

NIHR Health Protection Research Unit in Emergency Preparedness and Response

# Mental health, complex needs and vulnerability to radicalisation

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# **Executive Summary**

#### Introduction

Although there are various definitions and interpretations of the term 'radicalisation' across the literature, it is generally accepted that the term refers to the process by which individuals come to adopt extreme ideologies such as those associated with terrorist groups. Therefore, acts of terrorism are a potential though not guaranteed – outcome of radicalisation. Terrorism is one of the top threats to national security in the United Kingdom and new terrorist threats continue to emerge. As part of the government's counter-terrorism strategy, the Prevent programme seeks to identify and support individuals who may be vulnerable to becoming radicalised. However, there is a lack of consensus as to which factors make individuals susceptible. In particular, there is limited understanding of the link between radicalisation and mental health and other complex health-related needs (such as neurodiverse conditions and learning difficulties). The Forbury Gardens terrorist attack in Reading, England, in June 2020 has raised additional questions given that the attacker, Libyan-born refugee Khairi Saadallah, was in the mental healthcare system and reportedly had regular visits from a mental health professional. It is therefore important to establish the evidence base for the relationship between mental health disorders and radicalisation, in order to ensure that the support being provided by Prevent and other programmes is appropriate and will reduce the risk of future attacks. A solid understanding of the radicalisation process, and ability to identify who may be at risk for radicalisation, could help to prevent the process and therefore potentially prevent terrorist attacks.

## **Study objectives**

- 1. Identify risk factors of radicalisation
  - 1.1. In particular, explore whether mental health conditions, neurodiverse conditions, or other complex health needs can make individuals vulnerable to being radicalised and potentially drawn into terrorism and extremism
- 2. Assess the effectiveness of interventions designed to reduce the risk of radicalisation
  - 2.1. In particular, assess the effectiveness of interventions designed to impact on mental health and radicalisation
- 3. Identify gaps in the literature in order to inform future research.
- 4. Discuss results and develop recommendations specific to the UK context.

#### Method

Preliminary searches for terms relating to 'radicalisation/radicalization' and 'risk factors' on multiple Ovid databases revealed the existence of not only many hundreds of studies exploring the potential factors which may make people vulnerable to being radicalised, but also multiple recent reviews of the literature on this topic. Therefore, presented in the first part of this report is an 'umbrella review' – that is, a review of reviews – to assess what is already known about the potential risk factors for radicalisation and interventions for preventing radicalisation.

This umbrella review searched multiple electronic databases (Embase, Medline, Global Health, PsycInfo, Social Policy and Practice, and Web of Science) from inception to August 2021; reference lists of included reviews were also handsearched, along with two key journals in the field, and an expert was contacted for additional recommendations. The umbrella review was limited to reviews which: explored risk factors for radicalisation or interventions to prevent or counter radicalisation; explored behaviours relating to radicalisation including sympathies for violent protest and actually engaging in terrorist behaviour; reviewed at least one paper; reviewed at least some empirical data (rather than only theories); had a full, published text; were published in English; and were somewhat systematic/empirical in nature (i.e. not theoretical papers or narrative reviews with no defined methodology). We were interested in any risk factors and any interventions – not just those specifically relating to mental health and complex needs – as we felt at this stage it would be important to consider other variables relevant to radicalisation, which may interact with mental health and complex needs.

All citations were downloaded to EndNote where titles, abstracts and finally full texts were screened to assess eligibility. Reviews which met all inclusion criteria underwent data extraction and quality appraisal. Thematic analysis was used to analyse the results of the included reviews and a narrative synthesis approach was used to synthesise the data.

The most recent reviews included in the umbrella review were published in 2021, and the studies reviewed within those papers had publication dates up to 2020. Therefore, we next carried out a systematic literature review of literature published 2020-2021 and relating to health- and complex needs-related risk factors of radicalisation, to update previous reviews and explore whether there are any novel findings differing from those presented in the existing literature reviews. Again, the electronic databases Embase, Medline, Global Health, PsycInfo, Social Policy and Practice, and Web of Science were searched. To be included, studies had to contain original primary data; be published between 2020-2021 and not have been included in any previous systematic reviews; have a population greater than one (i.e. no single case studies); explore some form of radicalisation (including sympathies for violent protest and actual terrorist behaviour); explore either potential risk factors for radicalisation relating to mental health/complex health needs or effectiveness of interventions designed to prevent or counter radicalisation; have a full published text; and be published in English.

Again, citations were downloaded to EndNote where they underwent title, abstract and full text screening. Data extraction and quality appraisal of the studies meeting all inclusion criteria were carried out, thematic analysis was used to analyse their results, and narrative synthesis was used to synthesise the findings.

#### Results

*Umbrella review:* A total of 348 citations were found via database searching and an additional 15 were found through hand-searching. After all citations were screened against the selection criteria, 27 systematic reviews remained for inclusion in the umbrella review. The majority of reviews did not contain meta-analysis, focused only on significant findings, and used imprecise, vague language throughout (e.g. suggesting risk factors were found in 'many' or 'few' studies, without giving exact numbers). For that reason, we could only provide a narrative description of the results of the reviews, rather than any meaningful statistical analysis.

All reviews appeared to agree that there is no single, comprehensive profile of an individual at risk for radicalisation; however, a number of potential correlates of radicalisation were offered. In terms of socio-demographic characteristics, although evidence was mixed, reviews suggested that being male is more of a risk factor than being female; young age is a risk factor (although this raises questions about how 'young' is defined); and other risk factors include being single, low educational status, unemployment, low socio-economic status, residence in an urban area, prior criminal history, and extreme political or religious views. Only one review reported evidence of race as a predictor; however, they did not give details of which races were studied or found to be more likely to engage with terrorism. Evidence on immigration status suggested terrorists tend to have been born in the country they currently lived. The religion most often considered as a potential risk factor for radicalisation was Islam, which did appear to be frequently associated with radicalisation; however, religious identity, importance of religion, religious conversion, and religious fundamentalism – regardless of particular religion – were all found to be associated with radicalisation. Finally, mixed evidence was found regarding prior military experience and radicalisation.

In terms of mental health and complex health needs, there was again mixed evidence, with a suggestion of higher rates of mental illness in terrorist populations than the general population overall, although mental illness is likely to co-occur with other experiences (such as poor relationships, unemployment, traumatic experiences, recent life changes and being a victim of perceived injustice or discrimination) and so its exact relationship with radicalisation is difficult to untangle. Additionally, mental health status is assessed in different ways in different studies, making it difficult to ascertain precise prevalence rates. Depression appears to be the most frequently considered mental illness in the radicalisation literature, with some evidence that higher rates of depression may be present in terrorist populations. Reviews also provided a small amount of evidence for a relationship between radicalisation and self-harm/suicidality, schizophrenia/psychotic disorders, personality disorders, mood disorders, substance use, and post-traumatic stress disorder. None of the reviews considered other complex health-related needs such as neurodiversity or learning difficulties. None provided data on how a mental health problem might impede an individual's ability to extract themselves from the radicalisation process, or how mental healthrelated interventions might be used to prevent or counter radicalisation.

The reviews also provided evidence of a potential relationship between radicalisation and personality and disposition. In particular, there was evidence that radicalisation may be associated with low empathy, aspects of psychopathy and sadism, Machiavellianism, narcissism, thrill-seeking/risk-taking, anger/aggression, intolerance of ambiguity, authoritarianism, low self-control, impulsiveness, low selfesteem, uncertainty, moral neutralisation and a desire to be seen as significant. Adverse experiences also appeared to be associated with radicalisation. This

includes both early experiences such as childhood abuse or neglect and recent experiences such as divorce or death of a loved one. Other correlates of radicalisation included family (dysfunctional family, uninvolved parents); peers (low number of social contacts, poor integration with groups other than one's own, having violent/radical peers); wider society (disconnection from society, perception of one's group as superior); and personal, social or political grievances (dissatisfaction with political systems, perceived injustice, perceived threat, disrespect of the law or authorities).

'Pull' factors towards radicalisation were also identified, such as group dynamics (forming bonds with like-minded others who share grievances and beliefs) and perceived rewards (such as respect or fulfilment of need for excitement). Other motivators for radical behaviours included desire for revenge and desire to convey a message to wider society. Consumption of violent media and exposure to radical content were also risk factors for radicalisation, with the internet potentially playing a role in reinforcing ideological messages.

Whilst literature on potential correlates of radicalisation was abundant, we found far less literature on interventions designed to prevent and counter radicalisation, and none specifically aimed at testing mental health-related interventions. Our review noted some evidence that counter-narrative interventions (involving counter-stereotypical exemplars, persuasion, inoculation and alternative accounts) have little impact on primary outcomes (e.g. intentions to engage in extremist acts) but may be effective in targeting potentially relevant factors such as perceived threat, ingroup favouritism and outgroup hostility.

Interventions were deemed more effective when they targeted both at-risk populations and the general population, and when they involved people from a variety of different backgrounds (e.g. different ethnicities, different migrant status). Interventions which involved capacity-building and empowerment were also seen as particularly helpful, and work delivered through outreach was deemed more effective than work taking place in formal institutions.

Specifically targeting self-esteem was not deemed an effective aspect of an intervention, but there was some evidence that targeting social cognitive skills – such as increasing empathy – may be effective. Providing alternate 'routes to significance' was also suggested as a potentially effective way of preventing extremism.

However, very few intervention studies had any long-term follow-up, meaning it is difficult to assess how effective they may be in the long term. Additionally, several reviews noted the potential negative effects of interventions and policies designed to prevent and counter radicalisation, with many studies reporting that these can be counter-productive and actually lead to further radicalisation. In particular, we noted negative findings relating to the UK's Prevent strategy, which was seen as stigmatising toward Muslims in the UK. The quality of the reviews included in the umbrella review was low overall, with a mean quality score of 30.6%, and only two (of 27) reviews scoring 50% or over. The majority failed to explain and justify their selection of study designs for inclusion; did not carry out comprehensive literature searches; either did not carry out data screening and extraction in duplicate or did not report whether they did or not; did not provide lists of excluded studies; did not use satisfactory techniques for assessing risk of bias; and failed to consider publication bias.

2020-2021 review: A total of 657 citations were found in the initial searches, and 15 met all inclusion criteria and were included in the review. The majority (11/15) examined correlates of radical attitudes in the general population; three described the characteristics of terrorist samples; and one qualitative study explored expert views on a potential link between autism and radicalisation. No studies evaluated interventions for preventing or countering radicalisation.

The findings of the 2020-2021 novel paper review relating to socio-demographic correlates of radicalisation largely supported the findings of the umbrella review, with radicalised people tending to be male and young. Religion itself did not appear to be a risk factor, but the importance of religion appeared to be key, with those perceiving religion to be an extremely important part of their life being more vulnerable to radicalisation. There were mixed findings on immigration status as a risk factor.

One study included in the review examined autism as a potential risk factor for radicalisation and found no significant association. Another qualitative study with experts on autism (including people with an autism diagnosis and experts in the field) revealed that experts find it irresponsible to promote an association between autism and radicalisation, given the lack of evidence; they suggested that when people with autism do engage in radical activity, they tend to be from 'troubled' backgrounds involving neglect and poor social support. No other neurodiverse conditions were examined in the literature. Research on the relationship between mental health and radicalisation supported the findings of the umbrella review, suggesting that depression, anxiety, post-traumatic stress disorder, personality disorder and substance use were all associated with greater radical attitudes/intentions. Additionally, conduct problems, comorbid depression and dysthymia, and stress/distress were also identified as potential risk factors.

A number of studies considered the relationship between personality/disposition variables and radicalisation. These provided some evidence that (lack of) openness, (lack of) agreeableness, (lack of) extraversion, neuroticism, poor self-monitoring (the ability to actively control expressive behaviour and behave in 'expected' ways), low self-esteem, a sense of self-worth dependent on others, and a lack of future orientation (that is, lack of positive attitude towards the future) may be potential risk factors of radicalisation.

Having a prior criminal conviction and previous exposure to violence and conflict also appeared to be risk factors in several studies. There was some evidence of family-related risk factors, including poor family cohesion, a negative parental environment and parental violence, although these were considered by only one study each.

The review found mixed evidence on the relationship between radicalisation and social support/social capital. There was some evidence that membership self-esteem may be an important aspect of radicalisation – that is, the value attributed to oneself as a member of a specific group. Related, there was some evidence that a strong sense of belonging to a particular community (e.g. the global Muslim

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community, just as one example) may predict vulnerability to radicalisation. Lack of tolerance towards others and a desire to control others were also identified as potential risk factors.

Experts on autism suggested that experiences of bullying, exclusion and marginalisation may make people with autism particularly susceptible to radicalisation. Several other studies found that perceived discrimination of one's group by others may be a risk factor for radicalisation.

There was mixed evidence on attitudes towards the law, with one study finding no significant relationship between respect for laws and radicalisation, and another finding that legal cynicism predicted radicalisation. Political engagement was not found to be a risk factor.

Finally, there was some evidence (from one study only) that internet addiction and exposure to radical content online may predict vulnerability to radicalisation.

The quality of the 2020-2021 studies was much higher overall than the quality of reviews in the umbrella review, with an average score of 70.7% (compared to 30.6% for the reviews included in the umbrella review).

#### State of the literature

This study illustrates the volume of publications in the field of radicalisation, with 27 fairly recent systematic reviews covering either risk factors for radicalisation or interventions for preventing and countering radicalisation. Of these 27 reviews, 22 clearly listed their included studies; when these were collated, we found a total of 1,021 unique citations were included in the reviews of which 879 were included in

only one review each, illustrating the size of the field and raising concerns about the accuracy and thoroughness of the search and screening processes of the reviews. Conceptual and theoretical papers appear to dominate the field with fewer studies containing original, empirical data.

The majority of systematic reviews we reviewed were published in the last three years; so many similar reviews in a short time-frame is likely to create difficulties for policy-makers who need to draw recommendations from the evidence base. Additionally, the quality of systematic reviews in the field appears to be low. Empirical studies published between 2020-2021 appear to be higher in quality than reviews, but tend to rely on cross-sectional data from opportunity samples.

The literature tends to focus on either those already radicalised (e.g. convicted terrorists) or members of the general population, the majority of which are unlikely to become radicalised; there is little research involving those going through the radicalisation process, although this is perhaps understandable as they are likely to be a hard-to-reach group and unlikely to admit to being in the radicalisation process. Much of the literature on terrorists is done at a distance – for example, analysing legal documents or media reports – which is likely due to practical difficulties in gaining access to such participants. The majority of literature appears to be based on cross-sectional data, rather than prospective or longitudinal – whilst this can provide an indication of potential risk factors, it does not tell us anything about radicalisation as a process, the steps involved, or the relationships between different variables at different stages of the process. There is also a lack of longitudinal research on interventions, and therefore a lack of evidence on whether or not interventions actually have any long-term effect.

There appears to be little consensus within the literature as to what important terms – such as radicalisation – actually mean; such terms are conceptualised

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differently by different scholars. Some argue for a broader conceptualisation of radicalisation to include constructive, non-violent forms of extremism. As well as lacking standardised definitions, the field also appears to lack standardised measures of extremism and radicalisation – there are a number of different instruments to measure these concepts, not all of which are of high quality.

#### Conclusions

Our reviews identified some evidence that mental health problems may be slightly more prevalent in radicalised populations than the general population; studies showed significant associations between radical attitudes/behaviours and depression, self-harm, suicidality, anxiety, post-traumatic stress disorder, personality disorders, mood disorders, schizophrenia/psychotic disorders and substance use. Mental illness also appears to be more common in lone-actor terrorists than group actors. However, whilst rates of mental illness do appear to be higher in radicalised populations than the general population, it must be noted that prevalence rates still tend to be less than 50%, indicating that at least half of the individuals in radicalised populations do *not* have mental health problems. Additionally, mental health problems are measured differently across different studies and so it is difficult to make generalisations; more studies using standardised psychiatric assessments are needed. Assimilating the large body of evidence on this subject, it is evident that the relationship between mental illness and radicalisation is likely to be complex and multi-faceted. It would be facile and ill-judged to assume that mental health problems are likely to be the sole contributor to any radicalisation process. It is far more likely that mental health problems co-occur with other experiences which increase the risk of radicalisation such as chronic stress, recent life changes, history of trauma, poor relationships, and/or being a victim of perceived injustice or discrimination. The same can likely be said for neurodiverse conditions, although we found far less literature relating to these. Given the paucity of literature on neurodiverse conditions, we consider that

it is currently premature to consider such conditions as being direct causes of radicalisation. However, once again certain features of such conditions may interact with other factors which push and pull individuals towards radicalisation. More research work on this topic is required before any firmer conclusions can be made.

Overall, our reviews found no coherent understanding of the ways in which people become radicalised, and no single profile of the 'type' of person most likely to become radicalised; additionally, mental health problems do not appear to be major contributory factors in the vast majority of cases (although they do appear to be more common in lone actors) and the importance of mental health as a variable is unknown. However, certain commonalities were found across the literature - for example, being male, being young, being single, living in an urban area, lacking education or educational aspirations, coming from a dysfunctional family, having adverse early or recent experiences, gaining self-esteem from group membership and having personal or political grievances (such as experiencing perceived injustice or discrimination) all appear to be potential risk factors for radicalisation. However, there are of course radicalised people who do not fit into any of these groups, just as there are many, many people who do have these experiences but will not become radicalised. It is important not to generalise the findings and not to assume that any particular demographic is particularly likely (or unlikely) to become radicalised: this could result in stigmatisation of certain groups and also lead to overlooking others who do not fit these demographics but who are at risk of radicalisation.

There is less evidence relating to 'pull factors' of radicalisation, but the evidence we did find suggests that group dynamics are the key 'pull factor', with radical groups allowing people to feel that they belong, providing bonds with like-minded people, and providing a sense of identity. Other pull factors include desire for revenge,

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desire for excitement, desire for significance and desire to convey a particular message.

There may well be other factors which contribute to the radicalisation process and it is also likely that it is the interplay between variables which is of particular importance. What is clear from the reviews is that the exact mechanisms of radicalisation are as yet unknown, and that it is inappropriate to seek a single 'terrorist profile' or assume static qualities of individuals, as there are likely dynamic processes involved in radicalisation.

It is concerning that there is very little evidence on the effectiveness of interventions designed to prevent or counter radicalisation – very few studies have published follow-up results, making it difficult to assess the effects of interventions in the long term. There are also concerns that some interventions may be counter-productive and actually cause further radicalisation. Negative findings relating to the UK's Prevent strategy have been published, suggesting that it creates distrust and suspicion and is stigmatising towards Muslims. Further research is urgently needed to analyse the long-term impact of interventions and policies. In the meantime, policy-makers should be particularly careful that interventions do not stigmatise any particular groups – this is especially important given that perceived discrimination appears to be a risk factor for radicalisation.

#### **Recommendations for future research**

We make the following recommendations for researchers to fill the gaps we noted in the literature:

- More prospective or longitudinal studies to better understand radicalisation as a process which occurs over a period of time;
- More research to explore why people with similar experiences, grievances and characteristics follow different trajectories why do some become

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radicalised, and some do not? Prospective or longitudinal studies may help to understand;

- Development of a standardised measure of resilience against radicalisation/resistance to radicalisation;
- Further research on the relationship between mental health and radicalisation – again, longitudinal studies may help, along with deeper exploration of the characteristics of the mental health problem and how it relates to other life experiences;
- More research on the relationship between radicalisation and other complex health-related needs such as neurodiversity – again, considering how such conditions may contextualise other experiences which push and pull individuals towards radicalisation, rather than considering neurodiverse conditions as a direct cause;
- More research on members of the general population for whom radicalisation is particularly relevant, such as activists and protesters; not to imply that such people are likely to become violent radicals, but they may have insights on the radicalisation process, and studying a group of people who may possess extreme opinions but do not act violently may help understand how they differ from those who do commit violent acts;
- Where research is done with terrorist or other radicalised samples, there should be more focus on group-level explanations of radicalisation and the group processes involved, rather than focusing solely on individual characteristics and experiences;
- Based on our own previous research, we suggest researchers may want to consider moral injury as a potential correlate of radicalisation, as there is evidence that those experiencing moral injury and those at risk of radicalisation may be exposed to similar experiences and similar feelings;

- Based on our own previous research, we suggest researchers might consider investigating radicalisation as a way of compensating for chronic feelings of emptiness, lack of meaning or perceived deficits in one's life or relationships;
- Researchers should strive to understand the interactional effects of different variables potentially involved in the radicalisation process;
- Further exploration of the pathways for different types of extremism (such as religious, left-wing, right-wing) individually, as different variables might be relevant to the radicalisation process depending on the type of extremism;
- Given the wealth of literature in the field and the speed and volume at which new studies are being published, an individual or academic unit should monitor and assimilate the incoming evidence;
- Researchers should evaluate interventions appropriately and thoroughly, and over a long period of time in order to assess long-term impact; individuals from multiple disciplines such as law enforcement, education and mental health should be involved in research design;
- More research is needed to help mental health professionals identify who is at risk of radicalisation and how they may be able to help;
- Researchers should ensure that standard definitions of key terms relating to radicalisation are used to ensure consistency within the literature.

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# Introduction

#### Defining key terms

Recent years have seen increased academic focus on both radicalisation and terrorism, concepts which are closely linked and frequently associated with one another (Trimbur et al., 2021). However, the concepts appear to be defined differently across the literature. In the United Kingdom (UK), radicalisation is currently defined by the UK government's Prevent Duty guidance as "the process by which a person comes to support terrorism and extremist ideologies associated with terrorist groups" (Home Office, 2021); therefore, an individual who has developed a positive attitude toward terrorist ideologies or sympathises with acts of terrorism could be described as 'radicalised'. The Institute for Economics & Peace (2019) states that there is no single, internationally-accepted definition of what constitutes terrorism, and that various competing definitions are reported within academic literature; additionally, the definition of terrorism appears to change over time (McCann & Pimley, 2020). Terrorism is currently defined in the UK as an act of serious violence against a person or serious damage to property which endangers a person's life, creates a serious risk to public health and safety or is designed to seriously disrupt an electronic system; the act or threat of the act is designed to influence the government or to intimidate the public, and the act or threat of the act is made to advance a political, religious, racial or ideological cause (Terrorism Act, 2000). Terrorism is therefore a potential, but not guaranteed, outcome of radicalisation; not everyone who can be described as 'radicalised' will actually commit a terrorist act.

Literature relating to radicalisation frequently refers to not only terrorism but also extremism, fundamentalism, and authoritarianism. Scarcella et al. (2016) differentiate between the various terms, as summarised below.

#### **Key terms**

*Extremism* (active opposition to fundamental values) *Terrorism* (unauthorised use of violence and intimidation in the pursuit of political or ideological aims)

*Fundamentalism* (belief there is one set of religious teachings containing the fundamental truth)

*Radicalisation* (the process by which someone comes to adopt increasingly extreme political, social or religious ideals that undermine the status quo) *Authoritarianism* (unqualified submission to authority)

[Scarcella et al., 2016]

It is important to note that extremism, whilst 'conceptually close' to terrorism (Kinnvall & Capelos, 2021, p.2) and often used interchangeably with the terms terrorism and radicalism, can be either violent or non-violent (Onursal & Kirkpatrick, 2021). Additionally, radicalisation itself can be considered a spectrum, ranging from support and endorsement of extremists, to hypothetical intentions to engage in violent protest, to actual violent behaviours (Gotzsche-Astrup et al., 2020).

# Global impact of terrorism

According to the Global Terrorism Index 2019 (Institute for Economics & Peace, 2019), 103 countries recorded at least one terrorist incident in 2018. Recent

research suggests there are currently between 150-500 illegal terrorist organisations in the world (Zhetpisbaeva et al., 2021). Whilst the highest number of terrorist incidents take place in countries already struggling with conflict (for example, Afghanistan and Iraq saw the highest impact of terrorism in 2018) such incidents are not uncommon in other parts of the world, and the UK saw the highest impact of terrorism in Western Europe in 2018, ranking at 28 in the Global Terrorism Index (Institute for Economics & Peace, 2019). As such, terrorism is one of the top threats to national security in the UK. A recent House of Commons briefing report (Allen & Kirk-Wade, 2020) reports there have been 4,452 terrorismrelated arrests in the UK since September 11<sup>th</sup> 2001, with 268 arrests for terrorismrelated offences taking place in just the one year prior to the report.

Of the 103 countries reporting a terrorist incident in 2018, seventy-one reported at least one associated fatality (Institute for Economics & Peace, 2019). An analysis of terrorism-related deaths between 2007-2017 revealed an average of 21,000 people worldwide died from terrorism each year (Ritchie et al., 2019). As well as loss of life, terrorism has numerous other far-reaching consequences. Firstly, the psychological impact on survivors can be severe: a systematic review of post-traumatic stress disorder (PTSD) prevalence in various trauma-exposed populations (Santiago et al., 2013) estimated a PTSD prevalence of 37.1% in people exposed to 'intentional' trauma such as terrorism, and also found that PTSD prevalence tended to increase over time for this group whereas it decreased for groups exposed to nonintentional trauma. Secondly, terrorism can have major economic consequences to the countries affected due to high security expenditure, loss of infrastructure and loss of tourism (Tahir, 2020). A recent paper by Bardwell and Iqbal (2021) estimates that since 2000, terrorism has cost the world economy approximately \$US 855 billion.

It is therefore perhaps unsurprising that terrorism and radicalisation processes potentially leading to terrorism have received substantial attention from researchers across the globe. Academic attention and subsequent publication of

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literature on terrorism and radicalisation began to increase substantially after the 9/11 terrorist attacks in New York and the subsequent 'War on Terror' (Lum et al., 2006) and continues to grow substantially. In their recent systematic scoping review of push, pull and personal factors of radicalisation, Vergani et al. (2020) chart the distribution of empirical articles on terrorism over time: they show much lower numbers of studies published in the early 2000s, with the number of publications more than trebling between 2011 and 2015. In particular, recent years have seen an increase in studies aimed at identifying the risk factors for radicalisation; perhaps because broadly speaking, if we were to have a solid understanding of the process of radicalisation and ability to identify who is particularly at risk for radicalisation, we would consequently be better placed to prevent terrorist attacks.

#### The radicalisation process

Given the numerous different definitions and conceptualisations of radicalisation, it is perhaps unsurprising that there appears to be little consensus within the literature of what the radicalisation process entails. Schmid (2013) conceptualises radicalisation as a (typically gradual) process in which "normal practices of dialogue, compromise and tolerance between political actors and groups with diverging interests are abandoned (...) in favour of a growing commitment to engage in confrontational tactics of conflict-waging" (p.19). However, the process is not always gradual – for example, there are reports that some lone actors (such as Darren Osbourne, who drove a van into a crowd outside a Finsbury Park mosque) were radicalised within a month (BBC News, 2018). In such cases the timing of the radical appeal, at a point of vulnerability, might be crucial. Experts also disagree about fundamental issues such as whether this process is top-down or bottom-up (i.e., does someone mobilise vulnerable people and turn them into followers, or do individuals search for an organisation that allows them to follow a mission?). Kruglanski et al. (2014) consider radicalisation in terms of goals, and describe radicalised behaviours as 'counterfinal' in that their mission to achieve focal goals

undermines alternative goals. They suggest the radicalisation process requires arousal of the goal of significance followed by identification of terrorism/violence as the appropriate means to significance and a commitment shift to the goal of significance and away from other motivational concerns, resulting in the dominance of one goal and devaluation of the alternatives.

King and Taylor (2011) describe various different models of radicalisation with commonalities including the assumption that radicalisation is a transformation based on social psychological processes; the role of relative deprivation in the radicalisation process; and the role of experiencing some sort of identity crisis. However, the models discussed in this paper differ in terms of their emphasis on situational factors or social/psychological factors as making an individual more vulnerable to radical messages.

More recently, Beelmann (2020) proposed a social-developmental model of radicalisation, suggesting that the radicalisation process begins with ontogenetic developmental processes (i.e. societal, social and individual risk factors that occur between early childhood and early adulthood), then proximal radicalisation processes that occur from early adolescence to middle adulthood (e.g. identity problems, prejudice, political/religious ideologies, antisocial attitudes/behaviour). The stronger these proximal radicalisation processes, the greater the risk that extremist attitudes and behaviours will emerge.

Narrative overviews of the radicalisation/terrorism literature also provide various suggestions for causes or triggers of radicalisation. Overall, the literature suggests radicalisation is a complex process resulting from multiple influences and experiences (Ellis et al., 2020). Schmid (2013) suggests causes for radicalisation should be sought on three levels: micro-level (i.e. the individual level, for example identity problems; socio-demographic characteristics; personal experiences such as traumatic events; political or religious beliefs); meso-level (i.e. the wider radical milieu; the social surroundings which represent a reference group which may be seen as being treated unfairly or discriminated against); and the macro-level (i.e.

the role of government and society). This is agreed by Batzdorfer and Steinmetz (2020) who suggest that the pathway to violent extremism combines intra- and inter-individual dynamics and societal processes. Horgan (2008) suggests a variety of factors offering a framework for 'openness to socialisation into terrorism' which include emotional vulnerability (e.g. anger, alienation), dissatisfaction with their current activity (such as political or social protest), identification with victims (e.g. identifying with the suffering of one's group around the world), belief that engaging in violence is not immoral, sense of reward relating to being part of the movement, and social ties to others experiencing similar issues or already involved. A different set of factors are then hypothesised to come into play after initial involvement, moving towards engaging in terrorist events, which include the power of the group, the content and process of ideology, and the influence of a particular leader.

Leistedt (2013) claims there is no 'pattern' of psychopathology or single personality type among terrorists, although there is some evidence of commonalities such as fragmented families. According to Schmid (2013) the majority of terrorists are clinically 'normal'; backgrounds of terrorists are diverse, and there does not appear to be a single profile or type of person that will become a terrorist. Rather, there are various typologies, including frustrated revenge seekers, status seekers in search of recognition, identity seekers needing to find belongingness, and thrill-seekers. Schmid (2013) suggests grievances may play a role but they tend to be a mobilisation device rather than a personal experience and that terrorists may adopt others' grievances; social networks are important in drawing vulnerable people towards terrorism; and ideology can also play an important role as it can offers a reason for violence to appear acceptable. Leistedt (2013) reports that there is some evidence of a relationship between terrorism and the need to belong to a group/the tendency to define social status by group acceptance, as well as intolerance of dissent and rejection of compromise.

More recently, Hogg (2020) has discussed extremism in terms of the uncertaintyidentity theory, suggesting that group identification is motivated by the need to

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reduce feelings of uncertainty about the self and that conditions such as mass migration and poverty can cause 'widespread, extreme and chronic selfuncertainty', leading people experiencing these conditions to identify with radical groups which provide a clearly defined identity.

#### Deradicalisation and disengagement

There appear to be numerous terms used to describe countering and preventing radicalisation. Most commonly, the literature appears to refer to 'deradicalisation', but again, the term is contentious – for example, scholars differ in terms of whether they believe the concept to require an individual to have actively engaged in violence in order to qualify for deradicalisation, or whether reduction in radical beliefs and worldviews could also be considered deradicalisation (Baaken et al., 2020). Baaken et al. (2020) define deradicalisation as the process through which a radicalised individual (re)processes and finally discards their extremist views. Other terms such as disengagement and demobilisation are also used, most commonly to describe changes in behaviour but not necessarily changes in views. According to Schmid (2013), disengagement from terrorism frequently occurs without 'de-radicalisation' – that is, people who are radicalised can disengage themselves from terrorism (change their behaviour) without actually changing their cognitive framework.

#### The Prevent strategy

Prevent is part of CONTEST, the UK government's counter-terrorism strategy, aiming to prevent people engaging in terrorist acts or supporting terrorism (HM Government, 2015). Prevent involves a number of different institutions where there may be risks of radicalisation, including educational, religious, health-related and criminal justice institutions. The Prevent programme seeks to identify and support individuals who may be at risk of becoming radicalised. However, without a consensus as to which factors make individuals susceptible, it is difficult to judge whether Prevent is monitoring the appropriate individuals. In particular, there is limited understanding of the link between radicalisation and mental health and other complex health-related needs (such as neurodiverse conditions and learning difficulties) and the extent to which the mentally ill and neurodiverse populations should be considered vulnerable to radicalisation is therefore unclear. The Forbury Gardens terrorist attack committed by Libyan-born refugee Khairi Saadallah in Reading, England, in June 2020 has raised additional questions on this issue given that the attacker was in the mental health system and reportedly had regular visits from a mental health professional (BBC News, 2020). It is therefore important to establish the evidence base for the relationship between mental health and radicalisation, in order to ensure that the support being provided by Prevent and other programmes is appropriate.

#### Aims of the current review

This review aimed to examine the risk factors for radicalisation, and in particular whether mental health problems and other complex health-related needs (such as neurodiverse conditions or learning difficulties) make people more vulnerable to radicalisation; and to assess the current impact of interventions designed to prevent radicalisation, particularly those related to mental health. We also aimed to identify gaps in knowledge in order to suggest directions for future research.

# Method: Study 1 (Umbrella review)

# Initial scoping search

We carried out an initial, extremely broad scoping search designed to capture all literature potentially relating to either risk factors of radicalisation or interventions relating to countering or preventing radicalisation. Search 1 consisted of terms relating to radicalisation, combined using the Boolean operator 'OR'; Search 2 comprised synonyms relating to either risk factors or interventions, again combined using 'OR'; and the two searches were combined using 'AND'.



### Full scoping search strategy

(terroris\* or radicalis\* or radicaliz\* or extremis\* or fundamentalis\* or political violen\* or militant activis\* or jihad\* or neo-nazi\* or neo nazi\* or white supremac\* or white-supremac\* or extreme left or extreme right or anarch\*) AND (prevent\* or interven\* or counter-terroris\* or counter-radicali\* or de-radicali\* or risk\* or indicator\* or predictor\* or factor\* or at-risk population\* or at risk population\* or propensity or predispose\* or likelihood or cause\* or causation or causal or determine\* or determinant\* or root\* or correlat\* or vulnerab\* or trigger\* or moderator\* or mediator\*)

The asterisk symbol is used as a truncation command – so for example, 'terroris\*' would search for 'terroris' as a root term with any ending, thus would capture both 'terrorist(s)' and 'terrorism'.

This search was carried out by SKB across multiple Ovid databases: Medline, Embase, Global Health, PsycInfo, and Social Policy and Practice. All databases were searched from inception to August 2021. This search yielded 27,424 citations which, given the limited time available for this study, was far too large a data corpus to be screened. It also became clear from scanning several hundred of the first search results that multiple literature reviews in this area had already been published.

Given the wealth of literature, it is unsurprising that so many researchers have synthesised and appraised the existing studies in reviews. However, multiple reviews on the same topic can present difficulties to policy-makers who are then tasked with reading various different reviews with potentially inconsistent aims, results, conclusions and recommendations made. For this reason, it was deemed useful to conduct a 'review of reviews' in order to synthesise the literature in one paper. This type of review of existing literature reviews is known as an 'umbrella review' (Aromataris et al., 2015). Umbrella reviews are a useful way of comparing and contrasting all the separate review results in order to provide policy-makers with just one overview of the key findings as a way of making their evidence-based decision-making more straightforward (Smith et al., 2011). Carrying out an umbrella review was also deemed to be an effective way of meeting this study's aim of identifying gaps in the literature.

We therefore carried out an umbrella review following the guidance set out in the Preferred Reporting Items for Systematic Reviews (PRISMA; Liberati et al., 2009).

#### Search terms

We designed a search strategy to locate relevant reviews of the literature on radicalisation, employing a deliberately broad search strategy in order to avoid missing potentially relevant studies. Search 1 consisted of radicalisation synonyms, combined using the Boolean operator 'OR', and Search 2 consisted of reviewrelated terms, again combined using 'OR'. Search 2 was designed to capture systematic reviews, narrative reviews, rapid reviews and meta-analyses as well as any papers which used terms such as 'literature review/overview' or 'review/overview of the literature' (the Boolean operator 'NEAR' was used on Web of Science whilst 'adj3' was used across the other databases to capture the word 'review' within three words of the word 'literature', in accordance with the guidelines for using the databases). Searches 1 and 2 were then combined using the Boolean operator 'AND'.

#### Full umbrella review search strategy

(terroris\* or radicalis\* or radicaliz\* or extremis\* or fundamentalis\* or political violen\* or militant activis\* or jihad\* or neo-nazi\* or neo nazi\* or white supremac\* or white-supremac\* or extreme left or extreme right or anarch\*) AND ((literature NEAR review) or (literature NEAR overview) or systematic review or narrative review or rapid review or meta-analys\* or meta analys\*)

#### Data sources

One author (SKB) used the search strategy to search the following electronic databases: Embase, Medline, Global Health, PsycInfo, Social Policy and Practice, and Web of Science. All were searched from date of inception to August 3<sup>rd</sup> 2021. Reference lists of included papers were hand-searched to identify any relevant reviews potentially missed by our searches. The Journal for Deradicalization and Studies in Conflict and Terrorism were searched using the keyword 'review'. We also contacted a key expert in the area who recommended relevant literature. All resulting citations were downloaded to EndNote© reference management software (Thomson Reuters, New York) where duplicate citations were removed.

#### Selection criteria

There were no restrictions on the type of population studied: we were interested in reviews on radicalised populations and at-risk populations as well as reviews of factors associated with extremist opinions or sympathy for violent protest among the general population. Additionally, there were no restrictions on the type of risk factors considered; although we were particularly interested in mental health and complex health-related needs, it was deemed inappropriate to focus solely on these at this stage, potentially overlooking other important risk factors which may be more strongly associated with radicalisation, or which may interact with mental health to impact the radicalisation process. There were also no restrictions on the interventions considered or the date of publication.

To be included, studies had to:

- Review literature relating to either i) factors associated with attitudes and behaviours relating to radicalisation, terrorism, or extremism, including sympathies for violent protest, risk of radicalisation and actual terrorist behaviour; or ii) effectiveness of interventions designed to prevent radicalisation or de-radicalise individuals who are already radicalised;
- Review at least one paper;
- At least some of the reviewed studies should contain empirical data, rather than theories;
- Have a full, published text (e.g. conference abstracts were excluded);
- Be published in English, as this is the language spoken by the reviewers and translation of foreign-language papers was not possible due to the time constraints of this study.

After screening the citations and finding how many reviews and overviews existed, we added an additional inclusion criterion:

 Reviews needed to be somewhat systematic/empirical in nature (i.e. systematic reviews, scoping reviews, and meta-analyses as opposed to theoretical papers and narrative reviews with no defined methodology).

#### Title and abstract screening

One author (SKB) carried out the screening process. Based on the selection criteria described above, the titles of all downloaded citations were evaluated first for a decision on initial inclusion or exclusion. Any papers clearly not relevant to the study were removed. Following this, the abstracts were evaluated for their relevance to the current study. Next, full hard copies of the papers identified at this stage as potentially eligible for inclusion were obtained. Excluded citations were retained in separate folders within EndNote©. At the end of each stage of the screening process, any papers SKB had doubts about including or excluding were discussed with NG.

#### Screening of full text articles

Using a specially designed eligibility checklist created from the protocol for this review, one author (SKB) independently read the selected studies to form a list of excluded and included studies, with reasons. All excluded studies were stored in a separate folder on EndNote<sup>©</sup>. Again, any uncertainties about inclusion or exclusion were discussed with NG.

#### **Data extraction**

Using the standardised extraction form provided by the Cochrane Collaboration for RCTs as a guide (Higgins & Green, 2011), a modified version was developed using Microsoft Excel. This included the following headings: authors; year of publication; country of the author(s); type of review; aim of the review; population(s) included in the review; aspects of radicalisation considered in the review (e.g. sympathy for violent protest, or actual terrorist behaviour); databases searched in the review, with date range; which languages other than English (if any) were included in the searches; any additional searches carried out (e.g. hand-searching of journals, forward and backwards citations, contacting key experts); number of studies included in the review; type of studies included in the review; quality appraisal tool used; funding body; key results; conclusions; and limitations.

#### **Quality appraisal**

The quality of the reviews was assessed by one author (SKB) using the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) tool (Shea et al., 2017). This is a 16-item tool which assesses reviews on various domains such as their design, search strategy, screening and extraction processes, justification of excluded studies, description of included studies, assessment of risk of bias, and reporting of any funding received or potential conflicts of interest.

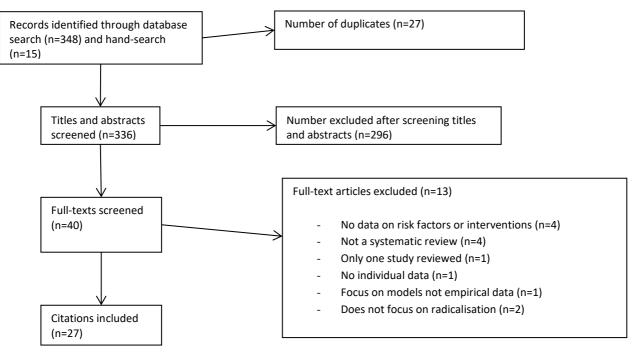
# Data analysis

Basic descriptive analyses were carried out to summarise the nature of the reviews and the number of studies included within them. The results of each review were coded using thematic analysis (Braun & Clarke, 2006) and outcomes were assessed through a narrative synthesis approach to review the presented information based on the appropriate guidance (Popay et al, 2006).

# **Results: Study 1 (Umbrella review)**

A total of 348 citations were found via the searches and downloaded to EndNote, where 27 duplicates were removed. Following title screening, 269 citations were excluded and a further 27 were excluded based on abstract. During the full-text screening, fifteen additional articles were found via hand-searching references lists and thirteen citations were excluded, leaving a total of 27 reviews for inclusion in the umbrella review.

A PRISMA flow diagram illustrating the various stages, and the numbers for inclusion and exclusion at each stage, is presented in Figure I.



# Figure I. Screening process

Studies which were excluded at the full-text screening stage are described in Table

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Authors (year)	Title of study	Journal	Reason for exclusion
Aldera et al. (2021)	Online extremism detection in textual content: A systematic literature review	IEEE Access	No data on risk factors or interventions
De Coensel (2018)	Processual models of radicalization into terrorism: A best fit framework synthesis	Journal for Deradicalization	Reviews models of the radicalisation process, rather than risk factors; unclear how many (if any) of the reviewed studies had empirical data
Gaikwad et al. (2021)	Online extremism detection: A systematic literature review with emphasis on datasets, classification techniques, validation methods, and tools	IEEE Access	No data on risk factors or interventions
Grossman et al. (2016)	Stocktake research project: A systematic literature and selected program review on social cohesion, community resilience and violent extremism 2011-2015	Australian Multicultural Foundation report	Considered racial, ethnic or religious exclusivism leading to racism and intolerance – not just radicalisation
King & Taylor (2011)	The radicalization of homegrown Jihadists: A review of theoretical models and social psychological evidence	Terrorism and Political Violence	Not a systematic review
Leistedt (2018)	Behavioural aspects of terrorism	Forensic Science International	Not a systematic review
Mazerolle (2020)	Police programmes that seek to increase community connectedness for reducing violent extremism behaviour, attitudes and beliefs	Campbell Systematic Reviews	Only one study was reviewed
Ostby et al. (2019)	Does education lead to pacification? A systematic review of statistical studies on education and political violence	Review of Educational Research	Focuses on the relationship between education and levels of conflict at a regional level; no data on individuals

# Table I. Papers excluded after full-text screening

Ribero-Marulanda et al. (2019)	Qualitative systematic review of emotional processes and social interaction: Behavioral analysis in contexts of political violence	International Journal of Psychological Research	Does not focus on radicalisation
Scarcella et al. (2016)	Terrorism, radicalisation, extremism, authoritarianism and fundamentalism: A systematic review of the quality and psychometric properties of assessments	PLoS ONE	No data on risk factors or interventions
Vestergren et al. (2017)	The biographical consequences of protest and activism: a systematic review and a new typology	Social Movement Studies	No data on risk factors or interventions
Webber et al. (2018)	The social psychological makings of a terrorist	Current Opinion in Psychology	Not a systematic review
Webber et al. (2020)	Ideologies that justify political violence	Current Opinion in Behavioral Sciences	Not a systematic review

Twenty-seven reviews were included in this umbrella review. The number of studies reviewed within these reviews ranged from 7 - 310. The quality of the reviews as rated using the AMSTAR ranged from 0% - 87.5%, although overall the quality was low, with only two reviews scoring 50% or more. An overview of the characteristics of the reviews included in this umbrella review are presented in Table II.

# Table II. Characteristics of included reviews

Authors (year); country of authors	Type of review	Aim	Focus (including terrorist ideology/type if applicable)	Radicalisation outcomes investigated	Databases searched (date range)	Languages included in search	No. of studies included	Quality appraisal tool used in the review	Funding body	Quality score of review
Batzdorfer & Steinmetz (2020); Germany	Systematic review using a network approach	To use a network approach to visually represent the central constructs and hypotheses across the radicalisation literature	Studies from the US and Europe, looking at political extremism, religious fundamentalism, nationalist/separatist extremism or single- issue extremism	Development of violence- promoting attitudes, beliefs or behaviours	PubPsych, Medline, PsycInfo, Web of Knowledge Science Citation Index, Social Science Research Network, dblp, IEEE Xplore, ACM Digital Library, JSTOR, The Campbell Library, National Criminal Justice Reference Service Abstracts (2004 – 2019)	Not reported	57	N/A	Not reported	11%
Campelo et al. (2020); France	Systematic review	To explore the profiles of European adolescents who have embraced radical Islamism	Western European adolescents and young adults aged 12-25	Radicalisation in general: violent actions, intentions to join extremist groups, sympathies for violent protest	PubMed, PsycInfo, Psychology and Behavioural Sciences Collection, MIVILUDES (January 2010 – July 2017)	Not reported	22	N/A	Not reported	32%
Carthy et al. (2020); Ireland	Systematic review	To assess the effectiveness of counter- narrative	Anyone exposed to a 'dominant' narrative – e.g. hostile social constructions of an	Risk of violent radicalism	Web of Science, PsycInfo, Scopus, Zetoc, Worldwide Political Science	English	19 independent studies	Cochrane Effective Practice and	Irish Research Council Government of Ireland	87.5%

				[						
		interventions in	adversary group –		Abstracts, Columbia		reported in	Organisation of	Postgraduate	
		reducing the risk	before or after		International Affairs		15 papers	Care checklist	Scholarship;	
		of violent	exposure to the		Online, Applied				Department	
		radicalisation	narrative intended to		Social Sciences				of Homeland	
			counter it – e.g.		Index & Abstracts,				Security	
			stereotype-		EthOS, NCJRS					
			challenging; the		Abstracts Database,					
			majority of		Directory of Open					
			participants were in		Access Journals,					
			university or high		Hedayah, SAGE					
			school		databases; hand					
					searches of nine					
					research and					
					professional					
					agencies' outputs;					
					contact with key					
					experts (2000 – May					
					2019)					
Christmann	Systematic	To explore the	Al Qa'ida-influenced	The radicalisation process	Applied Social	English	310	Quality	Not explicitly	32%
(2012);	review	evidence on	radicalisation		Sciences Index and			appraisal tool	stated, but	
UK		process of Al			Abstracts, National			for qualitative	assumed to	
UK		Qa'ida-			Criminal Justice			studies was	be the Youth	
		influenced			Reference Service			based on the	Justice Board	
		radicalisation,			Abstracts,			Magenta Book	for England	
		particularly			International			derived from	and Wales	
		among young			Bibliography of the			the		
		people, and the			Social Sciences,			Government		
		effectiveness of			Sociological			Social Research		
		interventions for			Abstracts, Social			Unit's		
		preventing			Science Abstracts,			guidance;		
		violent			PsycInfo, Intute			quality		
					1	1	1	1	1	1
		extremism			Social Sciences,			appraisal tool		

					Indove grou			studies was		1
					Index; grey					
					literature search			derived from a		
					included System for			study rating		
					Information on Grey			scale		
					Literature database,			developed as		
					Index of conference			part of a		
					proceedings, theses			member of the		
					and dissertation			research team's		
					searches, Index to			PhD thesis		
					Thesis (UK and					
					Ireland),					
					Dissertation					
					Abstracts					
					International; hand-					
					searching of					
					reference lists of					
					previous reviews					
					and key papers;					
					contact with key					
					experts (dates not					
					reported)					
Corner et al.	Systematic	To assess the	Across the	Radicalisation in general,	PsycInfo, ProQuest	English,	306 taken	SIGN grading	Department	46%
(2021);	review	impact of	radicalisation	from the formation of	Central Criminology	French,	forward for	system	of Home	10/0
	i ci i ci i	personality on	spectrum, from	radical views to actual	Collection, ProQuest	-	review; only	system	Affairs	
Australia,		attitudes,	radical views in the	terrorist acts	Central Social	German	high-quality		(Australia);	
UK and the		intentions and	general population		Science Database,		studies		European	
Netherlands		behaviours	to violent offenders		International		included ('n'		Research	
		relating to	who committed		Bibliography of		is reported		Council under	
		radicalisation	terrorist acts		Social Sciences,		to be 26, but		the European	
		and terrorism			Sociological		more than		Union's 2020	
					Abstracts, Scopus		26 studies		research and	
					(database inception		are		innovation	
					– July 2019);		discussed, so			
					– July 2019),		uiscusseu, so		programme;	

					forward and backward citation searches of all eligible studies		true 'n' is unclear)		Public Safety Canada	
Desmarais et al. (2017); USA	Systematic review	To identify risk factors associated with membership in terrorist organisations and/or perpetration of terrorist attacks	Terrorists	Membership in terrorist organisations and/or perpetration of terrorist attacks	PsycInfo, PsycArticles, Web of Science, National Criminal Justice Reference Service Abstracts, ProQuest Dissertations & Theses, Google Scholar (January 1 <sup>st</sup> 1990 – December 31 <sup>st</sup> 2015)	English 'or reliable translation available' – unclear what this means	205 (theoretical n=98, empirical n=50, case study n=33, literature review n=24, other n=3; USA n=121, other n=84)	N/A	Laboratory for Analytic Sciences	29%
Du Bois et al. (2019); Italy	Systematic review and meta- analysis and content analysis	To review literature on the radicalisation process	Range of people identified as radical, including foreign fighters, lone-actor terrorists, and homegrown terrorists	Committing extremist actions	Econlit, Web of Science, Directory of Open Access Journals, GetCITED, PLOS ONE, CiteSeer, Google Scholar (2014 onwards; unclear when review was carried out)	English, Dutch, Italian	256	N/A	European Union's Horizon 2020 research and innovation programme	0%
Emmelkamp et al. (2020); Netherlands	Multi-level meta- analysis	To examine risk factors for radicalisation in youth	Participants with a mean age of 25 or under	Positive attitudes towards radicalisation, willingness to engage in violent extremist behaviour, or actual violent extremist behaviour against others	PsycInfo, Web of Science, Criminal Justice Abstracts, Google Scholar (database inception – February 2019)	English, Dutch	25 studies describing 30 independent samples	N/A	No specific grant from any funding agency	50%

Gill et al. (2020); UK, Netherlands and Australia	Systematic review	To assess the impact of mental health problems on attitudes, intentions and behaviours with regards to radicalisation and terrorism	People who have been engaged in violent extremism, with or without comparative control groups	Terrorist offences	ProQuest Central Criminology Collection, PsycInfo, Pro Quest Central Social Science Database (database inception – February 2018) and Scopus, IBSS and Sociological Abstracts (database inception – July 2018) plus forwards citation search in Google Scholar (November 2019)	English, French, German	25 studies across 28 samples	N/A	Public Safety Canada; Department of Home Affairs (Australia); and the European Research Council under the European Union's Horizon 2020 research and innovation programme	32%
Harpviken (2020); Denmark	Systematic review	To understand the effect of psychological vulnerabilities on propensity to endorse or engage in extremism	Western youth or adolescents from Europe, North America or Australia	Endorsing or engaging in extremism	Academic Search Premier, Scopus, PsycInfo, National Criminal Justice Reference Service (database inception – February 2018)	English	25	Mixed Methods Appraisal Tool	Not reported	32%
Hassan et al. (2018); Canada	Systematic review	To synthesise evidence on how social media/the internet may contribute to violent extremism	People exposed to radical material online	Expressions of violent attitudes, hate-based emotions and attitudes, favourable attitudes towards violent radical online material, participating in violent activities, or taking parts	PsycInfo, Political Science Complete, Academic Search Complete, Education Source, ERIC, Communication Abstracts,	English, French, Spanish, Russian, Arabic, Chinese	11	N/A	Community Resilience Fund, Public Safety Canada	39%

Jahnke et al. (2021a); Germany	Systematic review and meta- analysis	To explore links between 'psychologically meaningful' risk factors and political violence outcomes among youth and young adults	Participant samples with a mean age not exceeding 30	in acts of political violence Attitudes towards violence, willingness to commit violent acts, or actual violent behaviour	Dissertations & Theses Global, Sociological Abstracts, SocINDEX, Francis and Web of Science (database inception – April 2018); searched Google for grey literature; searched websites of organisations working in the area of radicalisation PsycInfo/ PsyArticles/ Behavioral Science Collection, PubMed, Web of Science, ProQuest Dissertations and Theses Global, ERIC, Sociological Abstracts and Psyndex (from database inception – January 2020)	English, French, German, Italian, Swedish, Norwegian, Danish, Dutch, Spanish, Hebrew	95 samples from 67 index publications	N/A	Not reported	47%
Jugl et al. (2021); Germany	Systematic review and meta- analysis	To evaluate the outcomes of psychosocial prevention programs against	No participant- related exclusion criteria; interventions could be designed for the	Violent extremist behaviour or willingness to participate in violent actions	Cochrane Library, Campbell Collaboration, ERIC, JSTOR, NCJRS, ProQuest, PsycInfo	English, French, German	9 (based on primary interventions n=3, secondary	Maryland Scientific Methods Scale to code designs	Horizon 2020 European Union; German Federal	47%

		radicalisation and extremism	general population or at-risk groups or radicalised individuals; interventions were eligible if they focused on prevention of radicalisation		and Scopus (2000 – 2019); searched websites on the topic of radicalisation and extremism; hand- searched reference lists of key papers; contacted researchers in the field		interventions n=1, tertiary interventions n=1 or used a mixed approach n=3)		Ministry of the Interior; Konrad Adenauer Foundation scholarship	
Kenyon et al (2021); UK	Systematic review	To explore key themes arising from the literature on lone-actor terrorism	Studies on lone-actor terrorists	Committing lone-actor terrorist attacks	PsycInfo, PubMed, Scopus, Google Scholar (1 January 2001 – 30 April 2020); reference lists of included studies hand- searched	English	109	N/A	Not reported	18%
Losel et al. (2018); Germany & UK	Systematic review	To identify protective factors against extremism	No participant- related exclusion criteria	Outcomes included violent behaviour, sympathies for radical violence, willingness to use violence or a mindset explicitly supporting/justifying violence	Cochrane Library, Campbell Reviews, Dissertation Abstracts, Medline, PubMed, Embase, ERIC, German National Library, PsycInfo, Psyindex, Science Direct, Scopus, Sociological Abstracts, Sociological Collection and	English, German	17 papers containing 21 separate datasets	N/A	European Commission as a work package within the 'Modelling the processes leading to organized crime and terrorist networks'	21%

					World Cat (database inception – 2017); hand-searched reference lists of included articles; approached personal contacts				research consortium	
McGilloway et al. (2015); UK	Systematic review	To investigate the pathways and processes associated with radicalisation and extremism	People of Muslim heritage living in Western societies	Spectrum of radicalisation, from beliefs to violent acts	Applied Social Sciences Index and Abstracts, CINAHL, Embase, PsycInfo, PubMed, ScienceDirect, Scopus, Web of Science (dates not reported)	Not reported	17	The scoring system for mixed studies devised by Pluye et al. (2009)	Not reported	36%
Misiak et al. (2019); Poland, UK, Germany, Belgium, France, Norway and Turkey	Systematic review	To examine the association between mental health and risk of radicalisation	Radicalisation proneness or resistance in the general population or terrorist samples	Extreme religious beliefs, being in favour of violent activities, or perpetration of acts of mass violence	Medline/PubMed, ERIC and Health Source: Nursing/Academic Edition (from database inception – April 8 <sup>th</sup> 2018)	English	12	The SIGN grading system	Not reported	32%
Odag et al. (2019); Germany and Russia	Systematic review	To explore the role of the internet in the radicalisation process	Right-wing extremist and Jihadist content online	The content and tactics of extremist websites; identification with radical groups, outgroup hostility, planning a radical attack	Academic Search Premier, Arts and Humanities Citation Index, Google Scholar, JSTOR, PsycInfo, Social Sciences Citation	English, German	88	N/A	Not reported	7%

					Index, SocINDEX, VOX-pol online library, Psyndex, Sowiport/Sowis, WISO (2000 – 2019)					
Pistone et al. (2019); Sweden	Systematic scoping review	To explore the evidence for interventions that counter/prevent violent extremism, based on literature conducted in a Western context	All types of extreme ideological and religious groups, milieus and subculture structures that promote a violent agenda	Encouragement of and solicitation to commit violent acts, participation in violent acts	Medline, PsycInfo, PubMed, Scopus, Social Services Abstracts, Applied Social Sciences Abstracts, International Bibliography of the Social Services, TRIP database (1989 – November 2017)	English, Danish, Norwegian, Swedish	112	N/A	Not reported	39%
Stephens et al. (2021); Netherlands	Described as a 'review of literature' but appears to be somewhat systematic in nature	To review literature on preventing violent extremism	No participant- related exclusion criteria	Spectrum of radicalisation, from political ideas diametrically opposed to a society's core values, to actual violent extremist acts	Web of Science Social Science Citation database and others (not clear which)	Not reported	73	N/A	Dutch Ministry of Health, Welfare, and Sport	7%
Stockemer et al. (2018); Canada and Germany	Meta- analysis	To examine predictors of the radical right-wing vote in Europe	Supporters of the radical right	Voting for the radical right	Arzheimer's bibliography on the far right in Europe; Google Scholar (dates not reported)	English	46 quantitative, 14 qualitative	N/A	Not reported	16%

Taylor & Soni (2017); UK	Systematic review	To review qualitative literature on the lived experiences of the UK's PREVENT strategy in educational settings	School staff, students, or professionals who attended the Workshop for Raising Awareness of Prevent (WRAP)	N/A – perceptions regarding the Prevent strategy	Databases not reported (2013 – 2016)	English	7	N/A	Not reported	4%
Trimbur et al. (2021); France	Systematic review	To assess the evidence regarding the relationship between radicalisation or terrorism and psychiatric disorders	Persons considered as radicalised, terrorist groups, or support for political violence in the general population	Persons considered as radicalised (e.g. suspected Jihadists, former members of extremist groups); terrorists (i.e. members of terrorist groups, perpetrators of terrorist acts), or support for political violence	Medline, Lissa (database inception – June 2002); reference lists of included articles hand-searched	English, French	25	Scottish Intercollegiate Guidelines Network framework	Not reported	36%
Vergani et al. (2020); Australia	Systematic scoping review	To explore push, pull and personal factors of radicalisation	Extremists, general population, or experts	Behavioural radicalisation (i.e. engagement in violent action) or cognitive radicalisation (adoption and internalisation of violent and extremist beliefs)	PsycInfo, PubMed, Sociological Abstracts, Web of Science, Worldwide Political Science Abstracts, EconLit, Embase, PAIS Index, Scopus (2001-2015)	English	148	N/A	Not reported	21%
Williamson et al. (2021); UK	Systematic review	To explore individual-level factors involved in radicalisation	Quantitative studies on the process or motivations for radicalisation	Radicalistion, extremist attitudes, support for violent extremism	PsycInfo, Embase, Medline, PubMed, Google Scholar, PILOTS, Web of	English	10 (vs. 21 studies on moral injury)	14-item NIH checklist	Center for the Projection of National Infrastructure;	43%

		and to consider whether these are similar to risk and protective factors for moral injury			Science (database inception – November 2020)				part-funded by the National Institute for Health Research Biomedical Research Center at South London and Mausley NHS Foundation Trust and King's College London	
Windisch et al. (2016); USA	Systematic review	To explore what is known about disengagement from violent extremism	People who exited ideologically-based or violent groups, or changed their belief system while remaining in group activities	Disengagement from radicalisation (defined not as renouncement of the belief system, but loss of motivation to participate in group activities) or deradicalisation (defined as changing the belief system, rejecting extremist ideology, and embracing mainstream values)	JSTOR, Lexis Nexis, Criminal Justice Abstracts, Google Scholar, PsycInfo, Sociological Abstracts (dates not reported); reference lists of included studies hand- searched	Not reported	114	N/A	National Institute of Justice; Harry Frank Guggenheim Foundation; and the National Consortium for the Study of Terrorism and Responses to Terrorism project; Department of Homeland	21%

									Science and Technology Directorate's Office of University Programs	
Wolfowicz et al. (2020); Israel	Systematic review	To synthesise evidence on risk and protective factors for different outcomes of radicalisation and develop a rank-order of factors based on their pooled estimates	Studies needed to include both participants with radical behaviours and a comparison group of either non- violent radicals or the general population	Radical attitudes (justification/support for radical behaviours), willingness/intentions towards radical behaviours, or involvement in radical behaviours	Campbell Collaboration Library, ISI Science, PsycInfo, PubMed, SSRN, SCO, Sociological Abstracts, Bibsys, START (database inception – December 2017 for English-language papers and February 2018 for non- English-language papers); key experts contacted; relevant journals (e.g. Journal of Deradicalization and Perspectives on Terrorism) hand- searched	English, Dutch, German	57	N/A	European Union's Horizon 2020 research and innovation programme	44%

#### **Risk and protective factors for radicalisation**

Overall, the reviews appeared to offer consensus for the lack of a single, comprehensive profile of an individual at risk for radicalisation; some basic traits do emerge although these alone appear to be insufficient to explain radicalisation.

Below, we summarise the risk and protective factors for radicalisation found within the reviews included in this umbrella review. It is important to make a note here regarding the precision of terms used in this review. As has been noted in previous reviews (Windisch et al., 2016) researchers' use of language is frequently imprecise. Many of the reviews included in this umbrella review used vague or ambiguous terms such as 'some', 'many' or 'few': for example, suggesting that 'many studies' reviewed provided evidence of a particular risk factor being significantly associated with radicalisation. For this umbrella review, evidence is described as 'strong evidence' if significant associations were found in more than 75% of the studies which examined it as a factor within each review. 'Some evidence' suggests either less than 75% of studies found it to be significant or, as is the case in many of the reviews, they only reported significant findings and did not report how many studies considered each factor. Exact frequencies are given where possible; however, the majority of reviews used vague language and as such can only be described here in similarly vague terms.

We initially planned to provide relative effect sizes from a 'meta-meta-analysis' of the reviews in order to summarise the relative risk between different risk factors; however, we were unable to carry this out due to the limited data available. The majority of reviews relied on descriptive summaries of the studies they reviewed, due to the multiple different variables, outcomes, and comparison groups examined in the studies. Only three studies on risk factors for radicalisation

performed meta-analysis (Emmelkamp et al., 2020; Jahnke et al., 2021a; Wolfowicz et al., 2020); two of these (Emmelkamp et al., 2020; Jahnke et al., 2021a) provided Pearson's 'r' values and one (Wolfowicz et al., 2020) provided Fisher's 'z' values. The two reviews with 'r' values differed in the ways they presented their results: for example, Emmelkamp et al. (2020) provided an 'r' value for the single variable 'personality', whereas Jahnke et al. (2021a) provided 'r' values for different aspects of personality such as narcissism, self-esteem, empathy and intolerance of uncertainty. We then considered calculating 'success rates' for each of the potential risk factors by calculating, for each review, how many studies examined each risk factor and what percentage found significant results; however, again, this was not deemed to be feasible due to the limited data provided within the reviews – the majority focused on significant findings only and did not state how many studies examined each variable. For these reasons, we provide only descriptive overviews of the results of each review. For more detailed results from each review, please see Supplementary Table I at the end of this document.

## Socio-demographic characteristics

*Gender:* Emmelkamp et al. (2020) and Wolfowicz et al. (2020) found a small effect size for male gender and Kenyon et al.'s (2021) review on lone-actor terrorists found a tendency for them to be male. In Stockemer et al.'s (2018) review, male gender was associated with extreme right-wing voting in 55% of the studies which considered gender as a predictor. Vergani et al.'s (2020), Williamson et al.'s (2021) and Christmann's (2012) reviews also noted that violent extremists tend to be male. Only Du Bois et al.'s (2019) review concluded there was no evidence of an effect of gender on radicalisation, but it should be noted this particular review was rated as being very poor in quality.

*Age:* There was strong evidence that younger people are more likely to be violent extremists (Christmann, 2012; Vergani et al., 2020), join terrorist organisations

(Desmarais et al., 2017) and sympathise with radicals (Misiak et al., 2019). Kenyon et al. (2021) found a tendency for lone-actor terrorists to be under 50. Wolfowicz et al. (2020) found a relatively large effect size for older age as a protective factor of radicalism. Campelo et al.'s (2020) and Stephens et al.'s (2021) reviews suggest that adolescence is a particularly risky time for radicalisation, as it is a turbulent time featuring uncertainty and a struggle to find one's identity. Three cross-sectional studies in McGilloway et al.'s (2015) review of radicalisation in Muslims suggested younger people are more at risk, whereas one study found no influence of age. Odag et al. (2019) found young people are particularly at risk of being pulled into the Jihadist movement; their review of online radicalisation revealed that Al Qaeda sources specifically addressed young people in need of moral and social structures. In Stockemer et al.'s (2018) review of predictors of extreme right-wing voting, younger age was a significant predictor in 29% of the studies which investigated age. In Windisch et al.'s (2016) review of factors associated with deradicalisation, maturation was found to push individuals away from radical behaviour in 17% of studies on street gangs and 30% of studies on mainstream religious groups. Du Bois et al. (2019) conclude that the risk of radicalisation for the 'young generation' appears to be higher than the risk for older people although it is not clear which exact age range the 'young generation' refers to. However, Williamson et al. (2021) reported inconsistent findings relating to age and radicalisation.

*Race:* Desmarais et al. (2017) report some evidence of race or ethnicity as a predictor of membership in terrorist organisations (6/12 studies) and perpetration of terrorist attacks (1/1 study); however, the authors give no further details of which races/ethnicities were studied or which were found to be more likely to engage with terrorism.

*Country of birth/immigrant status:* Desmarais et al.'s (2017) found strong evidence of country of birth as a predictor of radicalism; however, the authors do not describe this in any further detail. Wolfowicz et al. (2020) found immigrant status had only a small effect size on radical behaviours and attitudes. In McGilloway et al.'s (2015) review of Muslim radicalisation, a Canadian study found no relationship between supporting terrorism and being born in Canada; a study from the USA found almost half of the terrorist sample were born outside of the USA; and a UK study found 66% of those involved in terrorism activity were second generation Muslims of Pakistani background. Misiak et al.'s (2019) review found three studies suggesting being born in the UK and speaking English at home were predictive of sympathy for radicals among Muslims living in the UK, whilst being born outside the UK was a protective factor. Vergani et al.'s (2020) review also found violent extremists tend to have been born in the country where they live. Losel et al. (2018) found one study suggesting that first generation immigrants were less vulnerable to radicalisation.

Marital and parent status: Desmarais et al.'s (2017) review found strong evidence that those involved in terrorism were more likely to be single than married; not having children also appeared to be relevant to terrorism outcomes. Stockemer et al.'s (2018) review found marital status was associated with extreme right-wing voting in less than 50% of the studies which investigated this. Wolfowicz et al. (2020) found a small effect size for being married as a protective factor for radical behaviours and attitudes. However, one study of radicalised individuals in Williamson et al.'s (2021) review found that being married was associated with poorer outcomes after a deradicalisation programme, perhaps because partners may encourage each other's commitment to radicalisation.

*Education:* Desmarais et al. (2017) found strong evidence of a relationship between educational attainment and terrorism-related outcomes; the majority of those involved in terrorism had at least a high school education and in some cases some university education, but rarely a university degree or postgraduate training. Emmelkamp et al.'s (2020) meta-analysis found a small effect size for low educational level, and Losel et al.'s (2018) review found that higher educational level and good school achievement were protective factors for radicalisation, as well as bonds to one's school. Education and bonds to school were also found to be

protective factors in Wolfowicz et al.'s (2020) review. Low educational level was associated with extreme right-wing opinion in 33% of the studies exploring education in Stockemer et al.'s (2018) review and low educational level was also found to be a 'push' factor towards radicalisation in Vergani et al.'s (2020) review. In Windisch et al.'s (2016) review, returning to or completing education was identified as a 'pull' factor away from radicalisation by 17% of studies on mainstream religious groups, 11% of studies on terrorist movements and 13% of studies on street gangs. However, Misiak et al.'s (2019) review found three studies with evidence that sympathies for radicalisation among Muslims living in the UK were associated with being in full-time education, and Wolfowicz et al. (2020) found a small effect size for the relationship between being in full-time education and radical intentions.

*Employment:* Desmarais et al. (2017) found some evidence of a relationship between employment status and terrorism outcomes; those involved in terrorism appeared to be more likely to be in blue-collar occupations, with the majority in skilled and/or specialised labour positions, and the association between employment status and terrorism outcomes was stronger when work- or schoolrelated problems were present. Losel et al.'s (2018) review of protective factors found a small effect size for employment although this was only considered in one study, and Vergani et al.'s (2020) review identified unemployment as a 'push' factor towards radicalisation. Wolfowicz et al. (2020) found a small effect size for unemployment as a risk factor of radical intentions and attitudes, and a larger effect size for unemployment as a risk factor of radical behaviours. Stockemer et al.'s (2018) review found that qualitative studies tended to suggest it was not unemployed citizens who voted for the extreme right, but self-proclaimed hard workers; however, the review concluded that overall, employment status plays only a small role in explaining propensity to vote for the radical right. In Windisch et al.'s (2016) review, gaining employment was associated with disengagement from the radicalisation process in 11% of studies on terrorist movements and 30% of studies

on street gangs. However, Misiak et al. (2019) found evidence from three studies (by one author) that inability to work was associated with resistance to radicalisation.

Socioeconomic status : Desmarais et al. (2017) found strong evidence that poverty / low socioeconomic status was associated with greater risk for engaging with terrorism, whereas Emmelkamp et al.'s (2020) meta-analysis found poverty and low socioeconomic status had only a very small effect size and Wolfowicz et al.'s (2020) review found a small effect size for socioeconomic status and being a welfare recipient. McGilloway et al. (2015)'s review found two British studies showing the majority of Muslim terrorists came from deprived areas with high Muslim concentrations and working-class backgrounds, but these findings were not reproduced in Danish or American studies. Vergani et al.'s (2020) review identified poverty as a push factor towards radicalisation. However, Misiak et al.'s (2019) review included three studies which suggested higher income was associated with sympathies for radicalisation.

*Religion:* Desmarais et al. (2017) found some evidence that being Islamic was associated with membership of terrorist organisations, and strong evidence of a relationship between being Islamic and perpetration of terrorist attacks, but no evidence of a relationship between other religions and terrorism. Williamson et al. (2021) reviewed five studies investigating primarily Islamic extremists which found being Muslim by birth was significantly associated with vulnerability to radicalisation; however, it must be noted most studies reviewed included primarily male, Muslim, young participants and so findings must be considered in the context of their samples and not generalised to this population as a whole. Desmarais et al. (2017) found strong evidence that converting from one religion to another was associated with membership of terrorist organisations, and some evidence that religious conversion was associated with actually carrying out terrorist attacks. Three studies in Misiak et al.'s (2019) review found perceived importance of religion was associated with sympathies for radicalism, and Campelo et al.'s (2020) and

Christmann's (2012) reviews found religious fundamentalism was a risk factor for radicalisation. Wolfowicz et al. (2020) found a medium sized effect for religious identity as a risk factor of radical attitudes and intentions and a small effect size for religiousness as a risk factor of radical attitudes. Losel et al. (2018) found mixed evidence regarding religion, with one study suggesting intensive religious practice was protective of radicalisation and another suggesting low importance of religion was protective.

*National identity:* Stockemer et al. (2018) found strong evidence that nationalism was associated with extreme right-wing voting. National identity had a relatively large effect size with regards to radical intentions and attitudes in Wolfowicz et al.'s (2020) review. Perhaps related, Wolfowicz et al. (2020) found a large-medium sized effect for belief in ethnic segregation as a risk factor of radical attitudes.

*Geographic location :* Desmarais et al. (2017) found strong evidence that urban settings were associated with greater risk of terrorism-related outcomes than rural areas; strong evidence that geographic location was associated with terrorist outcomes; and strong evidence of an association between terrorist outcomes and the number of foreign-born/ethnic groups in the location.

*Political affiliation:* There was some evidence of a relationship between extreme political ideology and membership in terrorist organisations (Desmarais et al., 2017) and a medium effect size for participation in activism (i.e. legal, non-violent ideologically motivated acts) as a risk factor (Emmelkamp et al., 2020). Wolfowicz et al. (2020) found a medium effect size of anti-democratic attitudes as a risk factor of radical attitudes but also that political participation generally had only a small effect on radical attitudes. There also appeared to be a small effect size for political disinterest as a protective factor of radicalisation (Losel et al., 2018). Conversely, one study in Misiak et al.'s (2019) review found that political engagement was associated with resistance to radicalisation.

*Criminal history:* Desmarais et al. (2017) found strong evidence of prior arrest and previous criminal history as predictors of radicalisation. Criminal history also had a large effect size for radical behaviours (Wolfowicz et al., 2020). Kenyon et al. (2021) found some evidence of an inclination for criminality and violence before radicalisation in lone-actor terrorists. Williamson et al. (2021) found personal history of criminality was significantly associated with vulnerability to radicalisation. Vergani et al. (2020) also found violent extremists tended to have previous criminal experiences, and Emmelkamp et al. (2020) found a small effect size for delinquency. Harpviken (2020) found that 12/12 studies showed an association between delinquency and extremism. Perhaps related, Christmann (2012) found evidence to suggest that radicalisation is often taking place in prisons.

*Other previous relevant experiences:* In Desmarais et al.'s (2017) review, there was no evidence of the relevance of previous participation in combat or training camp as part of the radicalisation process, or of previous foreign travel experience; however, there was strong evidence of prior military experience as a predictor. Vergani et al. (2020) also found many violent extremists tended to have previous military experience and knowledge of weapons. Conversely, Wolfowicz et al. (2020) found a small effect size for military experience as a protective factor against radical behaviours.

# Mental health and complex health-related needs

*Mental health disorders, generally:* Gill et al. (2021) found that various mental health disorders were present in the samples of extremists in the studies they reviewed; however, taken together, the results suggested no clear common diagnosis. Campelo et al.'s (2020) and Christmann's (2012) reviews concluded that diagnosed psychiatric disorders among radicalised individuals tended to be fairly rare, although no statistics were provided. Kenyon et al. (2021) found a higher prevalence of mental illness in lone-actor terrorists than both group-actor terrorists

and the general population, concluding that mental illness rates for lone-actor terrorists within the USA and Europe appear to be around 40%. In Misiak et al.'s (2019) review, two studies based on the same sample of 119 lone-actor terrorists found the odds of having a diagnosed mental illness were over thirteen times higher in lone-actor than group-actor terrorists; the same review suggested loneactors with single-issue ideologies were significantly more likely to have mental health disorders than those with other ideologies. Trimbur et al.'s (2021) found the prevalence of mental disorders in radicalised populations ranged from 6% - 41%, whilst the prevalence of psychiatric disorders in lone-actor terrorists ranged from 31.9% - 48.5%. In Gill et al.'s (2021) review of studies involving extremist participants, prevalence rates of mental illness ranged from 0% - 57%; again, prevalence rates tended to be higher in lone-actor terrorists than group-actor terrorists. In the same review, pooled results focused on confirmed diagnoses in studies where sample size was reported suggested an overall prevalence rate of 14.4%, which the authors suggest may be inflated as multiple studies focused on similar populations or geographical remits. Also in the same review, in studies where clinical examinations occurred, mental health diagnoses were present 33.47% of the time and in studies relying on privileged access to police or judicial data, diagnoses occurred 16.96% of the time, while studies based on open sources found diagnoses in 9.82% of cases. Desmarais et al.'s (2017) review found some evidence of an association between mental illness and membership of terrorist organisations (and less evidence of an association between mental illness and actually carrying out terrorist attacks), although they note that it is difficult to know what is being measured by the 'mental illness' label as studies within the review included different diagnostic requirements and measurements. Harpviken (2020) found that 4/6 studies found an association between mental illness and extremism, whereas one of the two remaining studies found that some diagnoses (but not all) were associated. Williamson et al. (2021) reviewed one study which found

psychological difficulties were protective of radicalisation (perhaps because of the protective impact of having experienced psychological care).

Depression: Desmarais et al. (2017) found strong evidence of a relationship between terrorist outcomes and depression, although this was investigated by only three studies within the review. Trimbur et al. (2021) found strong evidence (4/6 studies) that depression was associated with a higher risk of sympathy for violent protest and terrorism, and two studies on radicalised populations within the same review found prevalence rates of depression as 33% and 44%. Williamson et al. (2021) reviewed one study which found extremists were more likely to report depressive symptoms and suicidal ideation than matched non-terrorist controls. Jahnke et al.'s (2021a) review also found a significant overall effect for depression. Gill et al.'s (2021) review found mixed evidence on the association between radicalism and depression: depression appeared to contribute to extremist support more often than expected but also inhibited violent expressions of radicalisation in some cases. In Misiak et al.'s (2019) review, some studies found depressive symptoms weakly mediated the effect of stressful life events and political engagement on sympathies for violent protest and terrorism; three studies found high depression was associated with sympathies for radicalism; but others did not find depressive (or anxiety) symptoms shaped radicalisation. Vergani et al. (2020) found that mental health, including depression, was the most important of the 'personal factors' of radicalisation; they suggest that negative psychological states such as depression, isolation and low self-esteem are associated with personal crisis, cognitive opening and consequent search for meaning, which is then fulfilled by adopting extremist worldviews. Conversely, Losel et al. (2018) found that having an 'illness or depression' was protective against radicalisation; however, this was only found in one study and the review authors do not elaborate on whether physical illness or depression is found to be particularly protective, or why this might be. Wolfowicz et al. (2020) also found a small effect size for depression as a protective factor for radical attitudes.

*Anxiety:* Wolfowicz et al. (2020) found a small effect of anxiety as a risk factor of radical attitudes.

*Self-harm and suicidality:* Gill et al. (2021) found self-harm, suicidal ideation and suicide attempts were reported in several studies, with the highest prevalence of this being 57% of a group of 46 violent white supremacist group members. Two studies of radicalised populations in Trimbur et al.'s (2021) review found prevalence of suicidal ideation of 29.3% and 57%.

Schizophrenia and psychotic disorders: Three studies in Gill et al.'s (2021) review compared mental health disorders in violent extremist samples with the general population base rate; two found elevated levels of schizophrenia and two found elevated levels of psychotic disorders. One study in Misiak et al.'s (2019) review found radicalisation was associated with higher scores of schizotypal disorder; another study in the same review found terrorists who injured others in a violent attack were almost twelve times more likely to have a disorder on the schizophrenia spectrum. Three studies on radicalised populations in Trimbur et al.'s (2021) review investigated psychotic disorders and prevalence ranged from 3.4% -22%.

*Personality disorders:* In Corner et al.'s (2021) review, one study found all 13 personality disorders tested were related to radicalism; one study within this review found antisocial personality disorder was associated with extremist attitudes, although it could not be ascertained whether this was a causal relationship; one study found terrorists were significantly more likely than controls to have conduct disorder or antisocial personality disorder; and another study found non-clinical traits of antisocial behaviours were associated with radicalism. One study in Misiak et al.'s (2019) review found self-defeating personality disorder and paranoia were associated with radicalisation, whilst one study in Trimbur et al.'s (2021) review found an association between extremist opinions and antisocial personality disorder. All four studies investigating pathological personality traits in terrorist populations in Trimbur et al.'s (2021) review reported high prevalence, whereas the

prevalence rates of pathological personality traits in radicalised (but not terrorist) populations ranged from 12% - 77.7%. Personality disorder was found to have a small effect on radical intentions in Wolfowicz et al.'s (2020) review, and a medium large effect on radical attitudes in the same review.

*Mood disorders:* Misiak et al.'s (2019) review found that terrorists who injured people in a violent attack were almost forty-six times more likely to have a diagnosed mood disorder.

Substance use: Three studies on radicalised populations in Trimbur et al.'s (2021) review showed prevalence rates of substance use disorders between 22% - 73%. Vergani et al.'s (2020) review also found a high prevalence of substance abuse in violent extremists.

*Post-traumatic stress disorder:* Emmelkamp et al. (2020) found a small effect size for post-traumatic stress disorder as a predictor of radicalisation.

*Other psychological vulnerabilities:* Campelo et al.'s (2020) review identified various psychological vulnerabilities to radicalism, including depressive feelings and a feeling of despair which does not qualify as a major depressive episode addictive behaviour, and obsessive compulsive habits.

*General comments on mental health:* Gill et al. (2021) conclude that mental health disorders in violent extremists appear to co-occur alongside a range of other stressors, including poor relationships with others; perceived discrimination and victimisation; unemployment; significant recent life changes; traumatic experiences such as physical, sexual or psychological abuse, parental abandonment or domestic or neighbourhood violence; and substance abuse. Misiak et al. (2019) found that terrorists with a mental illness history were more likely to report a recent life change, being a victim of prejudice, or experiencing stress; therefore, it may not be mental illness itself which is predictive of radicalism, or it may be the interplay between mental health and other factors.

# Personality and disposition

*Conscientiousness:* Corner et al. (2021) found a small amount of evidence of a relationship between conscientiousness and radicalism (although less evidence than for three other aspects of the Five-Factor Model of personality, namely openness, agreeableness and neuroticism).

*Openness:* Corner et al. (2021) found some evidence of a relationship between openness and radicalism.

*Agreeableness:* Corner et al. (2021) found some evidence of a relationship between openness and agreeableness.

*Neuroticism:* Corner et al. (2021) found some evidence of a relationship between neuroticism and radicalism.

*Extraversion:* Corner et al. (2021) found no evidence of an association between extraversion and radicalism.

*Empathy:* Jahnke et al. (2021a) found a significant overall effect for empathy as a protective factor, and Losel et al. (2018) and Misiak et al. (2019) also both found empathy was a protective factor for radicalism (although this was only investigated in one study within each of the latter two reviews).

*Psychopathy:* Corner et al. (2021) found little evidence of an association between the construct of psychopathy and radicalism; however, they found a much larger amount of evidence for an association between radicalism and various traits associated with psychopathy, such as sensation-seeking, risk-taking and poor selfcontrol. One study within their review found overall psychopathy was not predictive of self-sacrifice for a cause, but the antisocial elements within were. In Desmarais et al.'s (2017) review, only one study investigated the relationship between psychopathy and terrorist outcomes, and found a strong association. *Sadism:* Corner et al. (2021) found strong evidence that sadism was associated with radicalism; they also found evidence for a link between radicalism and other aspects of sadism such as moral disengagement.

Machiavellianism: Corner et al. (2021) found strong evidence that Machiavellianism was associated with radicalism, and also found evidence that aspects of Machiavellianism such as self-interest were associated with radicalism.

*Narcissism:* Emmelkamp et al. (2021) found a small effect size for narcissism. Corner et al. (2021) found some evidence of an association between narcissism and radicalism, although this was only investigated in two studies; in this review, additional evidence was found for a relationship between radicalism and other aspects relating to narcissism, such as perceived superiority. Vergani et al. (2020) identified narcissism as a personality trait associated with radicalism, and Wolfowicz et al. (2020) found narcissism had a small effect on radical intentions and a large medium effect on radical attitudes. Jahnke et al. (2021a) found no overall significant effect for narcissism, despite four effect sizes that went into this estimate being positive.

*Thrill-seeking:* Emmelkamp et al. (2020) found a small effect size for thrill-seeking behaviour, whilst Wolkfowicz et al. (2020) found large effect sizes for the relationship between radical behaviour/radical attitudes and thrill-seeking and risk-taking behaviour. Corner et al. (2021) and Campelo et al. (2020) noted some evidence of a relationship between radicalism and risk-taking and thrill-seeking behaviour. Related, a search for adventure and excitement was reported to be a root cause of radicalisation by almost a quarter of the studies reviewed by Du Bois et al. (2019).

*Anger and aggression:* Jahnke et al. (2021a) found a significant overall effect for aggression, while Emmelkamp et al. (2020) found a small effect size for aggression and Wolfowicz et al. (2020) found a medium sized effect of anger/hate and a small

effect of aggression as risk factors of radical attitudes. Kenyon et al. (2021) found some evidence that lone-actor terrorists have high levels of anger and resentment. *Tolerance of ambiguity:* Intolerance of ambiguity, as well as black-and-white thinking, were identified as personality traits associated with radicalism (Vergani et al., 2020).

*Authoritarianism:* Batzdorfer and Steinmetz's (2020) review noted the prominence of authoritarianism (i.e. anti-democratic social attitudes, rigid attachment to traditional values, uncritical acceptance of authority and intolerance towards opposing views) in those with radical views. Wolfowicz et al. (2020) also found a large effect size for the relationship between authoritarianism/fundamentalism and both radical behaviours and radical attitudes. One study in Misiak et al.'s (2019) review found both right-wing and left-wing authoritarianism were significant predictors of acceptance of violence.

*Self-control:* Losel et al. (2018) found self-control was protective of radicalisation, although only investigated in one study. Wolfowicz et al. (2020) found large effect sizes for the relationship between radical behaviour/radical attitudes and low self-control. Batzdorfer and Steinmetz's (2020) review found that low self-control may prompt engagement in radical groups and Corner et al. (2021) reported evidence of a link between radicalism and poor self-control.

*Impulsiveness:* Emmelkamp et al. (2020) found a small effect size for impulsiveness, and Vergani et al. (2020) identified impulsiveness as a trait associated with radicalism.

*Self-esteem:* Jahnke et al. (2021a) found no significant link between political violence and self-esteem, but Emmelkamp et al. (2020) found a small effect size for low self-esteem (effects were significantly smaller for willingness to actually carry out extremist acts compared to positive attitudes towards radicalisation). Wolfowicz et al. (2020) found low self-esteem had a relatively large effect on radical

intentions. Batzdorfer and Steinmetz's (2020) review concluded that low selfesteem may prompt engagement in radical groups.

*Coping skills:* Emmelkamp et al.'s (2020) meta-analysis found a small effect size for coping skills; however, the authors do not elaborate on this relationship, or make it clear which coping skills were explored.

*Uncertainty:* Jahnke et al. (2021a) found no significant link between intolerance of uncertainty and political violence; however, Batzdorfer and Steinmetz (2020) found aversion to uncertainty may prompt engagement in radical groups, Vergani et al. (2020) and Wolfowicz et al. (2020) identified uncertainty as a trait associated with radicalism, and Emmelkamp et al. (2020) found a small effect size for emotional uncertainty.

*Moral neutralisation:* Wolfowicz et al. (2020) found a large-medium size effect of moral neutralisation as a risk factor of radical attitudes.

*Value complexity:* Value complexity was reported to be protective of radicalisation in Losel et al.'s (2018) review, although this was only explored in one study within the review.

*Desire to be seen as significant:* Quest for significance had a small effect on radical intentions (Wolfowicz et al., 2020), and was reportedly described as a micro root cause of radicalisation in over a third of the literature reviewed by Du Bois et al. (2019). Desire to be 'known' or 'special' was found to be a motivator of joining terrorist groups, but not carrying out terrorist attacks (Desmarais et al., 2017). Several studies in Williamson et al.'s (2021) review considered the role of perceived personal significance loss or gain as a motive for radicalisation, with mixed findings – two studies found that extremists were more likely to express a quest for significance, whilst one found no association between radicalism and need for significance and an experimental study found that manipulating perceptions of loss of significance did not significantly increase extremist views.

*General comments on personality and dispositions:* In Emmelkamp et al.'s (2020) meta-analysis, the effects of personality traits and dispositions were significantly smaller for willingness to actually carry out extremist acts compared to positive attitudes towards radicalisation, and the strength of the effect increased when the percentage of ethnic minority participants increased.

#### Adverse experiences

Campelo et al.'s (2020) identified a possible association between radicalism and early experiences of abandonment, whilst studies of radicalised populations in Trimbur et al.'s (2021) review showed a high prevalence of past psychological trauma, neglect and child abuse. Being a victim of abuse during adolescence was also identified as a risk factor for radical behaviours by Wolfowicz et al.'s (2020) review; this review also found a small effect size for exposure to violence as a risk factor for radical attitudes. Emmelkamp et al. (2020) found a small effect size for previous trauma. Kenyon et al. (2021) also found evidence that lone-actor terrorists tend to have experienced unfortunate life circumstances (coupled with an intensification of beliefs or grievances). In Harpviken's (2020) review, 7/7 studies examining traumatic experiences (such as exposure to violence or bullying) found a positive relationship between history of trauma and extremism; additionally, all studies in this review which examined the impact of adverse childhood experiences (such as physical or sexual abuse, neglect, abandonment and poverty) found a relationship with extremism. Personal strains (such as loss of parents, loss of work, or experiencing a traumatic event) had a medium size effect on radical attitudes (Wolfowicz et al., 2020). Conversely, in Williamson et al.'s (2021) review only one out of two studies suggested radicalism was associated with trauma exposure. Losel et al. (2018) reviewed one study which suggested that threatening life events were protective against radicalisation; however, this was only one study, and the review authors do not elaborate on the finding.

Several of the reviews also reported a prevalence of more recent negative experiences which were seen as 'triggers' for radicalisation; for example, Desmarais et al.'s (2017) review found strong evidence of the relevance of experiencing a triggering event to membership of terrorist organisations and some evidence that experiencing a triggering event was predictive of carrying out terrorist attacks, and Du Bois et al. (2019) found that personal trigger events were reported as a cause for radicalisation in almost a quarter of their reviewed studies.

Triggering events included trauma, rejection or discrimination (Campelo et al., 2020), a major personal loss (e.g. loss of a relationship) (Desmarais et al., 2017), imprisonment (Du Bois et al., 2019) and divorce or death of a loved one (Du Bois et al., 2019; McGilloway et al., 2015).

#### Family

*Family dysfunction:* Campelo et al.'s (2020) review found evidence of a relationship between radicalism and family dysfunction during childhood (e.g. absent or unwell parents). However, Emmelkamp et al. (2020) found no significant association between radicalism and parental problems; in this review, the effects for right-wing radicalisation were significantly smaller compared to religious and unspecific radicalisation, and the strength of the effect increased when the percentage of ethnic minority participants increased. Additionally, the same review found the effect of parental control was smaller than the effect of having weak bonds with parents or socialisation processes of parents. Williamson et al. (2021) found family history of criminality was significantly associated with vulnerability to radicalisation, and one study in their review also found that having family (or friends) imprisoned was associated with poorer outcomes after a deradicalisation programme.

*Protective family-related factors:* Losel et al.'s (2018) review on protective factors found various protective factors at the family level: larger effect sizes were found for appreciative parenting behaviour, ownership of a residential property, and

having a significant other not involved in violence, and smaller effect sizes were found for having family members not involved in violence, incarceration of a family member, and family membership in militant religious groups. Wolfowicz et al. (2020) found parental involvement was a protective factor for radical attitudes and behaviours. In Windisch et al.'s (2016) review of factors associated with deradicalization, family relationships were the most prominent 'pull' factors away from radicalism overall – most commonly immediate relatives (parents or siblings), children, and spouses. Family relationships pulled individuals away from radicalism in 50% of studies on mainstream religious groups, 78% of studies on street gangs, and 24% of studies on cults/new religious and social movements. In studies of terrorists within the same review, non-family relationships (e.g. friends, colleagues and neighbours) were the most prominent 'pull' factor away from radicalisation, in 55% of studies.

### Peer groups

*Social capital:* Harpviken (2020) found strong evidence that social isolation was associated with extremism and one study in Williamson et al.'s (2021) review found radicalised individuals were more likely to report social exclusion. Losel et al. (2018) and Misiak et al. (2019) both found mixed evidence on the effect of social capital, with some evidence suggesting low social capital can be protective against radicalisation and other studies suggesting a wider social network can be protective; this suggests there may be different underlying mechanisms (e.g. when more social contacts include non-extremists, this can be protective, whereas when lack of social capital also means less contact with extremist networks, this too can be protective).

*Integration/contact with other groups:* Low integration and poor integration were identified as risk factors for radical behaviours (Campelo et al., 2020; Desmarais et al., 2017; Emmelkamp et al., 2020; Wolfowicz et al., 2020), whereas out-group

friendships had a small protective effect on radical attitudes and radical intentions (Wolfowicz et al., 2020), as did contact with foreigners (Losel et al., 2018). Having contact with non-Muslims was negatively associated with support for terrorism amongst Muslims in one study in McGilloway et al.'s (2015) review. Christmann (2012) noted that poor integration is often identified as a risk factor for radicalisation but that it appears to be a background, rather than necessary, factor in the radicalisation process.

*Violent/radical peers:* Having non-violent peers was found to be a protective factor in Losel et al.'s (2018) review, whilst Wolfowicz et al. (2020) found strong evidence for having deviant/radical peers as a risk factor for both radical behaviours and radical attitudes, and Desmarais et al. (2017) found strong evidence of the relevance of having a family member or friend recruited to a terrorist organisation. Various negative peer relations including exposure to racist peers and a deviant peer group were found to have a small effect size on radicalism in Emmelkamp et al.'s (2020) review. One study in Williamson et al.'s (2021) review found that having family (or friends) imprisoned was associated with poorer outcomes after a deradicalisation programme. Friendship or admiration towards a member of the radical group was also found to be a predictor of radicalism in Campelo et al.'s (2020) review.

# Wider society

*Connectedness:* Societal disconnectedness had a relatively large effect on radical intentions (Wolfowicz et al., 2020), whereas a basic attachment to society was found to be protective in Losel et al.'s (2018) review. Perceived distance/alienation to others was identified as a risk factor by Christmann (2012) and had a medium effect size in Emmelkamp et al.'s (2020) review; however, in the latter review, a feeling of disconnection to society in general was not found to be a significant risk factor (although the strength of the effect increased when the percentage of ethnic

minority participants increased, and effects were also larger for religious and unspecific radicalisation than right-wing radicalisation). In Desmarais et al.'s (2017) review, no studies found an association between social exclusion and membership of terrorist organisations, but there was strong evidence of an association between social exclusion and perpetration of terrorist attacks.

*Identity:* The literature includes theories of a 'Muslim identity' (Christmann, 2012) where individuals may feel that they identify with the suffering of Muslims globally. However, McGilloway et al. (2015) reviewed one study on Muslim identity, finding no evidence of an association between Muslim identity and sympathy for terrorism.

Attitudes towards in-groups and out-groups: Attitudes towards immigration and racial minorities predicted radical right-wing voting in over half of the studies which examined this in Stockemer et al.'s (2018) review. In-group connectedness and perceived in-group superiority had a large effect on radical attitudes and intentions, as well as having similar ties with the group (Wolfowicz et al., 2020), and in-group identification had a small effect size in Emmelkamp et al.'s (2020) review, although the strength of this effect decreased with age. Perceived in-group superiority was also found to have a medium effect size as a predictor of radicalisation in Emmelkamp et al.'s (2020) review. Harpviken (2020) found strong evidence that social polarisation was associated with extremism.

## Personal, social and political grievances

*Dissatisfaction (personal):* Losel et al. (2018) reviewed one study which found dissatisfaction with quality of life was protective against radicalisation, which they suggest is related to dissatisfaction indicating internalising behaviour problems that lead to social withdrawal and thus less risk of affiliating with extremist groups. *Dissatisfaction (social/political):* Batzdorfer and Steinmetz (2020) concluded that dissatisfaction with the system may prompt engagement with radical groups, and Christmann (2012) concluded that political grievances play a role in the

radicalisation process. In Desmarais et al.'s (2017) review, there was some evidence (6/12 studies) of an association between having a grievance (political or personal) and terrorism outcomes. McGilloway et al.'s (2015) review also found several studies discussing grievances relating to foreign policy, such as anger and desire for revenge directed towards British and American governments. Stockemer et al.'s (2018) review found high levels of political discontent showed a significant relationship with radical right-wing voting in 71% of the studies which explored this. Investigation of qualitative studies within the same review revealed a disconnect from the political system that goes beyond dissatisfaction with the main parties. Political grievances (including collective and historical grievance, discrimination, marginalisation and corruption) were reported as causes for radicalisation in almost half of the studies reviewed by Du Bois et al. (2019), and Wolfowicz et al. (2020) found a small effect of political grievances as a risk factor for radical attitudes. Jahnke et al. (2021a) also found significant associations between political violence outcomes and dissatisfaction with the police, political actors and institutions, and democracy. In the latter review, effect sizes for the link between political violence and dissatisfaction with democracy were stronger for other ethnic, national or religious violence compared to unspecific political violence, as well as for samples with a subordinate group status. Conversely, medium sized protective effects were found for institutional trust and small effects were found for political satisfaction and general trust (Wolfowicz et al., 2020).

*Perceived injustice:* The most commonly reported grievance appeared to be perceived injustice, which was found to have a small effect size in Emmelkamp et al.'s (2020) and Wolfowicz et al.'s (2020) reviews and was reported to be associated with radicalism outcomes in Campelo et al.'s (2020) and Batzdorfer and Steinmetz's (2020) reviews. Being victim of perceived discrimination, institutional racism or oppression was found to be common amongst extremists (McGilloway et al., 2015), and Jahnke et al. (2021a) found a significant association between experiences of discrimination and political violence outcomes. 13/14 studies in Harpviken's (2020)

review found an association between perceived discrimination and extremism. Perceived discrimination was also found to be a risk factor (small effect size) in Emmelkamp et al.'s (2020) review, with the strength of the effect increasing when participants were older. Perceived discrimination had a small effect on radical attitudes in Wolfowicz et al.'s (2020) review. Vergani et al.'s (2020) review found the 'push' factor towards radicalisation appearing most often in the literature is the relative deprivation of a social group, also framed in terms of injustice, inequality, marginalisation, grievance, social exclusion, frustration, victimisation and stigmatisation. Du Bois et al. (2019) also found that perceived deprivation was reported as a cause of radicalisation in over a third of their reviewed studies, and Jahnke et al. (2021a) also found a significant association between group relative deprivation and political violence outcomes. Christmann (2012) noted that deprivation is often named as a risk factor for radicalisation, but that it appears to be a background factor rather than a necessary one; the same review found that perceived personal victimisation is frequently associated with radicalism. Wolfowicz et al. (2020) found a large medium effect size for the relationship between individual/collective relative deprivation and radical attitudes. In Desmarais et al.'s (2017) review, 2/3 studies found an association between income inequality and membership of terrorist organisations and 1/1 found an association between income inequality and perpetration of terrorist attacks. Unequal or discriminatory socio-economic conditions were also identified as a risk factor for radicalisation by Campelo et al. (2020). Conversely, Losel et al. (2018) found one study which suggested perceived personal discrimination was protective against radicalisation and one study which suggested subjective deprivation was protective; they suggest that this is because extremist attitudes in these studies were related to high selfesteem, authoritarianism and feelings of superiority, which counteract feelings of deprivation and discrimination.

*Perceived threat:* Stephens et al. (2021) suggest openness to extremist ideas emerges when there is a sense of threat or marginalisation of one's group identity.

Perceived threat to the group was deemed to be a 'push' factor by Vergani et al. (2020), Campelo et al. (2020) and Emmelkamp et al. (2020); the latter study found a larger effect of perceived threat on positive attitudes towards radicalisation than on willingness to carry out extremist acts and extremist behaviour. Both realistic and symbolic threats were associated with radicalisation (Jahnke et al., 2021a; Wolfowicz et al., 2020). Jahnke et al.'s (2021a) review concluded that perceived threat at an intergroup level was a stronger predictor than actual experiences of discrimination. One study in Misiak et al.'s (2019) review suggested right-wing extremists had higher perceived threats to physical existence and national identity, and left-wing extremists had higher perceived threat to moral integrity.

*Political triggers:* 18% of the studies reviewed by Du Bois et al. (2019) found that political trigger events led to radicalisation, for example military actions, cartoons of Mohammed, and arrests of political figures.

*Views of the law/authorities:* Emmelkamp et al. (2020) found a small effect size for disrespect of authorities as a predictor of radicalism, whereas law legitimacy and law obedience had a large effect size as protective factors for radical attitudes and behaviours (Losel et al., 2018; Wolfowicz et al., 2020).

# 'Pull' factors

*Group dynamics:* Group dynamics were identified as a 'pull' factor towards radicalisation in over a third of the literature reviewed by Vergani et al. (2020) and almost half of the literature reviewed by Du Bois et al. (2019). These include peer pressure, formation of bonds with like-minded people, fulfilment of belonging and identity needs, and identification of the individual with the group (Du Bois et al., 2019; Vergani et al., 2020). Desmarais et al. (2017) also found some evidence of desire to be with like-minded others as a potential 'pull' factor. Kenyon et al. (2021) found that lone-actor terrorists also appear to be part of subcultures and networks – often virtually – and that connections to others play an important role in

motivation to carry out the attack even though it is ultimately carried out alone. Christmann (2012) found evidence that radicalisation in Muslims is often preceded by forming social bonds with others who share the same grievances (such as dissatisfaction with mainstream political or social protest as a way of inducing political change) and beliefs (e.g. that violence against the state and its symbols is morally justifiable). Odag et al. (2019) found one of the most pronounced features of right-wing extremist websites was their potential for a collective identification going beyond local geographies, whilst online Jihadism was found to highlight collective identity and provide a sense of belonging. Odag et al. (2019) described motivations to use right-wing extremist websites, including affiliative, communicative and identity-related motivations. Additionally, Vergani et al. (2020) noted a special role is attributed to charismatic leaders and recruiters.

*Perceived reward:* Other 'pull' factors noted by both Vergani et al. (2020) and Odag et al. (2019) included material and emotional rewards such as monetary gain and fulfilment of desire for adventure and excitement, whilst Christmann (2012) concluded that gaining rewards in terms of respect from the group may play a role in the radicalisation process.

*Other motivations:* Desmarais et al. (2017) found strong evidence for ideological motivations for terrorism, such as a desire for revenge. Kenyon et al. (2021) found some evidence that lone-actor terrorists use symbolic violence to communicate a message to a wider audience.

## Social surroundings and macro root causes

Desmarais et al. (2017) found evidence for social drivers of radicalisation such as over-crowding and violence. McGilloway et al. (2015) found evidence from two qualitative studies that young Muslims were particularly at risk of radicalisation due to lack of opportunities and community structures such as deprivation and discrimination. Macro root causes were suggested to be globalisation and modernisation and foreign policy (Du Bois et al., 2019) and geopolitics and societal changes (e.g. perceived dissolution of moral, religious or civic values of modern societies) (Campelo et al., 2020).

#### Media consumption

*Exposure to radical content:* In Vergani et al.'s (2020) review, the most commonly discussed 'pull' factor was consumption of extremist propaganda, which was cited as a cause of radicalisation by 66.9% of the studies reviewed.

*Exposure to violent content:* Emmelkamp et al. (2020) found a small effect size for consumption of violent media.

*Internet:* The media and the internet were described as recruitment sources in almost a third of the studies reviewed by Du Bois et al. (2019). Hassan et al.'s (2018) review found tentative evidence that exposure to radical online content is associated with extremist attitudes, with active seekers of violent radical material at higher risk of engaging in violence than passive seekers, although they found no clear evidence that online material predicts radicalisation independently of other, offline, factors. Kenyon et al.'s (2021) review found lone-actor terrorists are more likely to engage in online interaction/learning with regards to radicalism than group-actor terrorists. However, Christmann's (2012) review found little evidence that the internet plays a role in radicalising people; instead, it appears to facilitate and enable by reinforcing ideological messages that have already been internalised.

*Differences in types of content:* Odag et al.'s (2019) review found that right-wing extremist websites tended to be 'cloaked', i.e. seemingly benign with no explicit connection to right-wing extremism, racism or nationalism, whereas online Jihadist content was more explicit in communicating ideology, with many sites glorifying and legitimising violence. Additionally, this review found Jihadist content is deliberately targeted at specific people, exploiting the information that potential recruits reveal about themselves on social media.

#### Radicalisation processes

It is likely that radicalisation is caused by the interplay of multiple factors. Christmann's (2012) review concluded that the radicalisation process most likely involves a stage of individual change (e.g. search for identity), which is enhanced through external aspects (e.g. experiencing discrimination) and socialising with likeminded people; this process is believed to be fairly gradual (often taking place over several years) although the final stage – deciding to carry out a violent attack – may be quite rapid. Stockemer et al.'s (2018) review found different 'types' of radicals who became radicalised via different processes: 'ideologues' with deep-rooted convictions passed on from parents during childhood socialisation or through socialisation with peers during young adulthood, and 'wanderers' and 'converts' who develop affinity for radical right-wing ideas through political awakenings (e.g. experiencing economic decline, perceived unjust competition from foreigners, negative perceptions of immigrants and witnessing the frailties of political elites).

#### Preventing and countering radicalisation

#### Preventing radicalisation

Stephens et al. (2021) identified four key themes emerging in the literature about preventing violent extremism: the first refers to personal resilience, suggesting violent extremism can be prevented by developing some skill or characteristic in individuals that prevents them from being drawn to violent extremist ideologies; focusing on developing certain cognitive capacities in order to provide individuals with the resources to question propaganda and consequently resist it; fostering particular traits such as empathy; and promoting or strengthening certain (antiradical) values or ideas. The second focuses on creating space to explore and address identity-related questions, with the assumption that openness to extremist ideas emerges when one's identity appears under threat. The third theme focuses on dialogue and action – i.e. providing space for frustrations and grievances to be aired. The final theme focuses on fostering resilience within communities, strengthening relationships between citizens and institutions of the state, and promoting social connection in communities with the assumption that a community can have features which render it able to prevent members of the community from engaging with violent extremism.

## Deradicalisation

Windisch et al. (2016) found that disillusionment was the most prominent factor associated with deradicalisation. This included lack of satisfaction with current life situation; frustration with the group, their place in the group or the direction of the group; disagreement with group methods, for example believing the group was to violent, hypocritical or resulting in negative attention; and negative experiences with the group, such as experiencing victimisation from fellow group members, infighting between group members and disloyalty among group members.

Windisch et al. (2016) also found several factors relating to fear which pushed people away from the radicalisation process: these included fear of confinement in jail, prison or a mental health facility and fear of being victimised by violence. Anxiety about getting incarcerated was also found to be a protective factor of radicalisation in one study in Losel et al.'s (2018) review.

#### Effectiveness of deradicalisation interventions

We found far fewer reviews on deradicalisation interventions than reviews on risk factors for radicalisation. Only four reviews (Carthy et al., 2020; Jugl et al., 2021; Pistone et al., 2019; Taylor & Soni, 2017) focused solely on interventions. Six other reviews (Campelo et al., 2020; Christmann, 2012; Jahnke et al., 2021a; Misiak et al., 2019; Stephens et al., 2021; Williamson et al., 2021) reviewed between one and three intervention studies each within their wider reviews on radicalisation.

Carthy et al. (2020) focused on counter-narrative interventions, which were most frequently delivered by video and involved techniques such as counterstereotypical exemplars, persuasion, inoculation and alternative accounts. When all outcomes were pooled, counter-narrative interventions showed a small significant effect; effects appeared to vary across different risk factors and different techniques, and when all risk factors were pooled to represent each single-group pre-/post-test study, the effect of the intervention over time was non-significant. Whilst there was little evidence for the effectiveness of counter-narrative interventions in targeting primary outcomes (e.g. intentions to engage in extremist behaviour), more evidence was found that such interventions may be effective at targeting particular risk factors such as realistic threat, in-group favouritism and explicit out-group hostility. Counter-narrative interventions also appeared to be more effective in reducing bias on an explicit than implicit level. There was some evidence that inoculation was more effective than persuasive techniques.

Jugl et al.'s (2021) review found that most interventions had a significant positive effect on behavioural and psychosocial outcomes relating to extremism and extremist attitudes. Mixed preventive programmes appeared to be most effective, followed by tertiary interventions and primary prevention. Stronger effects were found for interventions addressing both at-risk individuals and the general population, and for interventions including participants from different ethnic backgrounds; interventions where all participants had a migrant background showed no significant effect.

Four reviews – Stephens et al. (2021), Misiak et al. (2019), Campelo et al. (2020) and Jahnke et al. (2021a) – all reviewed one intervention study providing results on its effectiveness. In all four, the intervention study reviewed was Feddes et al.'s (2015) longitudinal study of empathy and self-esteem training. This study found that the intervention led to an increase in empathy which was associated with less positive

attitudes towards ideology-based violence; the intervention also led to increased agency, increased self-esteem, and increased perspective-taking, although these were not associated with radical attitudes. The intervention also appeared to increase narcissism, which itself was found to be associated with more positive attitudes towards ideological violence; however, overall, positive attitudes towards ideology-based violence and own violent intentions both decreased after the training. Increasing self-esteem does not appear to be a particularly useful target of interventions, but increasing empathy may be an important target.

Jahnke et al. (2021a) concluded that the measures which seem the most promising include programmes promoting development of a positive social identity and sense of belonging to nondeviant groups; contact interventions (members of different social groups coming together with a shared goal to counteract negative intergroup attitudes); training of social cognitive skills like empathy to reduce aggression and prejudice; and educational interventions to strengthen trust in political institutions and support democracy.

Christmann's (2012) review found one study suggesting the most successful interventions were capacity building/empowering young people, and using education or training on theology to challenge ideology. Another study focused on outreach, providing safe accessible spaces for addressing Islam and political issues and extending the debate to include non-Muslims, and found work delivered through outreach appeared to be more successful than work taking place in formal institutions. A third study suggested radicals are more receptive when confronted with people who are seen as credible conversation partners, suggesting discussion and dialogue can be effective if the conversation partner carries authority, legitimacy and knowledge.

Williamson et al.'s (2021) review found two studies which suggested that deradicalisation programmes focusing on providing alternative 'routes to significance' were effective in reducing support for radical extremism.

Pistone et al. (2019) reviewed various types of intervention, including empowerment/resilience interventions (n=67), policy programmes (54), deradicalisation (36), combined empowerment/resilience and deradicalisation (11), deradicalisation counter-narrative (3), combined deradicalisation and empowerment/resilience and counter-narrative (2), counter-narrative (2), and combined empowerment/resilience and counter-narrative interventions (2). These were most commonly implemented at the national level (69) followed by individuallevel interventions (53). Despite the wealth of literature on interventions (112 publications were included in Pistone et al.'s review), only 38 studies actually measured the effectiveness of the intervention and only two compared intervention effectiveness with either a control group or a different intervention group. Of the two comparison studies, one found an educational intervention focused on changing attitudes towards terrorists led to significantly better attitude change than a control group, and the other found that reading a special issue of a journal with information about left-wing extremism led to significantly better knowledge about left-wing extremism than a control group (but attitudes and behaviours were not assessed). Overall, this review described very mixed findings as to whether interventions were successful; some were not found to be effective and others did the opposite of what they were supposed to do. In particular, there appeared to be particularly strong evidence that the Prevent programme can be more harmful than helpful.

Taylor and Soni (2017) focused their literature review on the UK government's Prevent strategy and found the most common theme was that the duty of Prevent creates a culture of fear and suspicion towards those communities or ideologies associated with radicalised views and contingent sense of cautiousness around engaging in discussion with or about these communities or ideologies. Participants perceived that the concept of radicalisation was inappropriately reduced to profiling people as 'vulnerable' due to certain characteristics, leading to heavy monitoring and censorship of the activities of such people (e.g. Muslims).

Individuals who were part of the groups associated with radicalism reported feeling paranoia, alienation and distrust due to the suspicion from peers and the top-down approach to security promoted by Prevent (e.g. stopping and searching Islamic society students). Participants in the reviewed studies appeared to perceive that the 'fundamental British values' described in the strategy are unclear, irrelevant, inadequate and inaccurate; participants perceived it would be better to promote the consensus between traditional Islam and British moral, religious and political standpoints rather than promote fundamental British values as a distinct category. One study criticised the workshop materials of the WRAP training programme for focusing exclusively on individual vulnerability without considering how it could contribute to strained relationships; suggested the programme could lead to groups perceiving themselves to be 'other' and avoiding interaction with the wider community; and concluded that WRAP should shift its focus to social contexts. Whilst most of the qualitative data on experiences with Prevent were negative, there were some positive aspects too – namely the Theatre in Education programme 'Tapestry' which was seen as encouraging dialogue and making it easier to confront controversial issues such as radicalisation by using humour.

Overall, there appear to be very few *evidence-based* interventions that prevent or counter the development of intention to commit extremist acts.

## **Quality of reviews**

The overall quality of reviews included in the umbrella review was low (see Supplementary Table II for the full AMSTAR results of each review). Scores ranged from 0% - 87.5%, but only two scored 50% or over (mean: 30.6%, median: 32%, mode: 32%). Less than half of the included reviews included the components of PICO (population, intervention, comparison group, outcome) in their inclusion criteria. Only one review had registered a protocol prior to conducting their review. Few explained and justified their selection of study designs for inclusion. Very few met the criteria for having carried out a 'comprehensive literature search', with most failing to search trial registries or grey literature, or contact key experts in the field. Many did not report whether their data selection and/or data extraction were carried out in duplicate. Only one review provided a list of excluded studies and justified their exclusions, although most did adequately describe the studies which they did include. Only six reviews used a satisfactory technique for assessing risk of bias in the included studies, and most did not consider the funding sources of the included studies. Only six reviews contained meta-analysis and of these, only one assessed the potential impact of risk of bias on individual studies. Most reviews did not account for risk of bias in the discussion of their results, nor did they consider publication bias. Approximately half of the reviews explained or discussed heterogeneity in results. Finally, most but not all reported their own funding sources and made declaration of competing interest statements.

# **Introduction to Study 2**

Our umbrella review covers literature published up until 2020. We therefore decided to conduct another systematic review of literature published since 2020 (i.e. after all previous reviews had been carried out, and therefore not already included in any systematic reviews). Given the primary aim of this research was to investigate how mental health and complex health needs may affect radicalisation, we decided to focus on studies which explored this.

Our aims, as with the umbrella review, were to identify:

- Whether mental health conditions or other health-related complex needs may make individuals more susceptible to radicalisation, either through being targeted by recruiters or through 'self-radicalisation';
- Whether certain interventions (such as diagnosis, mentoring or referral to appropriate services) may aid those who have mental health conditions or

other complex needs and are being radicalised; what the impact of these interventions is, and whether they are beneficial or potentially harmful;

- The extent to which a mental health condition or other complex needs may impede an individual's ability to extract themselves from radicalisation;
- Any gaps in knowledge apparent from the literature, and any additional research questions which should be answered.

Although our aim was to focus on the potential association between radicalisation and mental health and complex health needs, it was expected that many studies investigating this would also explore other predictors, such as socio-demographic characteristics and social factors, and the potential interplay between mental health and other risk factors. We therefore aimed to extract all data relating to risk of radicalisation, even that which was not related to mental health, to present a complete picture of the included studies.

# Method: Study 2 (2020-2021 review)

## Search terms

Search 1 included health-related terms combined using the Boolean operator 'OR'. Search 2 included the same radicalisation- and terrorism-related terms as those used in the umbrella review, again combined using 'OR'. The two searches were then combined using the Boolean operator 'AND'.

#### Full search strategy

(terroris\* or radicalis\* or radicaliz\* or extremis\* or fundamentalis\* or political violen\* or militant activis\* or jihad\* or neo-nazi\* or neo nazi\* or white supremac\* or white-supremac\* or extreme left or extreme right or anarch\*) AND (mental health or mental ill health or neurodivers\* or neuro-divers\* or or schizophreni\* or personality disorder\* or psychosis or psychoses or learning disab\* or autism or autistic or depression or depressive or bipolar or bi-polar or dyspraxia\* or dyslexi\* or adhd or attention deficit hyperactivity disorder)

## Data sources

One author (SKB) used the search strategy to search the following electronic databases: Embase, Medline, Global Health, PsycInfo, Social Policy and Practice, and Web of Science. All were searched from date of inception to August 4<sup>th</sup> 2021. Reference lists of included papers were also hand-searched. All resulting citations were downloaded to EndNote© reference management software (Thomson Reuters, New York) and duplicate citations were removed.

# Selection criteria

There were no restrictions on the type of population studied: again, we were interested in both radicalised populations and at-risk populations as well as factors associated with extremist opinions or sympathy for violent protest among the general population. There were also no restrictions on the interventions considered.

To be included, studies had to:

- Contain original, primary data;
- Be published between 2020-2021;
- Not have been included in any previous systematic reviews;
- Have a population greater than 1 (i.e. no single case studies)
- Explore either radicalisation, terrorism, or extremism, including sympathies for violent protest, risk of radicalisation and actual terrorist behaviour;
- Explore either i) potential risk factors of radicalisation, terrorism or extremism relating to mental health or other complex health-related needs or ii) effectiveness of interventions designed to prevent radicalisation or deradicalise individuals who are already radicalised;
- Have a full, published text (e.g. conference abstracts were excluded);

 Be published in English, as this is the language spoken by the reviewers and translation of foreign-language papers was not possible due to the time constraints of this study.

If the same data was used in more than one study, only the most comprehensive article was used.

## Title and abstract screening

One author (SKB) carried out the screening process. Based on the search terms and criteria described above, the titles of all downloaded citations were evaluated first for a decision on initial inclusion or exclusion. Any papers clearly not relevant to the study were removed. Following this, the abstracts were evaluated for their relevance to the current study. Next, full hard copies of the papers identified at this stage as potentially eligible for inclusion were obtained. Excluded citations were retained in separate folders within EndNote©. At the end of each stage of the screening process, any papers SKB had doubts about including or excluding were discussed with NG.

## Screening of full text articles

Using a specially designed eligibility checklist created from the protocol for this review, one author (SKB) independently read the selected studies to form a list of excluded and included studies, with reasons. The list of studies still relevant for inclusion at this point was cross-referenced against the reference lists of all reviews included in our umbrella review to ensure the studies had not already been included in a systematic review. All excluded studies were stored in a separate folder on EndNote©. Again, any uncertainties about inclusion or exclusion were discussed with NG.

#### Data extraction

Using the standardised extraction form provided by the Cochrane Collaboration for RCTs as a guide (Higgins & Green, 2011), a modified version was developed using Microsoft Excel. This included the following headings: authors; year of publication; country of the author(s); design; number of participants; participant characteristics (e.g. population, mean age, gender ratio); aspects of radicalisation considered (e.g. sympathy for violent protest, or actual terrorist behaviour); risk factors explored; key results; conclusions; limitations; and funding body.

### Quality appraisal

The quality of the included studies was assessed by one author (SKB). Quantitative studies were appraised using a modified version of the AXIS tool developed by Downes et al. (2016), which consists of twenty questions assessing studies in terms of their objectives, various aspects of methodology (e.g. design, sample size, and use of standardised measures), results, discussions and conclusions. Two questions were modified so that a 'yes' response would be indicative of better quality, in line with the other eighteen questions. The question 'does the response rate raise concerns about non-response bias?' was reworded to 'was the response rate clearly reported and at least 50%?', and the question 'were there any funding sources or conflicts of interest that may affect the authors' interpretation of the results?' was reworded to 'does the study include a conflict of interest statement?'. This enabled us to simply add up all 'yes' responses and give each study a total score, which was converted to a percentage of positive responses, with a higher score reflecting a higher quality paper. Qualitative studies were appraised using a modified version of the Critical Appraisal Skills Programme (CASP) Qualitative Checklist, a ten-item quality appraisal tool assessing the methodology, data analysis and discussion of implications of qualitative studies (CASP, 2018). One question, 'how valuable is the research?', was reworded to 'do the authors discuss the value of the research in terms of implications and contribution to literature?' in order to allow yes/no

responses in line with the other items. Again, this allowed us to add up all 'yes' responses in order to give each study an overall quality score percentage.

## Data analysis

Basic descriptive analyses were carried out to summarise the included studies. The results of each were coded using thematic analysis (Braun & Clarke, 2006) and outcomes were assessed through a narrative synthesis approach (Popay et al, 2006).

# Results: Study 2 (2020-2021 review)

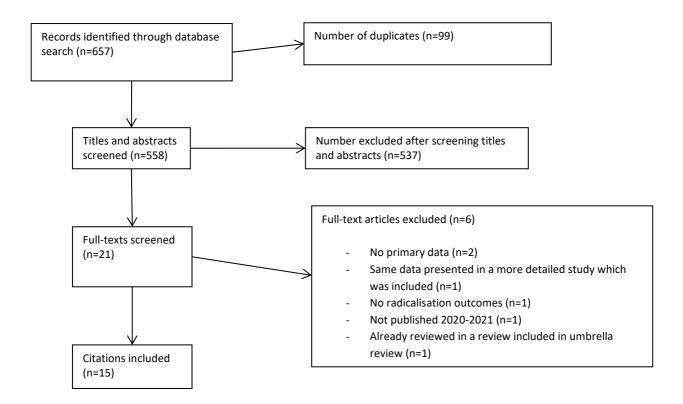
Searches yielded 657 citations, of which 99 were duplicates and immediately removed. After screening titles, 487 were removed; a further 50 were removed after screening abstracts. The full texts of the remaining 21 citations were obtained and screened in full. Six papers were excluded at this stage, and their reasons for exclusion are presented in Table III. A PRISMA diagram of the screening process is presented in Figure II.

Authors (year)	Title of study	Journal	Reason for exclusion
Al-Attar et al. (2020a)	Severe mental disorder and terrorism: When Psychosis, PTSD and addictions become a vulnerability	Journal of Forensic Psychiatry & Psychology	No primary data
Al-Attar et al. (2020b)	Autism spectrum disorders and terrorism: how different features of autism can contextualise vulnerability and resilience	Journal of Forensic Psychiatry & Psychology	No primary data
Bhui et al. (2020)	Assessing risks of violent extremism in depressive disorders: Developing and validating a new measure of Sympathies for Violent Protest and Terrorism	Australian and New Zealand Journal of Psychiatry	Contains only data which is presented in more detail in a separate paper which

# Table III. Papers excluded after full-text screening

			was retained for inclusion
Caton & Landman (2021)	Internet safety, online radicalisation and young people with learning disabilities	British Journal of Learning Disabilities	No radicalisation- related outcomes presented
Morgades-Bamba et al. (2020)	Exploring the radicalization process in young women	Terrorism and Political Violence	Was first published online in 2018, therefore does not meet the criteria for 2020-2021 publication date
Morris & Meloy (2020)	A preliminary report of psychiatric diagnoses in a Scottish county sample of persons of national security concern	Journal of Forensic Sciences	Already included in an existing systematic review which was included in our umbrella review

# **Figure II. Screening process**



This left fifteen papers which met all inclusion criteria and were therefore included in the review. The characteristics of these papers are summarised in Table IV.

# Table IV. Characteristics of included studies

Authors (year)	Country	Design	Radicalisation outcome	Participants (n)	Participant characteristics	Risk factors explored	Funding body	Quality
Ahearn et al. (2020)	UK (England)	Cross-sectional survey to identify factors relating to terrorism sympathy	Sympathies for violent radicalisation, assessed by the Sympathies for Violent Radicalisation Scale	608	Bangladeshi and Pakistani Muslims living in East London or Bradford Mean age not reported; range 18-45 Gender not reported	Socio-demographic characteristics (gender, age, ethnicity, place of birth, education, years lived in the area, same clothes as own ethnic group, same clothes as different ethnic groups); Belongingness to Britain, to local area, to global Muslim community and to local Muslim community; Respect for British law/Sharia law; Sense of belonging; Importance of religion; Mosque attendance; Experiences of discrimination; Number of social contacts; Physical health; Anxiety; Depression; Sympathy to defensive violence	No financial support received	60%
Bhui et al. (2020)	UK (England)	Cross-sectional survey to explore the relationship between sympathies for	Sympathies for violent protest and terrorism, assessed	618	White British and Pakistani people living in England	ICD-10 depression diagnosis; Dysthymia; Autism symptoms;	National Institute for Health Research (NIHR) Collaboration for Leadership in	80%

		violent protest/terrorism and common mental illness	using a study- specific 7-item scale		Mean age not reported; range 18-45 49.3% male	Personality disorder symptoms; Post-traumatic stress disorder; Anxiety; Alcohol consumption; Illicit substance use; Tobacco use; Previous criminal conviction; Perceived discrimination; Experience of threatening events; Social capital; Political engagement; Socio-demographic characteristics (age, gender, marital status, income, employment, education, place of birth, ethnicity, location, religion); Religious attendance	Applied Health Research and Care North Thames at Bart's Health NHS Trust	
Candilis et al. (2021)	Authors in USA, UK & Canada; participants in Iraq	Cross-sectional survey and latent class analysis to develop a typology for terrorism	Participants were incarcerated offenders convicted of terrorism	160	Incarcerated offenders convicted of terrorism in Iraq (44% lone-actor terrorists, 56% group- actor terrorists) Mean age 34.1 100% male	Collected data on the following: Socio-demographic characteristics (age, gender, marital status, educational level, occupation, financial status, geographic residence); Whether a family member had been murdered or charged with terrorism; Motivation for terrorist acts; Attitude toward causes and justifications of terrorism;	Iraqi Ministry of Health	75%

					Conduct disorder; Antisocial personality disorder; Cluster A personality disorders (schizoid, schizotypal, paranoid)		
Cherney et al. (2020) Australia	Descriptive, exploratory analysis of open- source data (e.g. court documents, media reports) on young adults identified as radicalising to violent extremism, to identify factors associated with radicalisation	Participants were identified by a large open-source Australian dataset called the PIRA dataset as radicalising to violent extremism	33	Australian youths aged 19 or under, identified as radicalising to violent extremism (either committing ideologically motivated acts, joining a terrorist organisation or associating with an extremist group) Mean age 17 90.9% male	Collected data on the following: Socio-demographic characteristics (age, gender, relationship status, highest level of education); History of alcohol or drug abuse; History of mental health problems; Previous criminal record; Contextual aspects of radicalisation (place of radicalisation, role of online social media and severity of online social media activity); Presence of bond attachments (marital status, close family, work history, engagement in education, anger towards Australian society and rejection of its values); Variables relating to social learning (group membership, recruitment method, radical peers and associates); Perceived injustice, victimisation or threat by authorities or government figures	Australian Research Council Future Fellowship	77.8%

Ehsan et al. (2021)	Pakistan	Development and validation of a risk assessment tool for extremism using exploratory factor analysis	Development of the Risk Factors for Extremism Scale to assess extremist tendencies	365	Students in Pakistan (79% undergraduates, 16% postgraduates, 5% enrolled in a diploma programme) Mean age 21.15 35.9% male	Confirmatory factor analysis of Risk Assessment Tool for Extremism (RATE) – factors were lack of tolerance towards others; desire to have control over others; dependant self-worth; religious intolerance; and lack of education Violent Extremism Beliefs Scale (assessing religious violence and extremism; extent of positive thinking; power politics; risk taking and impulsivity) Anxiety; Depression; Stress	Not reported	70%
Ellis et al. (2021)	Canada & USA	Cross-sectional survey to examine risk factors for support for violent radicalisation	Readiness to participate in illegal and violent behaviour for one's group or organisation, assessed by the 4- item Radicalism Intention Scale which is a subscale of the Activism and Radicalism Intention Scales	791	Young adults based in Boston, Toronto or Montreal (including 198 Somali participants who had lived in the USA or Canada for at least one year) Mean age not reported; range 18- 31+ 37.6% male	Socio-demographic characteristics (age, gender); Perceived discrimination; Depression; Anxiety ; Perceived social support; Location (Boston, Toronto or Montreal) (considered as a potential moderator)	Public Safety of Canada; Department of Defense Minerva Research Initiative; and National Institute of Justice	75%

Furnham et al. (2020)	Authors in Norway & UK; unclear where participants were from	Cross-sectional survey to examine ideological and personality	Militant extremist mindset, assessed by the Militant Extremist Mindset Questionnaire	506	Members of general population recruited online	Big Five personality factors (openness, conscientiousness, extraversion, agreeableness, neuroticism); Self-monitoring;	BI: Norwegian Business School	75%
		correlates of beliefs in the	Questionnalie		Mean age 20.34	Personality disorders; Self-esteem;		
		'militant extremist mindset' (consisting of			57.5% male	Socio-demographic characteristics (age, gender); Religiosity;		
		three dimensions: proviolence (acceptance of violence), vile world (perception there is something wrong with the world) and divine				Liberalism		
		power (belief in a divine power)						
Harpviken (2021)	Norway	Cross-sectional survey and structural equation	Support for those travelling to Syria to fight, assessed by 1 item; support for	10,932	High school students in Oslo	Socio-demographic characteristics (age (measured as grade in school), gender, immigrant status, family economy, number of books at home);	Not reported	75%
		modelling to investigate whether psychological vulnerabilities	the use of political violence, assessed by 3 items; extreme Islamist attitudes, assessed by 3		Mean age not reported; range 13-19 48% male	Mental illness; Previous traumatic experiences; Family circumstances;		
		increase	items; extreme			School satisfaction;		

		susceptibility to extremism in youth	right-wing attitudes, assessed by 3 items			Perceived discrimination; Social capital; Criminal conduct; Alcohol and/or drug use		
Jahnke et al. (2021b)	Germany	Cross-sectional survey to explore mediators of the link between adverse environmental factors and political violence support	engage in political	6,715	Ninth-graders from different parts of Germany Mean age 14.71 (males) and 14.59 (females) 47% male	Socio-demographic characteristics (age, educational aspirations, migration background); Depression; Lack of family cohesion; Parental violence; Discrimination; Legal cynicism	German Federal Ministry of Education and Research	70%
Merari & Ganor (2020)	Authors in Israel; participants Palestinian	Qualitative interviews to investigate the background, psychological characteristics and motivations of independent actors who carried out attacks in Israel	Participants were in prison for carrying out attacks against Israeli civilians or security forces	45	Palestinian prisoners who had been arrested for carrying out independent (i.e. not terrorist group- related) attacks against Israeli civilians or security forces Mean age 24.4 for adult males (n=25), 15.0 for juvenile males (n=11), 26.4 for adult females (n=5) and 16.0	Interviews covered the following topics: General background (demographics of the interviewee and their family, social milieu, exposure to media, political awareness and activity, religiosity, sources of influence, development of the decision to act, motivations to attack, attitude to the possibility of being killed, consultations with others about the attack, behavioural changes after the decision to act, hesitation, planning and preparation, execution of the attack, evaluation of the attack, possible deterring factors);	Chief Scientist's Bureau, Israel's Ministry of Public Security	62.5%

					for juvenile females (n=4) 80% male	Psychological status (significant life events, adjustment to change, coping with crises; MMPI-2 to assess psychopathology; SCID 5 SPQ and SCID 5 PD to assess personality disorders; Rorschach Inkblot Test to assess personality, cognition and mental states; Thematic Apperception Test to assess personality and mental states		
Miconi et al. (2020)	Canada	Cross-sectional survey to examine whether positive future orientation is associated with lower levels of sympathy for violent radicalisation beyond the contributions of depression	Sympathy for violent radicalisation, assessed by a modified version of the Sympathies for Radicalisation Scale	1,680	College students in Quebec Mean age not reported; 74% aged 16-21 29% male	Sociodemographic characteristics (age, gender, immigrant status, religion, exposure to violence); Future orientation i.e. positive attitude towards the future; Depression	Quebec Minister of Health and Social Services	65%
Miconi et al. (2021)	Canada	Cross-sectional survey of support for violent radicalisation, with mixed- effects models to test local differences in support for	Sympathy for violent radicalisation, assessed by a modified version of the Sympathies for Radicalization Scale	1,765	College students from anglophone colleges (Quebec City n=263, rural and surburban Quebec n=681, Anglophone Quebec n=41) or a francophone college (Francophone Montreal n=779)	Socio-demographic characteristics (age, gender, immigrant status, language spoken (French, English or both), religion, which college attended); Perceived discrimination; Exposure to violence; Depression;	Not reported	65%

		violent radicalisation			Mean age not reported; range 16- 25+ 29% male	Collective self-esteem (i.e. individual perception of importance of group identity), assessed on three dimensions: importance to identity (importance of belonging to a social group for one's identity), membership self-esteem (value attributed to the self as a member of a social group), public self-esteem (value attributed from others to one's social group)		
Mordeno et al. (2020)	Philippines	Cross-sectional survey to investigate potential processes in the formation of political exclusionist attitudes	Political exclusionist attitudes, assessed with 4 items adapted from a previous tool tapping beliefs regarding public policy directed at specific out-groups	641	Conflict-exposed high school students in the Philippines Mean age 16.47 33.9% male	Extent of conflict exposure; Mental health; Perceived threat	No specific grant from any funding agency	70%
Tang et al. (2020)	China (Hong Kong)	Cross-sectional survey to examine the mediating role of internet addiction, fear of missing out, and psychological wellbeing in the relationship between online exposure to movement-	Support for radical actions, assessed by providing a list of radical protest actions which took place during the Anti-ELAB Movement and asking to what extent participants accepted each action;	290	Tertiary students in Hong Kong Mean age not reported; 78.6% were aged 18-20 40.7% male	Frequency of obtaining movement- related information online; Internet addiction; Perceived social isolation; Depression	No external funding	60%

	related information and support for radical actions (during the Anti- Extradition Law Amendment Bill Movement in Hong Kong)	Support for Anti- ELAB Movement in general assessed by 1 item; Participation in the Anti-ELAB Movement assessed by 2 items					
Walter et al. UK (2021)	Qualitative study to explore how core autistic traits may make individuals susceptible to radicalisation and how to manage autistic young people at risk for radicalisation	Interviews asking for participants' perceptions about potential associations between autism and radicalisation; Whether potentially radical online materials had been accessed	34	Experts in the field: Professionals (National Health Service staff, academics, educational staff, counter-terrorism officers, n=22) and young people with autism (n=12) Age and gender of professionals not reported Mean age of young people not reported; range 14-19 Young people 75% male	Professionals asked about their views on potential associations between autism and radicalisation, pathways into radicalisation, susceptibility of people with autism, their recommendations for identifying individuals who might require intervention, and their views on interventions Young people asked about their online behaviour, whether they had accessed potentially radical materials or been approached by radicals online, and their experiences of support	New Bridge Multi Academy Trust	80%

The fifteen studies involved participants from a range of different countries: the UK (n=3), Canada (n=2), Australia (n=1), China (n=1), Germany (n=1), Iraq (n=1), Norway (n=1), Pakistan (n=1), Palestine (n=1) and the Philippines (n=1). Two studies were based in multiple countries: Norway and the UK (n=1) and Canada and the USA (n=1). Study population size ranged from 33 – 10,932.

The majority of studies (11/15) examined correlates of attitudes towards radicalism in the general population. Three studies described the characteristics of individuals identified as terrorists or radicalised, but did not compare these samples to control groups from the general population (Candilis et al., 2021; Cherney et al., 2020; Merari & Ganor, 2020). It is therefore not possible to identify risk factors from these three studies, although they do provide a useful snapshot of the characteristics of the terrorist/at-risk for terrorism population. The remaining study (Walter et al., 2021) was a qualitative study involving people with autism/experts in the autism field, exploring their views on potential links between autism and radicalisation. Again, this study provides potentially useful results for the review but cannot be used to assess risk factors. No studies evaluated interventions for preventing or countering radicalisation.

Among the non-radicalised, general population samples, support and sympathy for radicalism, terrorism and violence appeared to be fairly low: for example, Ahearn et al. (2020) found that 91.4% of their 608 participants condemned terrorist attacks. Bhui et al. (2020) found that 61% of their 618 participants condemned violent protest and terrorist actions, 26% were neutral and 13% had sympathies for violent protest and terrorism. Harpviken (2021) found that support for Syria fighters and use of political violence were low, whereas extreme Islamist and right-wing attitudes were somewhat higher. In Jahnke et al.'s (2021b) study, 70% of males and 84% of females (total n=6,715) scored below the midpoint of the political violence support scale, indicating disapproval of political violence.

Various potential correlates of radicalisation were explored. Table V presents an overview of the correlates tested in empirical studies, showing the number of studies which tested each correlate and the number of studies which found statistically significant associations between each correlate and radicalisation.

Correlate	Studies testing this association	Studies showing significance
Socio-demographic characteri	istics	
Gender	Ahearn et al. (2020)	Ellis et al. (2021) (p<0.05)
	Bhui et al. (2020) Ellis et al. (2021) Furnham et al. (2020) Harpviken (2021) Miconi et al. (2020)	Furnham et al. (2020) (p<0.001; proviolence aspect of extremism only) Harpviken (2021) (direct pathway to support for use of political violence) Miconi et al. (2020) (p<0.001)
	Miconi et al. (2021)	Miconi et al. (2021) (p<0.001)
Age	Ahearn et al. (2020) Bhui et al. (2020) Ellis et al. (2021) Furnham et al. (2020) Harpviken (2021) Jahnke et al. (2021b) Miconi et al. (2020) Miconi et al. (2021)	<ul> <li>Bhui et al. (2020) (p=0.04 for 21-25 age group, 0.03 for 26-30 age group, 0.001 for 31-35 age group, 0.03 for 36-40 age group and 0.02 for 41-45 age group when compared to 18-20 age group)</li> <li>Ellis et al. (2021) (p&lt;0.05)</li> <li>Harpviken (2021) (direct pathways to support for Syria fighters and support for use of violence)</li> <li>Jahnke et al. (2021b) (p&lt;0.01)</li> <li>Miconi et al. (2021) (p&lt;0.001)</li> </ul>
Ethnicity	Ahearn et al. (2020) Bhui et al. (2020)	Bhui et al. (2020) (p=0.007)
Religion	Bhui et al. (2020) Miconi et al. (2020) Miconi et al. (2021)	Miconi et al. (2020) (p<0.001) Miconi et al. (2021) (p<0.001)
Religious attendance	Ahearn et al. (2020)	

# Table V. Correlates of radicalisation explored in included studies

	Bhui et al. (2020)	
Importance of religion /	Ahearn et al. (2020)	Furnham et al. (2020) (p<0.05 for
religiousness	Furnham et al. (2020)	proviolence and p<0.001 for divine power)
Marital status	Bhui et al. (2020)	Bhui et al. (2020) (p=0.001)
Place of birth	Ahearn et al. (2020)	Bhui et al. (2020) (p=0.04)
	Bhui et al. (2020)	
Town/city currently lived in	Bhui et al. (2020)	
Immigrant background	Harpviken (2021)	Harpviken (2021) (direct pathways
	Jahnke et al. (2021b)	to support for Syria fighters, support for use of political violence,
	Miconi et al. (2020)	extreme Islamist attitudes and
	Miconi et al. (2021)	extreme right-wing attitudes)
		Jahnke et al. (2021b) (p<0.01)
		Miconi et al. (2020) (p<0.001)
		Miconi et al. (2021) (p<0.001)
Language spoken	Miconi et al. (2021)	
Education	Ahearn et al. (2020)	
	Bhui et al. (2020)	
Educational aspirations	Jahnke et al. (2021b)	Jahnke et al. (2021b) (p<0.01)
Which college attended	Miconi et al. (2021)	Miconi et al. (2021) (p=0.007)
School satisfaction	Harpviken (2021)	Harpviken (2021) (direct pathway to extreme right-wing attitudes)
Employment	Bhui et al. (2020)	
Income	Bhui et al. (2020)	
Physical health, mental health, o	and substance use	
Physical health	Ahearn et al. (2020)	
Autism symptoms	Bhui et al. (2020)	
Conduct problems	Harpviken (2021)	Harpviken (2021) (direct pathways to support for Syria fighters and support for use of political violence)
Depression	Ahearn et al. (2020)	Ehsan et al. (2021) (p<0.001 for the
	Ehsan et al. (2021)	RATE Scale ; p<0.01 for religious
	Ellis et al. (2021)	power violence and extremism ; p<0.01 for extent of positive
	Jahnke et al. (2021b)	thinking ; p<0.01 for power politics ; p<0.01 for risk-taking behaviour)

	Miconi et al. (2021) Tang et al. (2020)	Ellis et al. (2021) (Montreal sample only ; b=0.175) Jahnke et al. (2021b) (p<0.01) Miconi et al. (2021) (p=0.006) Tang et al. (2020) (p<0.001 for attitudinal support for Anti-ELAB, participation in Anti-ELAB, and support for radical actions generally)
Dysthymia	Bhui et al. (2020)	
Comorbid depression/dysthymia	Bhui et al. (2020)	Bhui et al. (2020) (p=0.01)
Anxiety	Ahearn et al. (2020) Bhui et al. (2020) Ehsan et al. (2021) Ellis et al. (2021)	Ahearn et al. (2020) (not significant in univariate analysis; p=0.035 in multivariate analysis) Bhui et al. (2020) (p=0.002) Ehsan et al. (2021) (p<0.01 for the RATE Scale ; p<0.01 for religious power violence and extremism ; p<0.01 for extent of positive thinking ; p<0.01 for power politics)
Post-traumatic stress disorder	Bhui et al. (2020)	Bhui et al. (2020) (p=0.003)
Personality disorder	Bhui et al. (2020) Furnham et al. (2020)	Bhui et al. (2020) (overall personality disorder score was not significant, but the item 'losing one's temper easily' was positively associated with sympathy for violent protest and terrorism (p=0.02)) Furnham et al. (2020) (p<0.001 for both proviolence and vile world)
Stress	Ehsan et al. (2021)	Ehsan et al. (2021) (p<0.001 for the RATE Scale ; p<0.01 for religious power violence and extremism ; p<0.01 for power politics)
Psychological distress	Mordeno et al. (2020)	Mordeno et al. (2020) (p≤0.001)
Alcohol consumption	Bhui et al. (2020)	Bhui et al. (2020) (p=0.048)
Illicit drug use	Bhui et al. (2020)	Bhui et al. (2020) (p=0.008)
Alcohol and/or drug use	Harpviken (2021)	Harpviken (2021) (direct pathway to extreme right-wing attitudes)
Tobacco use	Bhui et al. (2020)	Bhui et al. (2020) (p=0.01)

Personality and individual differences		
Openness	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for proviolence only)
Conscientiousness	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for proviolence only)
Extraversion	Furnham et al. (2020)	Furnham et al. (2020) (p<0.05 for vile world, p<0.001 for divine power)
Agreeableness	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for proviolence, p<0.05 for both vile world and divine power)
Neuroticism	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for vile world, p<0.05 for divine power)
Self-monitoring	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for proviolence only)
Self-esteem	Furnham et al. (2020)	Furnham et al. (2020) (p<0.05 for proviolence, p<0.01 for vile world)
Future orientation	Miconi et al. (2020)	Miconi et al. (2020) (a 1 SD increase in future orientation associated with 0.08 SD lower sympathy for violent radicalisation)
Fear of missing out	Tang et al. (2020)	Tang et al. (2020) (p<0.001 for attitudinal support for Anti-ELAB, participation in Anti-ELAB, and support for radical actions generally; no longer significant in regression)
History of adverse events		
Previous criminal conviction	Bhui et al. (2020)	Bhui et al. (2020) (p=0.048)
Threatening life events	Bhui et al. (2020) Harpviken (2021)	
Exposure to violence / conflict	Miconi et al. (2020)	Miconi et al. (2020) (p<0.001)
	Miconi et al. (2021) Mordeno et al. (2020)	Miconi et al. (2021) (p<0.001; context-dependent – all local contexts except Quebec City)
		Mordeno et al. (2020) (p≤0.05)
Family		

Family economy	Harpviken (2021)	Harpviken (2021) (direct pathways
, , , 		to support for Syria fighters and extreme right-wing attitudes)
Family environment	Harpviken (2021)	Harpviken (2021) (direct pathway to support for the use of political violence)
Lack of family cohesion	Jahnke et al. (2021b)	Jahnke et al. (2021b) (p<0.01)
Parental violence	Jahnke et al. (2021b)	Jahnke et al. (2021b) (p<0.01)
Cultural capital (number of books at home)	Harpviken (2021)	Harpviken (2021) (direct pathways to support for Syria fighters and extreme right-wing attitudes)
Social support and belongingness		
Social capital / social support	Ahearn et al. (2020)	Ellis et al. (2021) (Toronto sample
	Bhui et al. (2020)	only; b=-0.28)
	Ellis et al. (2021)	Harpviken (2021) (direct pathway to support for Syria fighters)
	Harpviken (2021)	support for syna lighters,
	Tang et al. (2020) (social isolation)	
Public self-esteem	Miconi et al. (2021)	
Membership self-esteem	Miconi et al. (2021)	Miconi et al. (2021) (p=0.002)
Importance to identity of belonging to social group	Miconi et al. (2021)	Miconi et al. (2021) (p=0.031)
Sense of belonging to the country currently lived in	Ahearn et al. (2020)	
Sense of belonging to local area	Ahearn et al. (2020)	
Sense of belonging to global Muslim community	Ahearn et al. (2020)	Ahearn et al. (2020) (p=0.009 in univariate analysis; p=0.002 in multivariate analysis)
Sense of belonging to local Muslim community	Ahearn et al. (2020)	Ahearn et al. (2020) (p=0.041 in univariate analysis; p=0.029 in multivariate analysis)
Same clothes as own ethnic group	Ahearn et al. (2020)	
Same clothes as different ethnic groups	Ahearn et al. (2020)	
Grievances and political attitudes	1	'
Perceived discrimination	Ahearn et al. (2020)	Ahearn et al. (2020) (p=0.013 in
	Bhui et al. (2020)	univariate analysis; p=0.001 in multivariate analysis)
	Ellis et al. (2021)	

	Harpviken (2021)	Ellis et al. (2021) (p<0.05)
	Jahnke et al. (2021b) Miconi et al. (2021)	Harpviken (2021) (direct pathway to extreme Islamist attitudes)
		Jahnke et al. (2021b) (p<0.01) Miconi et al. (2021) (p=0.011;
		context-dependent – all local contexts except Quebec City)
Perceived threat	Mordeno et al. (2020)	Mordeno et al. (2020) (p≤0.001)
Respect for laws of the country currently lived in	Ahearn et al. (2020)	
Respect for Sharia law	Ahearn et al. (2020)	
Legal cynicism	Jahnke et al. (2021b)	Jahnke et al. (2021b) (p<0.01)
Liberalism	Furnham et al. (2020)	Furnham et al. (2020) (p<0.001 for proviolence and p<0.001 for divine power)
Sympathy to defensive violence	Ahearn et al. (2020)	Ahearn et al. (2020) (p<0.001)
Political engagement	Bhui et al. (2020)	
Internet		
Internet addiction	Tang et al. (2020)	Tang et al. (2020) (p<0.001 for attitudinal support for Anti-ELAB, participation in Anti-ELAB, and support for radical actions generally; no longer significant in regression)
Exposure to online movement- related information	Tang et al. (2020)	Tang et al. (2020) (p<0.001 for attitudinal support for Anti-ELAB, participation in Anti-ELAB, and support for radical actions generally in correlational analysis; no longer significant in regression)

The results of the included studies are discussed below.

# Socio-demographic characteristics

*Gender:* Gender was found to be significantly associated with radicalisation-related outcomes in 5/7 studies; all five with significant results found that males were at greater risk (Ellis et al., 2021; Furnham et al., 2020; Harpviken, 2021; Miconi et al.,

2020, 2021). Supporting the results of these studies, the majority of terrorists/individuals identified as 'at risk' for terrorism in the studies which described these populations (Candilis et al., 2020; Cherney et al., 2020; Merari & Ganor, 2020) were male.

*Age:* Age was a significant predictor in 6/8 studies; these all suggested younger age was associated with greater support for radicalism (Bhui et al., 2020; Ellis et al., 2021; Harpviken, 2021; Jahnke et al., 2021b; Miconi et al., 2020, 2021). One of the other two studies (Furnham et al., 2020) found that (younger) age was significantly associated with the 'vile world' subscale of extremism (perception there is something wrong with the world) but lost its significance after adding personality factors into the model. In Candilis et al. (2021)'s study of terrorists, approximately half (49.4%, n=160) were aged under 34 and half were older.

*Ethnicity:* Ethnicity was significantly associated with radicalisation in 1/2 studies: Bhui et al. (2020) found that White British participants were significantly more likely to sympathise with terrorism than Pakistani participants.

*Religion:* Being religious (as opposed to non-religious) was significantly negatively associated with radicalisation in 2/3 studies (Miconi et al., 2020, 2021) whereas importance of religion was a significant predictor in 1/2 studies (Furnham et al., 2020). Attendance at a place of religious worship was not found to be a risk factor (0/2 studies showed a significant relationship between religious attendance and radicalisation outcomes). Proviolence (acceptance of violence) had a small but significant relationship with religiousness (Furnham et al., 2020) and, unsurprisingly, the 'divine power' subscale of extremism (belief in a divine power) was also positively associated with religiousness. Lack of tolerance in matters relating to religion was identified as a facet of extremism by Ehsan et al. (2021). Most of Merari and Ganor's (2020) lone-actor terrorist sample were religious, all believed in the existence of paradise, and 29/45 (64%) prayed daily; those who were religious were more likely to report motivators relating to revenge for humiliation, desire to be in paradise, and defense of al-Asqa Mosque, whereas those who were less

religious were more likely to be diagnosed as suicidal, depressive, or having a personality disorder. Also related to religion, the majority of Merari and Ganor's (2020) lone-actor terrorist sample expressed that they would still have carried out the attack even if they knew the Palestinian public, their family and friends, and religious authorities objected to it. In only one hypothetical situation – had he/she known they would go to hell for the attack – did the majority say they would have refrained from carrying out the attack.

*Marital status:* Only one study (Bhui et al., 2020) examined marital status as a risk factor of radicalisation, and found that being single was associated with greater sympathy for terrorism. In Cherney et al.'s (2020) study of radicalised youths, 69.7% (of 33) had never been married (perhaps because of their young age), but in Candilis et al.'s (2021) study of terrorists, 71% (of 160) were married.

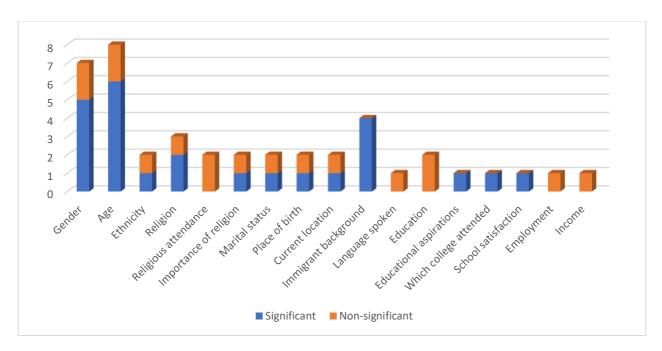
*Immigrant status:* Place of birth was a significant predictor in 1/2 studies: Bhui et al. (2020) found those born in the UK were more likely to sympathise with terrorism and violent protest than those born outside the UK. Immigrant status was a predictor of radicalisation in 4/4 studies. Miconi et al. (2020, 2021) found that first-generation immigrants reported overall lower scores on support for violent radicalism than later generations. Harpviken (2021) found that immigrant background had a direct positive effect on support for political violence, Syria fighters and extreme Islam, and a direct negative effect on right-wing extremism. Having a migrant background was significantly associated with support for political violence (Jahnke et al., 2021b) but was not included in any of the multivariate models in this study.

*Area of residence:* The town or city currently lived in was not found to be a significant independent risk factor (0/1 studies), although some studies which included current location as a potential moderating variable did find relevance. In Candilis et al.'s (2021) study of terrorists, over 84% (of 160) lived in urban areas. *Language:* Language spoken was not deemed to be a risk factor (0/1 studies).

*Education:* Level of education was found to be significant in 0/2 studies, but educational aspirations (Jahnke et al., 2021b) and school satisfaction (Harpviken, 2021) were associated with lower risk of radicalisation and the specific college attended was found to be significantly associated with radicalisation outcomes (Miconi et al., 2021). Educational level of terrorist/radicalised populations was generally low: 63.3% (n=19) of Cherney et al.'s (2020) participants had not completed high school, 69% of Candilis et al.'s 160 participants described their highest qualification as either primary or secondary school, and seven (15.6%) of Merari and Ganor's (2020) participants were illiterate; illiteracy was particularly high among juvenile males. Ehsan et al. (2021) carried out an exploratory factor analysis in order to develop a risk assessment tool for extremism and found that lack of education was a factor; however, although confirmatory factor analysis largely confirmed the overall factorial structure, lack of education was not sustained due to poor item loading.

*Employment:* Employment and income were not deemed to be risk factors, although they were only considered in one study. However, in Cherney et al.'s (2020) description of the characteristics of radicalised youths, eight individuals (32%) were considered to have unstructured time, i.e. were unemployed or underemployed, not a student and not actively engaged in community activities. In Candilis et al.'s (2021) terrorist sample, 87% (of 160) were employed; 48% rated their financial status as average, 32% as poor/very poor and only 20% as good/very good.

A graph illustrating the number of significant/non-significant findings for each sociodemographic correlate of radicalisation is presented in Figure III.



### Figure III. Socio-demographic correlates of potential radicalisation

## Physical health, mental health and substance use

*Physical health:* Physical health was not found to be a risk factor (0/1 studies).

*Autism:* Autism was not found to be a risk factor (0/1 studies). A qualitative study comprised of young people with autism and experts in the field (Walter et al., 2021) revealed that participants stressed that assumptions should not be made regarding the link between autism and radicalisation; they felt it was irresponsible to promote such an association given the lack of substantial evidence. Participants were conscious of media coverage of cases of radicalised individuals with an autism diagnosis and believed this had led to incorrect labelling of people with autism spectrum disorders as particularly susceptible to radicalisation. Many professionals felt they were receiving both appropriate referrals but also many people with autism who did not warrant formal referral were being referred to them. All professional participants felt better training was needed in understanding the range of presentations of autism spectrum disorders and how radicalisation may present in such individuals. The professionals agreed that the presence of an autism spectrum disorder itself did not make an individual susceptible to radicalisation but there may be particular traits common among autistic people affecting their susceptibility, including: difficulties in understanding and interpreting interpersonal relationships and acceptable/unacceptable behaviours; rigidity of thinking; need for structure and routine; 'special interests' individuals may become obsessive or hyper-focused on; self-esteem issues; elevated anxiety, stress or fear; difficulties recognising their own emotional states; sensory processing issues and cognitive impairments; difficulties with abstract thinking; difficulties anticipating the consequences of behaviour; uncertainty when differentiating right from wrong; and poor social interaction. Participants generally perceived that when people with autism do engage in radical activity, they are from 'troubled' backgrounds involving neglect and little emotional support.

*Conduct problems:* Conduct problems were found to be a risk factor in 1/1 studies (Harpviken, 2021).

*Depression:* Depression was positively associated with radicalism outcomes in 5/6 studies (Ehsan et al., 2021; Ellis et al., 2021; Jahnke et al., 2021b; Miconi et al., 2021; Tang et al., 2020). In Ellis et al.'s (2021) study, when moderation effects were examined by location, radicalism intentions were associated with depression in their Montreal sample only, suggesting the association may be context-specific.

*Dysthymia:* Dysthymia alone was not found to be a risk factor (0/1 studies) but comorbid depression and dysthymia was significantly associated with sympathies for violent protest and terrorism in 1/1 studies (Bhui et al., 2020).

*Anxiety:* 3/4 studies showed an association between anxiety and radicalism (Ahearn et al., 2020; Bhui et al., 2020; Ehsan et al., 2021).

*PTSD:* 1/1 studies found an association between PTSD and sympathies for violent protest and terrorism (Bhui et al., 2020).

*Personality disorder:* There were significant findings relating to personality disorders in 2/2 studies. In Bhui et al.'s (2020) study, whilst overall personality disorder scores showed no significant association with terrorism sympathy, the individual item of 'losing one's temper easily' was positively associated with terrorism sympathy. In

Furnham et al.'s (2020) study, proviolence was positively associated with personality disorder scores although not as strongly as the 'vile world' subscale was; the 'divine' power subscale was also positively predicted by personality disorder (Furnham et al., 2020).

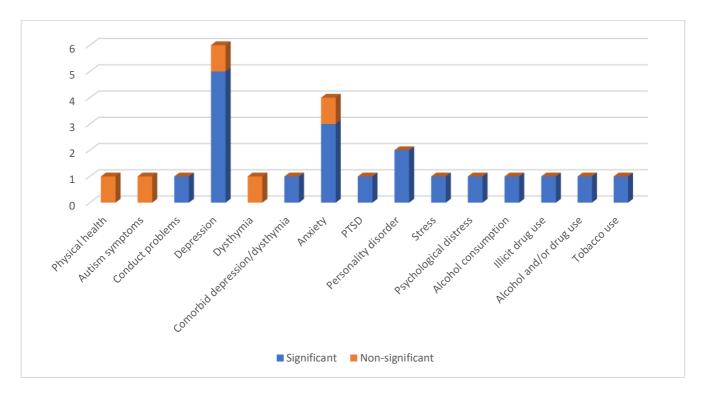
*Stress/distress:* Stress was associated with radicalism in 1/1 studies (Ehsan et al., 2021) and psychological distress was associated with political exclusionist attitudes in 1/1 studies (Mordeno et al., 2020). In the latter study, the relationship of psychological distress and perceived threat serially mediated the association between conflict exposure and political exclusionist attitude; the degree of exposure to political conflicts is believed to enhance psychological distress which in turn increases propensity to perceive threat against the out-group and ultimately reinforce political exclusionist attitudes.

*Substance use:* Use of alcohol, tobacco and drugs were considered in two studies and found to be significantly associated with radicalism in both: Bhui et al. (2020) found that sympathies for violent protest and terrorism were significantly more common in those who consumed alcohol, tobacco or illicit drugs and those with a previous criminal conviction and Harpviken (2021) found that alcohol and/or drug use was associated with greater support for Syria fighters and the use of political violence as well as right-wing extremism.

*Mental illness in radicalised populations:* Fourteen participants (42.4%) of Cherney et al.'s (2020) participants had a history of mental illness; in most cases, the diagnosis had been made before the individual engaged in terrorism-related activities. Additionally, 24.2% of the participants in the same study had a history of drug or alcohol abuse. In Candilis et al.'s (2021) study, 41% (n=66) met the criteria for conduct disorder; 24% (n=39) for paranoid personality disorder; 22% (n=35) for antisocial personality disorder; 21% (n=33) for schizoid personality disorder and 16% (n=26) for schizotypal personality disorder. Mental health problems appeared to be more common in Merari and Ganor's (2020) study: of the 39 individuals in this study who underwent psychological assessment, 26 (66.7%) were diagnosed with

either psychotic background, severe personality disorder, or suicidality. In the latter study, 4/5 illiterate participants who underwent psychological assessment suffered from severe psychopathology. Additionally, 8/45 participants described themselves as being in a dissociative-like state at the time of the attack.

A graph illustrating the number of significant/non-significant findings for each health-related correlate of radicalisation is presented in Figure IV.





# Personality and individual differences

*Openness, agreeableness, neuroticism, extraversion, conscientiousness:* The 'Big Five' personality traits were found to be significant in 1/1 studies (Furnham et al., 2020). This study found that conscientiousness was negatively associated with the 'proviolence' mindset, although the association lost its significance in a multivariate regression; openness was negatively associated with proviolence and positively associated with the 'divine power' subscale; agreeableness was negatively associated with proviolence and the 'vile world' subscale and divine power; extraversion was negatively associated with the 'vile world' subscale and positively associated with 'divine power'; and neuroticism was positively associated with the 'vile world' subscale and a significant negative predictor of 'divine world'.

*Self-monitoring:* Self-monitoring refers to a variable measured by assessing ability to actively control expressive behaviour, propensity to act in a way to draw attention from others, and displaying behaviour others would expect in social situations. This was significantly positively associated with the proviolence mindset and significantly negatively associated with the 'vile world' subscale of extremism in 1/1 studies (Furnham et al., 2020).

*Self-esteem:* Low self-esteem was associated with the 'vile world' subscale (Furnham et al., 2020).

*Future orientation:* Future orientation (the extent of one's positive attitudes towards the future) was significant in 1/1 studies (Miconi et al., 2020): future orientation was significantly and negatively related to sympathy for violent radicalisation, and this association was significantly stronger in males and in students with high depression scores.

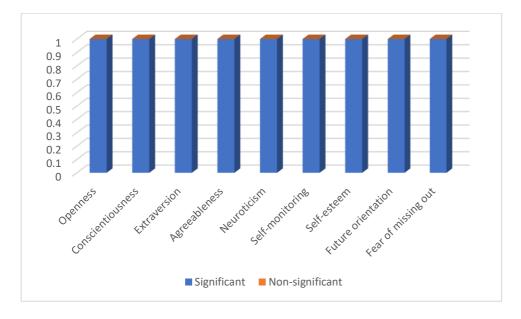
*Fear of missing out:* Fear of missing out was a significant risk factor in 1/1 studies (Tang et al., 2020) although did not remain significant in multivariate regression.

*Self-worth:* Ehsan et al. (2021) carried out an exploratory factor analysis in order to develop a risk assessment tool for extremism and found that 'dependant self-worth' (defined as "feelings about oneself dependent on some standard of excellence or living up to some interpersonal or intrapsychic expectations", ibid., p.244) was one factor.

A graph illustrating the number of significant/non-significant findings for each personality-related correlate of radicalisation is presented in Figure V.

## Figure V. Personality and individual difference-related correlates of potential

# radicalisation



# History of adverse events

*Criminal history:* Previous criminal conviction was found to be associated with sympathies for violent protest and terrorism in 1/1 study (Bhui et al., 2020). Cherney et al. (2020) found six (18.2%) of their radicalised participants had juvenile records for engagement in criminal activities.

*Exposure to violence, conflict and threatening events:* Exposure to violence/conflict was considered as a potential correlate in three studies and was found to be significantly associated with radicalism in all three (Miconi et al., 2020, 2021; Mordeno et al., 2020). In Miconi et al.'s (2021) study, exposure to violence was a risk factor for supporting radicalism across all local contexts except the Quebec City region. There was a two-way interaction between exposure to violence and generational status; being exposed to violence was not a risk factor for the non-immigrant population in Quebec City, whilst second-generation immigrants who were not exposed to violence seemed to be at higher risk of supporting violent radicalism. However, two studies which assessed 'threatening life events' as a potential risk factor found no association between this and radicalisation.

A graph illustrating the number of significant/non-significant findings for each adverse life event-related correlate of radicalisation is presented in Figure VI.

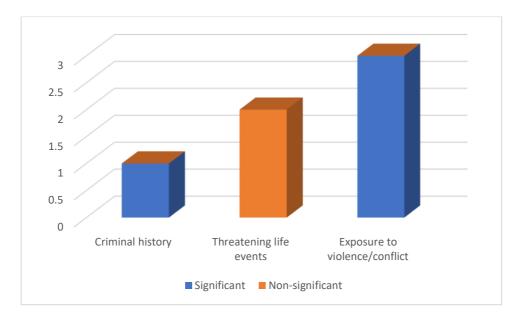


Figure VI. Adverse life event correlates of potential radicalisation

## Family

Family-related variables were found to be significant, although they were considered by two studies only. Jahnke et al. (2021b) found parental violence and lack of family cohesion to be positively correlated with political violence support, whilst Harpviken (2021) found family economy, family environment, and 'cultural capital' (assessed by the number of books in the family home) to be associated. In the latter study, having a strained family economy (i.e. financial status) had a direct negative effect on support for Syria fighters and indirect negative effect on support for Syria fighters and political violence; however, strained family economy also appeared to have a direct positive effect on right-wing extremism and an indirect negative effect on support for Syria fighters. Family environment had a direct negative effect on support for political violence but an indirect positive effect on support for Syria fighters. Cultural capital had a direct positive effect on support for Syria fighters and right-wing extremism. Cherney et al. (2020) found that the majority (71.4%, n=20) of radicalised youths described having close relationships with their families; however, Merari and Ganor (2020) reported that a considerable number of their lone-actor terrorist participants described family, personal or social problems that influenced their decision to carry out a terrorist attack, with the frequency of family problems as background for the attack being particularly high for females. Candilis et al. (2021) found that 18% of their 160 radicalised participants reported having a family member murdered and 6% had a family member charged with terrorism.

A graph illustrating the number of significant/non-significant findings for each family-related correlate of radicalisation is presented in Figure VII.

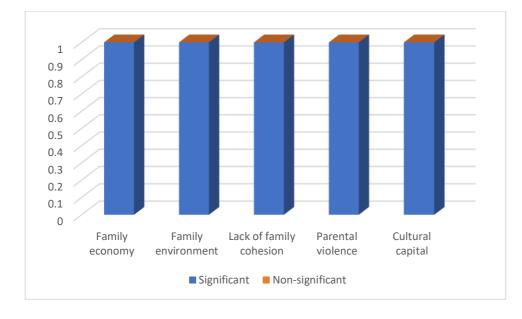


Figure VII. Family-related correlates of potential radicalisation

# Social support and belongingness

*Social capital/support:* Social capital and social support were only found to be significant predictors of radicalisation in 2/5 studies. Ellis et al. (2021) found that radicalism intentions were associated with poor social support in the Toronto sample only. Conversely, Harpviken (2021) found that social capital had a direct but

small positive effect on support for Syria fighters, indicating that greater number of social ties was a risk factor for radicalisation.

*Public self-esteem:* Public self-esteem was not found to be a risk factor (0/1 studies).

*Membership self-esteem:* Membership self-esteem (i.e. the value attributed to the self as a member of a group) was positively associated with radicalisation in 1/1 studies (Miconi et al., 2021).

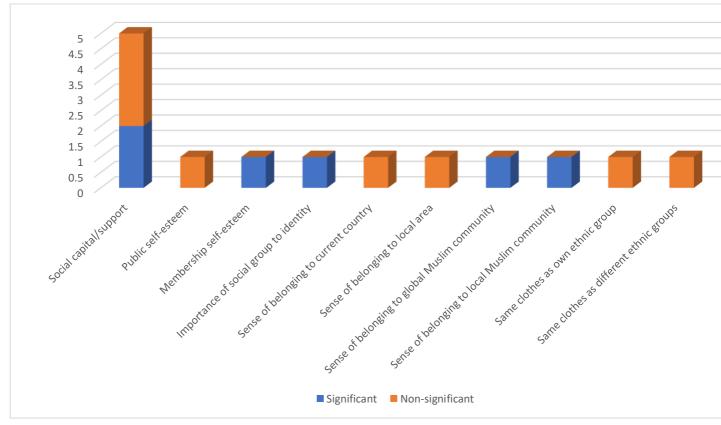
Sense of belonging: Importance of belonging to a social group for one's identity was positively associated with support for violent radicalism in 1/1 studies (Miconi et al., 2021). Sense of belonging to one's country and local area were not found to be associated with radicalisation (0/1 studies) but sense of belonging to both global and local Muslim communities was associated with radicalisation in 1/1 study (Ahearn et al., 2020). In this study, sense of belonging to the global Muslim community was the strongest predictor of terrorism sympathy: a one unit increase in this sense of belonging was associated with being 3.9 times more likely to sympathise with terrorism. A one unit increase in sense of belonging to the local Muslim community was related to being 2.9 times more likely to sympathise. Wearing the same clothes as own / different ethnic groups was not associated with radicalisation (0/1 studies).

*Group membership in radicalised populations:* In Cherney et al.'s 2020 study of a radicalised population, just under half (42.4% of 33) were members of either a formal extremist organisation or informal group of fellow extremists; 57.7% were actively recruited. Of these, 38.5% were recruited by an associate or member of an extremist group, one was recruited by a friend, one by a family member, and the identity of three recruiters was not known. A large portion of the sample (60.6%, n=20) were part of a close-knit clique, and for most their radicalisation occurred around the same time as becoming part of a clique.

*Bullying and marginalisation:* Walter et al.'s (2021) qualitative study with people with autism and experts on autism found that bullying, marginalisation and subsequent social isolation featured in all interviews, with participants suggesting that those with autism spectrum disorders are at risk of being victimised and excluded and it is this exclusion which makes them susceptible to exploitation and potentially radicalisation. Some suggested that behaving in extreme ways could be a way to control the nature of the attention they receive; some suggested that feeling helpless and rejected may contribute to a desire for revenge.

*Feelings towards others:* Ehsan et al. (2021) carried out an exploratory factor analysis in order to develop a risk assessment tool for extremism and found that lack of tolerance towards others was one (of five) emerging factors, as was desire to have control over others.

A graph illustrating the number of significant/non-significant findings for each social correlate of radicalisation is presented in Figure VIII.



### Figure VIII. Social correlates of potential radicalisation

### Grievances and political attitudes

*Perceived discrimination:* Perceived discrimination was positively associated with radicalism in 5/6 studies (Ahearn et al., 2020; Ellis et al., 2021; Harpviken, 2021; Jahnke et al., 2021b; Miconi et al., 2021). In Miconi et al.'s (2021) study, perceived discrimination was a risk factor for radicalisation across all local contexts except the Quebec City region. For the Quebec City participants, there was a significant three-way interaction between discrimination, depression and immigrant status; discrimination was not associated with support for violent radicalism either at low or high levels of depression in non-immigrants but discriminated first-generation immigrants reported lower support for violent radicalism, whereas non-depressed and non-discriminated second generation immigrants reported higher support for violent radicalism.

*Perceived threat:* Perceived threat was a risk factor in 1/1 studies (Mordeno et al., 2020).

*Respect for laws:* Respect for laws of one's current country and respect for Sharia law were not found to be significantly associated with radicalisation (0/1 studies).

*Legal cynicism:* Legal cynicism was positively correlated with political violence support in 1/1 studies (Jahnke et al., 2021b); legal cynicism significantly mediated the effects of lack of family cohesion and parental violence on support for political violence.

*Liberalism:* Liberalism was significant in 1/1 studies: Furnham et al. (2020) found a negative relationship between liberalism and both proviolence and 'divine world'.

*Sympathy to defensive violence:* Sympathy for defensive violence was a risk factor in 1/1 studies: in Ahearn et al.'s (2020) study, a one unit increase in sympathy for defensive violence related to being 2.9 times more likely to sympathise with terrorism.

*Political engagement:* Political engagement was not found to be significantly associated with radicalisation (0/1 studies).

*Grievances in radicalised groups:* The majority of Cherney et al.'s (2020) radicalised participants (73.1%, n=19) expressed signs of anger towards Australian society and an even larger majority (96.6%) felt they identified with a group which they believed to be victimised, subject to injustice, or under threat.

A graph illustrating the number of significant/non-significant findings for each grievance/political attitude-related correlate of potential radicalisation is presented in Figure IX.

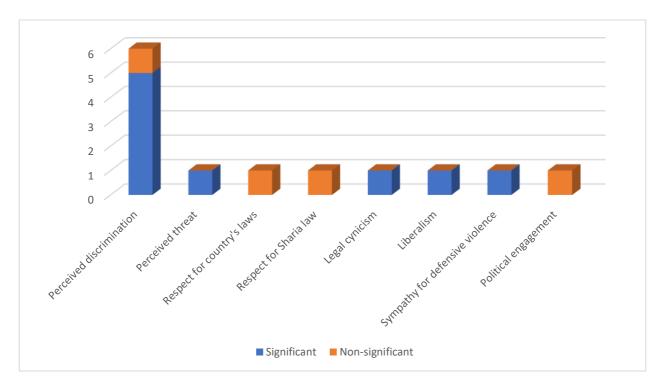


Figure IX. Grievance and political-related correlates of potential radicalisation

# Internet

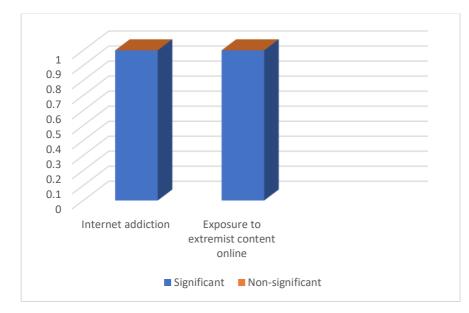
*Internet addiction:* Addiction to the internet was associated with radicalism in 1/1 studies (Tang et al., 2020). In this study, depression was found to mediate the relationship between internet addiction and support for radical actions.

*Exposure to extremist information:* Exposure to movement-related information was associated with radicalism in 1/1 studies (Tang et al., 2020).

*Internet use in radicalised populations:* Cherney et al. (2020) report that of the 28 individuals for whom role of the internet was assessed, for 50% the internet was deemed to play a role but not be the primary means of radicalisation, whilst for 25% there was no known role of online social media and for 25% it was their primary means of radicalisation. For the 21 youths for whom the internet appeared to play a role, 76.2% displayed active behaviour (e.g. disseminating content, directly communicating with other extremists to seek out information) whereas 23.8% displayed passive behaviour (e.g. consumed content or conducted searches).

*Internet and autism:* Walter et al.'s (2021) qualitative study with people with autism and experts on autism found that many participants reported feeling that the online world may be appealing to people with difficulties with face-to-face interactions, may lead to engagement with predatory individuals, and acceptance into an established group may offer an isolated individual a sense of belonging.

A graph illustrating the number of significant/non-significant findings for each internet-related correlate of potential radicalisation is presented in Figure X.





#### Terrorist typologies

Candilis et al.'s (2021) study of terrorists used latent class analysis with a three-class model: the largest class (40.6%, n=65) was categorised as 'non-religious nationalists'; the second largest (40%, n=64) was 'oppressed instrumentalists'; and the smallest class (19.4%, n=31) was 'aggrieved antisocials'. Individuals in the three classes were predominantly young urban dwellers who perceived their financial status as average or above, with high probabilities of employment and a primary or secondary education. There were no significant differences in age, financial status, occupation, education, or geographic residence between classes, nor did they reveal a significant difference in lone/group actor status. The non-religious nationalists were predominantly married, had no family member murdered or charged with terrorism, felt oppressed by government or other religious groups but did not regard terrorism as a response to oppression or poverty, cited national benefit as their chief motivation, did not justify terrorism against innocent people for political gain, and scored low on religiosity and antisocial personality disorder. The oppressed instrumentalists were predominantly married, with low probability of family grievance, felt oppressed by the government or other religious groups and regarded terrorism as a response to oppression and poverty, justified terrorist acts against innocent people (citing personal and group benefit as the main motive) but were unlikely to believe terrorism achieved political goals, and had a low probability of antisocial personality disorder, conduct disorder or any personality disorder. The aggrieved antisocials were predominantly single, with personality disorders and childhood conduct disorder, high probability of family grievance, regarded terrorism as a response to oppression or poverty and felt oppressed by the government or religious groups, justified terrorism against individual people for political gains, scored high on religiosity, and regarded national or group benefit rather than personal as their chief motives.

#### Reported motivations among radicalised groups

In Cherney et al.'s (2020) study of radicalised youths, 88.9% (of 33) reported that there was a significant event which precipitated or accelerated radicalisation. These events included events which generated grievances (e.g. cancellation of passport; 37.5%), emergence of the Islamic state (25%), personal experiences (e.g. death of a family member, 18.8%), acts by the Assad regime (12.5%) and the 'War on Terror' (6.3%). Candilis et al.'s (2021) terrorist participants described their motives for terrorism as beneficial for the country (35% of 160), for the group (32%) or the individual personally (20%).

Merari and Ganor's (2020) 45 lone-actor terrorist participants were also asked to rate potential motives for their attacks; those most commonly named as important by adult males were revenge for national humiliation (54.5%), defence of al-Aqsa Mosque (54.5%), desire to get to paradise (50%), revenge for religious humiliation (45%) and desire to die (45%). Less common among adult males were personal humiliation by Israelis (36%), hatred of Jews (32%), national struggle (27%), mistreatment of Palestinian females by Israeli Security Forces (27%), to prove himself (27%), and to gain social esteem (18%); none selected 'family humiliated by Israelis' or 'quarrel with the family' as motivators. The key motivators of juvenile males were national struggle (50%), mistreatment of Palestinian females by Israeli Security Forces (50%) and desire to die (50%); less common motivators were revenge for national humiliation (30%), revenge for religious humiliation (20%), defence of al-Asga Mosque (20%), desire to get to paradise (20%) and to prove himself (10%), while no juvenile males rated hatred of Jews, personal or family humiliation by Israelis, guarrel with the family or gaining self-esteem as motivators. For female participants (adults and juveniles grouped together due to low numbers), the main motivators were desire to die (75%), guarrel with the family (65.5%), revenge for religious humiliation (50%) or national humiliation (50%), defence of al-Asga Mosque (50%), hatred of Jews (50%) and desire to get to paradise (50%). Less common motivators were national struggle (37.5%), gaining

social esteem (25%), proving herself (25%), and personal humiliation (12.5%) or family humiliation (12.5%) by Israelis. The only motivator not rated important by any females was the mistreatment of Palestinian females by Israeli Security Forces. For adult males whose motivation was ideological (nationalist-religious), rather than personal or psychopathological, they tended to take more time planning their attacks; adult males motivated by a psychopathological state were more likely to use knives in their attack. Associations between motivations and characteristics of the attack were not found among females or juvenile males.

### Reported places of radicalisation

Cherney et al. (2020) found individuals were most likely to become radicalised at a place of worship (33.3% of 33) or no significant place (25.9%), followed by the internet (14.8%), social club (11.1%), in the home (11.1%) or in an educational institution (3.7%).

## **Quality of literature**

The quality of studies included in the 2020-2021 tended to be higher than the quality of the reviews included in the umbrella review. Study quality of the 2020-2021 papers ranged from 60% - 80% (mean: 70.7%, median: 70%, mode: 75%). Most of the studies met the majority of the quality criteria; however, almost all were reduced in quality by relying on opportunity samples and failing to disclose response rates or discuss non-responders, and many did not justify their sample size.

# Discussion

#### State of the literature

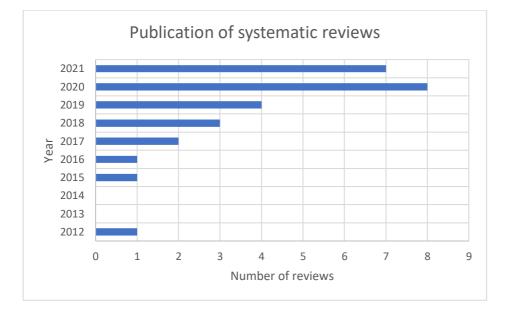
It is firstly important to note the sheer volume of publications in this field, as illustrated by the umbrella review. Several of our included reviews did not make it clear which studies were included in their reviews (Batzdorfer & Steinmetz, 2020; Christmann, 2012; Corner et al., 2021; Pistone et al., 2019; Stephens et al., 2021). One study (Stockemer et al., 2018) listed only the qualitative studies included in their review (n=14) and did not list the quantitative studies (n=46). The remaining reviews listed all of their included studies. These 21 reviews, plus the 14 citations listed by Stockemer et al. (2018), resulted in 1,021 unique citations of which 142 were cited in more than one review and 879 were included in only one review each. Every review contained at least some unique references i.e. references that were not included in another review. The full list of citations included in the reviews can be found in Supplementary Table III. The number of unique citations illustrates the amount of research being published in this field, and the fact that 879 citations were featured in only one review each – given that many of the reviews had similar aims and inclusion criteria - raises concerns about the appropriateness of their search strategies and thoroughness of their screening processes.

There appears to be a disproportionate number of conceptual papers published in the field. Desmerais et al. (2017) found many more conceptual papers than empirical, although they noted recent years have seen a substantial increase in empirical studies, and Du Bois et al. (2019) found that 42.6% of citations on radicalisation were overviews of other studies. In an examination of the literature published in the late 1990s in two of the field's leading journals, Silke (2001, 2008) reported that 62% of publications were literature reviews, and over 80% relied solely on secondary data. "Currently, only about 20 percent of research articles [in the radicalisation field] provide substantially new knowledge that was previously unavailable to the field"

[Silke, 2008, p.101]

Nearly all of the reviews included in our umbrella review were published after 2019; eight of the included reviews were published in 2020; and seven have been published in 2021 so far. Figure XI displays the publication years of the papers reviewed in this umbrella review, showing the increase over time.

Figure XI. Year of publication of systematic reviews on risk factors of radicalisation or deradicalisation interventions included in umbrella review



This suggests the nature of reviews in the field may be becoming more empirical in nature: until recently, there appeared to be an abundance of conceptual papers and overviews of the literature which were not done systematically. The increase in *systematic* reviews is perhaps a positive finding, although it must also be noted that

the quality of these empirical reviews was very low overall. Additionally, the publication of so many similar reviews in such a short timeframe creates difficulties for policy-makers, who are faced with reading multiple reviews often with contradictory findings and recommendations. Our umbrella review therefore fills a gap in the literature by collating the findings of all reviews in one paper; however, it highlights a key issue in the field, which is an over-abundance of both reviews on the same topic and papers with no new empirical data to add. It is concerning that a field so heavily saturated with literature reviews contains so few high-quality reviews: only two of those included in our umbrella review scored 50% or more on the AMSTAR and only one scored over 50%. It is perhaps unsurprising that policymakers struggle to make sense of the findings in order to develop recommendations: there is an almost overwhelming quantity of literature in the field but – particularly with regards to reviews - not necessarily a high degree of quality. The quality of the studies in our 2020-2021 review was much higher overall, indicating that perhaps empirical studies in this area tend to be of higher quality than reviews in the field. However, the studies do appear to rely on opportunity samples and little attention is paid to non-responders, suggesting that results could be potentially biased and not generalisable.

The literature tends to focus on either the general population (most of whom are unlikely to ever become radicalised) or terrorist samples consisting of individuals already convicted of terrorist attacks, with very little in between i.e. individuals going through the radicalisation process; this is likely due to such people being difficult to reach and recruit. Much of the literature on terrorists is based on research done at a distance, such as analysis of media reports or legal documents, likely due to the difficulties around gaining direct access to terrorists as participants; many other studies draw inferences from other populations believed to be relevant in some way (Silke, 2008). Our 2020-2021 review suggests that the majority of radicalisation-related research is cross-sectional in nature and carried out with members of the general population. This can provide useful information about, for

example, the strength of association between various individual characteristics and extremist views or sympathy for violent radicals, but cannot provide accurate information about the actual radicalisation process itself, the steps involved in the process, or the relationships between different variables at different stages of the process. The lack of longitudinal research on interventions for preventing or countering radicalisation is also an issue, as without follow-up studies we lack evidence of the effectiveness of such interventions.

We should also note here that an additional search was carried out which has not yet been discussed. Given that our 2020-2021 review searched only for studies with keywords relating to mental health, we considered carrying out a third review with much broader search terms, in order to describe all the data published within the last year on potential correlates of radicalisation. Searches were carried out on Embase, Medline, Global Health, PsycInfo, Social Policy and Practice, and Web of Science using the strategy used for the initial scoping search prior to carrying out the umbrella review, and limiting the results to June 2020 onwards. This yielded a total of 6,553 results of which 551 were duplicates and automatically removed. Title screening led to the exclusion of 5,335 papers, abstract screening excluded an additional 392, and full-text screening excluded eight papers. Fourteen were also excluded as they had already been included in our 2020-2021 review. Of those that remained, we found 65 papers with potentially relevant data on interventions, and 188 papers with potentially relevant data on correlates of radicalisation. These numbers were deemed too large to be able to carry out a review within the timeframe given for this project, and so no further analysis was done. However, the sheer number of studies published within the past year – particularly those focusing on correlates of radicalisation – illustrates just how much literature is being published in this area.

Because of the field having such a large body of evidence, and the speed and volume with which new studies are being published, we recommend that DHSC may wish to monitor and collate the incoming evidence, using a 'live' monitoring

process to ensure that the large amount of literature being produced is assimilated and new information acted upon appropriately.

Despite – or perhaps because of – the abundance of literature in this field there appears to be little consensus on what the various terms and concepts actually mean. In particular, there seem to be problems with the conceptualisation and assessment of 'radicalisation': it is frequently associated with terrorism, but not all radicalisation is bad or dangerous, so it is perhaps inappropriate to conflate radicalisation with violent extremism (Knight & Keatley, 2020) and incorrect to assume that the two co-occur. Adebayo (2021) points out that radicalisation can in fact benefit society, pointing to feminism, workers' rights, the abolition of slavery and black activism – all of which would have been considered 'radical' at one time. Adebayo (2021) argues that radicalisation should instead be defined as simply the process by which a person comes to adopt extreme viewpoints and aspirations, which can be either constructive or destructive. Gaspar et al. (2020) also argue for a broader conceptualisation of the term radicalisation to include both violent and non-violent activities.

Despite the amount of literature focusing on radicalisation and its potential causes and correlates, the field still appears to lack not only standardised definitions but also standardised measures. One problem identified in the literature is the disagreement about the definition and understanding of key terms such as radicalisation and deradicalisation, even among researchers and policy-makers. As a result, inconsistent approaches have been used at various levels (Baaken et al., 2020). It is unclear how likely it is that single, agreed-upon definitions of key terms might ever be accepted; until such a time, it is important for researchers, policymakers, and anyone involved in disseminating information to clarify which definitions they are using. For this reason, we recommend the UK government to ensure that standard definitions are used across all government agencies to foster effective communication and action planning.

Additionally, there are a wide variety of different instruments for assessing extremism and radicalisation, the quality of which appears to be fairly poor overall: a systematic review of the quality of 30 different instruments assessing risk factors of extremism (Scarcella et al., 2016) found that just over half of the criteria necessary for a transparent description of the instruments were reported across the studies, and assessment of psychometric properties was poor overall.

### Mental health and radicalisation

In terms of mental health, our reviews showed some evidence of depression, selfharm, suicidality, schizophrenia/psychotic disorders, mood disorders, anxiety, substance use, post-traumatic stress disorder, co-morbid depression and dysthymia, and personality disorders as correlates of radicalisation, with the most evidence being found for depression (although, it must be noted, this is because depression tends to be the most commonly explored mental health variable). However, the evidence suggests that these mental health conditions are unlikely to be solely responsible for an individual beginning the radicalisation process, as they often appear to co-occur with other experiences such as poor relationships, history of trauma or perceived injustice and discrimination. Additionally, it is important to point out that such experiences are also risk factors for poor mental health (Harandi et al., 2017; McLaughlin et al., 2020; Pascoe & Smart Richman, 2009). As such, since mental ill-health and radicalisation share common risk factors, these risk factors may be a likely explanation for the relationship between radicalisation and mental health, rather than poor mental health necessarily leading to radicalisation.

The prevalence rates of mental illness in radicalised populations described by the studies within our umbrella review ranged from 0% - 57%. Reviews investigating lone-actor terrorists tended to report higher pooled prevalence rates: 40% (Kenyon et al., 2021) and 31.9%-48.5% (Trimbur et al., 2021). This supports previous findings

that mental disorders are more common within lone-actor terrorist populations than group-based (Corner & Gill, 2015, 2017).

In our 2020-2021 review, three studies reported mental illness prevalence in radicalised populations. Cherney et al. (2020) reported a prevalence rate of 42.4%; Merari and Ganor (2020) reported a prevalence rate of 66.7%; and Candilis et al. (2021) reported prevalence rates of 41% for conduct disorder, 24% for paranoid personality disorder, 22% for antisocial personality disorder, 21% for schizoid personality disorder and 16% for schizotypal personality disorder. Overall, the literature does seem to suggest a higher prevalence of mental illness in terrorist samples than in the general population - common mental health disorders are reported to affect up to 15% of the population at any one time (NICE, 2011). However, although the prevalence of mental illness appears to be higher than we would expect based on rates in the general population, it is important to note that in most studies, still less than half of the radicalised samples reported a history of mental illness – indicating that more than half of them had no mental health background.

It is also important to note that mental illness is measured in different ways across the different studies: for this reason, it is difficult to make generalisations about the mental health status of the radicalised individuals who are the subjects of the studies. Trimbur et al. (2021) recommend that more studies using standardised psychiatric assessments are urgently needed.

The literature in the field appears to have undergone several paradigm shifts in terms of the hypothesised relationship between mental health and radicalisation (Gill & Corner, 2017). Early research suggested that psychopathy and sociopathy played direct causal roles in radicalisation; terrorists were seen as simply possessing psychopathic or sociopathic personalities (Cooper, 1978). This is perhaps because it can be difficult to face the idea of the perpetrators of atrocious acts being rational, 'normal', mentally well individuals and is perhaps easier to simply view them as deviant personalities who are psychologically different from the majority of the

population (Silke, 2008). However, Gill and Corner (2017) suggest that the earlier research linking terrorism and psychopathy suffered from the fundamental attribution error, a cognitive bias that involves a tendency to over-emphasise dispositional explanations for behaviour and fail to consider situational explanations – in other words, early literature relied on the assumption that a person's actions depend on what kind of person they are, rather than the social and environmental context within which the individual is acting. In the late 1990s scholars began to question the assumption that terrorists were psychopaths or sociopaths, criticising the lack of empirical evidence the assumption was based on, and suggesting that in fact rates of mental illness are no different in terrorist populations than they are in the general population (Victoroff, 2005). There was then a spate of papers highlighting the psychological 'normality' of terrorists (e.g. Kruglanski & Fishman, 2009) and rejecting a potential relationship between radicalisation and mental illness. The literature appeared to move from 'all terrorists are psychopaths' to 'there is no relationship at all between mental health and terrorism' (Gill & Corner, 2017). However, recent research has begun to consider a wider spectrum of mental health and complex health-related problems for example, depression, anxiety, and neurodiverse conditions – and suggests that perhaps it is a myth that there is no mental disorder in terrorist samples. For example, Lankford (2017) reports that the prevalence of mental health problems in the 9/11 terrorists appears to be higher than originally reported. Gill et al. (2020) argue that mental health problems are relatively common in the radicalised samples and are more easily identifiable when the researchers are in proximity to the participants and using standardised measures or have access to privileged closed-sources. However, mental health problems are very rarely the sole contributor to radicalisation; rather, they appear to compound, or be compounded by, other problems. As Al-Attar (2020a) points out, mental health is unlikely to be a *direct* risk factor for radicalisation, but may interact with other factors in complex and indirect ways to play a role in the process. It is important to point out that

terrorists/violent extremists who do have a mental illness background are likely to also have experienced other adverse events – such as chronic stress, a major life change, or being a victim of discrimination or injustice (Corner & Gill, 2015). Again, we suggest that mental ill-health and radicalisation may simply share common risk factors, rather than mental ill-health itself causing radicalisation. What is clear is that the relationship between mental health and radicalisation is complex, nuanced, and multi-faceted, not a simple black-or-white issue.

That said, the debate around radicalisation and mental health continues to this day. Some argue that terrorists are not suffering from antisocial personality disorder or psychopathy, such as Crowther and Chiarantini (2021) who suggest the unpredictability and instability associated with mental health problems would make people such people inappropriate targets for terrorist group recruitment. Others urge researchers to maintain an interest in questions around the psychological aspects of terrorism (Marazziti, 2021).

It is important that researchers drawing links between mental health and terrorism/radicalisation do not stigmatise populations with mental health problems. Aggarwal (2019) is critical of the politicisation of mental health, suggesting that it has dissuaded Muslims in the general population in America and Europe from seeking mental health treatment. Given the contradictory evidence on risk factors for radicalisation, there is concern that governments could be using the public health system for surveillance in the War on Terror (Aggarwal, 2019).

"The legacy of politicising mental health has bred suspicion among vulnerable populations (...) detainees have withheld symptoms of depression and posttraumatic stress disorder from military clinicians out of fears that interrogators would use their health information against them"

[Aggarwal, 2019, p.309-310]

Any policies aimed at monitoring those diagnosed with mental health problems for signs of radicalisation risk stigmatising mental illness and subsequently risk undermining trust in mental health professionals. This is particularly important for vulnerable populations who may already be hesitant to seek mental health support, such as Muslims: research suggests that mental health is already highly stigmatised in Muslim communities and that many prefer to manage symptoms of mental illness through religious strategies such as prayer (Loewenthal et al., 2001), and as a result Muslims under-utilise mental health services (Tanhan & Scott Young, 2021). Over-exaggerating the relationship between radicalisation and mental health, and seeking to monitor every mental health patient for signs of radicalisation, would make Muslims even less likely to seek mental health treatment.

Our findings on the potential relationship between mental health and radicalisation also highlight several gaps in understanding. For example, one of the aims of this review was to establish the extent to which a mental health condition or other complex need can impede an individual's ability to extract themselves from the radicalisation process. We did not find any data, in either the umbrella review or the 2020-2021 review, to answer this guestion. There are a lack of prospective or longitudinal studies to provide insights about the process of radicalisation, with the majority of studies relying on cross-sectional data to simply show the prevalence of mental health problems in terrorist populations, or the relationship in the general population between mental health measures and responses to surveys on sympathies for violent extremism. Research on people actually going through the radicalisation process is scarce, perhaps because such people are difficult to make contact with and recruit into research; additionally, those currently being radicalised may be unlikely to admit this to researchers. Longitudinal research, examining the radicalisation process over time, is also scarce and as such it is difficult to make any comments about factors impeding an individual's ability to extract themselves from the process.

Whilst there is some evidence that those with mental illness who do become radicalised are more likely to become lone actors than group actors, it is unclear to what extent other people may be involved in the radicalisation process itself. Even lone-actors tend to be part of subcultures and networks and connections to others within these are thought to play an important role in motivation to carry out lone attacks (Kenyon et al., 2021); however, questions remain as to whether those with mental illness are more likely to self-radicalise or be targeted by groups, and if the latter is true, it is unclear what group processes are involved.

Finally, our reviews did not uncover anything about whether certain mental healthrelated interventions like mentoring or referral to appropriate services may help those with mental health problems who are being radicalised. In fact, there is little evidence at all relating to the impact mental health practitioners can have on the radicalisation process, and no guidelines for how those working in the mental health field should respond to individuals with mental illness who may have committed radical acts or be in the process of radicalisation and further research is urgently needed to better understand both how mental health professionals should identify those likely to go on to commit terrorist acts and what they should do to mitigate those risks.

"For practitioners presented with individuals with mental illness who have engaged in terrorism, 'doing nothing' is not an ethical option and they are often expected to inform critical decisions that impact risk to the public as well as the welfare of the individual. There is therefore not only a clear gap in the research field but also an urgent need for guidelines for forensic mental health practitioners working in this ethically, clinically, operationally and politically complex arena"

[Al-Attar, 2020a, p.967]

#### Other complex health-related needs and radicalisation

We found very little research on the relationship between radicalisation and other complex health-related needs such as neurodiversity and learning disabilities. The umbrella review provided no evidence relating to other complex health-related needs, and the 2020-2021 review included one study which found no association between autism and radicalisation and another study in which people with autism and experts in the field suggested that assumptions should not be made regarding the link between autism and radicalisation and that, without substantial evidence, promoting such an association is inappropriate and irresponsible. Participants in the latter study perceived that, when people with autism do become radicalised, it is likely to be due to other factors such as the bullying, marginalisation, victimisation and exclusion frequently experienced by those with autism. In other words, autism was perceived to be unlikely to directly influence radicalisation, but may be indirectly associated due to other experiences people with autism are likely to have. So, overall, the relationship between neurodiverse conditions and radicalisation may be similar to the relationship between mental health conditions and radicalisation – that is, there is no *direct* link, but such conditions may be involved in the radicalisation process via complex interaction with other factors. Indeed, Al-Attar (2020b) suggests that autism spectrum disorders do not play a causal role in radicalisation but different aspects of these disorders may 'interact to contextualise push and pull factors in a nuanced way' (ibid., p.945). The role of such disorders in the radicalisation process is therefore likely to differ from person to person depending on their developmental, cultural and situational contexts. Rather than assuming a causal relationship between neurodiverse conditions and radicalisation, it may be beneficial instead to investigate i) how such conditions may contextualise other factors which push and pull individuals towards radicalisation, and ii) how best to support individuals with such conditions who do find themselves in the radicalisation process.

#### Other correlates of radicalisation

Both our umbrella review and 2020-2021 literature review support previous reviews in finding no coherent understanding of the processes by which individuals may become radicalised, come to adopt radical views and engage in violence towards other groups (Batzdorfer & Steinmetz, 2020). However, certain commonalities across the literature were identified, suggesting various potential correlates of radicalisation. Desmarais et al. (2017) suggest it is better to consider the results in terms of 'potential correlates' with radicalisation, rather than 'risk factors', due to the heterogeneity of the studies making up the evidence.

Both our umbrella review and 2020-2021 review found that males appear to be at greater risk of radicalisation. This supports data from the UK which reports that approximately 91% of terrorism-related arrests are male (Allen & Kirk-Wade, 2020). However, the Institute for Economics & Peace (2019) reports that between 2013 and 2018, incidents of female suicide attacks have increased by 200%, and so it is important not to overlook the risk of radicalisation for females.

Our umbrella review and 2020-2021 review also both found evidence that younger people appear to be more at risk of radicalisation, although it is not entirely clear where the age cut-off for 'young' would be. The finding that younger individuals are more at risk of radicalisation suggests that the radicalisation process may be linked to processes of identity formation. Conversely, a report from the UK (Allen & Kirk-Wade, 2020) showed that half of all terrorism-related arrests in 2018/19 were aged 30 and over. It may be the case that it is at a younger age – e.g. adolescence, young adulthood – when extremist views begin to take shape, but it is not necessarily the case that only young people will act on these views. Without prospective longitudinal studies, it is impossible to ascertain at which age the radicalisation process typically begins or becomes problematic.

Whilst the umbrella review suggested that *typically*, people with low education and no employment are more vulnerable to radicalisation, the 2020-2021 review, which

comprised better-conducted research, did not find evidence of educational level, employment or income as predictors of radicalisation. However, educational aspirations and school satisfaction were correlated with a radicalism measure in one study each. So, it may be the case that rather than simply *status* of education or employment that is important, it is one's feelings towards and perceptions of their education or employment which is key – or perhaps the meaning that one takes from their education or employment. Further research is needed to ascertain the specific relationship between radicalisation and education/employment.

Based on our umbrella review's findings on socio-demographic correlates with radicalisation, we can extrapolate that the 'average' radicalised person is likely to be a young single male, with limited education, no employment, and low socio-economic status, living in an urban area, with previous criminal history and extreme political or religious ideologies. However, there are of course radicalised persons who do not fit into any of these groups – and additionally and importantly, there appear to be a multitude of other factors which contribute to an individual being vulnerable to radicalisation. It is essential that the findings on socio-demographic correlates are not generalised and that no particular demographic groups are labelled as being particularly likely (or unlikely) to become radicalised, as this could result in stigmatisation of particular demographic groups and also result in others - who do not fit these demographics but are still at risk of being radicalised - being wrongly overlooked.

Findings on personality were mixed, with some studies in the umbrella review finding strong effects and others concluding various aspects of personality were not significantly associated with radicalisation. The personality characteristics and dispositions identified as correlates of radicalisation in our umbrella review included low empathy, aspects of psychopathy and sadism, Machiavellianism, narcissism, risk-taking and thrill-seeking, anger and aggression, intolerance of ambiguity, authoritarianism, low self-control, impulsiveness, low self-esteem and a desire to feel or be seen as significant – although these characteristics were not found to be

significantly associated with radicalisation in every review. Our 2020-2021 review additionally found significant associations between radicalisation and the 'Big Five' personality traits and also future orientation, or the tendency to look positively toward the future, as well as fear of missing out, self-monitoring and self-esteem. However, the evidence from the 2020-2021 review on personality and individual differences comes from single studies for each personality factor, and it is therefore difficult to know whether the results can be generalised.

Our umbrella review found some evidence of a relationship between radicalisation and both adverse early experiences (such as abuse or neglect in childhood) and adverse recent experiences (such as a rejection or loss very soon before radicalisation). Our 2020-2021 review found that previous exposure to violence or conflict appeared to be associated with radicalisation.

Our umbrella review found mixed evidence on the association between family dysfunction and radicalisation, although having involved, appreciative parents and overall good relationships with family members appeared to be protective. In terms of peer groups, those vulnerable to radicalisation appear to have a low number of social contacts, low integration with groups other than their own, and violent or radical peers. Recent literature proposes that in terms of social capital, bridging social capital (connections between individuals from diverse backgrounds) is protective against radicalisation whereas bonding social capital (connections within a group with highly similar demographic characteristics and attitudes) can be an effect of radicalisation (Jones, 2021). Regarding wider society, those vulnerable to radicalisation appear to be disconnected from society and perceive their own ingroups to be superior to other groups. Our 2020-2021 review further suggested that the importance one places on belonging to a group, and their membership self-esteem, may be associated with radicalisation.

Grievances were found to be common in our umbrella review, with radicalisation frequently associated with dissatisfaction with political systems, perceived injustice and perceived deprivation of one's group relative to other groups, perceived threat

to one's group or identity, and disrespect of the law and authorities. Our 2020-2021 further suggested that legal cynicism - defined as "perception of the social order and law as illegitimate and nonbinding" (Jahnke et al., 2021b, p3.) - was associated with radicalisation.

The 'pull' factor most commonly discussed in the reviews included in our umbrella review was group dynamics, with evidence suggesting that individuals 'pulled' toward radical groups form bonds with like-minded individuals who share the same grievances and beliefs, and that these groups allow the individual to feel they belong somewhere and have an identity within the group. Other 'pull' factors include perceived rewards (such as respect from other members of the group or fulfilment of desire for excitement). Other motivators for radical behaviour include desire for revenge and conveying a message to wider society.

Although several reviews included in our umbrella review described evidence for macro root causes, there did not appear to be consensus on which of these were particularly important or the extent of their effect. Reviews considered different macro root causes, including overcrowding, violence, lack of opportunities, globalisation, modernisation, foreign policy, geopolitics and societal changes; however, each of these were reported by one review only.

Consumption of violent media content as well as exposure to radical content were both found to be correlates of radicalisation in our umbrella review. Although several reviews noted the importance of the internet in the radicalisation process, this is perhaps due to it reinforcing ideological messages and providing a space for people to communicate with like-minded others, rather than actually playing a role in radicalising people. This supports previous research which has noted that the internet creates more opportunities to become radicalised, and can act as an 'echo chamber' for confirming existing extremist beliefs, but does not necessarily accelerate radicalisation or replace the need for in-person communication between radical groups (Von Behr et al., 2013). Our 2020-2021 review added the finding that internet addiction may put an individual at risk of radicalisation; the exact nature of

this relationship is unclear, and it may simply be that individuals addicted to using the internet are more likely to be exposed to extremist material due to the amount of time spent online.

Overall, it appears likely that a complex interplay of risk factors is responsible for the radicalisation process, the exact mechanisms of which are yet to be established. This supports previous suggestions (e.g. Schmid, 2013) that there is no single cause of radicalisation but rather a complex combination of internal and external push and pull factors. Gill et al.'s (2020) review concludes that 'terrorist samples are marked by their diversity rather than their homogeneity' (p.9). Beelmann (2020) suggests radicalisation is caused by a chronic imbalance of a number of risk and protective factors, rather than one, or few, concrete processes. Gill et al. (2021) note that individuals with different initial states can experience different processes and pathways and come to the same outcome of extremism (known as the principle of equifinality), whilst experiencing a single factor can impact on different people in different ways and lead to different outcomes (the principle of multifinality).

Additionally, Horgan (2008, 2014) suggests that the focus on trying to establish a 'terrorist profile' risks missing critical features of the development of a terrorist, including the gradual nature of socialisation processes into terrorism, the 'pull' factors attracting people to terrorism, migration between roles (e.g. the movement from fringe activities such as protests to violent or illegal behaviour) and the potential importance of 'role qualities' (for example, what might attract someone to being a sniper rather than suicide bomber). In other words, the search for a 'terrorist profile' assumes the existence of static qualities of the individual, obscuring the dynamic processes likely to shape the development of a terrorist.

#### Interventions

Overall, we found very little evidence relating to the effectiveness of interventions for countering or preventing radicalisation, supporting previous suggestions that

primary empirical data on intervention effectiveness is scarce (Feddes & Gallucci, 2015) and that few intervention studies publish follow-up results (Jones, 2021, private communication). No 2020-2021 literature was found on interventions, although it must be noted that only mental health-related interventions would have been picked up by this search. The umbrella review showed that risk factors are far more widely reviewed than interventions; only four reviews focused solely on interventions and these reviews showed that long-term effects of interventions are rarely considered. As a result, it is difficult to claim effectiveness of any particular intervention.

One major concern is whether certain types of counter-terrorism might actually be having the opposite effect to the one that is wanted, i.e. causing further radicalisation (Schmid, 2013; Nasser-Eddine et al., 2011). Indeed, Pistone et al.'s (2019) review did find some negative effects of interventions. Looking in more detail at the studies included in this particular review, we noted that counternarratives had been found to generate more negativity against the United States (Aistrope, 2016a) as well as contribute to the stigmatisation of Muslims (Aistrope, 2016b). The Channel deradicalisation programme and 'A Common and Safe Future Policy' programme were also found to contribute to the stigmatisation of Muslim communities (Korn, 2016; Lindekild, 2012). Community policing policies were also deemed to lead to profiling of communities or individuals (Pickering et al., 2008).

The most negative findings appeared to relate to the United Kingdom's Prevent counter-radicalisation policy. This policy has been controversial, attracting criticism from various human rights organisations with regards to its propensity to discriminate against Muslims and its implications for the right to freedom of speech (Younis, 2021). Scholars are critical of its 'othering' of Muslims and suggest it is eroding diversity (Adebayo, 2021) and that its surveillance strategies are intrusive and lead to marginalisation and stereotyping (Alam & Husband, 2013).

Indeed, Taylor and Soni's (2017) review of Prevent and several of the studies included in Pistone et al.'s (2019) review did find negative effects. Prevent appears to fail to prevent extremism because it is failing to engage Muslim communities (Awan et al., 2014) and is actually doing the opposite of what it aims to do (Spalek, 2011; Sliwinski, 2015). Prevent was found to be counter-productive and stigmatising (Awan et al., 2014; Curtis & Jaine, 2012; Stevens, 2011), leading Muslim communities to feel they were being spied on (Awan et al., 2014; Lakhani, 2012). Additionally, Prevent is seen as investing in the wrong things (Lakhani, 2012); people are unclear about its aims (Lakhani, 2012); and Prevent appears to create distrust of the police (Spalek, 2011). Overall, the people who can most effectively cooperate with the police to reduce crime are the people judged to be suspicious and part of the problem by Prevent (Spalek & McDonald, 2010).

"Years of policy frameworks, political rhetoric and community partnerships have normalised this hyper-sensitivity and policing of Muslim youth. The result is that an entire community and its youth sub-group are tainted with an incipient potential to 'become terrorist', which is at once dehumanising, unjust and utterly counter-productive"

[Abdel-Fattah, 2020, p.385]

#### Gaps in the literature and recommendations for researchers

1. As noted, prospective and longitudinal studies in this field are scarce. Radicalisation research tends to rely on cross-sectional data, which is at odds with the subject matter: if radicalisation is a process, then a snapshot of correlates of radical attitudes and behaviours at one particular moment in time may help in identifying potential risk factors but is not helpful in explaining in a meaningful way *how* and *why* an individual might become more, or less, radicalised over time. We suggest that longitudinal research is essential in understanding the processes of radicalisation and deradicalisation.

2. Schmid (2013) described various gaps in our knowledge of the radicalisation and deradicalization processes, many of which still remain. For example: why do many people share the background characteristics of terrorists but do not become radicalised? Although various correlates of radicalisation have been identified, it is clear that not *everyone* who experiences the same grievances and adverse experiences, for example, and not *everyone* who possesses certain personality characteristics or meets certain socio-demographic criteria will become radicalised. In fact, the majority will not. So, why do people possessing similar characteristics and with similar experiences follow such different trajectories? This remains unclear and should be investigated further.

3. Related, we noted a lack of validated, standardised measures of resilience to radicalisation. In order to explore what makes some people resilient to radicalisation despite potentially experiencing the same things as others who may become radicalised, it is important to be able to measure their resistance to extremism. Development of standardised measures to assess this would be useful.

4. Further research on the potential link between radicalisation and mental illness is also needed. Whilst scholars disagree on the importance of mental health to the radicalisation process, our reviews do provide some evidence that mental illness tends to be higher in radicalised populations than in the general population. In particular, evidence suggests that rates of depression are higher in radicalised populations – although it must be noted that depression also seems to be the most frequently studied mental illness in relation to radicalisation. Our review also suggests that mental health problems appear to be more prevalent in lone-actor terrorists than group-actors. Our reviews highlight a need for prospective longitudinal studies – knowing that depression prevalence is high in radicalised people does not tell us much. For example, it fails to tell us which came first – were people depressed before they became radicalised, or was this a consequence of radicalisation? It could be that radicalisation leads to mental illness through the breakdown of resilience (Knight & Keatley, 2020), so it is important to know which occurred first. Furthermore, it could also be possible that there is no direct relationship between mental ill-health and radicalisation but the two simply share common risk factors. Additional questions include: was their mental health diagnosis recent or chronic? Had they sought help? Had they received treatment/therapy including whether they had been prescribed medication, and did they take it as prescribed if so? Without knowing these details, it is difficult to understand the relationship between depression (or any other mental health problem) and radicalisation. Deeper exploration of how mental health problems relate to, exacerbate or exacerbated by other life experiences would also help further our understanding of the relationship between radicalisation and mental health. We also found no evidence relating to mental health interventions, such as diagnosis, mentoring and referral to appropriate services, and how these may impact the radicalisation process and so further research is urgently needed in this area.

5. We also found very little research on the relationship between radicalisation and other complex health-related needs such as neurodiversity and learning disabilities. This is concerning as complex health-related needs were one of the potential correlates of radicalisation which we were particularly keen to explore within this review; however, there was not sufficient evidence to make claims about the potential relationship between radicalisation and complex health-related needs. A recent report on neurodiversity in the criminal justice system (Criminal Justice Joint Inspection, 2021) suggests that 15-20% of the general population have some form of neurodivergence, whereas in offending populations, 5-7% of those referred to liaison and diversion services have an autistic spectrum condition; 16-19% of those in prisons have autistic traits or indicators; approximately 25% of prisoners meet diagnostic criteria for attention deficit hyperactivity disorder; 29% have a learning disability or challenge; and potentially over 50% of adult prison populations have dyslexia and up to 80% have a speech, language or communication need. Whilst being in the criminal justice system does not necessarily translate to risk of radicalisation, this does raise concerns that neurodiversity may potentially put individuals at risk of violent behaviour – although, again, it is likely that neurodiversity co-occurs with other experiences and perceived grievances rather than acts as a sole predictor for offending behaviour. Further research is needed to explore the best ways to support neurodiverse individuals who may be in the radicalisation process.

6. The majority of research in this field appears to focus on either the general population (in particular, in our 2020-2021 review, with students as participants) or on radicalised populations who have already committed, and been convicted of, acts of violent extremism. There is less research on members of the general population who are not radicalised but for whom radicalisation is particularly relevant, such as protesters and activists – people who arguably possess 'radical' or 'extreme' opinions but who have not committed acts of violence or terrorism. It has been suggested that those involved in activist behaviour could be a target of prevention efforts (Emmelkamp et al., 2020); however, most activists do not go on to commit acts of violence, and possessing radical ideologies in and of themselves is not problematic (Sarma, 2017) so this group illustrate the fact that extreme opinions and beliefs do not necessarily lead to violent extremism. It may be useful to compare the characteristics of non-violent protesters and activists with those of radicalised individuals who go on to commit acts of violence: how are they similar, and more importantly, how do they differ? Studying people who are not radicalised

but for whom radicalisation is relevant, such as protesters, activists and people subjected to repression, may help us understand the pathways to radicalisation, rather than just the outcome.

7. Our reviews suggest that, when research does focus on terrorist groups as opposed to non-terrorist members of the general population, the focus tends to be on their individual characteristics and experiences (for example, socio-demographic characteristics, mental health, family life and adverse life events) rather than on the social processes involved in encouraging them to join and stay engaged with terrorist groups. Smith et al. (2020) recommend studying extremist groups "as groups first and as extremists second" (ibid., p.328), considering social influence, social interaction, intragroup relationships, how the groups formed in the first place and which mechanisms lead to the development of potential for violence. We agree that it may be useful to focus on group-level explanations of radicalisation, considering radicalisation in terms of social psychological theories. For example, one such theory is that of the group polarisation effect, which suggests that groups make more extreme decisions and hold more extreme opinions than their individual members (Myers & Lamm, 1976). This can be for a variety of reasons, such as people wanting to 'stand out' in the group by exaggerating their positions somewhat; a minority of extreme opinions voiced by prominent members can become the majority with other group members wanting to present their own opinions as similar; and shared risk lessens individual risk, meaning groups are more likely to make risky decisions than individuals. If group polarisation is at play within terrorist groups, this could explain how individuals with existing extreme ideals could take steps towards violent behaviour after communicating with others with similar ideals. Other social psychological theories on social identity, groupthink, deindividuation, and obedience and conformity within groups could also offer a potentially useful framework for considering the radicalisation process. We

therefore recommend future research more deeply explores the group processes involved with radicalisation.

8. There are several factors which could potentially influence the radicalisation process which have yet to be explored in the literature. One of these is moral injury, defined as the effects of "perpetrating, failing to prevent, or bearing witness to acts" that transgress deeply held moral beliefs and expectations" (Litz et al., 2009, p.695). Morally injurious events threaten one's deeply held beliefs and can lead to profound feelings of shame, guilt and self-doubt as well as maladaptive coping such as self-destructive acts (Williamson et al., 2021). Given that radicalisation can be associated with a quest for significance, Williamson et al. (2021) theorise that feelings such as shame and self-uncertainty (common with moral injury) could drive individuals toward radicalisation; there is evidence individuals at risk of adopting radical beliefs and those experiencing moral injury may be exposed to similar types of incidents such as victimisation and perceived betrayal. Williamson et al. (2021) carried out simultaneous systematic reviews on individual differences in susceptibility and resilience to both moral injury and radicalisation; however, no studies explored both. This may be worthy of further investigation, and so future research might consider the potential association between moral injury and radicalism.

9. Some similarities were noted in the way that scholars discuss radicalisation and the 'pull' towards radical groups, and the way other scholars discuss 'celebrity worship', an intense form of psychological attachment involving making a celebrity the primary focus of one's life (Brooks, 2021). For example, celebrity worship is believed to evolve from strong identification with and intense devotional feelings for a particular person, and is characterised by loyalty toward that person and willingness to invest time into them (Brown, 2015); strong identification, devotion

and loyalty are also noted to be characteristic of the followers of extremist groups, and it has been noted that particularly charismatic leaders of extremist groups have an important role in recruitment (Vergani et al., 2020) perhaps due to their ability to inspire an intensely loyal following. Previous research by the current authors (Brooks, 2021) theorises that one key motivation of celebrity worship is the attempt to 'fill gaps' in one's life, substituting or compensating for something lacking: for example, to identify with someone who possesses attributes missing in the life of the worshipper and find vicarious meaning in the lives of others (Hollander, 2010), to seek external stimulation and gratification as a way of compensating for perceived deficits in the self (Reeves et al., 2012), to compensate for a poorly defined sense of identity (McCutcheon et al., 2002) or developing an attachment to a public figure as compensation to make up for something lacking in real-life relationships (Stever, 2011). These ideas have their roots in empty self theory (Cushman, 1990, 1995) which proposes that a confluence of socio-cultural, psychological, demographic and economic changes in the world have led to an 'empty self' characterised by loss of shared meanings, isolation, confused values, poor relations with others and low self-esteem, which leads individuals to seek external ways of compensating for the emptiness they feel. Cushman's (1990) original theory was that one's 'empty self' must continually be 'refilled' by the consumption of media and unique experiences. Whilst we are not suggesting there may be an overlap between people who are radicalised and people who participate in celebrity worship, it is possible that similar mechanisms could be involved in both: chronic feelings of emptiness and perceived deficits in one's identity or relationships could lead to 'compensating' via involvement in radical groups. There is evidence to suggest that loss of personal significance can push individuals toward extremism as a way of restoring significance (Jasko et al., 2017); this is potentially similar to the quest to 'fill' an 'empty self'. We suggest that future research should consider using standardised measures to assess both chronic emptiness and perceived deficits, particularly perceived deficits in one's own identity – for

example, measuring self-concept clarity (Campbell et al., 1996) would provide a good indication of the extent to which people possess a clear and coherent sense of self. This could then be analysed as a potential predictor of radicalisation in order to ascertain a relationship between the two. Additionally, when assessing the extent of an individual's social capital, it may be useful to specifically assess perceived deficits in social relationships.

10. We also recommend that future research should strive to understand the interactional effects of the different variables potentially involved in the radicalisation process - for example, the interactions between cognitions and emotions (Zmigrod & Goldenberg, 2021). Harpviken (2021) suggests explicit modelling of such effects using a longitudinal perspective could help to explain the interplay among different risk and protective factors.

11. We also suggest that future research aims to differentiate between different types of extremism, developing unique models for each different type and subsequently developing unique methods of countering and preventing different types of extremism. There are likely to be different paths to radicalisation, and different correlates of radicalisation, for the various different types of extremist. For example, Schmid (2013) queried whether Islamist radicalisation is different from other, more secular forms, of radicalisation; we would argue that there may not only be differences between Islamic and secular radicalisation but also between religious, left-wing, and right-wing radicalisation. The United States has recently seen a rise in right-wing extremism (for example white supremacists, antigovernment extremists, and 'incels'); left-wing extremists (including anarchists, environmental and animal rights groups and Antifa) have also been increasingly active over recent years (Jones et al., 2020). A recent YouGov poll suggests that in the United Kingdom, the general public see Islamic extremists as the biggest threat,

but right-wing extremists are seen as a 'big threat' by 31% and left-wing extremists by 23% (Ibbetson, 2021). The radicalisation pathways for the various types of extremism are likely to differ, and it is therefore unhelpful for counter-radicalisation policies to group together these different types. Indeed, recent research suggests a substantial discrepancy between the uniform image of violent extremism presented in policy and the challenges and complexities experienced by practitioners attempting to address these phenomena (Jamte & Ellefsen, 2020).

12. Given the large and rapidly-increasing body of evidence in this field, we recommend that there should be a strategy in place for monitoring and assimilating all the new evidence being published. We suggest DHSC might wish to maintain a database of all publications relating to radicalisation and deradicalisation and ensure emerging evidence is acted upon appropriately.

13. Regarding interventions, the key recommendation we can make based on these reviews is that interventions are evaluated thoroughly and appropriately. Researchers involved in developing and evaluating interventions should ensure that evaluation methods are clearly formulated, and should prepare for a long-term evaluation as quick results should not be expected (Nehlsen et al., 2020). However, it must be noted that outcome studies are likely to be inherently unreliable given that those who remain radicalised are unlikely to admit this (Jones, 2021, private communication).

14. Additionally, approaches to address violent radicalisation should be multidisciplinary. Research on prevention and countering which brings together researchers, practitioners and intended beneficiaries would be particularly useful to ensure that interventions are evidence-based, appropriate, practical, and not stigmatising (Aggarwal, 2019). Incorporating local police, community agencies, mental health practitioners and educators who form trust-based networks within communities would also be beneficial (Ellis et al., 2020), emphasising trust and principles such as power-sharing and co-learning between service systems, law enforcement and community agencies.

15. Related to the suggestion of involving mental health practitioners in intervention development, we suggest that more research is needed to help mental health professionals identify who is at risk of being radicalised and what they can do to help.

16. There is debate as to the effectiveness of including former extremists in preventing and countering extremism (Baaken et al., 2020). Some researchers have suggested that those who have disengaged from terrorist activity should be encouraged to become vocal in dispelling the attraction of terrorist involvement (Horgan, 2008). This seems to be a logical choice given that ex-terrorists are likely to have become disillusioned with terrorist groups (Windisch et al., 2016) and therefore are likely to be well-equipped to highlight the negative aspects of belonging to such groups. However, our reviews did not find any evaluations of exterrorist group members being involved in prevention efforts. We therefore recommend that research should be carried out to assess the effectiveness of interventions involving ex-terrorists.

17. Better understanding of the potential impact of mental health treatments for those who are radicalised and also have poor mental health is urgently needed. We recommend that the impact of mental health treatments for such individuals should be assessed, including whether there is potential for forms of mental health treatment to specifically help those radicalised people with mental health problems to deradicalise.

18. Researchers should ensure that standard definitions of key terms relating to radicalisation are used and clarity regarding how various terms are used should be ensured, to foster effective communication.

#### Limitations

There are a number of limitations to be considered, both of the papers included within the umbrella review/the 2020-2021 review and our review process itself. Quality of the reviews included in the umbrella review was poor overall, with only two reviews scoring 50% or over on the AMSTAR appraisal. Only six contained meta-analysis and the majority of reviews failed to adequately consider risk of bias. Additionally, very few met the criteria for a comprehensive search strategy, with most focusing on published, peer-reviewed literature. Whilst quality of the 2020-2021 studies was generally higher, most relied on convenience sampling and many failed to consider non-responders, meaning that the picture provided of correlates of radicalism may not necessarily be representative of the population as whole. Some caution must therefore be taken in generalising these results.

A limitation of umbrella reviews is that they compile evidence from multiple preexisting reviews, many of which will have used the same original sources to draw their conclusions. For example, we noted multiple reviews all reviewed the same single study evaluating a self-esteem intervention to prevent radicalisation. Whilst we report how many studies were cited in multiple reviews in Supplementary Table III, and have made efforts to ensure that the findings of each review are based on a number of unique studies not considered by any other review, it is still the case that a minority of studies are cited in multiple reviews and as such the importance of certain risk factors may be exaggerated.

A further limitation of the literature included in the review is that mental health diagnoses in offenders of radical or violent behaviour are often made by non-

mental health professionals (e.g. police officers) so the mental health-related terms used within the literature (e.g. depression, PTSD) may be used in an everyday, rather than diagnostic, sense. Additionally, many studies are conducted 'at a distance' rather than directly with the offenders, meaning they rely on second-hand (or even third-hand) descriptions of behaviours, mental health symptoms and psychopathology. The validity of diagnoses in the included studies is therefore under question and we urge caution in interpreting the results.

In terms of limitations of our own review process, the decision to limit the search to English-language papers means that potentially relevant studies published in other languages were excluded. Given additional time, we would have not limited by language, and translated foreign-language papers in order to provide a full global picture of the correlates of radicalism. We must also acknowledge the possibility that papers meeting our inclusion criteria may have been missed, due to the search strategy used or the databases searched; reviews using broader search terms or a wider variety of databases may have uncovered additional papers. We included studies with a variety of definitions of important concepts, such as extremism/radicalism/radicalisation, which could be an additional limitation; for example, endorsement of extreme political parties is not seen as a precise measure of extremism (Harpviken, 2020) although we did include one review which explored voting for extreme right-wing parties as its radicalisation-related outcome. Also, it needs to be noted that the searching, screening, data extraction and data synthesis processes were all carried out by one author. Although any concerns or queries were discussed with the other study author, it would strengthen the validity of this review if a sample of studies underwent double screening and data extraction.

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# Supplementary Table I. Summary of findings of reviews included in umbrella

#### review

Authors (year)	Findings
Batzdorfer & Steinmetz (2020)	Categories extracted from hypotheses included: micro-level – activism; criminal history; critical events; demographics; dispositions; genetics; meaningfulness (i.e. search for purpose in life); military experience; psychological health; radical attitudes; radical behaviour; religious affiliation; religious beliefs; religious practices; social status; state (that is, 'emotional responses and sensitivity' e.g. situational hatred); substance abuse; meso-level – cohesion; group processes; significant others; social exclusion; social influence; macro-level – integration; objective inequality; subjective inequality.
	The construct considered most frequently was the presence of radical attitudes, and the most frequently considered determinants were:
	<ul> <li>Objective inequality</li> <li>Subjective inequality</li> <li>Demographics</li> <li>Integration</li> <li>Social exclusion</li> <li>Social status</li> <li>Dispositions.</li> <li>Of these, the most relevant constructs were:</li> <li>Subjective inequality</li> <li>Group processes</li> <li>Dispositions</li> </ul>
	<ul> <li>Meaningfulness.</li> <li>With regard to importance within the network (i.e. how many other constructs a construct is related to) the most important were social status, demographics, dispositions and psychological health.</li> </ul>
	The paper does not describe which specific demographics, dispositions etc are predictors; rather, it maps the literature in terms of how many studies focus on each concept and how the concepts overlap. The discussion does mention in passing some of the findings by decomposing constructs into lower-level constructs:
	<ul> <li>Dispositions – prominence of authoritarianism, low self-control. Authoritarian individuals tended to hold anti-democratic social attitudes, were rigidly attached to traditional values, uncritically accepted authority and were intolerant towards opposing views.</li> <li>Adversarial personality traits (low self-control), traits implying identity weakness (low self-esteem), opportunities for engagement (dissatisfaction with the 'system' and perceived injustice) and anxiety-related traits (e.g. aversion to uncertainty) may prompt engagement in radical groups.</li> </ul>

	The review showed that survey data dominates the field.
Campelo et al. (2020)	Individual risk factors: diagnosed psychiatric disorders were found to be rare among radicalised youths, however several studies descried trait/psychological vulnerabilities:
	<ul> <li>depressive feelings / a frequent feeling of despair that does not qualify as a major depressive episode</li> </ul>
	addictive behaviour
	risky behaviours / sensation-seeking
	obsessive compulsive habits
	early experiences of abandonment
	<ul> <li>adolescence itself, which can be a turbulent time with a struggle to find one's identit</li> </ul>
	personal uncertainty
	perceived injustice
	<ul> <li>a triggering event such as trauma, rejection or discrimination</li> </ul>
	Micro-environmental risk factors:
	<ul> <li>family dysfunction during childhood, e.g. involving absent or unwell parents</li> <li>friendship or admiration towards a member of the radical group</li> </ul>
	Macro-environmental risk factors:
	unequal or discriminatory socio-economic conditions
	difficulties with social integration
	<ul><li> perceived group threat</li><li> religious fundamentalism</li></ul>
	geopolitics
	<ul> <li>societal changes e.g. dissolution of moral, religious or civic values of modern societie</li> </ul>
Carthy et al. (2020)	Counter-narratives were delivered via video (n=10), in written format (n=6), via video game (n=2) or using a manipulated version of the implicit association test (n=1). Counter-narrative techniques included counter-stereotypical exemplars (n=9), persuasion (n=5), inoculation theory (n=1) and alternative accounts (n=4). Outcomes included support for extremism (n=3), symbolic threat (n=7), realistic threat (n=9), perception that out-groups are inferior (n=9) and relying on stereotypical information in relation to an outgroup (n=4).
	Overall when all outcomes pooled: intervention showed a small effect; however, effects varie across different risk factors.
	Findings:
	<ul> <li>Little evidence that counter-narrative interventions are effective at targeting primary outcomes (i.e. intentions to engage in extremism); however, some evidence was found that interventions may be effective at targeting certain risk factors including realistic threat, in-group favouritism, and explicit out-group hostility</li> <li>When all risk factors were pooled to represent each randomised controlled trial, the difference between those who did and did not receive a counter-narrative intervention was significant (small effect size)</li> </ul>
	<ul> <li>Use of persuasive techniques was not found to be effective, whereas inoculation showed promising effects; however, both effect sizes represented single study samples</li> </ul>
	<ul> <li>The intervention effect for randomised controlled trials which measured both symbolic and realistic threat was not significant; interventions targeting symbolic threat were not effective, but realistic threat appeared to decrease significantly</li> <li>The intervention effect for randomised studies which measured in-group favouritism and out-group hostility was significant; those in the counter-narrative conditions showed a decrease in the overall risk factor compared to a control group with a small-medium effect</li> </ul>
	<ul> <li>When all risk factors were pooled to represent each single-group pre-/posttest study the effect of the intervention over time was not significant</li> </ul>

	<ul> <li>In these within-groups samples, the counter-narrative interventions did not appear to reduce perceived group threat</li> <li>In the within-groups samples, the counter-narrative appeared to be effective in</li> </ul>
	reducing bias on an explicit level but not an implicit level
Christmann (2012)	<ul> <li>A number of different models of the radicalisation process have been proposed; although the models differ in their proposed stages, most agree that there is a stage of individual change (e.g. search for identity) which is enhanced through external aspects (e.g. experiencing discrimination) and a move to violent radicalisation tends to occur after socialising with like-minded people</li> <li>The radicalisation process appears to be gradual (taking place over several years) although the final stage (deciding to carry out a violent attack) can be quite rapid</li> <li>Literature includes biological theories of radicalisation (suggesting the majority of people who become radicalised are young and male); psychological theories (there does not appear to be any evidence of a psychological profile of a terrorist, and most do not appear to be suffering from any mental illness); theories of a 'Muslim identity'; and societal theories (suggesting that risk factors include deprivation and poor integration, although these appear to be background factors rather than necessary ones; segregation; political grievances; social bonds with others who share the same grievances; and religious beliefs)</li> <li>Some evidence to suggest radicalisation is taking place in prisons</li> <li>Little evidence that the internet plays a role in radicalising people; instead, it facilitates and enables by reinforcing ideological messages that have already been internalised</li> <li>Research on individual risk factors reveals no typical profile of a terrorist and no specific set of characteristics which may play a role in the radicalised; however, there are some key risk factors which may play a role in the radicalised; however, there are some key risk factors which may play on loin the radicalision process: having emotional vulnerability (e.g. feelings of alienation), dissatisfaction with mainstream political or social protest as a way of inducing political change, identification with the suffering of Muslims globa</li></ul>
	One study suggested the most successful interventions were capacity building/empowering young people, and using education or training on theology to challenge ideology.
	One study focused on outreach, providing safe accessible spaces for addressing Islam and political issues and extending the debate to include non-Muslims. Work delivered through outreach appeared to be more successful than work taking place in formal institutions. One study suggested radicals are more receptive when confronted with people who are seen as credible conversation partners, suggesting discussion and dialogue can be effective if the conversation partner carries authority, legitimacy and knowledge.
Corner et al. (2021)	<ul> <li>2 studies examined psychopathy as a risk factor; one found no significant result and the other found overall psychopathy was not predictive of self-sacrifice for a cause, but the antisocial elements within were</li> <li>1 study found all 13 personality disorders tested were related to radicalism, although personality disorders alone did not explain the variance in the model; 1 study found antisocial personality disorder was associated with extremist attitudes, although it could not be ascertained whether this was a causal relationship; 1 study found terrorists were significantly more likely than controls to have conduct disorder or antisocial personality disorder; 1 study found non-clinical traits of antisocial behaviours were associated with radicalism</li> <li>3 studies specifically examined the role of the Dark Tetrad personality dimensions (psychopathy, narcissism, Machiavellianism and sadism); associations were found between radicalism and narcissism (1/2 studies), sadism (2/2 studies), Machiavellianism (3/3 studies) and psychopathy (1/3 studies)</li> </ul>

	<ul> <li>23 studies explored personality traits associated with dimensions of the Dark Tetrad; the largest amount of evidence was found for psychopathy (13 studies; 7 with evidence for sensation, risk and thrill-seeking traits; 6 with evidence for impulsivity and poor self-control; 2 with evidence for low empathy); also evidence of a relationship between radicalism and narcissism (superiority, 3 studies; greed, 1 study), Machiavellianism (self-interest, 1 study; weak morality, 1 study; status seeking, 1 study; moral neutralisation, 1 study; inflexibility, 1 study) and sadism (moral disengagement, 1 study; intolerance, 1 study; need for dominance, 1 studies)</li> <li>15 studies explored variables corresponding to personality traits within the Five-Factor Model: no studies found a relationship between radicalism and extraversion; 2 found an association between conscientiousness and radicalism (fairness seeking and goal commitment, 1 study each); 7 found a relationship between openness and radicalism (adventure-seeking, 2 studies; passion, 2 studies; creativity, 2 studies; and courage, 1 study); 6 found a relationship between radicalism and agreeableness (altruism, 3 studies; belonging, 2 studies; bravery and selflessness, 1 study each); 6 found a relationship between radicalism (uncertainty, 4 studies; fear, 2 studies; guilt, 1 study)</li> </ul>
Desmarais et al. (2017)	<ul> <li>The most frequently investigated risk factors were individual factors, including sociodemographics, criminal history, religion, work/education, personal experiences, attitudes, relationships and mental health; sociodemographics were examined most frequently of these</li> <li>Some evidence (15/20 studies) that younger age was associated with greater risk for membership in a terrorist organisation</li> <li>Half of the studies which examined race as a risk factor (6/12) found some support for its relevance to terrorism</li> <li>Some evidence (5/6 studies) that poverty / low socioeconomic status was associated with greater risk for terrorism</li> <li>Some evidence for family characteristics as a predictor of terrorism (although only 2 studies examined this)</li> <li>7 studies which examined prior arrest as a risk factor found elevated rates of prior arrest among members of a terrorist organisation, and 2/2 studies found evidence of having a criminal record being a predictor of terrorist attactivity</li> <li>7/15 studies found that being Islamic was associated with membership of terrorist organisations and ¼ found a relationship between being Islamic and perpetration of terrorist attacks; there was no evidence (from 7 studies) of a relationship between educational attainment and perpetration of terrorist attacks; there was no evidence (from 7 studies) and erelationship between educational attainment and perpetration of terrorist attacks; there was no evidence to reprorist attacks; the majority of those involved in terrorism had at least a high school education and in some cases some university education, but rarely a university degree or postgraduate training</li> <li>9/15 found a relationship between employment status and terrorist organisation and 3/6 found a relationship between employment status and terrorism outcomes was stronger when work- or school-related problems were present</li> <li>2/2 studies found han association between employment status and terrorism outco</li></ul>

	perpetration of terrorist attacks; those involved in terrorism were more likely to be single
	<ul> <li>Not having children was found to be relevant to terrorism outcomes (number of studies not reported)</li> </ul>
	<ul> <li>0/2 studies found an association between social exclusion and membership of terrorist organisations, but 3/3 found an association between social exclusion and perpetration of terrorist attacks</li> </ul>
	• 7/7 found that having family members in a terrorist organisation was associated with terrorism outcomes
	<ul> <li>4/7 found an association between mental illness and membership of terrorist organisations whilst 1/3 found an association between mental illness and perpetration of terrorist attacks; however, it is difficult to know what is being measured by the 'mental illness' label as studies included different diagnostic requirements and measurements</li> </ul>
	<ul> <li>3/3 found an association between depression and terrorism outcomes, and 1/1 study found an association between psychopathic tendencies and membership of terrorist organisations</li> </ul>
	<ul> <li>6/9 studies found an association between geographic region and membership of terrorist organisations and 1/1 study found an association between geographic region and perpetration of terrorist attacks</li> </ul>
	<ul> <li>8/8 found an association between type of area (rural/urban) and membership in terrorist organisations, although a study comparing terrorists with a comparison sample found no significant differences; 3/3 found an association between type of area and perpetration of terrorist attacks; urban settings were associated with greater risk for terrorism outcomes than rural</li> </ul>
	<ul> <li>2/3 found an association between income inequality and membership of terrorist organisations and 1/1 found an association between income inequality and perpetration of terrorist attacks</li> </ul>
	<ul> <li>1/1 study showed an association between terrorist organisation membership and percentage of foreign-born residents; ½ found an association between percentage of Muslim residents and terrorist organisation membership; 2/2 studies found an association between number of ethnic groups in an area with terrorism outcomes</li> <li>In terms of motivation: 9/11 found evidence of ideological motivation being relevant to terrorism outcomes; 6/7 and 5/6 found that desire for revenge/vengeance was relevant for membership in terrorist organisations/perpetration of terrorist attacks respectively; 2/4 studies found evidence of the relevance of desire to be with likeminded others as a motivator to join terrorist organisations but 1/1 found no evidence of this as a motivator for carrying out terrorist attacks; ½ found evidence of the relevance of desire to be known or special as a motivator for carrying out attacks; 2/2 found that media or government influence, including propaganda, was a relevant motivator; 5/5 found that social drivers (a catch-all category including overcrowding, violence and lack of integration) were motivators for terrorist outcomes</li> <li>Regarding the radicalisation process, 2/4 found evidence that those of a younger age were more likely to be recruited into terrorist organisations; ¾ and ½ found evidence of participation in combat or training camp as part of the radicalisation process; 0/2 found evidence of the relevance of acceptance of or experience with Jihad; 2/3 and ½ found evidence of converting from religion to another as being</li> </ul>
	associated with membership of terrorist organisations and carrying out terrorist attacks respectively; 2/2 showed the relevance of having a family member or friend recruited to becoming a member of a terrorist organisation
Du Bois et al.	Micro root causes of radicalisation:
(2019)	<ul> <li>Perceived deprivation (37.74% of the literature)</li> <li>Adventure/excitement (24.51% of the literature)</li> <li>Political grievance such as collective and historical grievance, discrimination, marginalisation and corruption (43.58% of the literature)</li> <li>Quest for significance (37.35% of the literature)</li> </ul>

	Maca root sources
	Meso root causes:
	Group identity (49.92%)
	Social interaction (46.69%)
	Radical rhetoric (51.36%)
	Macro root causes:
	Globalisation and modernisation (21.4%)
	• Foreign policy (28.4%)
	Trigger events:
	<ul> <li>Micro (e.g. death of a loved one, divorce, imprisonment) – 23.74%</li> </ul>
	<ul> <li>Meso – recruitment – 35.8%</li> </ul>
	<ul> <li>Meso – media and internet – 31.13%</li> </ul>
	• Macro – e.g. military actions, cartoons of Mohammed, arrests of political figures –
	18.68%
	No study provided evidence of an effect of gender, but the risk of radicalisation for the 'young
	generation' appeared to be higher than the risk for older people.
Emmelkamp et	Risk factors, in order of effect size:
al. (2020)	
	Medium effect size:
	Activism i.e. participation in legal, non-violent ideologically motivated acts
	Perceived in-group superiority
	Perceived distance to other people i.e. alienation
	Canall offert size.
	Small effect size:
	Male gender
	Personality – thrill-seeking behaviour, self-esteem, coping skills, emotional
	uncertainty, impulsiveness, narcissism, lack of empathy (effects for willingness to
	carry out extremist acts and extremist behaviour were significantly smaller compared to positive attitudes towards radicalisation; strength of effect increased when
	percentage of ethnic minority participants increased)
	<ul> <li>Delinquency and aggression</li> </ul>
	Low educational level
	<ul> <li>Negative peer relations e.g. low social integration with peers, exposure to racist</li> </ul>
	peers, deviant peer group
	In-group identification (strength of effect decreased when participants were older)
	• Perceived discrimination (strength of effect increased when participants were older)
	<ul> <li>Perceived group threat (effects for willingness to carry out extremist acts and</li> </ul>
	extremist behaviour were significantly smaller compared to positive attitudes
	towards radicalisation)
	Perceived injustice
	Disrespect of authorities     Other widest radio consumption energies traume DTCD surgeon of life consciuded
	<ul> <li>Other – violent media consumption, anomia, trauma, PTSD, purpose of life, perceived level of effectiveness regarding actions in society</li> </ul>
	level of effectiveness regarding actions in society
	Very small effect size:
	Poverty / low socioeconomic status
	Not significant
	Parental problems (effects for right-wing radicalisation significantly smaller compared
	to religious and unspecific radicalisation; strength of effect increased when
	percentage of ethnic minority participants increased; effect of parental control was
	smaller than the effect of having weak bonds with parents or socialisation processes
	of parents)

	• Feelings of disconnection to society (effects for right-wing radicalisation significantly smaller compared to religious and unspecific radicalisation; strength of effect increased when percentage of ethnic minority participants increased)
Gill et al. (2021)	<ul> <li>Prevalence rates of mental health in violent extremist samples ranged from 0% to 57%.</li> <li>Pooled results focused on confirmed diagnoses where sample sizes are known (n=1705) suggested a prevalence rate of 14.4% (although the authors suggest this may be inflated as multiple studies focused on similar populations of terrorists or geographical remits).</li> <li>Where clinical examinations occurred (n=236), mental health diagnoses were present 33.47% of the time.</li> <li>Where studies relied on privileged access to police or judicial data (n=283), actual diagnoses occurred 16.96% of the time.</li> <li>Studies based on open sources (n=1089) reported diagnoses 9.82% of the time.</li> <li>Self-harm, suicidal ideation and suicide attempts were reported in several studies, with the highest prevalence of this being 57% of a group of 46 violent white supremacist group members.</li> <li>Various mental health disorders were present in the samples – taken together, the results suggest no clear common diagnosis.</li> <li>Three studies which compared mental health disorders in violent extremist samples with the general population base rate; two found elevated levels of schizophrenia and two found elevated levels of psychotic disorders.</li> <li>There were mixed findings on depression, which appeared to contribute to extremist support more often than expected but also inhibited violent expressions of radicalisation in some cases.</li> <li>Several studies found higher rates of mental illness in lone offenders compared to group offenders.</li> <li>Mental health disorders in violent extremists appeared to co-occur alongside a range of other stressors, including poor relationships with others; perceived discrimination and victimisation; unemployment; significant recent life changes; traumatic experiences such as physical, sexual or psychological abuse, parental abandonment or domestic or neighbourhood violence; and substance abuse.</li> </ul>
Harpviken (2020)	<ul> <li>6 studies examined mental illness; 4 found an association between mental illness and extremism, 1 found no association, 1 found some diagnoses to be related and others not</li> <li>7 studies examined traumatic experiences (such as exposure to violence or bullying); all found a positive relationship between history of trauma and extremism</li> <li>13 studies examined early socialisation; all found effects of adverse childhood experiences on extremism; experiences included physical or sexual abuse, neglect, abandonment, poverty. Several studies noted children built on their parents' political attitudes, often with a more extreme stance, whereas others found people rejected their parents' ideologies and took an opposite extreme stance. Mixed evidence on school socialisation</li> <li>13/14 studies found a relationship between extremism and perceived discrimination</li> <li>13/14 studies found either social isolation or polarisation to be associated with extremism</li> <li>12 studies examined delinquency, all found this to be related to extremism</li> </ul>
Hassan et al. (2018)	<ul> <li>Tentative evidence that exposure to radical online content is associated with extremist attitudes.</li> <li>Active seekers of violent radical material appeared at higher risk of engaging in violence than passive seekers.</li> <li>No clear evidence that online material predicts radicalisation independently of other, offline, factors.</li> </ul>
Jahnke et al. (2021a)	<ul> <li>Significant overall effects for depression, empathy, and aggression.</li> <li>No significant links between political violence and self-esteem or intolerance of uncertainty.</li> </ul>

	<ul> <li>No overall significant effect for narcissism, despite four effect sizes that went into this estimate being positive.</li> <li>Significant small effect size and severe heterogeneity for 'identification'.</li> <li>Significant associations between political violence outcomes and group relative deprivation; realistic threat; symbolic threat; negative intergroup emotions; experiences of discrimination; dissatisfaction with the police, political actors and institutions; and dissatisfaction with democracy. The strongest effect size was for realistic threat. Severe heterogeneity in the effect sizes,</li> <li>No significant association between exposure to intergroup conflict and political violence.</li> <li>For ideologies associated with political violence, significantly stronger links between identification and right-wing violence, and realistic threat and unspecific violence.</li> <li>Effect sizes for the link between political violence and dissatisfaction with democracy were stronger for other ethnic, national or religious violence compared to unspecific political violence, as well as for samples with a subordinate group status.</li> <li>Narrative review of longitudinal studies supported the finding that political violence is associated with dissatisfaction with current political actors or democracy.</li> <li>The only longitudinal study considering identification as a predictor did not corroborate a significant risk-enhancing effect of this over time.</li> <li>Two longitudinal studies suggested exposure to intergroup conflict is related to a higher risk for political violence.</li> <li>Overall, perceived threat at an intergroup level appears to be a stronger predictor than actual experiences of discrimination.</li> </ul>
Jugl et al. (2021)	<ul> <li>Overall, most programs had a significant mean positive effect on behavioural and psychosocial outcomes relating to extremism and extremist attitudes</li> <li>Mixed preventive programs had the largest positive effect, followed by tertiary interventions and primary prevention</li> <li>Stronger effects for programs addressing both at-risk individuals and the general population</li> <li>Programs where all participants had a migrant background had no significant effect; programs with participants from different ethnic backgrounds showed comparatively large effects</li> </ul>
Kenyon et al. (2021)	<ul> <li>General consensus regarding the lack of a single comprehensive profile for lone-actor terrorists; some basic traits do emerge (tendency to be male and aged under 50) but these alone are insufficient to differentiate them from other offender populations</li> <li>Some indication of lone-actor terrorists having negative emotions such as high levels of resentment and anger</li> <li>Some evidence of an inclination for criminality and violence before radicalisation</li> <li>Higher prevalence of mental illness and personality disorders in lone-actor terrorists than group-actor terrorists and the general population; rates for lone-actor terrorists within the USA and Europe appear to be around 40%</li> <li>Some evidence for a tendency to have been motivated by emotional and social needs and to use symbolic violence for communicating a message to a wider audience</li> <li>Some evidence that lone-actor terrorists tend to have experienced unfortunate life circumstances, coupled with an intensification of beliefs or grievances</li> <li>Lone-actor terrorists more likely to engage in online interaction/learning with regards to radicalism than group-actor terrorists</li> <li>Despite being classed as 'lone actors', they do appear to be part of subcultures and networks – often virtually – and although the attacks themselves are carried out alone, these connections to others play an important role in the motivation to carry out the attack</li> <li>Some evidence that lone-actor terrorists engage in lengthy planning of their attacks</li> </ul>
Losel et al. (2018)	<ul> <li>Protective factors at the individual level:</li> <li>Self-control (effect size 3; one sample, separately analysing three types of extremism)</li> <li>Empathy (effect size 1; one study)</li> <li>Value complexity (effect size 1; one study)</li> <li>Anxiety about getting incarcerated (effect size 1; one study)</li> </ul>

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	<ul> <li>Acceptance of police legitimacy (effect size 2; one study)</li> <li>Adherence to law (effect size 4; one sample, separately analysing three types of extremism)</li> <li>Political disinterest (effect size 1; one study)</li> <li>Low importance of religion (effect size 2; one study)</li> <li>Intensive religious practice (effect size 1; one study)</li> <li>Employment (effect size 1; one study)</li> <li>Perceived personal discrimination (effect size 1; one study)</li> <li>Subjective deprivation (effect size 2; one study)</li> <li>Dissatisfaction with quality of life (effect size 1; one study)</li> </ul>
	<ul> <li>Having an illness or depression (effect size 3; one study)</li> <li>Threatening life events (effect size 1; one study)</li> <li>Protective factors at the family level:</li> </ul>
	<ul> <li>Appreciative parenting behaviour (effect size 2; two studies)</li> <li>Ownership of residential property (effect size 2; one study)</li> <li>Family members not involved in violence (effect size 1; one study)</li> <li>Significant other not involved in violence (effect size 2; one study)</li> <li>Incarceration of a family member (effect size 1; one study)</li> <li>Membership in militant religious groups (effect size 1; one study)</li> <li>Protective factors at the school level:</li> </ul>
	<ul> <li>Higher educational level (effect size 1; one study)</li> <li>Good school achievement (effect size 4; one study)</li> <li>Bonding to school (effect size 2; one sample, separately analysing three types of extremism)</li> <li>Protective factors at the peer group level:</li> </ul>
	<ul> <li>Non-violent peers (effect size 3; two studies)</li> <li>More social contacts (effect size 1; one study)</li> <li>Contact to foreigners (effect size 2; one study)</li> <li>Protective factors at the community/society level:</li> </ul>
	<ul> <li>Basic attachment to society (effect size 3; two studies)</li> <li>Low social capital (effect size 1; one study)</li> <li>Migrant of the first generation (effect size 1; one study)</li> </ul>
McGilloway et al. (2015)	<ul> <li>1 study showed having contact with non-Muslims was negatively associated with support for terrorism</li> <li>1 study found no significant association between Muslim identity and sympathy for terrorism</li> <li>2 qualitative studies suggested younger Muslims were particularly at risk of radicalisation due to lack of opportunities or community structures such as deprivation and discrimination</li> <li>2 British studies showed the majority of terrorists came from deprived areas with high Muslim concentrations and working class backgrounds, but these findings were not reproduced in a Danish study or an American study</li> <li>3 studies suggested younger people were more at risk; 1 study found no influence of area</li> </ul>
	<ul> <li>age</li> <li>1 Canadian study found no relationship between supporting terrorism and being born in Canada; a study of USA terrorists found almost half were born outside of the USA; a UK study found 66% of those involved in terrorism activity were second generation Muslims of Pakistani background</li> <li>2 studies looked at health and personality, which were deemed insufficient alone to explain radicalisation</li> <li>1 study found the majority of US terrorists had recently experienced stressful life events such as divorce or death of a loved one</li> <li>5 studies found that being victims of discrimination, institutional racism or oppression were common amongst extremists</li> <li>Several studies discussed grievances relating to foreign policy e.g. anger and desire for revenge directed towards British and American governments</li> </ul>

Misiak et al.	Evidence from three studies that sympathies for radicalisation among Muslims living
(2019)	<ul> <li>Evidence from three studies that sympathies for radicalisation among Muslims living in the UK were associated with younger age; being in full time education; being born in the UK; speaking English at home; higher income; higher levels of depression and perceiving religion as important. Resistance to radicalisation was predicted by higher number of social contacts, stressful life events, political engagement, less social capital, inability to work, and being born outside the UK.</li> <li>Depressive symptoms appeared to weakly mediate the effect of stressful life events and political engagement on sympathies for violent protest and terrorism; however, other studies did not find depressive or anxiety symptoms shaped radicalisation.</li> <li>One study found support for religious-political violence was related to loss of family members in violent activities and perception of being treated unjustly.</li> <li>One study found that mental health problems during or before extremism involvement were found in 41% of (n=44) White Supremacists; suicidal lideation was reported by 57% and family history of mental disorders was reported by 48%.</li> <li>Two studies based on the same sample of 119 lone-actor terrorists found the odds of having a diagnosed mental illness were over 13 times higher in lone-actor terrorists than group terrorists. Terrorists who injured people in a violent attack were almost 12 times more likely to have a diagnosed mood disorder. Terrorists with a mental illness history were more likely to report a recent life change, being a victim of prejudice, or experiencing stress. Lone-actors with single-issue ideologies were significantly more likely to have a diagnosed than those with other ideologies.</li> <li>One study suggested bigher levels of empathy were associated with less positive attitudes towards ideology-based violence.</li> <li>One study suggested both poles of political extremism were associated with high ideological and morbid transcendence; right-wing extre</li></ul>
Odag et al. (2019)	<ul> <li>Studies on online right-wing extremism suggest many sites are 'cloaked'/seemingly benign and do not explicitly reveal a connection with right-wing extremism; explicit references to racism and nationalism are mostly lacking; one of the most pronounced features is their potential for a collective identification that goes beyond local geographies</li> <li>Motivations to use right-wing extremist sites include affiliative, communicative, identity-related, emotional and material needs</li> <li>Online Jihadist content is more explicit in communicating ideology; many sites glorify violence and are legitimised by leading figures of the scene who encourage a 'holy war'; Jihadist content is targeted at specific people, exploiting the information that</li> </ul>
	<ul> <li>potential recruits reveal about themselves on social media</li> <li>Young people are particularly at risk of being pulled into the Jihadist movement; Al Qaeda sources address young people in need of moral and social structures</li> <li>Online Jihadism highlights collective identity and provides a sense of belonging</li> </ul>
Pistone et al. (2019)	Types of intervention reviewed: empowerment/resilience (67), policy programmes (54), deradicalisation (36), combined empowerment/resilience and deradicalisation (11), deradicalisation counter-narrative (3), combined deradicalisation and empowerment/resilience and counter-narrative (2), counter-narrative (2), combined empowerment/resilience and counter-narrative (2).

	Interventions were most commonly implemented at the national level (69) followed by individual-level interventions (53).
	Findings:
	<ul> <li>Only 38 of 112 publications measured the intervention effectiveness</li> <li>Only 2 studies compared intervention effectiveness with either a control group or a different intervention group; one found an educational intervention focused on changing attitudes towards terrorists led to significantly better attitude change than a control group, and the other found that reading a special issue of a journal with information about left-wing extremism led to significantly better knowledge about left-wing extremism than a control group</li> <li>Very mixed findings as to whether interventions were successful; some did the opposite of what they were supposed to do – there appears to be particularly strong evidence that PREVENT is harmful more than helpful</li> <li>Overall, there are no evidence-based interventions that prevent and counter the development of intention to commit violent extremist acts</li> </ul>
Stephens et al.	Themes emerging in the literature about preventing violent extremism:
(2021)	<ul> <li>Personal – 'the resilient individual' (suggesting violent extremism can be prevented by developing some skill or characteristic in individuals that prevents them from being drawn to violent extremist ideologies); cognitive resources (focusing on developing certain cognitive capacities in order to provide individuals with the resources to question propaganda and consequently resist it); character traits (focused on fostering particular traits such as empathy); promoting/strengthening values (promoting certain values or ideas);</li> <li>Identity – adolescence as a period of identity search; 'identity threat and belonging' suggesting openness to extremist ideas emerges when there is a sense of threat or marginalisation of one's group identity; creating space to explore and address identity-related questions;</li> <li>Dialogue and action – e.g. providing space for frustrations and grievances to be aired</li> <li>Engaged, resilient communities – strengthening of relationships between citizens and institutions of the state; promoting social connection in communities with the assumption that a community can have features which render it able to prevent members of the community from engaging with violent extremism</li> <li>Very few longitudinal intervention studies were found.</li> <li>One paper on empathy and self-esteem training found that an increase in empathy was associated with less positive attitudes towards ideology-based violence, but self-esteem training increased narcissism and higher narcissism was associated with more positive attitudes towards ideology-based violence, but self-esteem</li> </ul>
Stockemer et	Predictors of radical right-wing vote investigated:
al. (2018)	<ul> <li>Attitudes towards immigration and racial minorities (significant in 51% of the studies which examined this)</li> <li>Having a blue collar job (31%); being unemployed (27%); being self-employed (35%); white collar jobs (19%); overall, employment status plays only a small role in explaining propensity to vote for the radical right</li> <li>Younger age (29%)</li> <li>Low levels of education (33%)</li> <li>Male gender (55%)</li> <li>Euroscepticism, marital status, housing situation – all lower than 50%</li> <li>Nationalism considered as a predictor in 7 studies but showed a positive and significant relationship with extreme right voting in all 7</li> <li>High levels of political discontent showed a significant relationship in 71%</li> <li>Parents' preferred political parties, economic attitudes, and participation in the community were considered in fewer than 5 studies and show no generalisable results</li> <li>Qualitative studies added the following:</li> </ul>

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	<ul> <li>A group of 'ideologues' with deep-rooted convictions passed on from parents to children during childhood socialisation or through socialisation by peers during young adulthood</li> <li>'Wanderers' and 'converts' who develop their affinity for radical right ideas through political awakenings e.g. by experiencing economic decline, perceived unjust competition from foreigners, negative perceptions of immigrants and witnessing the frailties of political elites</li> <li>Often not the unemployed/socially deprived citizen who votes for the extreme right, but self-proclaimed hard workers who see their standard of living decreasing while others profit without doing anything for it</li> <li>Disconnect from the political system that goes beyond dissatisfaction with the main parties</li> </ul>
Taylor & Soni	Themes:
(2017)	<ul> <li>Academic freedom – the most common theme was that the duty of PREVENT creates a culture of fear and suspicion towards those communities or ideologies associated with radicalised views and contingent sense of cautiousness around engaging in discussion with or about these communities or ideologies</li> <li>'Flawed FBVs' (fundamental British values) – perception that they lack clarity and are irrelevant, inadequate and inaccurate; participants perceived it would be better to promote the consensus between traditional Islam and British moral, religious and political standpoints rather than promote FBVs as a distinct category</li> <li>Surveillance and securitisation – feelings of paranoia, alienation and distrust due to the suspicion from peers and the top-down approach to security (e.g. stopping and searching Islamic society students)</li> <li>Focus on individual vulnerability – due to the lack of agreement about the processes involved in radicalisation, the concept is frequently reduced to profiling people as 'vulnerable' due to certain characteristics leading to heavy monitoring and censorship of the activities of such people (e.g. Muslims)</li> <li>One study criticised the workshop materials of the WRAP training programme for focusing exclusively on individual vulnerability without considering how it could contribute to strained relationships; suggested the programme could lead to groups perceiving themselves to be 'other' and avoiding interaction with the wider community; suggests WRAP should shift its focus to social contexts</li> <li>Most of the qualitative data on experiences with PREVENT were negative, but thre were positive aspects too – namely the Theatre in Education programme 'Tapestry' which was seen as encouraging dialogue and making it easier to confront controversial issues such as radicalisation by using humour</li> </ul>
Trinchaustal	
Trimbur et al. (2021)	<ul> <li>People at-risk of radicalisation: <ul> <li>4 studies suggested depression was associated with a higher risk of sympathy for violent protest and terrorism; 2 studies found no such association</li> <li>1 study found a significant association between extremist opinions and antisocial personality disorder</li> </ul> </li> <li>Radicalised populations: <ul> <li>Prevalence of mental disorders ranged from 6% - 41%</li> <li>3 studies investigated psychotic disorders; prevalence ranged from 3.4% - 22%</li> <li>Severe mental disorders identified in 12% and 38.2% in two studies of radicalised teenagers</li> <li>Two studies on depression showed the prevalence as 33% and 44%</li> </ul> </li> </ul>
	<ul> <li>Two studies looking at suicidal ideation found rates of 29.3% and 57%</li> <li>3 studies on substance abuse disorder showed prevalence ranging from 22% - 73%</li> <li>Prevalence of pathological personality traits ranged from 12% - 77.7%</li> <li>High prevalence of psychological trauma, neglect and child abuse identified in 4 studies</li> <li>Terrorist populations:</li> </ul>
	<ul> <li>4/4 studies on group terrorism showed a high prevalence of pathological personality traits</li> </ul>

	<ul> <li>Prevalence of psychiatric disorders among lone-actor terrorists varied from 31.9% - 48.5%</li> </ul>
Vergani et al. (2020)	<ul> <li>Push factors:</li> <li>85 studies examined at least one push factor</li> </ul>
	<ul> <li>The push factor appearing most often in the literature is the relative deprivation of a social group (also framed in terms of injustice, inequality, marginalisation, grievance, social exclusion, frustration, victimisation and stigmatisation)</li> <li>Other push factors:         <ul> <li>perceived threat to the group</li> <li>state repression</li> <li>poverty</li> <li>unemployment</li> <li>low education level</li> </ul> </li> <li>Pull factors:</li> </ul>
	<ul> <li>116 articles discussed pull factors</li> <li>Most commonly discussed pull factor is consumption of extremist propaganda (cited</li> </ul>
	<ul> <li>as a cause for radicalisation in 66.9% of articles)</li> <li>Second most commonly discussed is group dynamics (36.5% of articles), including peer pressure, formation of bonds with like-minded people, fulfilment of belonging and identity needs and total identification of the individual with the group, and influences of family and kinship ties; a special role is attributed to charismatic leaders and recruiters</li> <li>Other pull factors include material and emotional rewards (e.g. monetary rewards, fulfilment of desire for adventure and excitement)</li> <li>Personal factors:</li> </ul>
	<ul> <li>Appear in 39.2% of articles</li> <li>First and most important category of personal factors is mental health, including depression, low self-esteem, isolation; these psychological states are often associated with personal crisis, cognitive opening and consequent search for meaning which is then fulfilled by adopting extremist worldviews</li> <li>Personality traits and cognitive structure include narcissism, low tolerance of ambiguity, personal uncertainty, black-and-white thinking and impulsiveness</li> <li>In terms of demographics, violent extremists tend to be young, male, and generally born in the country where they live; many have previous experiences such as criminal records, substance abuse, military experience and knowledge of weapons</li> <li>Personal factors are more often used to explain cognitive radicalisation than behavioural radicalisation, and often appear as the sole factor explaining behavioural radicalisation when there are strong psychological disorders</li> </ul>
Williamson et al. (2021)	<ul> <li>Several studies considered the role of perceived personal significance loss or gain as a motive for radicalisation: 2 studies found that extremists were more likely to express a quest for significance; 2 studies found that deradicalisation programmes focusing on providing alternative routes to significance were more effective in reducing support for radical extremism; 1 study found no association between radicalism and need for significance; 1 study found manipulating perceptions of loss of significance did not significantly increase their extremist views</li> <li>2 studies examined trauma exposure: 1 found high prevalence of trauma exposure in radicalised participants, 1 found no such association</li> <li>5 studies investigating primarily Islamic extremists found male gender, being Muslim</li> </ul>
	<ul> <li>by birth and personal or family history of criminality were significantly associated with vulnerability to radicalisation; Inconsistent findings regarding age; however, it must be noted most studies reviewed included primarily male, Muslim, young participants and so findings must be considered in the context of their samples and not generalised to this population as a whole</li> <li>2 studies considered interpersonal difficulties; 1 found having friends or family imprisoned was associated with poorer outcomes after a deradicalisation programme, as was being married, perhaps because partners encourage each other's</li> </ul>

	<ul> <li>commitment to radicalisation; 1 found radicalised individuals were more likely to report social exclusion</li> <li>Few studies examined mental health difficulties; 1 found psychological difficulties can be protective of radicalisation (perhaps because of the protective impact of having experienced psychological care) whereas another found extremists were more likely to report depressive symptoms and suicidal ideation than matched non-terrorist controls</li> </ul>
Windisch et al.	Terrorist movements (36 studies):
(2016)	<ul> <li>Disengagement was associated with disapproval of the use of violence in 38% of studies and with being subjected to or witnessing violent action, and therefore reconsidering their involvement with the organisation, in 14%</li> <li>Disillusionment also appeared to be a prominent factor pushing individuals away from extremism (58%); related, studies reported infighting between group members (19%) and disloyalty among members (17%) as push factors away from extremism</li> <li>Physical confinement (25%) and fear of confinement in jail, prison or a mental health facility (5%) also contributed to the disengagement process</li> <li>Social relationships with non-family members (e.g. friends, colleagues and neighbours) emerged as the most prominent factor pulling individuals away from extremism (55%)</li> <li>Gaining employment (11%) and returning to or completing education (11%) also triggered the disengagement process</li> <li>Cults/new religious and social movements (25 studies)</li> </ul>
	<ul> <li>Disillusionment (68%) was the most common push factor</li> <li>Social relationships (28%), in particular family (24%), emerged as a pull factor</li> <li>Street gangs (23 studies):</li> </ul>
	<ul> <li>Fear of being victimised by violence emerged as a contributing factor to desistance in 39% of studies</li> <li>Maturation also appeared to push individuals away from gang life (17%)</li> <li>Fear of confinement (9%) or physical confinement in prison, jail or a mental health facility (4%) also contributed to the exit process, as did disillusionment with group activities (22%)</li> <li>Most prominent pull factor leading to exit was family (78%), followed by employment (30%) and education (13%)</li> <li>Mainstream religious groups (30 studies):</li> </ul>
	<ul> <li>Disillusionment was the most prominent push factor (57%), followed by maturation (30%)</li> <li>Family was the most prominent pull factor (50%), most commonly parents (30%); education was identified as a pull factor by 17%</li> <li>Across the entire sample:</li> </ul>
	<ul> <li>Disillusionment was the most common theme, including lack of satisfaction with current life situation and frustration with the group, their place in the group or the direction of the group; disagreement with group methods, for example believing the group was too violent, hypocritical, or resulting in negative attention to the organisation; and experiencing victimisation from fellow group members</li> <li>Relationships were the most prominent pull factor, most commonly immediate relatives (siblings or parents), children, and spouses</li> </ul>
Wolfowicz et al. (2020)	<ul> <li>For protective factors of radical attitudes, the largest effect size was found for law abidance; medium sized effects were found for factors related to school bonding and performance, parental involvement, and institutional trust; small effect sizes were found for political satisfaction, general trust, depression and out-group friendships and the smallest effects were found for political participation and socio-demographic characteristics such as socio-economic status, education, marital status and age</li> <li>Risk factors of radical attitudes: largest effects for authoritarian/fundamentalist personality, and similar ties; then traditional criminogenic factors such as low self-control, thrill seeking/risk-taking, low legitimacy, criminal history, police contact, symbolic and realistic threat, and in-group superiority; large medium sized estimates</li> </ul>

<ul> <li>for personality disorder, narcissism, deviant peers, a belief in ethnic segregation, and moral neutralisations; then individual/collective relative deprivation, anger/hate, low integration; then religious/national identity, personal strains, and anti-democratic attitudes; small effects for male gender, experiencing discrimination, uncertainty, political grievances, perceived injustice, exposure to violence and active posting of politically-related content online; smallest effects for anxiety, aggression, politics, religiousness, immigrant status, being a welfare recipient, and unemployment</li> <li>Protective factors for radical intentions: small effects for quest for significance, unemployment, personality disorder/narcissism, perceived injustice, being a full-time student; slightly larger effects for societal disconnectedness, individual and collective relative deprivation, male gender, and religious/national identity; larger effect sizes for in-group connectedness, low self-esteem, symbolic and realistic threat, in-group superiority and activism intentions; smallest effect size for radical attitudes</li> <li>Protective factors for radical behaviours: smallest estimates for military experience, marital status, parental involvement and education; slightly larger estimates for school bonding, age, law legitimacy and law obedience</li> <li>Risk factors for radical behaviours: smallest effect sizes for socio-demographic characteristics such as gender, immigrant status and being a welfare recipient; slightly larger estimates for low integration, being a victim of abuse during adolescence, and poor integration; slightly larger estimates for other socio-demographic characteristics such as unemployment and citizenship status; largest estimates for thrill-seeking and risk-taking behaviour, deviant/radical peers,</li> </ul>

### Supplementary Table II. AMSTAR results of reviews included in the umbrella review

- Кеу
- Q1 Did the research questions and inclusion criteria include PICO components (population, intervention, control group, outcome)?
- Q2 Did the report explicitly state that review methods were established prior to conducting the review / justify significant deviations from the protocol?
- Q3 Did the authors explain their selection of study designs for inclusion?
- Q4 Did the authors use a comprehensive literature search strategy?
- Q5 Did the authors perform study selection in duplicate?
- Q6 Did the review authors perform data extraction in duplicate?
- Q7 Did the review authors provide a list of excluded studies with justifications?
- Q8 Did the review authors describe the included studies in adequate detail?
- Q9 Did the review authors use a satisfactory technique for assessing the risk of bias in individual studies?
- Q10 Did the authors report on sources of funding?
- Q11 (If meta-analysis performed) Did authors use appropriate methods for statistical combination of results?
- Q12 (If meta-analysis performed) Did authors assess the impact of risk of bias in individual studies on meta-analysis results?
- Q13 Did the authors account for risk of bias when discussing the results?
- Q14 Did authors discuss heterogeneity observed in results?
- Q15 Did authors carry out investigation of publication bias and discuss its impact on the results?
- Q16 Did authors report any potential sources of conflict of interest, including funding received?

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Total	%
Batzdorfer & Steinmetz (2020)	No	No	No	Partial	Not reported		No	No	No	No	N/A	N/A	No	Yes	No	No	1.5	11%

Campelo et al. (2020)	Yes	No	No	Partial	Not reported	Yes	No	Yes	No	No	N/A	N/A	No	Yes	No	No	4.5	32%
Carthy et al. (2020)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	14	87.5%
Christmann (2012)	Partial	No	No	Yes	Yes	Yes	No	No	Yes	No	N/A	N/A	No	No	No	No	4.5	32%
Corner et al. (2021)	Partial	No	No	Partial	Yes	Yes	No	No	Partial	No	N/A	N/A	Yes	Yes	No	Yes	6.5	46%
Desmarais et al. (2017)	Yes	No	No	Partial	Not reported	Yes	No	No	No	No	N/A	N/A	No	Yes	No	Partial	4	29%
Du Bois et al. (2019)	No	No	No	No	Not reported	Not reported	No	No	No	No	N/A	N/A	No	No	No	No	0	0%
Emmelkamp et al. (2020)	Yes	No	No	Yes	Not reported	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	8	50%
Gill et al. (2020)	Yes	No	No	Partial	Not reported	Not reported	No	Yes	No	No	N/A	N/A	No	Yes	No	Yes	4.5	32%
Harpviken (2020)	Partial	No	Yes	Partial	No	No	No	Yes	Yes	No	N/A	N/A	No	No	No	No	Partial	32%

Hassan et al. (2018)	Partial	No	No	Yes	Yes	Not reported	No	Yes	No	No	N/A	N/A	No	Yes	No	Yes	5.5	39%
Jahnke et al. (2021a)	Yes	No	Yes	Partial	Yes	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	7.5	47%
Jugl et al. (2021)	Yes	No	Yes	Yes	Not reported	Yes	No	Yes	No	No	Yes	No	No	Yes	No	Partial	7.5	47%
Kenyon et al. (2021)	Yes	No	No	Partial	Yes	Not reported	No	No	No	No	N/A	N/A	No	No	No	No	2.5	18%
Losel et al. (2018)	Partial	No	No	Partial	Not reported	Yes	No	No	No	No	N/A	N/A	No	Yes	No	No	3	21%
McGilloway et al. (2015)	No	No	Yes	Partial	Not reported	Yes	No	Yes	Yes	No	N/A	N/A	No	No	No	Partial	5	36%
Misiak et al. (2019)	Partial	No	No	Partial	Not reported	Not reported	No	Yes	Yes	No	N/A	N/A	No	Yes	No	Partial	4.5	32%
Odag et al. (2019)	Partial	No	No	Partial	Not reported	Not reported	No	No	No	No	N/A	N/A	No	No	No	No	1	7%
Pistone et al. (2019)	Yes	No	Yes	Partial	Yes	Not reported	Yes	Yes	No	No	N/A	N/A	No	No	No	No	5.5	39%

Stephens et al. (2021)	No	No	No	No	Not reported	Not reported	No	No	No	No	N/A	N/A	No	No	No	Yes	1	7%
Stockemer et al. (2018)	Partial	No	Yes	No	Not reported	Not reported	No	No	No	No	No	No	No	Yes	No	No	2.5	16%
Taylor & Soni (2017)	No	No	No	No	Not reported	Not reported	No	No	No	No	N/A	N/A	No	No	No	Partial	0.5	4%
Trimbur et al. (2021)	Yes	No	No	Partial	Yes	Not reported	No	Yes	Yes	No	N/A	N/A	No	No	No	Partial	5	36%
Vergani et al. (2020)	Partial	No	Yes	Partial	Yes	Not reported	No	No	No	No	N/A	N/A	No	No	No	No	3	21%
Williamson et al. (2021)	Partial	No	No	Partial	Not reported	Yes	No	Yes	No	No	N/A	N/A	Yes	Yes	No	Yes	6	43%
Windisch et al. (2016)	Yes	No	No	Partial	Not reported	Yes	No	No	No	No	N/A	N/A	No	No	No	Partial	3	21%
Wolfowicz et al. (2020)	Yes	No	Yes	Partial	Not reported	Not reported	No	Yes	No	No	Yes	No	No	Yes	Yes	Partial	7	44%

## Supplementary Table III. Citations reviewed by the studies included in umbrella review

Reference	Reviews cited in
Abbas T. (2011). Islamic radicalism and multicultural politics: The British experience. Routledge, 223p.	Du Bois et al. (2019)
Abbas , T. , & Siddique , A . (2012) . Perceptions of the processes of radicalisation and de-radicalisation among British South Asian Muslims in a post-industrial city . Social Identities, 18, 119 – 134	McGilloway et al. (2015)
	Vergani et al. (2020)
Abdiqani F. (2016). How dangerous Islamists use the Quran, 24p	Du Bois et al. (2019)
Abdulagatov Z.M. (2013). The influence of the religious factor on the extremist behavior of Dagestani Youth. Russian Education and Society, 55(2), 67–81	Vergani et al. (2020)
Abrahms, M. (2008). What terrorists really want: Terrorists motives and counterterrorism strategy. International Security, 32, 78–105	Desmarais et al. (2017)
Acevedo GA, Chaudhary AR (2015) Religion, cultural clash, and Muslim American attitudes about politically motivated violence. J Sci Study Relig 54(2):242–260	Vergani et al. (2020) Wolfowicz et al. (2020)
Achilov D & Shaykhutdinov R (2013) State Regulation of Religion and Radicalism in the Post-Communist Muslim Republics, Problems of Post- Communism, 60:5, 17-33	Vergani et al. (2020)
Ackerman G and L. Pinson, "An Army of One: Assessing CBRN Pursuit and Use by Lone Wolves and Autonomous Cells," Terrorism and Political Violence 26 (2014): 226–45	Kenyon et al. (2021)
Adamczyk A., Gruenewald J., Chermak S.M., and Freilich J.D. (2014). The relationship between hate groups and far-right ideological violence. Journal of Contemporary Criminal Justice, 30(3), 310–332	Vergani et al. (2020)
Agarwal, S., & Sureka, A. (2015). Topic-specific YouTube crawling to detect online radicalization. In International Workshop on Databases in Networked Information Systems (pp. 133-151). Springer, Cham	Odag et al. (2019)
Aghedo I., and Osumah O. (2012). The Boko Haram uprising: How should Nigeria respond? Third World Quarterly, 33(5), 853–869	Vergani et al. (2020)

Agnew, R. (2010). A general strain theory of terrorism. Theoretical Criminology, 14, 131–1	Desmarais et al. (2017)
Ahmad A. (2016). The ties that bind and blind: Embeddedness and radicalization of youth in one Islamist organization in Pakistan. Journal of Developmental Studies, 52(1), 5-21	Du Bois et al. (2019)
Ahmad, I. (2012). Theorizing Islamism and democracy: Jamaat-e-Islami in India. Citizenship Studies, 16(7), 887-903.	Vergani et al. (2020)
Aho, J. A. (1988). Out of hate: A sociology of defection from neo-Nazism. Current Research on Peace and Violence, 11(4): 159-168	Windisch et al. (2016)
Akchurina V., and Lavorgna A. (2014). Islamist movements in the Fergana Valley: A new threat assessment approach. Global Crime, 15(3–4), 320–336	Vergani et al. (2020)
Akhtar, S. (1999). The psychodynamic dimension of terrorism. Psychiatric Annals, 29, 350–355	Desmarais et al. (2017)
Al Baghal, T. (2014). Estimating support for extremism and its correlates: The case of Pakistan. ASK Research & Methods, 23, 35-56	Vergani et al. (2020)
Al Qurtuby, S. (2014). Ambonese Muslim jihadists, Islamic identity, and the history of Christian-Muslim rivalry in the Moluccas, eastern Indonesia. International Journal of Asian Studies, 12(1), 1-29	Vergani et al. (2020)
Alao A. (2013). Islamic radicalization and violent extremism in Nigeria. Conflict, Security & Development, 13(2), 127-147	Vergani et al. (2020)
Alakoc B, "Competing to Kill: Terrorist Organizations Versus Lone Wolf Terrorists," Terrorism and Political Violence 29, no. 3 (2015): 509–32	Kenyon et al. (2021)
Albrecht, S. L., & Bahr, H. M. (1983). Patterns of religious disaffiliation: A study of lifelong Mormons, Mormon converts, and former Mormons. Journal for the Scientific Study of Religion, 22(4): 366-379	Windisch et al. (2016)
Alhabash, S., & Wise, K. (2012). Peacemaker: Changing students' attitudes toward palestinians and israelis through video game play. International Journal of Communication, 6, 356–380	Carthy et al. (2020)
Alhabash, S., & Wise, K. (2015). Playing their game: Changing stereotypes of Palestinians and Israelis through videogame play. New Media and Society, 17(8), 1358–1376	Carthy et al. (2020)
Ali, F., & Post, J. (2008). The history and evolution of martyrdom in the service of defensive Jihad: An analysis of suicide bombings in current conflicts. Social Research, 75, 615–654	Desmarais et al. (2017)

Alimi, E. Y. (2006). Contextualizing political terrorism: A collective action perspective for understanding the Tanzim. Studies in Conflict and Terrorism, 29, 263–28	Desmarais et al. (2017)
Alimi, E. Y. (2011). Relational dynamics in factional adoption of terrorist tactics: A comparative perspective. Theory and Society, 40, 95–118	Desmarais et al. (2017)
Alimi, E.Y. (2015). The relational context of radicalization: The case of Jewish settler contention before and after the Gaza pullout. Political Studies, 64(4), 910-929	Vergani et al. (2020)
Alimi, E. Y., Bosi, L., & Demetriou, C. (2012). Relational dynamics and processes of radicalization: A comparative framework. Mobilization: An International Quarterly (San Diego, Calif.), 17, 7–26	Desmarais et al. (2017)
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