Shooting Alone: The Pre-Attack Experiences and Behaviors of U.S. Solo Mass Murderers[1][2]

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Abstract:

This paper outlines the socio-demographic, developmental, antecedent attack, attack preparation and commission properties of 115 mass murderers between 1990 and 2014. The results indicate that mass murderer attacks are usually the culmination of a complex mix of personal, political and social drivers that crystalize at the same time to drive the individual down the path of violent action. We specifically focus upon areas related to prior criminal engagement, leakage and attack location familiarity. Whether the violence comes to fruition is usually a combination of the availability and vulnerability of suitable targets that suit the heady mix of personal and political grievances and the individual's capability to engage in an attack from both a psychological and technical capability standpoint. Many individual cases share a mixture of unfortunate personal life circumstances coupled with an intensification of beliefs/grievances that later developed into the idea to engage in violence.

Key Words:

Forensic science, mass murder, threat assessment, risk assessment, violence, terrorism

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President Obama began 2016 calling for a national "sense of urgency" to limit gun violence. This followed a series of high profile mass murder events. In total, twenty-seven separate shootings killed four or more people in the United States in 2015. Some attacks were organized crime related. Some were terrorist related. Some were acts of domestic violence. Solo individuals acting upon personal grievances perpetrated others. This article is interested in the latter group of offenders. Utilizing a unique dataset of 115 solo mass murderers, we examine their socio-demographic characteristics and the antecedent behaviors they engaged upon prior to and during their attack planning and the attack itself.

Previous research focused upon mass murder in a historical context (1), the offense location (2), victimology (3), motivations (4-5), public responses to mass shootings (6), cultural aspects of mass murder (7), and the psychology of mass murderers (8). Others provided empirical examinations of offender behavior of similar offender types. These include studies of adolescent mass murderers (9), lone-actor terrorists (10-13), individuals that attack or approach prominent public officials/figures (14), active shooters (15), school shooters (16-17) and comparisons between "lone wolf terrorists" and "deranged shooters" (18) and suicide bombers with various mass casualty shooters (19).

This paper focuses upon an empirical examination of solo mass murderer behavior, with an aim of highlighting the trajectories of their violent 'radicalization' and how

these findings can be operationalized. The results are derived from the richest (in terms of sample size and breadth of variables) dataset of its type on mass murderer behavior.

Data

We developed a unique dataset that categorizes the socio-demographic, developmental antecedent attack, attack preparation and commission properties of 115 mass murderers between 1990 and 2014. To reduce bias in the sample, we limit our focus to United States-based offenders. Despite the palpable rise in public anxiety following events such as Columbine, Aurora, and Sandy Hook, the fact remains that mass murder is an extraordinarily rare event in the U.S. From 1976 to 2000, the percentage of murders that involved more than one victim ranged from 3% to 4% of homicides per year (20). A review of the FBI's Supplementary Homicide Reports from 2000 to 2012 shows that the number of mass murders (four or more victims) was approximately *one-tenth of one percent* of all murders (excluding the 9/11 deaths). Nevertheless, perhaps because it occurs so infrequently but is so disturbing, few crimes receive more news coverage than mass murder (21). The level of available granular behavioral data is consequently far higher.

To identify our sample, we first examined the academic literature on mass murderers and built an actor dictionary, producing a list of names that fit our criteria (see below). Next, we identified additional offenders through databases created by *Mother Jones, USA Today* and Mayors Against Illegal Guns. Finally, we conducted searches on LexisNexis using specific terms and searched the Federal Bureau of Investigation's

Uniform Crime Reports for each year of the relevant time period to find other offenders who meet our criteria.

A pervasive problem with prior research on mass murder is the shifting definition of what exactly a mass murder *is*. Previous research focused on criteria like offender motive (22), the type of weapon used (22) and the number of wounded victims (5). Generally these criteria are not relied upon in the literature, perhaps because they appear to be arbitrary. There is, however, general agreement that a mass murder involves multiple victims killed at one (or multiple but geographically close) location(s) over a relatively short period of time (3, 5, 22-23). Nevertheless, there is less agreement about the minimum number of victims required to define a murder event as "mass". Some researchers use a threshold of two victims (24), others use three victims (5, 23), and still others use four victims (20-21).

The definition used in this study is *four or more victims (not including the offender)* for the following reasons. First, four or more victims (not including the offender) is the demarcation line accepted by the Federal Bureau of Investigation in its 2005 report: *Serial Murder: Multi-Disciplinary Perspectives for Investigators*, released after a meeting of experts in various fields relevant to the study of multiple homicides. This definition of mass murder was the result of considered reflection by the leading academics (criminologists, psychologists, forensic psychiatrists), and practitioners (state and federal law enforcement officials and prosecutors) brought together by the FBI for the specific purpose of clarifying issues related to serial and mass murder.

Second, where data is collected via open source research methods, the number of victims is an important determinant of media coverage of multiple murder events. Research suggests the attention given to any mass murder by the media is affected by certain factors, and high profile mass murders are significantly more likely to involve larger numbers of killed and wounded, stranger victims, public locations, assault weapons and workplace violence (2, 21).

Third, practical considerations necessitated a threshold of four victims instead of three. A review of the FBI's Supplementary Homicide Reports from 1976 to 1999 reveals there are over three times as many cases of three victim homicides as there are four victim homicides (21). Employing a mass murder definition of three or more victims would necessitate reducing the time span of the study from approximately 24 years to at most eight years. While that approach may be useful in future research, this study opts for the use of a greater time span which also matched the time span utilized in previous data collection endeavors (11).

We narrowed our parameters to only include those mass murderers who acted alone and without direction or support. In keeping with that same principle, the study also excludes state-sponsored as well as gang, terrorism and organized crime related incidents. Also, solely domestic attacks are excluded, as these are frequently treated separately in the literature and appear to have a distinct genesis (19, 25).

The codebook built upon one utilized previously in a study of lone-actor terrorists (11). The variables included in the codebook span socio-demographic information (age, gender, occupation, family characteristics, relationship status, occupation,

employment, etc.), antecedent event behaviors (aspects of the individual's behaviors towards others and within their day-to-day routines), event specific behaviors (attack methods, who was targeted) and post-event behaviors and experiences (claims of responsibility, arrest/conviction details, etc.). Data were collected on demographic and background characteristics and antecedent event behaviors by examining and coding information contained in open-source news reports, sworn affidavits and when possible, openly available first-hand accounts. The vast majority of sources came from tailored LexisNexis searches. Information was gleaned from relevant documents across online public record depositories such as documentcloud.org, biographies of a number of mass murderers and all available scholarly articles.

Three independent coders coded each observation separately. After an observation was coded, the results were reconciled in two stages (coder A with coder B, and then coders A+B with C). In cases when three coders could not agree on particular variables, differences were resolved based on an examination of the original sources that the coders relied upon to make their assessments. Such decisions factored in the comparative reliability and quality of the sources (e.g., reports that cover trial proceedings vs. reports issued in the immediate aftermath of the event) and the sources cited in the report.

The below results outline the prevalence of the various behaviors detailed in the codebook. For the results that follow, where possible, we do report or distinguish between missing data and 'no' answers but it should be kept in mind that the likely result is that 'no' answers are substantially undercounted in the analysis. Unless otherwise stated, each of the figures reported below are of the whole sub-samples

(n=115). There is precedent for this in previous research on attempted assassinations of public figures, fatal school shootings and targeted violence affecting institutions of higher education and lone-actor terrorists (11, 14, 17, 26).

Results

First, we analyze the socio-demographic characteristics of the offenders themselves. The aim here is not to create an offender 'profile'. Given the broad spectrum of potential motivations and idiosyncratic ideologies across a low base rate of offenders, such an endeavor is conceptually and empirically problematic and also holds little practical relevance for investigative purposes. Instead, our goal is to provide better insight into what variables we see universally across all crimes including mass murderers, and what offender characteristics appear to be particularly prominent within the mass murderer sample.

Males heavily dominate the sample. Only three females made our inclusion criteria. In October 2006, Valerie Moore (by then an already convicted and released murderer) killed 12 and injured a further 31 after intentionally setting fire to a mattress outside the hotel room of an individual she recently argued with. Also in 2006, Jennifer San Marco returned to her former workplace at a Postal Service office and shot and killed six before turning the gun on herself. During a February 2014 tribal meeting to discuss her possible eviction, Cherie Lash Rhoades fired from two handguns and wielded a butcher knife, killing four. The wider crime and terrorism literature also shows that males are also far more likely to engage in a wide range of violent and illegal behaviors (see 12 for a full explanation). Indeed, males account for 93.2% of

all sentenced prisoners in state or federal prisons according to a 2010 U.S. Department of Justice report (27). In effect, the relatively low preponderance of females in the sample is nothing extraordinary.

The average educational attainment within the same was relatively low. Only 24% of the sample had some experience of university education, with 11% finishing an undergraduate degree, and 4% finishing some form of graduate degree. This was generally reflected in later career achievements. 28% of the mass murderers were unemployed, 33% worked in the service or administrative sectors and 5% were professionals.

A high percentage the mass murderers were single (43%) whilst smaller numbers were married (17%) or divorced (13%).

Previous Criminal History

Much academic work on volume crime shows that a large predictor of future engagement with criminal and illicit behaviors is whether the individual has a previous history of criminal or illicit activities (28). Previous research has shown that offenders with prior convictions (including child molestation, robbery, or multiple probation sentences) are more likely to engage in a spree of homicidal offending (29). Fein and Vossekuil's (14) study of individuals who took part in or at least attempted to take part in an assassination of a public figure illustrated that 56% of the sample had one or more arrests for a non-violent offense while 20% had one or more arrests for a violent offense.

Our sample shows similarly high figures. 43% possessed a previous criminal conviction. Of this sub-sample, 67% served time in prison indicating the seriousness and/or prolific nature of their offending. Offences included failure to pay child support, drug possession, forgery, counterfeiting, drink driving, unauthorized use of a motor vehicle, burglary, armed robbery, aggravated robbery, kidnapping, criminal damage to property, theft, cruelty to animals, aggravated harassment, drug dealing, gun possession (whilst being a felon), assault, child endangerment, domestic violence, sexual battery, gross sexual imposition, sex with a minor, assault with a firearm, drive-by shooting, and second degree murder. We therefore see a very wide range of illegal activities and certainly no concentration of one crime type that we can identify as an escalatory "trigger" for subsequent behavior into mass murder.

Other Distal Factors

There are a number of other behaviors providing an understanding of the offender's behavioral background. 63% experienced long-term stress. Examples of this include: academic frustration stemming from learning disorders; difficulty maintaining employment and failure in business ventures; disabling injuries from automobile and work accidents; long-term financial debts; a range of mental health issues including depression, bi-polar disorder and post-traumatic stress disorder; being a victim of sexual/physical abuse in childhood; an inability to establish appropriate social relationships; long-lasting discord in marriages and romantic relationships; and being the main suspect in a double murder for over six years. 44% of the sample had a history of substance abuse. 41% had a diagnosed mental health disorder. At least 8 of the offenders had previously tried to kill themselves, whilst many others regularly spoke of a desire to kill themselves.

26% could be characterized as socially isolated whilst 24% also lived alone at the time of their attack. Whilst 18% had some military experience, only 2% had experienced actual combat.

Proximal Factors

This section provides an overview of the prevalence of behaviors the individual engaged in very near to the mass murder. None of these behaviors are attack-related specifically but again provide a more holistic view of the immediate life-situation the offenders found themselves in just prior to planning their attack. The results again highlight the importance of short-term situational risk factors. Consistently across a number of variables, it appears these short-term risk factors appear most commonly for mass murderers particularly in the 6-month time frame prior to their eventual attack.

[Table 1. Around Here]

Attack Signaling

One of the most surprising behavioral trends was the extent to which the sample tended to leak information to significant others regarding their attack plan (See Table 2). Studies of similar actors have however found similar results. For example, Meloy et al.'s (9) study of adolescent mass murderers in North America illustrated that 44% of the sample discussed the act of murder with at least one other person prior to the

event itself. Also, 58% of the offenders in their study made threatening statements alluding to mass murder prior to the event and this was usually to a third-party audience. In 81% of Vossekuil et al.'s (17) sample of U.S.-based school shooters, at least one other individual had known of the offender's intentions or specific plans for the school attack. In 59% of the cases, more than one non-attack related person had prior knowledge. Unlike Meloy et al.'s study, there was a lower rate of school shooters (17%) who provided specific pre-event warnings. Vossekuil et al. (17) also found that although most of the offenses were committed by individuals, in 44% of the cases the solo offender was "influenced by other individuals in deciding to mount an attack, dared or encouraged by others to attack, or both". In some of these cases, others aided the solo offender in acquiring the weapon and/or ammunition. Finally, Fein and Vossekuil (14) studied individuals who committed or attempted to commit assassinations of public figures in the United States. They illustrate that although specific pre-attack warnings are a rare-event, often others close to the offender were either aware of his/her interest in assassinations (44%), history of verbal/written communications about the eventual target (77%) or history of indirect, conditional or direct threats concerning the eventual target (63%).

The leaking of intent is therefore a key indicator to keep in mind with regards to countering lone actor terrorism. However, this information cannot be acted upon if the recipient of the leaked information does not pass this up to the relevant authorities. There could be a clear barrier to this information being passed on. For example, Borum (30) posits that "those with kinship bonds may not approve at all of the attacker's intent, but they may feel restrained from acting because of love and loyalty or concern about the consequences". Borum further outlines that research on such

reporting mechanisms shows that factors such as the presence of multiple reporting channels, anonymity, accessibility, safety and credibility are key to successful transmission of this information. Of course, not all of the instances in which information is received about verbalized intent are viable threats or risks so instead of acting straight away, the logical next step is to engage in a risk assessment and look at the rest of the individual's behaviors with regard to their situation, capability, motivation and opportunity to act. The results in table 2 outline various 'leakage' related behaviors

[Table 2. Around Here]

Motivational structures are difficult to unpack with regards to mass murderers. Just over half (56%) held a grievance against a particular person or entity. The list of grievances include government-related institutions and officials, neighbors, former employers and co-workers (e.g. being teased for eating a chicken burrito every day at work), family members (e.g. for making the offender "suffer"), acquaintances (e.g. for selling poor quality drugs), neighbors (e.g. dog owners), service providers (e.g. landlord, lawyers, accountants, teachers), specific sets of the population (e.g. homosexuals, women, minority groups) and other vaguer categories (e.g. "rich snobs" who "raped my soul", individuals involved in the "Rave" scene, Campbell Soup because of the level of MSG in foods, Communists, and the band Pantera who the offender alleged stole his lyrics). Offenders were aggrieved against the government due to, for example, being a former government employee, a dispute over benefits payments, a dispute over parking fines, a belief that the government was trying to control the offender using low frequency radio waves, a belief that the police were

framing him for a serial murder, a belief that child support payments were set too high, the tax office for taking too much of his earnings and a paranoid delusion that a "cop" was out to ruin him by breaking into his house multiple times and then touching him and causing him to vomit. Many offenders appeared obsessed about other issues unrelated to their grievance. These include obsessions with serial murderers, death, food additives, former girlfriends, female neighbors, celebrities, firearms, and the causes of ill health.

Finally there are a couple of other event related behaviors that produced interesting results. The mass murderer sample were overwhelmingly likely to have a history of the attack location (79%) and this may account for why very few engaged in dry runs (4%). Their attacks typically took place in situations in which most of their routine activities also played out (e.g. work, school etc.). 85% of the plots appeared to preconceived and planned, not spontaneous or impulsive. Many mass murderers also consumed drugs or alcohol just prior to the attack (20%). 53% died at the scene of their attack. All but 13 of those cases were suicide, the rest being death by cop.

Discussion

On the surface, mass murder attacks seem to defy explanation. The immediate aftermath of both phenomena is marked by drama, panic and an inevitable search for simple answers. In particular, there is an unerring tendency to reach for mono-causal master narrative explanations. The individual actor is either deranged, unbalanced, unhinged, disturbed, mad, crazy, nuts and unstable, or he/she is driven by a hateful ideology, radicalized, politically focused, inspired by some foreign 'entity', or determined to effect some social or political upheaval or policy change. In the days

that follow an event such as these, the framing of the individual's motivation usually takes on one of these two narratives. The chosen narrative depends upon the easy availability of information regarding their ideological content, mental health history or personal background details.

Yet what we see from the analysis we offer here, mass murderer attacks are usually the culmination of a complex mix of personal, political and social drivers that crystalize at the same time to drive the individual down the path of violent action. Whether the violence comes to fruition is usually a combination of the availability and vulnerability of suitable targets that suit the heady mix of personal and political grievances and the individual's capability to engage in an attack from both a psychological and technical capability standpoint. Many individual cases share a mixture of unfortunate personal life circumstances coupled with an intensification of beliefs/grievances that later developed into the idea to engage in violence. What differed was how these influences were sequenced. Sometimes personal problems led to a susceptibility to ideological influences. Sometimes long-held ideological influences became intensified after the experience of personal problems. This is why we should be wary of mono-causal master narratives (e.g. it was caused by mental illness). The development of these behaviors is usually far more labyrinthine and dynamic.

One of the major implications this type of analysis such as this could be to provide guidance or a framework to those tasked with responding to such phenomena. Given our counter-intuitive findings on the leakage of intent, this may be particularly relevant in terms of early disruption of plots. An understanding of this complexity and

the multiplicity of potential factors could help inform how threat assessments of particular 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 interventions are likely to be effective in terms of mitigating either risk, broadly speaking, or a specific threat).

The results highlight that the target and/or target location of the violence was usually associated with something to do with the individual's personal grievance. This may help give us a sense of what Borum calls the 'scenarios of exposure' or the conditions under which a particular individual become a threat. The temporal issues also highlight the fact that we need to view risk dynamically. Given a set of circumstances and conditions an individual may appear to be no or low risk. However, small changes in their life-course, the loss of a protective factor, personal circumstances or opportunity to offend can have a force-multiplier effect and propel the individual into a higher category of risk. These issues are explored in detail by Monahan (31) who warns however, of the need for comparison samples (including control groups) in order to scientifically validate many of the otherwise working assumptions relevant to risk assessment.

From the analysis presented in this paper, mass murderers look very similar to lone-actor terrorists, perhaps only differing in the ratio to which they are personally versus politically aggrieved. They display no discernable socio-demographic profile, generally somebody knows something about the plot, many but not all are socially

isolated, they engage in a wide range of pre-crimes, and they are rarely sudden and impulsive. We sought to examine whether their 'radicalization' trajectory toward this act of violence was also similar. The analyses suggest that they share a lot in common with the results outlined in Gill et al. (11) and Gill (12). This has a multiplicity of implications for early detection, threat management and possibly disruption. The job of intelligence analysts (be it for the police or intelligence communities) often involves assessing the scale of an individual's threat based on often fragmentary information. The analyses above do not point toward one single behavioral profile from which risk assessments can be built but instead provide insight for the development and application of structured professional judgments in these cases.

Finally, the results also highlight the fact that (a) in most cases there tends to be long-held risk factors but (b) they tend to be enabled in a force multiplier effect by much more recent situational stressors and that (c) the trajectory into violence tends to be a lengthy process. Phases may be identifiable on this process, from grievance formation to fixation to capacity building to attack planning. If an individual is identified ahead of time (say for example after leaking key information), the individual's position in this pathway can be plotted, and a range of disruption/prevention tools can be implemented from there.

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Table 1. Prevalence of Proximal Behaviors

Variable	Occurred within 2 Years	Occurred within 1 Year	Occurred within 6 Months
Recently Unemployed	29%	28%	23%
Experienced Being Degraded	31%	23%	17%
Target of a Perceived Act of Prejudice	23%	16%	7%
Problems with Personal Relationships	38%	34%	23%
Financial Problems	25%	24%	19%
Elevated Level of Stress	56%	45%	38%

Table 2. Leakage & Network Related Behaviors

Behavior	Mass Murderer
Other People Aware of the Individual's Grievance	46%
Made Verbal Statements to Friends/Family about Intent or Belief	31%
Interacted Face to Face with Members of a Wider Network	7%
At Least One Other Knew of the Individual's Research/Planning/Prep for an Attack	17%
Interacted Virtually with Members of a Wider Network	3%
Received Help in Procuring Weaponry	7%
Produced Public Statements Prior to the Event	12%
Made a Pre-Event Warning	19%
Learnt Through Virtual Sources	10%
Tried to Recruit Others	3%