Mental Disorders, Personality Traits and Grievance-Fueled Targeted Violence: The Evidence Base and Implications for Research and Practice

On the night of October 1st 2017, Stephen Paddock opened fire from the 32nd floor of the Mandalay Bay hotel in Las Vegas onto a crowd of concert attendees below. His actions led to the deaths of 58 and injuries to an additional 546. It was the deadliest mass shooting conducted by a single individual in United States history. Unlike many, but certainly not all, other mass shootings and terrorist attacks, Paddock's motive(s) remained elusive in the weeks that followed. Within a week of the shooting, investigators publicly stated they had not yet derived any insights into his motivations from Paddock's personal life, political affiliations, social behaviors, economic situation, or factors associated with radicalization. A simple assumption followed that the violence was caused by an undiagnosed mental disorder (Farrell, 2017). These assumptions gained further traction when evidence emerged of Paddock's father's history of psychopathy, suicidal tendencies, and criminality (Griffin, 2017). Such assumptions hold instinctive appeal: they offer clear-cut and simple univariate explanations of causality. By attributing this unprecedented act of violence to mental illness (as conceptualized by the general public) it provides an imprecise portrayal that fits the popular narrative of the crazed killer.

This paper aims to move away from such instinctive appeals by synthesizing the existing evidence base regarding the relationship between mental disorders and personality traits and (a) attitudinal affinities with violent causes and (b) a number of violent behaviors (including mass murder and terrorism). The evidence base is mixed and the research focus changed across time: from simple and unempirical assertions of causation, to an almost

complete rejection of their presence to a finer-grained and disaggregated understanding (Gill & Corner, 2017).

This change in focus is perhaps unsurprising when the scientific study of psychopathology and general violence and crime is taken into consideration. That particular literature demonstrates the importance of combining multiple factors, and how they interact in space and time. Examination of different disorders, situations, demographics, along with unique experiences provide more rounded answers regarding attribution of mental disorder to criminal and violent behavior. For example, there is evidence that individuals with acute symptoms of specific psychiatric disorders may be at higher risk of criminal and violent behavior (Häfner & Boker, 1982; Link et al., 1992). This may exacerbate, and be exacerbated by; non-compliance with medication (McFarland, Faulkner, Bloom, Hallaux & Bray, 1989), substance abuse (Monahan et al., 2001), homelessness (Martell, 1991), and prior arrests (Shore et al., 1989). Monahan et al.'s (2001) analyses disaggregated the initial findings of the MacArthur Study of Mental Disorder and Violence. Monahan et al., investigated the impact of multiple confounding factors on violent behavior, including; prior violence and criminality, childhood, neighborhood context, and diagnosis. Rather than searching for causality in simple terms, these analyses sought to explain for whom and under what circumstances there was likely to be a greater influence of mental disorders and personality traits.

Psychopathy and Personality as Causes of Terrorist Behavior

Initial forays into the study of psychopathology and terrorist engagement during the 1970s and 1980s focused upon personality traits and disorders, especially three that are found within Cluster B of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V)

personality disorders: Borderline, Narcissistic, and Antisocial. Such approaches hold instinctive appeal and the symptoms that individuals with these disorders present mirror what many assume the behavior and personality of a terrorist is like. Those diagnosed with anti-social personality disorder present with persistent disregard for, and violation of, the rights of others, disrespect towards the feelings of others, and indifference and a lack of remorse for their negative actions. Individuals diagnosed with narcissistic personality disorder are marked by grandiosity, a lack of empathy, and a pathological need for admiration. Whereas individuals with borderline personality disorder present with identity disturbance, difficulties controlling anger, impulsivity, and instability in personal relationships (DSM-V, APA, 2013). Other personality-driven explanations suggested that early life and familial influences serve as a factor for terrorist engagement (Ferracuti & Bruno, 1981; Johnson & Feldman, 1982; Kent & Nicholls, 1977; Olsson, 1988; Pearlstein, 1991).

Poor research designs and a lack of empiricism ultimately undermined the arguments in favor of terrorism being rooted in disorders of personality, including psychopathy. Various studies supporting psychopathic and personality-level explanations were conducted in the absence of rigorous clinical diagnostic procedures conducted on an individual in a clinical setting for prolonged periods. Instead, they relied upon autobiographies, biographies, second-hand case studies, media interviews and willful mis-readings of actual empirical work (see Horgan, 2005 for a full review). In the absence of rigorous clinical and empirical procedures, the reductionist view, where terrorists are characterized as suffering from some mental illness purely on the nature of the attack behavior, ignores the highly complex neurological, psychological, and sociological processes whereby actors become brutalized and desensitized to violence, and subsequently suffer psychological consequences as a results of terrorist engagement (Horgan, 2003). Despite these methodological problems, the appeal of such

efforts remains influential within the literature beyond their zenith in the 1970s and 1980s. For example, several recent studies continue to hypothesize that terrorists are driven by envy, an urge to punish and retaliate, and a lack of empathy (Marazziti, Veltri & Piccinni, 2017; Martens, 2004; Perlman, 2002).

One of the earliest, and most consistently cited, investigations into terrorist personality was the state-funded, German study, Analysen zum Terrorismus, which includes Schmidtchen's interviews and subsequent analyses of 250 terrorist careers (Jäger, Schmidtchen, & Süllwold, 1981). The results distinguished between personality types, across both leaders and followers. Within the cohort, 25% of participants had lost one or both parents in early life, and 33% reported severe conflict with their parents (Post, 1984). Böllinger (1981) interpreted the interviews conducted during the investigation, asserting that over-controlling parents prevented an individual from developing autonomy, causing an identity crisis, which made violence irresistible.

Attractive as the findings of the German investigation appeared to be, it is imperative to consider the lesser-reported methodological issues, which severely affected both the validity and replicability of the results. Approached interviewees were extremely reluctant to meet with researchers (as interviewers were perceived as government agents). This severely reduced the subject pool. Those who agreed to be interviewed were often hostile and uncooperative. Despite being funded by the German Ministry of the Interior, local government units were habitually reticent to cooperate with the researchers. There was little effort to stratify findings across terrorist roles. There was no engagement of controls, and most of those approached were left-wing-inspired offenders. Most importantly, however, the

researchers conducted interviews on suspected terrorists, who had been apprehended, but not convicted of any offence (Horgan, 2003).

From Attributional Explanations to Social and Situational

A failure to attribute pathology or specific personality types to terrorist behavior led to a change in direction in the scientific investigation of terrorist behavior. Süllwold's clinical observations of Schmidtchen's findings in the highly influential Analysen zum Terrorismus (Jäger et al., 1981) concluded the relative lack of mental disorder in their sample suggested that social processes may be more important than psychopathology in explaining why individuals commit terrorist acts. Pathological attributes were said to be antithetical to the camaraderie, ideological commitment, inter-personal loyalty and organization successful terrorist groups require in the face of adversity against a stronger foe. Instead, studies began positing answers drawn from sociological and social psychological theories. Many analyses spurned psychopathology and personality traits by inferring (without empirical evidence) that those with a mental disorder are simply not recruited and that there was no relationship whatsoever between mental and personality disorders and terrorist engagement. Gill and Corner (2017) explain that, even in the presence of several explicit and nuanced reviews of the evidence base, the dichotomy between mental disorder and terrorist behavior proliferated. Despite recent advancements in empirical evaluation, this attribution error continues to proliferate. The field largely went from the promise of one singular explanation of behavior to another. Reich (1998) succinctly outlined some of this reasoning:

> Psychological accounts of terrorism are replete with explanations that ignore or blur the variety and complexity… a product of loose and weak thinking, a disregard for the

> need for evidence, and the habit, unfortunately endemic in so many areas of psychological discourse, of having a single idea and applying it to everything. (Reich, 1998, p. 262)

The Move Toward Disaggregation

Much like the literature examining mental disorder in criminal and violent behavior, the study of the terrorist has also recently become more disaggregated, with empirical analyses focusing upon specific terrorist sub-sets (e.g. lone-actors, foreign fighters) rather than aggregate measures (e.g. the general terrorist). Such analyses plot a mid-way point between the initial attributional studies that sought causation in psychopathology and the social explanations that overlooked the potential of psychopathology in favor of group explanations. Some empirical studies found evidence for the presence of mental and personality disorders with various degrees of methodological sophistication. Some simply report aggregate prevalence rates of mental disorder diagnoses (Perry et al., 2017; Leyenhorst and Andreas, 2017; Gill et al., 2014). Others disaggregate across mental disorders and compare to the societal base rate. For example, Weenink's (2015) study of 140 Dutch foreign fighters and attempted foreign fighters found 6% had diagnosed disorders. These included psychotic, narcissistic, AD/HD, ADD, schizophrenia, autism spectrum, and post-traumatic stress disorders. The prevalence of schizophrenia and psychosis was higher than in the general population. An additional 20% displayed indications of other undiagnosed mental health problems. Corner, Gill, and Mason's (2015) sample of 153 lone-actor terrorists also noted a diverse range of disorders including Traumatic Brain Injury (1.3%), drug dependence (0.7%), schizophrenia (8.5%), schizoaffective disorder (0.7%), delusional disorder (2.0%), psychotic disorder (0.7%), depression (7.2%), bipolar disorder (3.9%), unspecified anxiety disorder (1.3%), dissociative disorder (0.7%), obsessive compulsive disorder (1.3%),

posttraumatic stress disorder (3.3%), unspecified sleep disorder (0.7%), unspecified personality disorder (6.5%), and autism spectrum disorder (3.3%). Schizophrenia, delusional disorder and autism spectrum disorders were more prevalent than in the general population.

Other studies compared terrorist samples with control or comparison groups. For example, Gottschalk and Gottschalk (2004) administered the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) to 90 incarcerated Palestinian and Israeli terrorists and to control groups matched on demographics. The former sample scored higher on the subscale measures psychopathic deviate, paranoid, depressive, schizophrenic, and hypomanic tendencies. Merari (2010) administered a range of clinical interviews and personality tests, including the Rorschach Inkblot Test, Thematic Apperception Test (TAT), House-Tree-Person Drawing Test, and a shortened (300 item) version of the California Personality Inventory (CPI), on failed suicide bombers and a control group of other terrorist types and non-political criminals. The suicide bombers received significantly more diagnoses of Avoidant Disorder, Dependent Disorder, depressive symptoms and suicidal tendencies. They were significantly less likely to have psychopathic tendencies and impulsive-unstable tendencies compared to the control group. Across four studies comparing lone- and group-terrorists, it was consistently found that the former are significantly more likely to have a mental disorder (Gruenewald et al., 2013; Hewitt, 2003; Corner and Gill, 2015; Corner, Gill and Mason, 2015).

While these results demonstrate a correlational relationship between the presence of particular mental disorders and particular forms of terrorist behavior, the answers to causation remain elusive because of research design and data limitations. We return to this issue in a later section. For now though, we think it appropriate to note that solely focusing upon those

who engage in violence on behalf of a political or religious cause unduly narrows our understanding of the relationship between mental disorder and personality traits and extreme violence. Answers may also be found in the scientific study of (a) fixated and aggrieved individuals (b) mass murderers (c) individuals radicalized by or attitudinally affiliated with a violent cause and (d) violent criminals.

The Fixated and Aggrieved

A group of individuals whose vulnerability profile, grievance structure, and desire for action has been more concretely linked to their mental health status are fixated individuals (Mullen et al., 2009). Much of the research involving fixated individuals has focused on those with pathological fixations. Mullen et al. (2009) define the pathologically fixated as individuals who "spend much of their waking lives thinking about the object of their concern. They usually gather information from multiple sources, including newspapers, books, television, and, increasingly, the Internet" (p. 34). Many fixated individuals make attempts to communicate with their focus, and may also seek close physical contact. Particular attention has been paid to those who assassinate, attack, approach, or communicate with politicians, royalty, and high-profile individuals.

One of the earliest published empirical investigations into fixated individuals was Shore, Filson, and Rae (1990), who examined arrest rates of psychotic individuals who were fixated on U.S. political figures. Fixated individuals were found to have higher prior arrest rates than both the general population and control subjects with prior arrests. Dietz et al. (1991) examined inappropriate communications made by individuals with mental disorders to members of the U.S. Congress. More specifically, they evaluated differences between the content of communications of individuals with and without intent to approach their target.

Dietz et al. found that individuals who communicated more frequently were more likely to approach their targets, but those who made threats towards their targets were less likely to pursue an encounter. The Secret Service Exceptional Case Study Project (Fein & Vossekuil, 1997) expanded to examine individual and psychological factors of the individuals. The results highlighted high prevalence rates of delusional thought (43%), history of contact with mental health services (61%), history of serious depression or despair (44%), and substance abuse (39%), whilst concluding that the outcome behavior (attack or attempted attack) was the result of logical, traceable thought and action processes. A misunderstanding by non-clinicians of the nature of mental illness is that its presence is incompatible with logical thought. This, however, is largely erroneous, as illustrated for instance by Bennett (2010), in her study of 435 sequential homicides, who found that homicide offenders with a psychotic illness were significantly more likely to have had some pre-existing intention and a plan to harm the victim, and significantly less likely to have killed as a spur of the moment reaction.' Scalora et al. (2002a; 2002b) also examined individuals who fixated on U.S. members of Congress, noting that in both studies, a significant proportion of cases (46.2%; 29.3%) were suspected of having a mental disorder,[1] with approachers more likely than those who did not approach to show evidence of a disorder. Scalora, Baumgartner and Plank (2003) further compared mentally disordered and non-mentally disordered individuals within this cohort of offenders. They noted that mental disorder in and of itself does not predict aggression or risk of violence, thus supporting the evidence base within the wider mental disorder and crime literature.

Nor does the existence of a mental disorder predict the likely success of an insanity defense to a charge of violent crime. The assumption of the capacity of individuals, with or

[1] This decision was reached based on author examinations of U.S. Capitol Police's Threat Assessment Section's case files of incidents of threats or suspicious behaviour towards members of U.S. Congress

without mental disorders, to engage in purposeful, planned actions for which they bear full responsibility, is an underlying principal of the defense of lack of criminal responsibility (the insanity defense). A successful insanity defense requires the presence of a mental disorder of such a degree of severity that it would be wrong to hold the defendant morally responsible for their action. Jurisdictions have different requirements for an insanity defense. The most common of these is the presence of a "mental disease or defect" that interferes with the defendant's capacity to appreciate the nature of the criminal act at the time it occurred or the fact that it was against the law. Some jurisdictions provide an alternative element: lack of capacity to conform behavior to the requirements of the law. Regardless of the jurisdictional requirement, insanity defenses are pursued infrequently and are successful in a minority of cases where it is pursued.

"Insanity" is a legal term, widely misused to refer to mental illness. As a result, a failed insanity defense is often misinterpreted as indicating absence of a mental illness, rather than a determination that the defendant did not fulfill the jurisdictional requirements for the defense. Thus, individuals like John Salvi (mentioned below and evaluated by one of the authors (RS)) are frequently found criminally responsible, even in the presence of evidence of serious mental illness.

In comparative studies of communicators and approachers, the nature of the mental disorders tends to discriminate between the two groups. For example, Adams et al. (2009) illustrated that approachers to Canadian politicians were significantly more likely to be psychotic compared to communicators. James et al. (2010) demonstrated that approachers were significantly more likely than communicators to exhibit overt evidence of serious mental illness (e.g. psychosis). Scalora et al (2002a, 2002b) and Schoeneman et al. (2011) found similar results.

Further examinations of this type of offender have more recently been conducted outside of the U.S. (Eke, Meloy, Brooks, Jean, & Hilton, 2014; James et al., 2007; James et al., 2009; James et al., 2010; James, Meloy, et al., 2010; Mullen et al., 2009; Pathé et al., 2015; Pathé, Haworth, & Lowry, 2016; van Buuren & de Graaf, 2014). James et al. (2007) examined attacks on European politicians between 1990 and 2004, highlighting the high prevalence rates of psychosis. James et al. (2009) highlighted that 83.6% of their sample from the U.K. Fixated Threat Assessment Centre data evidenced serious mental disorder (i.e. psychotic illness or major depression). James et al. (2010) further disaggregated the specific disorder prevalence in a separate sample. They highlighted a wide range of mental disorders including schizophrenia (61%), paranoid psychosis (unspecified) (9%), delusional disorder (8%), schizoaffective disorder (3%), bipolar disorder (5%), depression (2%), personality disorders (10%), and chronic drug intoxication (2%). Pathé et al. (2015) performed a descriptive analysis of all cases from the first year of operation of the Queensland Fixated Threat Assessment Centre highlighting that 70% had a formal psychiatric diagnosis at referral, with 54% of diagnoses classified as severe.

Research surrounding fixated individuals has traditionally sat within the domain of threat assessment. However, with the growing evidence base concerning lone actor terrorists and mental disorder, and the examination of motivational groups within the fixated, academics and practitioners are starting to examine whether these groups of individuals are distinct or not. Indeed, Fein, Vossekuil, and Holden (1995) classified John Salvi III, an individual who murdered two and injured five in shootings aimed at abortion providers, as a fixated individual. Their logic spanned from Salvi's earlier verbalizations of his grievance and his chosen target. However, Salvi has also since been classified as a lone-actor terrorist

due to his espoused anti-abortion grievance. Much like the nexus between the classification of mass murderers and lone-actor terrorists, the hard lines of demarcation between fixated individuals and lone actor terrorists are also starting to blur. This was never clearer than in the 2017 Fort Lauderdale airport shooting that killed five and injured six. In this case, the perpetrator reported to an FBI Field Office in November 2016 and under interrogation after the violence, that the United States government controlled his mind, the CIA made him watch ISIS videos, he had been hearing voices and that he had participated in jihadi chat rooms online. Although legally competent to stand trial, his defense team's report stated he had been diagnosed with schizophrenia and schizoaffective disorder.

Mass Murderers

Much like lone-actor terrorists, mass murderers conduct large scale acts of violence alone, are considered to act on perceived grievances, and their mental state has been continually discussed. A phenomenon widely examined within the U.S., mass murderers have previously been incorrectly thought of as a distinct cohort of offenders, acting on impulse, primarily because of psychiatric conditions. The evidence however is that most of these are the product of predatory, rather than impulsive, violence – even when there is evidence of mental disorder. Additionally, mass murders are rarely solely attributable to the presence of a diagnosis of a mental disorder alone. Metzl and MacLeish's (2014) rigorous literature review concluded numerous other risk factors (substance use, childhood abuse, gender, household firearm ownership) correlate more strongly with violence than mental disorder alone. Similarly, Aitken, Oosthuizen, Emsley, and Seedat (2008) note that although biological and psychological factors are important contributors to individuals committing acts of mass violence, social and environmental factors, such as employment problems, bullying, interfamilial problems, and financial concerns were more proximate triggers for an act.

Intrinsically linked to the assumption of causality, is the preconception that individuals who commit mass murder suddenly 'snap' and kill indiscriminately. However, the data suggests otherwise. Fox and DeLateur (2014) concluded mass murderers consistently perform planning and preparatory behaviors over periods of time. Gill et al. (2017) further affirmed this, noting that only 15% of mass murder attacks appeared to be spontaneous in nature.

A major issue restricting the examination of the mental state of individuals carrying out mass acts of violence is valid psychiatric and psychological assessments. Within mass murderers, the high levels of suicide, and 'suicide-by-cop' during the events, remove any possibility of direct evaluation. As Stone (2015) noted, when analyzing mass murderers, scholars from non-forensic contexts are often forced to rely on ''distance diagnosis'', which are drawn from reporting from family/friends/neighbors/acquaintances/co-workers and media stories, opinions of which may be inherently skewed by the actions of the perpetrators, as motives for such heinous acts are desperately sought. As highlighted by Corner and Gill (2017), this credibility issue is also found in empirical investigations of lone-actor terrorism. They explain that in some cases, anonymous, questionable sources may artificially inflate true prevalence rates. In these sources, symptoms of a specific mental disorder are often implied, and surreptitiously (and in some cases, openly) associated with the violent behavior.

Empirical studies, underpinned by different definitional boundaries and data collection activities, often highlight the relatively high rates of mental disorder within the sample. Hempel, Meloy, and Richards (1999) found 50% of their sample of mass murderers within the U.S had a documented psychiatric history. Meloy, Hempel, Mohandie, Shiva, and

Gray (2001) found 23% of adolescent mass murderers had a psychiatric history. [2] McCauley, Moskalenko, and Van Son (2013) identified high rates of "depression or despair" in adult assassins and adolescent school attackers (44% and 78% respectively). Capellan (2015) noted mental illness was confirmed in 25.6% and suggested in a further 17.3% of non-ideologically motivated active shooters. Finally, Gill et al.'s (2017) study of 115 U.S. mass murderers found a prevalence rate of 41%.

Each study examining mass murderers has highlighted the prevalence of mental disorders. However, mass murderer studies rarely outline the content of these disorders and/or diagnoses. Instead they simply note a mental disorder is present. To resolve this discrepancy, we have extracted data regarding mental disorder prevalence from three samples; lone actor terrorists, mass murderers, and fixated individuals. The data regarding mass murderers and lone actors is drawn from open source news reports, sworn affidavits and when possible, openly available first-hand accounts (see Corner et al., 2016; Gill et al., 2017). Data concerning the fixated individuals was drawn from the Fixated Threat Assessment Centre (FTAC). Figure 1 illustrates the prevalence rates for disorders identified within each sample. Prevalence rates for schizophrenia and delusional disorder are higher than the general population across all three samples. This fits with research from the wider criminological literature (Wallace, Mullen & Burgess, 2004). However, within the field, it has long been identified that co-morbid substance use is a mediating factor in violence for individuals with schizophrenia (Arseneault, Moffitt, Caspi, Taylor & Silva., 2000). Figure 1 appears to partially support this. Substance dependence is noted as higher than expected within mass murderers (and within the FTAC sample, 4.4% were noted as having problems

[2] Although this figure appears not to include substance abuse, as the authors noted that 62% of adolescents had a history of substance abuse (alcohol, amphetamine, cocaine, heroin, inhalants, LSD, marijuana, and PCP).

with substances). These results highlight two major issues which remain within the literature fields examined above; a lack of examination of symptoms, and a lack of temporal ordering of symptoms and behaviors.

[INSERT FIGURE 1 HERE]

Individuals Radicalized by or Attitudinally Affiliated with a Terrorist Cause

The study of psychopathology and personality in terrorists tends to solely focus upon those who conducted, or at least attempted to conduct, violence. Those studies that focus upon individuals who hold attitudinal affinity with such causes is a nascent literature with most published in the past few years. These studies further highlight the importance of taking personality into account along with several other personal, situational, and attitudinal measures. Victoroff et al.'s (2010) study of 52 teenagers in Gaza highlighted that depressive symptoms were common amongst supporters of "religio-political aggression". Bhui et al. (2014) developed a radicalization scale that asked 16 questions regarding sympathies for violent protest and terrorism. Of the 608 U.K.-based participants, those most sympathetic were significantly more likely to also report depression (via the Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, & Williams, 2001)) and to see religion as important in their daily life. Those who condemn violent protest and terrorism were associated with a greater number of social contacts, less social capital, an unavailability for work due to housekeeping or disability, and birth outside the United Kingdom. There was no significant difference in terms of generalized anxiety scores. Bhui et al.'s (2016) modified analysis further demonstrated those sympathetic to violent protest and terrorism were also significantly more likely to have previously had problems with the police or made a court appearance. A range of other lifestyle and behavioral decisions were associated with little sympathy for violent protest and terrorism. They include the death of a close friend, previously signing a petition, donating

money to charity, volunteer work, and boycotting religious products. Nivette, Eisner, and Ribeaud (2017) developed a four-item violent extremist attitudes scale and deployed it in a sample of 1,288 adolescents in Switzerland. Personal strain (which includes a measure of personal stressors, negative life events and prior stays at a psychiatric hospital) was associated with a significantly higher support for violent extremism although it explained very little of the variance within the sample and largely disappeared once other social and individual variables were included in the analysis. Those with poor coping skills were significantly more likely to support violent extremism. Self-reported low self-control had no impact upon violent extremism.

Violent Criminals

Within the literature examining mass murders and fixated individuals, the role of psychopathology is implied to be causal. The newer field examining radical affinity is yet to proffer an opinion on causality. Within the more mature field of mental disorder in crime and violence, the research examining the role of psychopathology is highly convoluted. On one side, a strand of research assumes a consistent causal link between psychiatric symptoms (when they are found to be present) and criminal behavior (Fuller Torrey, 2015). On the other hand, a more nuanced strand of research argues there are "a (small) group of offenders whose symptoms relate directly to crime and a (larger) group whose symptoms and crimes are not directly related." (Peterson, Skeem, Kennealy, Bray, & Zvonkovic, 2014, p. 1).

Research investigating symptoms of serious mental disorder reports conflicting prevalence rates of symptoms co-occurring with violent acts. Monahan et al. (2001) found that in only 12% of violent incidents, offenders reported experiencing psychosis-related symptoms at the time of the incident. Shaw et al (2006) found that in a sample of individuals

convicted of homicide (n = 1594), 545 had received a diagnosis of mental disorder at some point prior to their offence, with 164 individuals experiencing active symptoms at the time of their offence (76 experienced symptoms of psychosis, 101 experienced symptoms of depression). Skeem, Kennealy, Monahan, Peterson, and Appelbaum (2015) concluded that psychotic symptoms immediately preceded 12% of violent incidents in their sample. Nielssen, Westmore, Large, and Hayes (2007) examined homicide offenders who were assessed by psychiatric staff for the purposes of a legal defense. Within the sample, 58% reported auditory hallucinations, and 57% reported delusional beliefs of a threat immediately prior to their offence. However, given the high levels of co-morbid substance misuse and intoxication (73% and 35%), it is not possible to discern whether the active symptoms of psychosis can be causally attributed to the offence.

Although the above investigations highlight prevalence of symptoms, they do not infer the role of such symptoms in the subsequent criminal behavior. A separate strand of research examines whether criminal behaviors are contingent on active psychiatric symptoms. Wessley et al. (1993) examined the association between experiencing delusions and performing a violent or non-violent act. Patients were asked whether their actions had occurred as a result of a 'principal delusion'. Sixty-percent of patients reported that at least one action was motivated by their principal delusion, and 20% described three or more incidences. However, Wessley et al. were unable to establish the extent to which violent behavior was motivated by delusions. Hellerstein, Frosch and Koenigsberg (1987) found no significant differences in violence between individuals with and without command hallucinations. However, Junginger (1990) examined rates of compliance in command hallucinations, noting 50% compliance in patients experiencing harmless commands, compared to 40% compliance for those experiencing dangerous and violent commands.

Junginger (1995) found that 46% of patients reported partial compliance to somewhat violent commands, and 23% reported full compliance to commands classed as very dangerous. Peterson, Skeem, Hart, Vidal, and Keith (2010) identified that only 5% of offenders investigated were classified as offending due to their psychotic symptoms. Peterson et al. (2014) found that in 4% to 13% of the cases examined, crimes were mostly or directly motivated by psychiatric symptoms. The results of these investigations highlight that it is rarely possible to attribute active symptoms of severe mental disorders as a causal factor in violent behavior.

Implications for Research

The above investigations have value, as they identify disorders and symptoms which often co-occur with specific behaviors found in mass murderers, lone actors, fixated individuals, and radicals. However, as Horgan (2014) correctly notes, "detailed research would be needed to further clarify the precise nature and role (if any) of mental health problems in the development of their violent activity" (p. 63). The presence of symptoms of a mental disorder will only ever be one of many factors in an individual's movement towards radicalization, planning a terrorist attack, and following an attack. In many cases, psychological problems may be present, but completely unrelated. Additionally, even mental disorders that are associated with an increased risk of violence (e.g., substance use and active psychosis) may never give rise to an act of violence until they are combined with environmental factors that favor violence, in the context of a situational trigger. The development of radicalization and attack planning behaviors is likely to differ from case to case depending upon the individual's mental health status, diagnosis (if any), prior life experiences, co-existence of other stressors and vulnerabilities, and lack of protective factors.

Thus, processes into and out of terrorism are far more labyrinthine and dynamic than one single factor can explain.

A gap currently exists between quantitative approaches to understanding psychopathology and engagement in grievance-fueled violence (be it terrorism, mass murder and so on) and qualitative accounts. The latter provide contextually-rich and immersive accounts of the process through which individual cases traverse through mental or personality disorders, and its relationship (or lack thereof) to vulnerability to radicalization, radicalization, violent radicalization, attack planning and attack commission (Bockler, Hoffmann & Zick, 2015; Gartenstein-Ross, 2014; Hemmingby & Bjorgo, 2015). Indeed, they are the cornerstone upon which theoretical pathway models are built. Yet, they have potentially little external validity or generalizability because they are so few. The former provides concrete prevalence rates of certain demographics, behaviors, outcomes and the correlations and relationships between them (Corner & Gill, 2015; Gill et al., 2014;). Yet, they offer no insight into the typical sequences in which behaviors are experienced as a pathway. They also provide no insight into causality. The presence of a factor does not equal causality nor does it highlight that such a factor is facilitative in the outcome. It may, in fact, be completely irrelevant to the outcome.

Within criminology, research has long shifted from examining both the presence (or absence) of variables, and in-depth individual case studies. Instead life course research has identified multiple overlapping and contingent events which influence offending behavior. This includes childhood experiences and abuse (Monahan et al., 2001), parenting practices (Monahan et al., 2001), age and employment (Uggen, 2000), marriage and spousal choice (van Schellen, Apel, and Nieuwbeerta, 2012), mental disorder and non-compliance to

medication (McFarland, et al., 1989), mental disorder and homelessness (Martell, 1991), mental disorder and prior arrests (Shore et al., 1989), and neighbourhood context (Monahan et al., 2001).

With the increased availability of first-hand primary data drawn from policing and intelligence agencies, such endeavours may soon be possible (Schuurman & Eijkman, 2015; Bockler, et al., 2015; De Bie & De Poot, 2016; Griffiths et al., 2017; Weenink, 2015). They may also make use of quantitative sequencing analysis. Human behavior is more complex than mono-causal interactions imply. Sequence models make the move from 'why' an individual becomes involved in violence, to examine 'how'. This methodology uses quantitative analyses to deliver a sequence which highlights behavioral trajectories, which in turn enhances qualitative understanding (Buene, Giebels, & Taylor, 2010; Taylor, 2006). This methodology not only offers potential for broadening understanding of the role of mental disorder in violent behavior, but also terrorist behavior more generally.

Within a behavioral sequence, immediate experiences and behaviors are often highly related. However, experiences and behaviors earlier in the sequence also have an effect on the final outcome. It is therefore imperative to capture the indirect experiences and behaviors, and examine how they affect the development of the sequence (Taylor & Donald, 2007), whilst also retaining the complex individual direct inter-relationships. Behavioral sequencing has been performed across a wide range of situations, including marital interactions (Gottman, Markman & Notarius, 1977), traffic accidents (Clarke, Forsyth & Wright, 1999), alcohol-related violence (Taylor, Keatley, & Clarke, 2017), rape (Fossi, Clarke, Lawrence, 2005), and terrorist mobilization (Jacques & Taylor, 2007). Rather than seeking monocausal explanations, sequence models highlight that eventual engagement in a violent act is the

culmination of multiple risk and protective factors crystalizing over time. Instead of focusing on what 'causes' radicalization and engagement with violence, sequence models allow examination of multiple factors, including mental disorder, to discern how experiences and settings impact on an individual's decision making.

Quantitative interpretations of psychopathology in terrorism have led to a lack of consideration of *when* an individual may develop psychological problems. Such problems are undoubtedly important in some cases. Sometimes it may facilitate violence. In other cases, it may make the adoption of an ideology easier due to delusional or fixated thought. However, the presence of symptoms of a mental disorder will only ever be one of many factors in an individual's movement towards radicalization, planning a terrorist attack, and following an attack. In many cases, psychological problems may be present, but completely unrelated. The development of radicalization and attack planning behaviors is likely to differ from case to case depending upon the individual's mental health status, diagnosis (if any), prior life experiences, co-existence of other stressors and vulnerabilities, and lack of protective factors. Thus, processes into and out of terrorism are far more labyrinthine and dynamic than one single factor can explain. The challenge for practitioners is to understand when, how, for whom, and in what circumstances, functions and processes might be relevant to understanding a person's movements into and through terrorist activities (Borum, 2014). Research feeding into such prevention efforts should move to use existing criminological approaches to life course analysis.

Relatedly, interpretations of existing research findings should take the timing of measurements and availability of source data into account. There may be subtle reporting biases inherent within different types of data collection initiatives. Studies dependent upon

prison samples may falsely equate diagnosed disorders with the terrorist violence, yet the disorders may be a by-product of prison life. Retrospective data collection based on open sources will differ in terms of how authors deal with competing accounts by expert psychiatrist witnesses in court. Samples largely dependent upon those who die at the scene of their attack will have a deficit of such data resources to inform the authors' judgements. Without taking such features into account, it will weaken predictive power, add noise to the existing evidence base, and lead to greater uncertainty.

Implications for Mental Health Professionals

There are a number of issues to note for mental health professionals and practitioners tasked with managing the risk posed by these various violent actors. The first relates to base rates. Terrorism and mass murder are very low base-rate activities subject to the well-established problem of excessive false positives, even with highly sensitive measures. Within this very low base rate of activity are sub-samples with diagnosed mental health problems. The number of individuals with these same problems who will never consider or engage in violence far outweighs in number the violent actors. It should be obvious therefore to state that a diagnosis does not hold predictive value for violence. However, several terrorism risk assessment tools mark the presence of mental disorders as significant, doing so without indicating the base rate of those disorders in the general population. As such, the numerator in such calculations of risk shed little light on the extent of the problem. Caution is therefore warranted in the application of these tools. As Borum (2014) highlights from an operational assessment point of view, the key function of looking at a disorder is seeing how it affects the subject's ability to engage in goal-directed behavior and to act on intentions. Sometimes a mental or personality disorder may decrease the likelihood of such behavior; sometimes it may enable it; and sometimes it may have no relationship at all.

Second, and relatedly, it is important to not just focus solely upon the mental health of the individual of concern, but to take a holistic approach to understanding their circumstances. In addition, it is worthwhile to distinguish between the related concepts of "risk" and "threat" of violence. Risk, the likelihood of an individual or group to engage in an act of violence, may stem from several sources with complexity within, and idiosyncrasy across, cases being the norm. Threat assessment is the process of determining whether a given individual poses a risk of harm to a specific target. An individual may be properly identified as "high risk" by virtue of such factors as childhood conduct disorder, adult antisocial behavior, substance abuse, and history of violence, without posing a threat to any identifiable target. Conversely, a fixated individual with a specific grievance towards an identified target who has acquired weapons and attempted to approach the target, may be identified as posing a serious threat, even in the absence of other risk factors. An understanding of this complexity and the multiplicity of potential factors could help inform how threat assessments, particularly of lone actors, should be carried out. When we talk about 'threat', and the related concept of risk, we need to consider multiple, overlapping questions including issues related to identification of threats (e.g. threat of what precisely?), exposure (e.g. under what conditions are particular offences more likely?) and management (i.e. which risks should be prioritized and what interventions are likely to be effective in terms of mitigating either risk, broadly speaking, or a specific threat) (Borum, 1999). Given a set of circumstances and conditions, an individual may appear to be of low risk. However, small changes in their life-course, personal circumstances, or opportunity to offend can have a force-multiplier effect and propel the individual into a higher category of risk.

Third, it is important to note there is active resistance within some psychological and psychiatric communities to engage in practice in this field. Some studies suggest that placing the assessment risk posed by such actors in the hands of mental health workers "puts these workers in potentially untenable positions because the legal duties they are asked to perform misalign with the predictive value of their expertise" (Metzl & MacLeish, 2015:246). The concern about predictive abilities is legitimate. Indeed, those who practice in the field of threat assessment are well aware that the ability to accurately predict human behavior, especially as the time since the most recent evaluation increases, is minimal. Instead, threat assessment professionals seek to identify the level of risk: low, moderate, and high.

This resistance has other additional sources of concern that may differ between treating clinicians and forensic evaluators, although there are differences between countries. For example, in the United States, treating clinicians have ethical obligations to act as advocates for their patients. Thus, they may resist taking any action (such as reporting concerning behavior to law enforcement) that could prove to be problematic for the patient. In addition, clinicians have both ethical and legal obligations to maintain confidentiality. Reporting concerns about potential violence (including possible violent extremist activity) may raise fears that it could result in ethical complaints or malpractice claims.

In the United States, the professional organizations for mental health professionals deem it ethical for the treating clinician to breach confidentiality to prevent harm to the patient him- or herself or others. Moreover the federal statute that governs the confidentiality of health records, the Health Insurance Portability and Accountability Act (HIPAA) contains 16 exceptions that allow for disclosure of information without the patient's permission for the public good.

In the United States, forensic evaluators operate under ethical obligations of honesty and objectivity, but they are not advocates for the persons they evaluate. They are trained to consider multiple sources of information in their analyses, going beyond the history provided by the examinee and the information obtained in the examination, in order to increase the accuracy of their assessments. As such, it is important that forensic evaluators appreciate the complex array of historic and dynamic factors, both those that increase risk and serve a protective role, in the areas of individual, environmental, and situational factors. Ethical practice in this field requires that the examinee be informed of the evaluator's role and the lack of confidentiality. It also requires, however, that the evaluator acknowledge the state of the science in the field of risk assessment and, the presence or absence of key information.

Fourth, there is also an argument that downstream prevention can potentially further stigmatize and marginalize troubled populations and any treatment may be misinterpreted (Metzl & MacLeish, 2015:246). Some have raised the specter of targeting individuals who possess factors that indicate the potential for increased risk, with law enforcement or other governmental action taken prior to any offense being committed. Counter to this is the argument that multiagency approaches to liaison and diversion of vulnerable individuals, when they are showing signs of concerning behavior but before they have acted, is appropriate and worthwhile.

In the United Kingdom, the Counter Terrorism and Security Act 2015 creates a duty on certain bodies, including educational establishments and hospitals, to have "due regard to" the need to prevent people from being drawn into terrorism (the so called Prevent Duty). The notion that mental health services should cooperate with the Prevent Duty has attracted some

controversy, but it has been argued that it is in fact an arrangement that goes to the heart of what psychiatrists, psychologists and other mental health professionals do. That is, attempt to provide better outcomes and better lives for vulnerable patients and protect others from the harm they might cause. The Prevent Duty is about safeguarding vulnerable people against those who would wish to use them for their own purposes. The concept of safeguarding is understandable in other areas of life. For example, most jurisdictions have safeguards in place to prevent the grooming of vulnerable children by those who would wish them harm, and to safeguard vulnerable adults. It has been argued that it is reasonable to apply this model to those that are vulnerable and at risk of destroying their lives, and the lives of others, by descent into extremism and violence. The Prevent Duty represents an opportunity to act before the tragedy occurs, to liaise with agencies and divert people in other directions, thus helping them and reducing the risk that they pose.

Early results of a pilot project in the United Kingdom involving police and mental health services, working together to liaise with mental health services and divert vulnerable individuals, suggests a significant minority of referrals had a diagnosed psychotic illness and a significant proportion had been known to mental health services but were not currently receiving a service. Irrespective of the individuals pronounced ideology one principal concern is to protect people and help them to alter their behavior. The concern is about the possibility of grievance-fueled violence, and how to reduce the associated risk. In this regard, it is relevant that those with grievance fueled violence have higher rates of psychosis, predominantly delusional disorder. In a jurisdiction where compulsory treatment can be applied for the sake of a person's health, rather than solely on the grounds of dangerousness, treating the mental illness and introducing individuals into a care pathway serves both the interests of public health and of public safety, without it being necessary to attempt to predict

which individuals would have gone on to commit violent acts, if they had not been treated. This follows a population model, already used with the fixated in the UK, in which attention to reducing risk factors may prevent harmful events, without knowing which cases would have gone on, in the absence of intervention, to act violently. This model is based upon prevention, not prediction. The medical analogy is with coronary heart disease, where treatment of risk factors in a population (e.g. high cholesterol, smoking, hypertension) will lower the risk of heart attacks without it being necessary to predict exactly which individuals would have gone on to have them, if treatment had not been provided. Practical attention to the range of risk factors in a given population, or sub-population, may be a way forward in preventing lone-actor violence, without it being necessary to complete the difficult and complex task of disaggregating the relative importance of each factor in a given case.

Conclusion

The examination of psychopathology within the field of terrorism has historically been marred by subjective opinion and poor empirical evaluation. Fortunately, more recent investigations are moving away from causal assumptions, and are looking to other academic fields to pursue a more comprehensive understanding of the interplay between mental disorder and violence and crime. Empirical research examining mental disorder in crime and violence highlights that the commission of such events is a complex synthesis of psychopathology, personal circumstance, and environment. What differs across cases is the ordering of such factors. This review has shown that research examining different types of targeted violence has much to gain from following this lead.

It may be argued that individuals who are driven to conduct an act of violence due to an underlying grievance are distinct from those examined in the general crime literature.

Attitudinal affinity notwithstanding, psychological, situational, and contextual factors affect behavior. Conducting an act of targeted violence is the culmination of a series of behaviors. The decisions involve weighing the costs and benefits and such calculations differ across offenders based on prior experience, personality and habituation. It is therefore not surprising that psychopathology sometimes has a role in targeted violence. However, research is yet to determine at which point the experience of a mental disorder is relevant to behavior. For some, the experience of symptoms of a mental disorder may be just one of many factors that pushed and pulled that individual into engagement. Or the presence of symptoms may be a by-product of criminal activity. Or the mental disorder may be just one of many factors in the mix, but nevertheless one without which the others alone would not have led to the individual committing an act of violence. Improvements in research examining targeted violence will feed into professional practice.

Finally, despite the nascent empirical research showing the prevalence of mental disorders within terrorist samples, it is worth noting that such individuals typically remain a minority in most samples. This attests to the limitations of expecting mental health professionals to identify individuals at risk of carrying out mass violence. In many cases, psychologists may have little to contribute in those circumstances in which potential perpetrators display no psychological disturbance and continue to act rationally.

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Figure 1: Mental Disorder Prevalence Across Lone-Actor Terrorists, Mass Murderers, and those Fixated on Public Figures

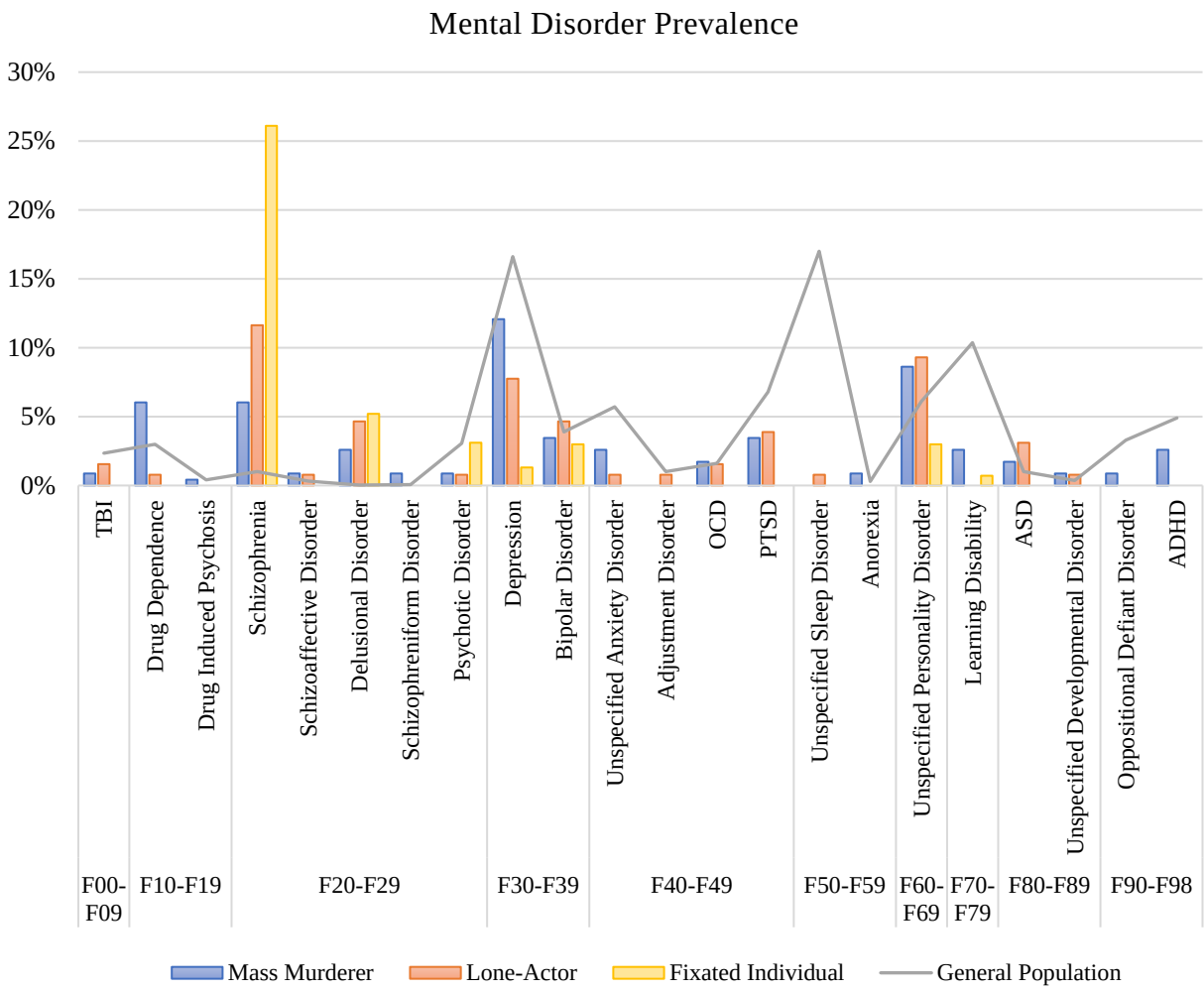

Figure 1 Mental Disorder Prevalence Rates across Actors and a General Population. ICD-10 Code groups and Specific Disorder Names Included