

The Lone-Actor Terrorist and the TRAP-18

Lone actor terrorism is considered a major national security threat in both North America and Europe. Although the focus has been on violent Islamic jihadists, and most recently both recruitment and attacks by individuals inspired by ISIS, such threats come from the extremes, regardless of ideology. As Pascal wrote over three centuries ago, “les extremes se touchent,” the extremes meet (Paul, 1905, p. 22). For example, despite the inordinate attention paid to jihadist violence in the United States, there have been an almost equal number of murders by individuals from the extreme right when compared to jihadists since 9/11, and twice as many attacks by the extreme right (New America Foundation, 2016).

Efforts to counter such violence, and to distinguish between those who have the legally protected right in democracies to have extreme beliefs from those who intend to act violently on their extreme beliefs, have, in part, focused upon risk assessment of such individuals. The Terrorist Radicalization Assessment Protocol (TRAP-18) is an attempt to advance these efforts.

Over the past forty years there has been a slow and steady evolution in the understanding of the individual terrorist, both theoretically and empirically (Gill, 2015; Simon, 2013; Sageman, 2008). The past few years in particular have seen a burgeoning of empirical studies, many of them challenging earlier theoretical misconceptions concerning the lone terrorist, such as the absence of mental disorder or socioeconomic deprivation (Borum, Fein & Vossekuil, 2012; Borum, 2014; Gill, 2015; Gill et al., 2014; Gill, Horgan, Hunter & Cushenberry, 2013; Corner & Gill, 2014; Gruenwald et al., 2013; Bryneillson et al., 2013; Cohen et al., 2014; Spaaj, 2012; Simon, 2013; Sageman, 2008; Hamm and Spaaj, 2015; Horgan, 2005, 2008; Weenink, 2015; Meloy, 2011; Meloy & Yakeley, 2014; Bergen, 2016). Such work has contributed to the development of three published structured assessment

instruments for the coding of behaviors for terrorist risk, including the Violent Extremist Risk Assessment (VERA; Pressman, 2009) modeled after the HCR-20 (see Douglas et al., 2013 for the newest version 3), the Multi-Level Guidelines for the Assessment and Management of Group-Based Violence (MLG; Cook et al., 2013), and the Extremism Risk Guidelines (ERG 22+; Lloyd and Dean, 2015). Other coding tools have proliferated among various law enforcement and security agencies in both North America and Europe, some of them classified, but without the requisite peer-reviewed research to demonstrate their scientific reliability and validity before being operationally utilized. Such criticism, however, must also acknowledge the compelling need for intelligence gathering in a world where a heightened awareness of risk is ubiquitous (Meloy & Hoffmann, 2014).

In response to these needs, Monahan (2012) articulated the present state of the science concerning the “conceptual and methodological challenges” that must be surmounted to advance the risk assessment of individual terrorism. He elaborated upon four problems: 1) the need for clarity as to what is being assessed; 2) the likely usefulness of structured professional judgment; 3) the identification of robust risk factors within four domains: ideologies, grievances, affiliations, and moral emotions; and 4) the very low probability of prospective validation. In a follow up chapter, Monahan (2016) reported on the positive advances since his earlier paper, and added the domain of “identities” to his four domains of risk. However, he also noted the continued stagnation in terrorism research due to the lack of political will to bring together the academic and intelligence communities. He posited that the most realistic research endeavors will be “known outcome” studies where comparisons are made between those who have and have not carried out terrorist acts on putative risk factors.

Monahan (2012) furthermore noted in a comparison of the general criminal violence risk research and the terrorism research that there is little overlap, necessitating the development of a structured professional judgment instrument specific to terrorism:

“From the existing research, therefore, it appears that *none* of the four overlapping dimensions of the risk of common violence identified by Kroner et al (2005)—criminal history, an irresponsible lifestyle, psychopathy and criminal attitudes, and substance abuse—characterize those who commit violent terrorism. In addition, there is little empirical evidence supporting the validity of other putative risk factors for terrorism beyond what is already obvious (i.e., age, gender, and perhaps marital status). Indeed, the strongest empirical findings are entirely negative: terrorists in general tend not to be impoverished or mentally ill or substance abusers or psychopaths or otherwise criminal; suicidal terrorists tend not to be clinically suicidal. In no society studied to date have personality traits been found to distinguish those who engage in terrorism from those who refrain from it (Monahan, 2012, p.).”

The purpose of this study is to present an investigative template which may eventually provide a reasonable assessment of risk of lone-actor terrorism, based upon the recommendations of Monahan (2012, 2016) and incorporating work on proximal warning behaviors for targeted violence (Meloy, 2011; Meloy et al., 2012) and distal characteristics of the lone terrorist (Meloy & Yakeley, 2014). The proximal warning behaviors, a typology derived from the threat assessment literature (Meloy et al., 2012; Meloy & Hoffmann, 2014), have been found to have ecological validity across a range of targeted violence domains, such as public figure attackers and school attackers, both in the United States and Europe (Hoffmann et al., 2011; Meloy et al., 2014a, 2014b). They have also shown postdictive validity when discriminating between German school shooters and other students of concern with no intent to attack (Meloy et al., 2014b). The distal characteristics are based upon the psychosocial research concerning lone actor terrorism conducted during the past decade (Borum, Fein & Vossekuil, 2012; Borum, 2014, 2015; Gill, 2015; Gill et al., 2014; Corner & Gill, 2014; Gruenwald et al., 2013; Spaaj, 2012; Simon, 2013; Sageman, 2008; Hamm and Spaaj, 2015) as well as the original psychodynamic formulations of the authors (Meloy & Yakeley, 2014). One study has found these distal characteristics to have some criterion validity, and good to

excellent interrater reliability, in a small sample of European individual terrorists (Meloy, Roshdi, Glaz-Ocik & Hoffmann, 2015). This rationally-derived theoretical model is applied in this study to an existing large dataset of lone-actor terrorists in the United States and Europe to test its criterion validity from several perspectives. The instrument is called the Terrorist Radicalization Assessment Protocol, and consists of 18 coded behavioral patterns (TRAP-18). Although the TRAP-18 may complement the other three instruments noted earlier (MLG, VERA, ERG 22+), what it brings to the task which the others do not is a focus only on targeted violence—acts which are intended and purposeful—rather than general violence, the lone-actor terrorist as distinct from terrorists under external command and control, and a proposed temporal distinction between indicators which may compel active risk management in temporal proximity to a possible terrorist act, and those more distal characteristics which may only need active monitoring. Such a distinction, we believe, can aid in the prioritizing of cases and operational efficiencies for more effective utilization of resources

Definition of Terms for the TRAP-18

The TRAP-18 consists of two sets of indicators: first, eight warning behaviors which were originally developed to identify patterns of proximal risk for intended or targeted violence, in contrast to the more common mode of violence which is typically impulsive or reactive (Siegel & Victoroff, 2009; Meloy et al., 2012). Second, ten distal characteristics of the lone terrorist derived from studying the extant empirical and theoretical research on terrorism and the first author's experience as a forensic psychologist (Meloy, 2004, 2011) in directly and indirectly assessing both foreign and domestic lone terrorists over the past twenty years and his thematic review of these clinical cases (Meloy & Yakeley, 2014). This work occurred as both a privately retained consultant for various entities, as well as public retention by the FBI and other agencies within the US Government. The privately retained work involved domestic lone actor terrorists and terrorist cells who ideologically framed their motivations with both secular (two examples, the

single issue of use of lethal force by police officers and adherents of the Patriot Movement) and religious ideologies (for example, a religious belief in the end times and the need to offensively pre-empt Armageddon). The work for both the FBI and other government agencies remains classified. The ten characteristics are psychodynamically, psychobiologically, and psychosocially based, and define more chronic and distal aspects of the lone actor terrorist that may prompt further intelligence gathering and monitoring, but may stop short of the active risk management which is compelled by the presence of a warning behavior. This formulation is conceptually based upon the work of Monahan and Steadman (1996) who applied the meteorological distinction between watching and warning to assessing the risk of violence. The category of watching implied a more distant risk which should be monitored, while a warning was reserved for a threat that compelled immediate and active risk management. The eight proximal warning behaviors and 10 distal characteristics combine to form the TRAP-18.

The Warning Behavior Typology

These are proximal and dynamic patterns which may indicate accelerating risk for targeted violence. The warning behaviors are not discrete variables, but patterns for analysis (Meloy et al., 2014, Guldemann et al., 2013). Typologies can provide a framework to help think about multiple dimensions of a problem and how those dimensions might interact (Borum et al., 2012); pattern analysis has its roots in gestalt psychology (Kohler, 1929; Koffka, 1921; Wertheimer, 1938) and capitalizes on normal cognitive-perception to organize bits of detail into meaningful patterns. The behavioral patterns are coded as present if any pre-offense behavior is found to have a reasonably certain fit with the proffered descriptions:

Pathway warning behavior is research, planning, preparation or implementation of an attack (Calhoun & Weston, 2003; Fein & Vossekuil, 1998). These are the latter stage markers on the pathway as defined by Calhoun & Weston (2003) and exclude the earlier markers, such as an initial personal grievance and ideation, defined in

their theoretical model, and captured by the first distal characteristic of the TRAP-18 below.

Fixation warning behavior indicates an increasingly pathological preoccupation with a person or a cause, accompanied by a deterioration in social and occupational life (Mullen et al., 2009). It is distinguished from normal fixations such as intense enthusiasm over a sports team, the early stages of romance, and lifelong hobbies.

Identification warning behavior indicates a psychological desire to be a pseudo-commando (Dietz, 1986; Knoll, 2010), have a warrior mentality (Hempel, Meloy & Richards, 1999), closely associate with weapons or other military or law enforcement paraphernalia, identify with previous attackers or assassins, or identify oneself as an agent to advance a particular cause or belief system (Meloy, Mohandie, Knoll & Hoffmann, 2015). It is notable as a shift from believing what others do (fixation) to wanting to become who they are, and may embrace both nonfictional and fictional individuals and groups.

Novel Aggression warning behavior is an act of violence that appears unrelated to any targeted violence pathway and is committed for the first time (Meloy et al., 2012). It is understood to be a behavior with which the subject tests his actual ability to be violent, and is distinguished from the distal characteristic of a history of criminal violence.

Energy Burst warning behavior is an increase in the frequency or variety of any noted activities related to the target, even if the activities themselves are relatively innocuous, usually in the days, weeks, or hours before the attack (Odgers et al., 2009; Meloy et al., 2012). It can only be calculated if there is already an established baseline of behavioral activity through prior intelligence gathering.

Leakage warning behavior is the communication to a third party of an intent to do harm to a target through an attack (Meloy & O'Toole, 2011). It is only coded if it was known or could have been known by others prior to the attack.

Last Resort warning behavior is evidence of a „violent action imperative“ and „time imperative“ (Mohandie & Duffy, 1999); it is often a signal of desperation or distress. The subject has decided that there is no other alternative than to be violent toward the target. Sometimes it is triggered by a major loss or anticipated loss.

Directly Communicated Threat warning behavior is the communication of a direct threat to the target or law enforcement beforehand (Meloy et al., 2012).

The 10 Distal Characteristics of the Lone-Actor Terrorist

Personal Grievance and Moral Outrage join both personal life experience and particular historical, religious, or political events. The personal grievance is often defined by a major loss in love or work, feelings of anger and humiliation, and the blaming of others. Moral outrage is typically a vicarious identification with a group which has suffered, even though the lone-actor terrorist has usually not experienced the same suffering, if any at all. In a few cases, there will only be a personal grievance, yet it is comprehended and often magnified by the next characteristic.

Framed by an Ideology is the presence of beliefs which justify the terrorist's intent to act. It can be a religious belief system, a political philosophy, a secular commitment, a one-issue conflict, or an idiosyncratic justification (Simon, 2013; Meloy et al., 2014). Often the belief system is cherry-picked for words and phrases which justify targeted violence, and intellectual understanding of the ideology is superficial and simplistic.

Failure to Affiliate with an Extremist Group is defined by the actual failure and/or rejection of the lone-actor terrorist from a radical or extremist group with which he

wants to join (Puckitt, 2001). In some cases, the subject has rejected the extremist group, or the group's beliefs are too moderate for him.

Dependence on the Virtual Community is evidence of the lone-actor terrorist's active communication with others through social media, chat rooms, e-mails, list-servs, texting, tweeting, etc. about his radical or extreme beliefs (see Gill, Corner, Conway, Thornton, Bloom and Horgan, *forthcoming*). This also includes learning tactical skills concerning his act of terrorism from others through the internet. The extensive use of social media may only involve posting of opinions, activities, or intent for some individuals. In all cases, dependence implies some amount of reliance on the internet, and should be broadly interpreted for coding.

Thwarting of Occupational Goals is a major setback or failure in a planned academic and/or occupational life course.

Changes in Thinking and Emotion is indicated when thoughts and their expression become more strident, simplistic, and absolute. Argument ceases, and preaching begins. Persuasion yields to imposition of one's beliefs on others. There is no critical analysis of theory or opinion, and the mantra, „don't think, just believe,“ is adopted. Emotions typically move from anger and argument, to contempt and disdain for others' beliefs, to disgust for the outgroup and a willingness to homicidally aggress against them (Matsumoto et al., 2015). Violence is cloaked in self righteousness and the pretense of superior belief. Humor is lost. The warning behavior of fixation may be apparent throughout these changes, but fixation is defined by thought *content*, while this distal characteristic is change in the *interpersonal expression* of that content. Expressiveness may suddenly diminish when the subject goes operational and enters the later stages of the pathway.

Failure of Sexual-Intimate Pair Bonding is coded if the subject has historically failed to form a lasting sexually intimate relationship. The sexualization of violence may be a secondary component. It refers to the finding of a sexual attitude or behavior in

the subject which appears to substitute for the absence of a sexual pair bond, such as the sexualization of weapons, the anticipation of unlimited sexual gratification in the afterlife (libido in the service of thanatos), the exclusive use of prostitutes and other unbonded sources of sexual gratification, or compulsive use of pornography: all of these behaviors may be rationalized by the ideology; eg, among jihadists, the adoption of more liberal sexual behaviors may be acceptable because they help maintain operational secrecy in the West through deception of others.

Mental Disorder is coded if there was evidence of a major mental disorder by history or at present. Whether or not ideology helped buffer the symptoms of mental disorder is a secondary, but important consideration (Meloy & Yakeley, 2014): an esoteric or nihilistic belief is utilized by the individual to manage the anxiety of a decompensating mind. This characteristic was called “nexus of psychopathology and ideology” in the foundational publication (Meloy & Yakeley, 2014).

Greater Creativity and Innovation is coded if there was evidence of tactical thinking „outside the box” (Meloy & Yakeley, 2014; Simon, 2013). It was operationalized for this study by coding whether the terrorist act was innovative and/or subsequently imitated by others.

Criminal Violence is coded if there was evidence of instrumental criminal violence by history separate from the terrorist act.. Predatory (instrumental) violence contrasts with affective violence, which is an emotional and reactive mode of violence to an imminent threat (Meloy, 1988, 2006). There is an extensive body of research which indicates that these modes of violence are somewhat biologically distinctive in mammals (Siegel and Victoroff, 2009). Predatory violence biologically underpins the pathway warning behavior, which is concerned with late stage tactical markers, but is coded here only if found in the subject’s history of instrumental criminal behavior. Virtually all acts of terrorism are predatory (instrumental) violence. This characteristic indicates both a capacity and a willingness to engage in predation for a variety of reasons, such as a history of armed robberies or planned assaults on

others. Although the instrumentality of the violence is emphasized, it may be difficult to code this aspect of criminality due to a paucity of investigative reports on the subject's history. This characteristic was called "predatory violence" in the original foundational publication (Meloy & Yakeley, 2014).

Methods

The Sample

The sample consists of 111 lone-actors from the United States and Europe who engaged in, or planned to engage in acts of lone-actor terrorism, and were convicted for their actions or died during the commission of their offenses (Gill, Horgan & Deckert, 2013; Corner & Gill, 2014; Gill, 2015). Terrorism was defined as "the use or threat of action where the use or threat is designed to influence the government or to intimidate the public or a section of the public, and/or the use or threat is made for the purpose of advancing a political, religious, or ideological cause" (p. 2, Gill et al., 2013). The sample includes only lone-actors who actively planned and carried out an attack. Lone-actor terrorists were identified through the academic literature, LexisNexus, the Global Terrorism Database developed by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland, and lists of those convicted of acts of terrorism in the United Kingdom and the United States. All lone-actors engaged in their acts between 1990 and 2014, a twenty-five year period (Gill, 2015).

Data Collection and Measurement

The original codebook utilized in the study of these 111 terrorists is outlined in detail elsewhere (Gill, 2015) and is available from the second author as supplementary material. For this study questions from the codebook which addressed the 18 behavioral patterns in the TRAP were selected by the authors. This methodology presented several challenges: first, a number of the TRAP-18

indicators emphasize underlying motivation, whereas the original coding of the 111 terrorists emphasized behaviors; second, the TRAP-18 focuses on patterns of behaviors, rather than discrete acts, eg, pathway vs. procurement of weapons. This led to the necessity of judgment, and in some cases, extrapolation, to identify clusters of behaviors in the original coding that fit within a TRAP indicator. Both of these problems increased the subjectivity of the research task, which was addressed in two ways: the researchers conferred on the choice of codebook variables for each of the TRAP indicators, capitalizing on their respective understanding of the development of the TRAP-18 and its meaning, and the complete database underlying the 111 terrorists; and second, each of the TRAP-18 indicators below identify the discrete variables from the original codebook that were utilized, our comments, and the percentage of the subjects who were positive on that particular variable.

We then did two further analyses: we divided the subjects into three different ideological groups: radical Islamic extremists, extreme right wing terrorists, and single issue terrorists as defined in the original study (Gill, 2015), and compared the frequencies of the TRAP-18 indicators across the three groups. The final analysis compared successful vs. thwarted attackers across the TRAP-18 indicators. The original lone-actor dataset (Gill, 2015) included both successful actors and those who were thwarted in their plans. A thwarted attack covered plots which were developed by lone actor terrorists that were interrupted/uncovered/stopped by some form of policing/intelligence/security organization and subsequently led to a conviction. It did not include cases of individuals caught up in FBI sting operations (these are omitted from the data entirely). It also did not include 'material support' cases: in other words, individuals in the U.S. who were charged with (18 USC Section 2339A) knowingly and intentionally providing training, expert advice, service, or personnel for terrorist endeavors

Statistics

All descriptive analyses are expressed in frequencies where data were known. All comparative analyses utilized nonparametric statistics (χ^2) to determine significance, which was set at $p < .05$, and phi coefficients to determine the effect size of any significant difference. Effect sizes were interpreted utilizing Cohen (1988; .10=small, .30=medium, .50=large).

Results

Each of the 111 subjects had to have at least one or more of the coded variables to be counted as a subject who displayed that particular TRAP indicator. Many subjects had more than one variable within each TRAP indicator, but would only be counted once. For example, the first distal characteristic, personal grievance and moral outrage, has within it 8 originally coded variables. In order for a subject to be counted as demonstrating that distal characteristic, he would have to have at least one of the original coded variables, but could have several more. The frequency percentages for the originally coded variables are listed in parentheses.

Coding of distal characteristics

For the characteristic 'personal grievance and moral outrage', we included behaviors such as whether the individual experienced, in the build up to the event, being: degraded (18%), the target of an act of prejudice/unfairness (23%), lied to or disrespected (23%), ignored or treated poorly by someone important to them (11%), or the victim of a verbal or physical assault (14%) We also included whether he recently became unemployed (29%), demonstrated a tipping point in the progression of the grievance (62%), or experienced financial problems (28%). These variables addressed both interpersonal and work-related negative events.

For the characteristic 'framed by an ideology', 39% were right-wing inspired, 27% were single-issue¹ inspired and 34% were Islamic extremists. These variables defined the ideological persuasion of the subjects.

In terms of 'failure to affiliate with an extremist group', we coded whether the individual failed to recruit others or form his/her own group prior to the event (22%) and whether the individual was rejected entry from an activist/pressure/terrorist group prior to the event (14%). These variables included the subject as both rejector and rejected.

'Dependence on the virtual community' included two behaviors that catalogued whether the individual interacted online with co-ideologues (30%) and whether the individual used the internet to specifically learn some aspect of their plot (42%). These variables both infer reliance on the internet, but also capture both interaction with others as well as tactical learning devoid of direct interaction.

'Thwarting of occupational goals' neatly corresponds to behaviors such as whether the individual became recently unemployed (29%), recently dropped out of school/university (13%), had an upcoming life change he/she did not want (9%), experienced a downturn in their work (12%) or academic performance (3%), and was interrupted in working on a proximate goal (14%).

The characteristic 'changes in thinking and emotion' encapsulates behaviors such as whether the individual produced their own propaganda (25%), sought legitimization for their plans from leading epistemic authority figures (14%), intensified their religious (25%) or ideological beliefs (48%) prior to the build up of their plot, was angry in the lead up to the event (55%), and whether the individual denounced others who shared their ideology (12%). Although these variables cover a wide range of activities, they infer the emotions of anger and contemptuous

¹ This is a broad amalgamation of disparate ideologies including environmentalism, anti-abortionism, and animals' rights.

devaluation of others' beliefs, and a sanctioning of their own acts in relation to their evolving beliefs.

For the characteristic 'failure of sexual-intimate pair bonding', we looked at whether the individual was single (59%), experienced problems in personal relationships in the build up to the plot (29%), and whether they were characterized as socially isolated (55%). All of these variables code in the direction of chronic interpersonal failures.

We examined whether the individual had a history of mental illness (41%) for the characteristic 'mental disorder'. This variable captures a history of mental health problems some time in the life course of the subject. Corner & Gill (2015) created and coded variables concerning mental illness diagnoses, including number and name of diagnoses and diagnostic categories. These variables were created following examination of the extensive literature available on each actor. The names of the diagnoses were located in the literature, and reliability and quality of the source was taken into account. To ascertain number of diagnoses the same process was carried out. Diagnostic categories were noted either from a confirmed diagnosis in articles, or from a series of symptoms that were cross-referenced with diagnostic material, and given a provisional diagnosis (ICD-10, World Health Organization, 2013). The diagnoses included traumatic brain injury, drug dependence, schizophrenia, schizoaffective disorder, delusional disorder, psychotic disorder, depression, bipolar disorder, unspecified anxiety disorders, dissociative disorders, OCD, PTSD, unspecified sleep disorder, unspecified personality disorder, and autism spectrum disorder. Corner, Gill and Mason (2016) provide a descriptive analysis of the prevalence of these different disorders in this sample.

The characteristic 'creativity and innovation' was demonstrated by Gill et al (2014) to have two key components: the degree to which a product is novel/original and also generalizable. We coded whether other lone actors had previously carried out a

particular attack type. If not, the attack was coded as novel/original (22%). If an attack inspired copycats, it was coded as generalizable (14%).

The 'criminal violence' characteristic asks whether the individual had a history of instrumental and violent criminal behavior prior to their lone-actor terrorist plot (30%).

Coding of proximal warning behaviors

The 'pathway warning behavior' includes whether the individual engaged in preparatory activities (24%), demonstrated evidence of bomb-making manuals in the offender's home (42%), engaged in dry-runs (30%), received hands-on training for an event (23%) and had a stockpile of weapons (57%). All of these variables are specific to research, planning, and preparation for the terrorist act, and by definition negate the notions of impulsivity and "snapping."

The following behaviors were included for 'fixation warning behavior': whether the individual's ideological (48%) or religious (25%) orientation intensified prior to the event, or if the ideological (18%) or religious (15%) belief changed, if the person's anger was escalating prior to the attack (33%) and whether the individual seemed obsessed with one specific event or phenomena (26%). These variables capture the increasing anger and intensity of the pathological preoccupation (Meloy et al., 2012).

'Identification' included whether the individual claimed to be part of a wider group/movement or characterized their actions as a group/movement (46%), if there were evidence to suggest the individual read literature/propaganda from a wider movement (60%) or other lone-actor terrorists (18%). Although these

variables do not directly address self-identification, they suggest an increasing interest in others' actions, perhaps to be like them.

Whether the individual engaged in other forms of violent behavior prior to the event (17%) summed up the 'novel aggression' characteristic. Again, this is an extrapolation of one behavioral variable to measure a testing of the subject's ability to be violent, and should be viewed as an estimate due to its subjectivity.

'Energy burst' included whether the individual increased levels of physical activity or outside excursions prior to the event (8%). This is a difficult variable to code, often due to the lack of information and attention to this warning behavior during the original data gathering, or the lack of calibration of the subject's normal level of activity.

'Leakage' covers a range of behaviors including whether the individual produced letters/public statements prior to the event regarding their ideology (59%), made verbal statements to a wider audience about their intent or belief prior to the event (49%), let others know about their grievance (74%) or ideology (68%) or intent (51%) and also whether they expressed a desire to hurt others (65%). All of these coded variables capture leakage to third parties, whether individuals or the universe of internet users. All of these variables also exclude a directly communicated threat to the target beforehand.

If the individual cleared out his/her bank accounts (4%) or paid off their debt (2%) prior to the event, it was coded under the 'last resort' characteristic. The same also applied to the following three behaviors: upcoming life change (9%), work-related loss or stressor (16%), and being a helpless victim (12%). Some of these coded behaviors suggest a sense of the subject perhaps feeling trapped, but the extrapolation to "last resort" is not exact by any means due to the limitations of the original coding.

Finally, if the subject provided a specific pre-event warning (22%), it was considered a ‘directly communicated threat’. Although prior research indicates that direct threats will occur in a minority of cases of targeted violence, they always warrant attention by the threat assessor (Meloy, Sheridan & Hoffmann, 2008).

We then assessed the prevalence of each TRAP indicator across the 111 lone-actor terrorists (see Table 1). Obviously each lone-actor terrorist can experience more than one coded behavior within each indicator, so the figures in Table 1 are not a sum of the coded behaviors. The prevalence percentage, instead, represents the number of lone actor terrorists who had at least one or more coded behavior assigned to each of the TRAP-18 indicators.

Table 1: Prevalence of TRAP 18 Indicators Across 111 Lone Actor Terrorists

Indicator	Prevalence
Personal Grievance & Moral Outrage	78%
Framed by an Ideology	100%
Failure to Affiliate with an Extremist Group	29%
Dependence on the Virtual Community	49%
Thwarting of Occupational Goals	55%
Changes in Thinking & Emotion	88%
Failure of Sexual-Intimate Pair Bonding	84%
Mental Disorder	41%
Creativity & Innovation	29%
Criminal Violence by History	30%
Pathway Warning Behavior	80%
Fixation	77%

Identification	77%
Novel Aggression	17%
Energy Burst	8%
Leakage	85%
Last Resort	28%
Directly Communicated Threat	22%

We then examined the degree to which each lone actor experienced each TRAP-18 indicator. One individual displayed 16 of the 18 indicators, one scored 15 out of 18, five scored 14 out of 18, another 5 scored 13 out of 18, eleven scored 12 out of 18, 18 scored 11 out of 18, 25 displayed 10 indicators, 12 displayed half of the indicators. In sum, 70% of the 111 lone actors demonstrated at least half the TRAP-18 indicators.

Across ideologies, there was no difference in terms of the prevalence of indicators on display with each averaging between 9.5 and 9.9. However, there were four ($p < .05$) significant differences in terms of which indicators each ideology was likely to display: personal grievance and moral outrage, dependence on the virtual community, thwarting of occupational goals, and fixation. The results are displayed in Table 2. Islamic extremist lone-actors were significantly more likely to display dependence on the virtual community than the single-issue terrorists. Extreme right-wing lone actors were significantly less likely to display personal grievance and moral outrage, thwarting of occupational goals, and fixation warning behaviors than either the Islamic extremists or the single-issue terrorists. Single-issue lone actors were significantly less likely to display dependence on virtual communities than the Islamic extremists. There were no significant differences in the other proximal warning behaviors and distal characteristics.

Table 2: Prevalence of TRAP 18 Indicators Across Ideologies

Indicators	Islamic	Extreme	Single-	Prevalence
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	Extremist (n=38)	Right- Wing(n=43)	Issue (n=30)	Overall (N=111)
Personal Grievance & Moral Outrage	84%	67%*	87%	78%
Framed by an Ideology	100%	100%	100%	100%
Failure to Affiliate with an Extremist Group	18%	33%	37%	29%
Dependence on the Virtual Community	63%*	51%	26%**	49%
Thwarting of Occupational Goals	66%	42%*	60%	55%
Changes in Thinking & Emotion	92%	84%	90%	88%
Failure of Sexual-Intimate Pair Bonding	87%	86%	77%	84%
Mental Disorder	32%	40%	53%	41%
Creativity & Innovation	29%	28%	30%	29%
Criminal Violence by history	29%	33%	27%	30%
Pathway Warning Behavior	76%	81%	83%	80%
Fixation	84%	65%*	83%	77%
Identification	68%	86%	73%	77%
Novel Aggression	13%	19%	20%	17%
Energy Burst	8%	9%	7%	8%

Leakage	79%	88%	87%	85%
Last Resort	32%	26%	27%	28%
Directly Communicated Threat	21%	16%	30%	22%

* = $p < .05$, ** = $p < .01$, *** = $p < .001$

The successful vs. thwarted attackers are represented in Table 3. Those who successfully carried out an attack were significantly more likely to display the following distal characteristics a) failure of sexual-intimate pair bonding ($p=.002$, $\phi = .293$) (b) creativity and innovation ($p=.045$, $\phi=.190$) and (c) fixation warning behavior ($p=.032$, $\phi=.204$). Those who were thwarted in their attack plans were significantly more likely to display dependence on the virtual community ($p=.0008$, $\phi=.317$) and pathway warning behavior ($p=.005$, $\phi=.264$). All these effect sizes were small to medium.

Table 3: Comparison of TRAP-18 variables between successful and thwarted attackers

Characteristic	Attack Carried Out (n=67)	Attack Thwarted (n=44)	Prevalence Overall (N=111)
Personal Grievance & Moral Outrage	82%	73%	78%
Framed by an Ideology	100%	100%	100%
Failure to Affiliate with an Extremist Group	27%	32%	29%
Dependence on the Virtual Community	36%	68%****	49%
Thwarting of Occupational Goals	57%	52%	55%

Changes in Thinking & Emotion	93%	82%	88%
Failure of Sexual-Intimate Pair Bonding	93%**	71%	84%
Mental Disorder	45%	34%	41%
Creativity & Innovation	36%*	18%	29%
Criminal Violence by history	35%	23%	30%
Pathway Warning Behavior	72%	93%****	80%
Fixation	84%*	66%	77%
Identification	72%	84%	77%
Novel Aggression	18%	16%	17%
Energy Burst	8%	9%	8%
Leakage	90%	77%	85%
Last Resort	34%	18%	28%
Directly Communicated Threat	20%	23%	22%

* = p = .045, ** = p = .032, *** = p = .002 ****p=.005, *****p=.0008

Discussion

The TRAP-18 combines 8 proximal warning behaviors with 10 distal characteristics of lone actor terrorists (Meloy et al., 2011; Meloy & Yakeley, 2012). Some of these definitions have been slightly modified from the original publications as noted to

provide clarity and efficiency in coding for operational use. The purpose of separating proximal and distal characteristics is to draw the distinction between watching and warning (Monahan and Steadman, 1996). We think the presence of distal characteristics compel active monitoring (the watching). The presence of proximal warning behaviors compel active risk management (the warning). However, even though a temporal difference between the proximal warning behaviors and the distal characteristics makes logical sense, eg, the late stages of pathway behavior would follow personal grievance and moral outrage, this needs to be empirically tested. Likewise, within the proximal warning behaviors, the time frame attached to novel aggression (“days, weeks or hours before the attack”) is a formulation from our experience, not empirical testing.

In this study we viewed a large open source database of lone actor terrorists in the United States and Europe (N=111) derived from another study (Gill, 2015) through the lens of the TRAP-18. Our purpose was to test its criterion validity from several perspectives. This sample spanned a 25 year period (1990-2014), and was further divided according to ideological motivation (radical Islamism, right wing extremism, and single issue extremism) and whether the terrorist act was thwarted or successful.

Seventy percent of the subjects were positive on at least half the TRAP-18 indicators. Seventy-seven percent or more evidenced four proximal warning behaviors: pathway, fixation, identification, and leakage. These elevations are consistent with other domains of targeted violence, such as public figure attackers and school attackers (Hoffmann et al., 2011; Meloy et al., 2014a, 2014b, 2015).

Pathway, fixation, and identification—in this study occurring in 80%, 77%, and 77% of the subjects, respectively-- have emerged as three very robust proximal warning behaviors when retrospectively analyzed in various domains of subjects who have carried out acts of targeted violence. Hoffmann et al (2011) found in a small sample of nonterrorist attackers of public figures in Germany a frequency of 100% for both

pathway and fixation, and 57% for identification. Meloy et al. (2014a) found a similar frequency—94%, 78%, and 56%--for US Presidential and political attackers and assassins. In a small sample of German school shooters, all three warning behaviors occurred at a frequency of 100%, but more importantly, discriminated them with large effect sizes from other students of concern who had no intent to be violent—along with novel aggression and last resort (Meloy et al., 2014b). Novel aggression and last resort in this study were coded in a small minority of cases, unlike other studies, which may be a real finding, or due to the lack of goodness of fit between the coded variables and these two warning behaviors. Leakage occurred in 85% of this sample of lone actor terrorists, and is ubiquitous across virtually all domains of targeted violent events which have been studied (Fein & Vossekuil, 1999; Meloy et al., 2014a; O’Toole, 2000; Vossekuil et al., 2002), even though the definition used in our studies is more narrow than when it was originally construed (O’Toole, 2000; Meloy & O’Toole, 2011). However, it appears to not have the discriminatory power of pathway, fixation, and identification. From a practical threat assessment perspective, this means that leakage, given its frequency, will often be a point of entry for the threat assessor in a case, but he or she needs to look for other warning behaviors to determine whether the case warrants more aggressive risk management. Directly communicated threats, once again, are infrequent, and occurred in only 22% of the lone actor terrorist cases. This finding, however, is very similar to other research over the past twenty-five years, beginning with Dietz and Martell (1989), Fein and Vossekuil (1999), and Hempel et al. (1999) who found that most targeted violence subjects do not warn their targets beforehand, an obvious tactical maneuver which enhances their probability of success. Although this fact is widely known among threat assessors, there is still the wrong assumption among many law enforcement personnel that if there is no directly communicated threat, there is no risk of violence. Direct threats are most useful, common and predictive of violence in domestic cases (Campbell et al., 2003).

Seventy-eight percent or more of the subjects evidenced four distal characteristics: personal grievance and moral outrage, framed by an ideology, changes in thinking

and emotion, and failure of sexual pair bonding. Four out of ten had a mental disorder. These findings support the work of other researchers, including Monahan (2012) and Spaaj (2012).

Both the warning behaviors and distal characteristics were originally derived through a rational-theoretical approach to the extant literature, and were not specifically focused upon any one ideology; this study empirically supports the general usefulness of the TRAP-18 since there were only four significant differences among the three ideological samples: personal grievance and moral outrage, dependence on the virtual community, thwarting of occupational goals, and fixation. This suggests that the TRAP-18 can be utilized in the investigation of a subject of concern regardless of ideology, and supports the utility of the instrument across various operational efforts to interdict lone actor terrorists with different ideological motivations. This contrasts with the inherent limitations of other investigative methods which focus only upon jihahists (Office of the Director of National Intelligence, 2011). This TRAP analysis across ideologies is striking given the Gill (2015) finding of major significant differences in individual characteristics and antecedent event behaviors across the three ideologies in the same sample. Gill (2015) recommended in future studies the use of multi-dimensional scaling techniques: this is a much more sophisticated analysis wherein variables that regularly co-occur are plotted closer together in Euclidean space.

Comparison of successful and thwarted attackers utilizing the TRAP-18 was an attempt to measure the difference between those subjects who attacked and those who were interdicted before the attack, another aspect of criterion validity called postdictive validity. A better measure of postdictive validity would be to compare this entire sample to other subjects of concern, but upon investigation had no intent to attack. Unfortunately, such a comparison sample was not available at the time of this study, and awaits further testing. Nevertheless, our findings have specific operational utility. The TRAP-18 was able to discriminate among those lone actor terrorists who were successful in their attacks from those who were thwarted based

upon five variables: the successful attackers were more likely to be fixated, creative and innovative, and had a history of failures in sexually intimate pair bonding; and were less likely to evidence the final stages of pathway behavior and be dependent upon a virtual community. These findings make both theoretical and practical sense. Less evidence of pathway behavior would suggest less observation by others, either third parties or law enforcement. This could have many determinants, including deliberate secrecy, luck, or inadequate intelligence gathering. Fixation as the second proximal warning behavior which discriminated suggests that a subject's preoccupation with his cause, despite deterioration in work and love, will advance his plan. Such preoccupation may have a variety of determinants, ranging from an obsessional disorder, delusion, or anger, to boredom or disciplined resolve. This finding is also consistent with a study of nonterrorist attackers of western European politicians which found that fixation was strongly correlated with being a loner and lethality risk toward the target (James, Mullen, Meloy, Pathe, Preston, Farnham & Darnley, 2007). Fixation also suggests an intensity of pursuit in a larger stalking context (Meloy & Hoffmann, 2014; Mullen, James, Meloy et al., 2008). A history of failures of sexually intimate pair bonding, a distal characteristic, would likely contribute to the subject's aloneness (Borum, 2014), and therefore lower the risk of others becoming aware of his activities (Gill, 2015). In the more general criminal literature, a positive attachment is also associated with a decreased risk of criminal violence (Cassidy & Shaver, 1999). Creativity and innovation, a distal characteristic that is related to success of an attack, supports the phenomenological position that the unknown unknowns are the most dangerous facts within a risk assessment for targeted violence. If defenders cannot or do not think outside the box, they will remain one step behind the lone actor terrorist.

The other distal characteristic which was more prevalent among the thwarted than the successful attackers was dependence on the virtual community. This makes common sense since communication and interaction via the internet, especially through the proliferating social media technologies, increases the risk that someone privy to such chatter will convey their concern to the authorities responsible for the

public safety. Although overall leakage was very frequent (90% v. 77%) in both groups, it appears that the illusion of privacy—or the impunity of grandiosity--on the internet is one of the most common vulnerabilities of the lone actor terrorist, and strongly correlates with failure ($p=.0008$, $\phi=.317$). In fact, this variable had the largest effect size among the five—although all effect sizes (the strength of the difference) were small to medium. Gill (2015) has analyzed the reasons for virtual *interaction*: reinforcement of beliefs, seeking legitimization for their actions, disseminating propaganda, recruitment, and signaling the attack. Virtual *learning* includes accessing ideological content, opting for violence, choosing a target, attack preparation, and overcoming hurdles. Bergen (2016) found in his sample of 330 people in the US charged with some type of terrorist crime since 9/11, that 40% maintained a presence on the Internet or used it for operational purposes. However, there is a risk to these rewards, as our data suggest.

Dependence on the internet has also changed dramatically over the 25 year period of this study's lone actor terrorists, from its complete absence in 1990 through the remarkable acceleration in use of social media between 2005-2014. Change over time is not accounted for in our analysis, and there is a likely trend in a decrease in the failure to affiliate with an actual group and an increase in dependence on the virtual community—a sea change from affiliation to inspiration as the motivation to act, in some cases the result of what Meloy (2016) has called “cajoling” through social media. This awaits further study.

These thwarted vs successful attack differences, however, should be treated with caution. The TRAP indicators which discriminated may be a product of unknown artifacts, such as aspects of the investigation, pre-emptive policing, tips, luck, the year of the interdiction, ideological contributions, and the specific countries in which these different cases occurred. There are a multitude of unknown factors which may have influenced group placement as either thwarted or successful and may be unrelated to the five identified TRAP indicators.

Limitations

This known group outcome study has some limitations: all data were open source and retrospective, with the possibility of both hindsight bias and observational bias affecting the results. There were also noted discrepancies between the definitions of the 18 variables and the data from the codebook (Gill, 2015) utilized to determine presence or absence of the variables. For example, leakage is a communication to a third party of intent to attack a target (Meloy & O'Toole, 2011), but the questions from the codebook provided a broader array of data for "leakage" which may have inflated the frequency of this particular variable. It was decided to err on the side of behavioral inclusion. Also, there is one dependent variable, "framed by ideology," which is contaminated by the independent variable that we utilized to define terrorist subjects for the study, "...advancing a political, religious, or ideological cause." Although these variables are not exactly the same, their equivalence likely inflated the findings concerning the distal characteristic of "framed by ideology."

Although the results support some aspects of criterion validity of the TRAP-18— its usefulness across ideologically different terrorists, and some postdictive validity when comparing successful and thwarted attackers, the authors--who did the mapping of the TRAP indicators onto the variables in the codebook--were not blind to group membership, and there was no independent determination of interrater reliability, only careful discussion and consensus. This is a weakness of the study. However, a previous study of a small sample of European individual terrorists utilizing the TRAP found an overall kappa of 0.895 for interrater reliability with two independent raters (Meloy, Roshdi, Glaz-Ocik & Hoffmann, 2015). Finally, confirmatory bias may be present in this study given the desire of the first author to empirically buttress the TRAP-18. Further research is necessary by independent groups with independent samples to see if the TRAP-18 withstands further scrutiny, including larger samples and known outcome (postdictive) designs.

Practical Applications

The TRAP-18 appears to have utility as an investigative template and organizing tool to help counterterrorism threat assessors prioritize cases for monitoring or risk management. Based upon the work of Monahan and Steadman (1996), we recommend that a case of concern be first investigated for any evidence of proximal warning behaviors. Any one behavior would strongly suggest active risk management, a result of what meteorologists consider a Warning. In the absence of any proximal warning behaviors, the case would be investigated for distal characteristics. The presence of such characteristics—at this point we do not quantify how many—would warrant active monitoring of the case, what meteorologists would consider the result of a Watch. Other structured professional judgment instruments which have been proposed, such as the VERA, the ERG 22+, and the MLG become additional sources to help organize data from a case. Multi-method assessments work best. Throughout such intelligence analysis, however, it is critical to recognize that insufficient investigation does not mean the absence of an indicator. Investigation must be as thorough as possible to render such an opinion and rule out any one of the TRAP-18 indicators.

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