Emerald Insight

Article information:

Discover NTU Libraries

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.

A model for differentiating school shooters characteristics

Maria Ioannou, Laura Hammond and Olivia Simpson

Dr Maria Ioannou and
Dr Laura Hammond are Senior
Lecturers, both at the
International Research Centre
for Investigative Psychology
(IRCIP), University of
Huddersfield, Huddersfield, UK.
Olivia Simpson is based at the
International Research Centre
for Investigative Psychology
(IRCIP), University of
Huddersfield, Huddersfield, UK.

Abstract

Purpose – *The purpose of this paper is to explore the potential for developing a model for differentiating school shooters based on their characteristics (or risk factors) before the attack took place.*

Design/methodology/approach – *Data on 40 school shootings was compiled from the National School Safety Center's Report on School Associated Violent Deaths and media accounts. Content analysis of the cases produced a set of 18 variables relating to offenders' characteristics (or risk factors). Data were subjected to Smallest Space Analysis (SSA), a non-metric multidimensional scaling procedure.*

Findings – *Results revealed three distinct themes: Disturbed School Shooter, Rejected School Shooter and Criminal School Shooter. Further analysis identified links between these themes with the family background of the offender.*

Research limitations/implications – *These findings have both significant theoretical implications in the understanding of school shooters and the crime in general. They offer potential for practical applications in terms of prevention and intervention strategies. A key limitation relates to the quality of data.*

Originality/value – *This is the first study to develop a model for differentiating school shooter characteristics.*

Keywords Aggression, Multidimensional scaling, Offender characteristics, School shooter, School shootings, School violence

Paper type Research paper

Although rare, the aftermath of a school shooting is devastating and raises many questions and efforts to understand this phenomenon, its causes, perpetrators and motivations. The media extravaganza that stems from these attacks has led to widespread myths about schools, pupils and the attackers themselves. Muschert (2007) suggested that media myths give rise to the juvenile "super-predator". The media hurry to supply accounts of the incidents has led to many faulty assumptions and stereotypes of the perpetrators. Meanwhile, a number of researchers have attempted to produce an offender profile of a student capable of these acts, something that the FBI have cautioned against, as warning signs could be irrelevant and lead to unfairly labelling a student who may not pose any danger (O'Toole, 2000).

A number of studies have focused on factors relating to family environment, behavioural aspects of a perpetrator causing them to act out in such a destructive manner (Fritzon and Brun, 2005; Pittaro, 2007) and descriptions of the school environment that may have caused the perpetrator to act as they did. The Federal Bureau of Investigation Law Enforcement Bulletin (2011) provide a list of warning signs to look for, and researchers have pointed out a number of different risk factors (Meadows, 2007). Others have looked closely into cases studies (Leary *et al.*, 2003), focused on understanding the motivations of the offenders (Fritzon and Brun, 2005) or offence characteristics (Gerard *et al.*, 2015). Fritzon and Brun (2005), attempting to understand the perpetrators motives and extreme acts of school-associated violence, developed a model of school-associated violent deaths applying action systems theory to the phenomenon of school violence while Gerard *et al.* (2015) investigated 28 cases of school shooting incidents and

developed a model of offence characteristics. While there have been attempts to understand the motivations of the offenders (Fritzon and Brun, 2005) and study the offence characteristics (Gerard *et al.*, 2015) or even describe the offenders characteristics (i.e. Fritzon and Brun, 2005; Gerard *et al.*, 2015), to the authors' knowledge, previous studies have not attempted to provide a model of offender characteristics which might be used to identify risk factors and develop prevention and intervention strategies. In addition, many of the studies on school associated violence include all types of incidents occurring in schools, whilst the focus of the present study is on "rampage" school shootings only; the expressive, non-targeted attacks on school grounds.

Characteristics (or risk factors) of a "rampage" school shooter

An overview of the literature identifies many diverse aspects, characteristics and risk factors associated with a rampage school shooter that act as triggers for aggressive behaviour.

Mental disorders have consistently been associated with aggressive behaviours among youths. Studies have found that offenders in school shooting incidents commonly show symptoms of depression (Verlinden *et al.*, 2000; Harding *et al.*, 2003). Leary *et al.* (2003) looked at personality disorders, paranoia, low impulse control, lack of empathy and also sadistic behaviours and their association to lower thresholds for violence. McGee and DeBernardo (1999) studied the clinical features of a school shooter, looking at depression, suicidal tendencies and mixed personality disorders. They describe a school shooter suffering from depression as hypersensitive to criticism, likely to anticipate rejection and typically suspicious of others. Within cases they examined there was evidence that the perpetrators had contact with a mental health professional prior to the shooting incident, yet no risk was noted. Gerard *et al.* (2015), in their study, found that 71 per cent of the 28 school shooters suffered from depression and 57 per cent had a psychiatric history.

Suicidal ideation is another characteristic identified in many studies (Verlinden *et al.*, 2000; Langman, 2009). Vossekuil *et al.* (2002) found that 78 per cent of the 41 offenders who carried out school-based attacks had either attempted suicide or expressed suicidal thoughts prior to the incident. Kidd and Meyer (2002) showed that six of the eight offenders they examined expressed suicidal intentions. Marano (1998) describes this behaviour as resorting to desperate measures, with feelings of depression and suicidal intentions, concluding that these perpetrators may feel like they have nothing left to lose by acting aggressively. Fritzon and Brun (2005) made reference to perpetrators with suicidal intentions. They describe this type of school shooter as having their emotional distress turned inward. The offender acts in such a way in order to change his/her internal state, with the most extreme form resulting in suicide.

Studies have also identified a link between bullying victimisation and violence in general (Pellegrini *et al.*, 1999), as well as in School Associated Violent Deaths (SAVD) (Anderson *et al.*, 2001). Wike and Fraser (2009) found that offenders are often subjected to teasing, bullying or victimisation at some point prior to the incident. Similarly, Verlinden *et al.* (2000) showed that across all nine cases they examined offenders had been teased and marginalised by peers, while Vossekuil *et al.* (2002) found that 71 per cent of their sample were bullied. In 80 per cent of the 15 cases in Leary *et al.*'s (2003) study offenders were bullied and ostracised by their peers, and 54 per cent of the offenders in Gerard *et al.*'s (2015) study were victimised.

Offenders in school shootings incidents are frequently considered loners (McGee and DeBernardo, 1999; Weisbrot, 2008). Gerard *et al.* (2015) found that in their sample 43 per cent of their offenders were considered loners. This sense of separatedness extends beyond the notion of the loner to include feelings of isolation, sadness, loneliness, not belonging and not fitting in (O'Toole, 2000).

The literature also includes numerous studies concerning children who murder and their interest in violent media (Kidd and Meyer, 2002; Fritzon and Brun, 2005; Ferguson, 2008). This interest includes violent books, films, video games and television programs. The World Health Organisation world report on violence and health has stated that exposure to violence on television increases the likelihood of immediate aggressive behaviour and has an unknown effect in the longer term on serious violence. It has been hypothesised that violent media may reduce the perception of right and wrong, and encourage acting upon desires

(Langman, 2009). Vossekuil et al. (2002) found that 59 per cent of the offenders in their study were interested in violent media (movies, video games, books or their own writing). A book that became relevant to a few cases of attacks such as Barry Dale Loukatis (Frontier middle school shooting) and Michael Carneal (Heath high school shooting) is Stephen Kings book Rage. The book is a fictional account of a student's perspective of attacking their own school and holding his algebra classmates hostage. Both Loukatis and Carneal read this book before their attacks, with Loukatis quoting the book during his attack, saying, "This sure beats algebra doesn't it?". Ferguson (2008), reflecting on the literature of violent video games, claims that it is difficult to quantify "interest" in violent media and concludes that video game exposure should be discarded as a facet of any profiles used for school shooters.

Leary et al. (2003) focused their research on the study of interpersonal rejection and the aggression that stems from this. They found evidence to support their hypothesis that school shootings may be provoked by real or imagined interpersonal rejection (e.g. a relationship ending). Leary et al. (2003) suggest three forms of rejection that can provoke aggressive and violent acts in schools: teasing, ostracism and romantic rejection. Guerra et al. (2003) support this notion that there can be an increase in aggression through a child's acquired cognitive schemas depicting the world as a hostile place. Rejection may act as a proximal risk factor in individuals who already possess existing dynamic risk factors (Wike and Fraser, 2009). Gerard et al. (2009) found that 50 per cent of the 28 offenders in their sample had experienced some form of rejection by an organisation or individual.

Aggression can also stem from the familial lifestyles of the child (Shumaker and Prinz, 2000). McGee and DeBernardo (1999) state that although a family may appear superficially normal, they are quite often dysfunctional in many different aspects. They found that a rampage school shooter has more often than not been in the presence of divorce, separation and/or frequent episodes of highly charged emotions between parents. According to McGee and DeBernardo (1999) these children are also likely to have a large amount of anger among the family and a struggle for power in the household. Family criminality has also been identified in previous research; Gerard et al. (2015) found that 14 per cent of their sample had a history of family criminality. A child is also more likely to have aggressive outbursts where there is abuse in the home, criminal histories within the family and also where there is parental substance abuse (Lewis et al., 1988; McGee and DeBernardo, 1999; Shumaker and Prinz, 2000).

An issue that stands out in the research regularly is the focus on aggression and the association it may have with school associated violence. Anderson and Huesmann (2003) describe a school shooting as an act that is both premeditated aggression and violence at once. The use of a variety of weapons and those belonging to a family member is evident in many cases (Fritzon and Brun, 2005; Wike and Fraser, 2009). According to McGee and DeBernardo (1999), the child develops a fascination with guns, bomb making, covert action, assassinations and media portrayals of real or fictional violence. This enthusiasm for weapons can be a part of the perpetrator's planning, as school shootings are rarely impulsive, and therefore there may be clues to the planned attack. Langman (2009) identified that the student will give verbal threats that include vague warnings to classmates of what they are planning to do to them. Twemlow et al. (2002) noted that school staff have been blinded to prior warning communications of school shootings in the past decade. They argue that – in contrast to other school violence – school homicides involve the student giving many warning communications. Gerard et al. (2015) found that 61 per cent of the school shooters in their sample had a history of violence and 43 per cent had made threats and told others about their plans. Vossekuil et al. (2002) showed that 31 per cent displayed violent behaviour in the past and 27 per cent had been arrested.

The present study

From reviewing the school shootings literature it is evident that there are a number of offender characteristics and/or risk factors that have consistently been identified. Canter (2004) uses the term "theme" rather than "type" to draw attention to the well-established finding in psychology that no form of individual variation ever allows the majority of people to be assigned to one of a set of pure types. Instead it is likely that the criteria that contribute to the themes, in this case the

characteristics (or risk factors) of the perpetrator, will overlap to some extent. Empirical support for distinct themes will provide a firm basis for understanding the varieties of school shooters. Beyond this utility in enriching the theory of school shooting, such a model would have practical value for developing assessments of dangerousness and the implications of various forms of prevention and intervention.

The current study aims to explore the potential of developing a model for differentiating school shooters based on their characteristics before the attack took place. The first objective is to determine whether offender characteristics (or risk factors) can be distinguished into different themes and the second objective is to establish whether there is a relationship between these themes and the family background of an offender.

Method

Sample

The sample consisted of 40 school shooting cases dating from 1966 to 2012. The youngest offender was 13 years of age and the oldest was 23 years of age at the time the crime was committed. The mean age was 16.3 years (SD = 2.11). Out of the 40 cases, 38 were committed by males and two by females. School shootings took place in seven different countries: USA ($n = 29$), Germany ($n = 4$), Canada ($n = 2$), Brazil ($n = 2$), Finland ($n = 1$), the Netherlands ($n = 1$) and Argentina ($n = 1$).

Procedure

Data were collected from the National School Safety Center's Report on SAVD, news articles (e.g. *The New York Times*, *BBC*, *Fox News*, *CNN* and local newspapers), and secondary resources, such as published books and journal articles. All details were confirmed by at least two or more sources.

Cases were excluded if the perpetrator was not a pupil or previous pupil at the school at the time of the offence. Cases were also excluded if the location of the attack was not on the school grounds or on a non-school day. The sample included those identified as rampage shootings.

Adopting the content analysis approach used in numerous previous studies examining thematic distinctions between differing offenders (Canter and Fritzon, 1998; Salfati and Canter, 1999; Youngs and Ioannou, 2013; Ioannou and Oostinga, 2015), 18 variables on offender characteristics (or risk factors) were identified and coded dichotomously in terms of the presence or absence of each variable. Previous research has demonstrated that content analysis, any more refined than presence/absence dichotomies, is likely to be unreliable (Canter and Heritage, 1990; Canter and Ioannou, 2004). Full variable descriptions are given in the Appendix.

Analysis

The data were analysed using Smallest Space Analysis (SSA)-I (Lingoes, 1973). SSA allows a test of hypotheses concerning the co-occurrence of every variable with every other variable. In essence the null hypothesis is that the variables have no clear interpretable relationship to each other. SSA is a non-metric multidimensional scaling procedure based upon the assumption that the underlying structure, or system of behaviour, will most readily be appreciated if the relationship between every variable and every other variable is examined.

SSA represents the co-occurrence of variables, in our present study offender characteristics (or risk factors), as distances in a geometrical space. The SSA program computes association coefficients between all variables. It is these coefficients that are used to form a spatial representation of items with points representing variables. The closer any two points are to each other on the spatial configuration, the higher their associations with each other. Similarly, the farther away from each other any two points are, the lower their association with each other.

A number of studies of criminal actions have found such MDS models to be productive (e.g. Canter and Heritage, 1990; Canter and Fritzon, 1998; Salfati, 2000; Ioannou and Oostinga, 2015).

The particular power of SSA-I comes from its representation of the rank order of co-occurrence as rank orders of the distances in the geometric space (the use of ranks leads to it being considered non-metric MDS).

The measure of co-occurrence used in the present study was Jaccard's coefficient. Jaccard's coefficient calculates the proportion of co-occurrences between any two variables as a proportion of all occurrences of both variables. This has now become the standard coefficient used with this type of data since the initial Canter and Heritage (1990) study. Its great advantage is that it only calculates co-occurrence across recorded events. Any absence of activity is not used in the calculation. This means it only draws upon what was known to have happened and does not take account of what was not recorded to have happened. With this sort of data such lack of recording can be in error, whereas noting that something occurred is less likely to be inaccurate.

To test hypotheses, an SSA configuration is visually examined to determine the patterns of relationships between variables and identify thematic structures. Offender characteristics (or risk factors) with similar underlying themes are hypothesised to be more likely to co-occur than those that imply different themes. These similarly themed offender characteristics (or risk factors) are therefore hypothesised to be found in contiguous locations, i.e. the same region of the plot. The hypothesis can therefore be tested by visually examining the SSA configuration. The coefficient of alienation (Borg and Lingoes, 1987) indicates how well the spatial representation fits the co-occurrences represented in the matrix. The smaller the coefficient of alienation is the better the fit, i.e. the fit of the plot to the original matrix. The most acceptable scores range between 0.15 and 0.24 (Donald, 1995). However, as Borg and Lingoes (1987) emphasise there is no simple answer to the question of how "good" or "bad" the fit is. This will depend upon a combination of the number of variables, the amount of error in the data and the logical strength of the interpretation framework. In summary, the SSA was used to explore the co-occurrences of offender characteristics (or risk factors) and allowed for the testing of the hypothesis that they can be differentiated into themes.

Results

### Offender characteristics (or risk factors) in the present study

The offender was male in 95 per cent of the cases, while being "bullied" occurred in 57.5 per cent of the cases. Mental illness, weapon fascination and being a loner were present in about half of the sample (42.5 per cent). In over a third of the cases there was evidence of offenders' violent writings (37.5 per cent), the offender had expressed suicidal thoughts in the past (37.5 per cent) and was playing violent video games and/or watching violent films prior to the shooting (35 per cent). Almost 28 per cent of the sample kept a journal, while 22.5 per cent of the offenders were on medication due to mental health issues. One-fifth of the sample were at some point suspended or expelled from school and 17.5 per cent of them suffered abused at home. Past suicide attempts, violent behaviour as well as past criminal convictions were evident in 15 per cent of the cases. Five (12.5 per cent) of the school shooters had experienced a recent relationship breakup while in four cases (10 per cent) the offender planned and/or implemented the offence with another individual. Similarly, in four cases (10 per cent) the offender was violent against his family in the past. All frequencies are presented in Table I.

SSA of offender characteristics (or risk factors)

Figure 1 shows the distribution of the 18 offender characteristics (or risk factors) for the 40 school shootings on the two-dimensional SSA. The coefficient of alienation of 0.24 indicates a reasonable fit of the spatial representation of the co-occurrences of the characteristics (or risk factors). The regional hypothesis states that items that have a common theme will be found in the same region of the SSA space. To test the hypothesised framework of school shooters characteristics, it was therefore necessary to examine the SSA configuration to establish whether different themes of offender characteristics (or risk factors) could be identified.

Table I	Frequencies of variables		
Offender characteristics (or risk factors)		*n*	*%*
Male		38	95
Bullied		23	57.5
Mental illness		17	42.5
Weapon fascination		17	42.5
Loner		17	42.5
Suicidal thoughts		15	37.5
Violent writings		15	37.5
Violent media		14	35
Journal		11	27.5
Medication		9	22.5
Suspension-expulsion		8	20
Abused at home		7	17.5
Past convictions		6	15
Past suicide attempt		6	15
Past violent behaviour		6	15
Relationship breakup		5	12.5
Multiple offenders		4	10
Violence against family		4	10

Figure 1 Two-dimensional smallest space analysis (SSA) plot of school shooter characteristics (or risk factors) with regional interpretation

Note: Coefficient of alienation = 0.24
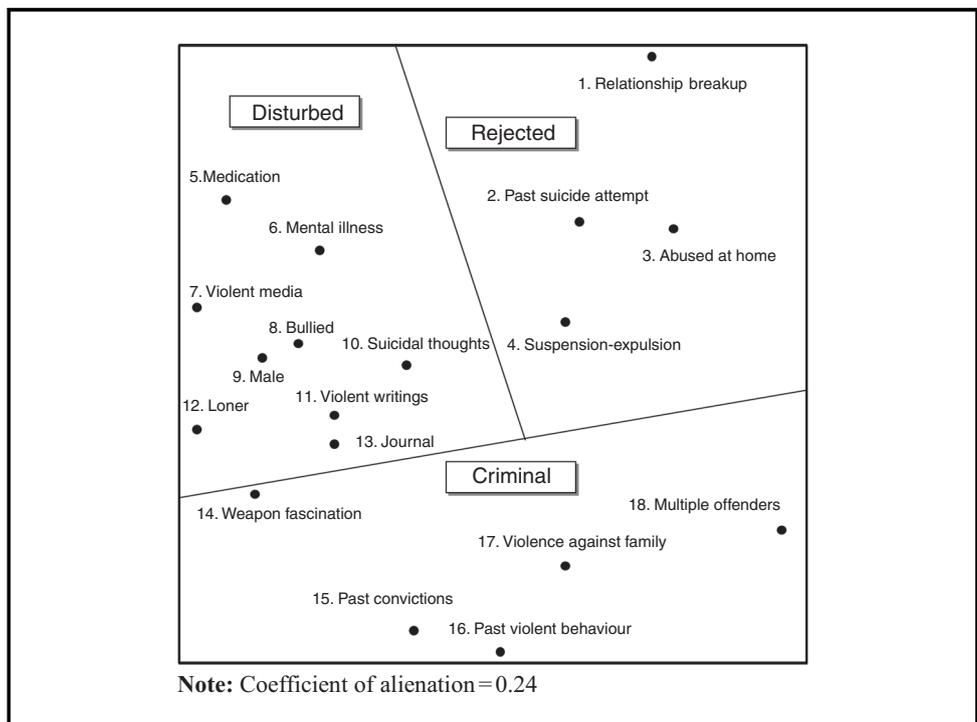
As can be seen in Figure 1, visual examination of the SSA plot confirmed that it can be partitioned into three distinct regions or themes: Disturbed School Shooter, Rejected School Shooter and Criminal School Shooter.

Disturbed School Shooter. As it can be seen from Figure 1 there is a region that contains a number of offender characteristics (or risk factors) concerned with emotional and/or mental health problems. Nine variables characterise this theme: offender being on medication and/or

receiving therapy due to mental health issues (5), offender suffering from a diagnosed mental disorder (6), offender was playing violent video games and/or watching violent films (7), offender was bullied at school (8), offender was male (9), offender had suicidal thoughts evidenced in conversation, writings or drawings (10), there was evidence of offender's violent writings and/or drawings (11), offender was a loner without many friends and/or socially excluded (12) and offender kept a journal (13).

These variables indicate that school shooting emerges out of the person's self-destructive emotions. An expressive style of offending where the internal source results in acts whose purpose is to destroy oneself. A history of mental illness, suicidal thoughts and violent media and writings strongly correlate. Bullying at school may be the result of the offender being a loner or appearing "strange" preoccupied with his own thoughts. A case example illustrating this theme is student Dylan Klebold who, accompanied by classmate Eric Harris, entered their high school shooting staff and students. There was evidence of both Dylan and Eric's violent writings, mental illness as well as an influence from gothic culture. The items forming this theme have a Cronbach's α of 0.73 which is quite high given that the material is collected from media sources with all their inherent unreliabilities and thus lends support to regarding these items as forming a scale.

Further analysis looking into the relationship of the theme to family background revealed that those offenders who lived with their grandparents scored higher in this theme ($M = 7.50$, SD $= 2.12$) than those who did not live with their grandparents ($M = 3.79$, SD $= 2.20$) and this difference was significant $t(38) = -2.332$, $p < 0.05$. Furthermore, a significant difference was found $t(38) = -3.143$, $p < 0.001$, with offenders with a history of family suicide scoring higher in this theme ($M = 8.50$, SD $= 0.71$) than those without a history of family suicide ($M = 3.74$, SD $= 2.11$).

Rejected School Shooter. In the top right-hand section of the plot, four variables form a distinct theme: offender experienced a recent relationship breakup resulting in feelings of rejection (1), offender made suicide attempt in the past (2), offender was physically and/or psychologically abused at home (3) and offender was suspended or expelled from the school (4).

Here the school shooting may be used by the offenders to send a message to those individuals who hurt or excluded them. It is seen as a direct means of affecting a person significant to the school shooter and as a device the offender may use to achieve focused revenge. The "rejected" label is derived from the fact that all these variables express a real or imagined interpersonal rejection. A case illustrating this theme is Robert Butler Jr who entered his school and shot two members of staff. He then drove a mile away from the school grounds and shot himself. Butler had been recently suspended from school for driving his vehicle in the football field. The variables in this theme give a Cronbach's α of 0.69. Further analysis revealed that offenders who were either adopted or lived with foster parents ($M = 3.00$, SD $= 0.00$) scored higher in this theme than those who did not ($M = 0.53$, SD $= 0.95$) and these results were statistically significant $t(38) = -3.633$, $p < 0.001$. The rejected school shooter was also found to have a history of family criminality $t(38) = -3.378$, $p < 0.01$ and parental drug and/or alcohol abuse $t(38) = -2.268$, $p < 0.05$.

Criminal School Shooter. In the bottom of the SSA plot, five variables together form a second theme: offender had a fascination with weapons (14), offender had past convictions (15), offender was violent in the past (16), offender was violent in the past against family members (17), offender planned and/or implemented the offence with another individual (18). Taken together these variables indicate an emphasis to a criminal's behaviour and can be seen as representing general criminality. Here we have an offender who has a history of offending and past violent behaviour and school shooting is seen as part of a generalised criminal activity.

A case illustrating this theme is Andrew Douglas who entered his school accompanied by Mitchell Schott Johnson and shot at staff and students. Andrew had a reasonably stable upbringing, which also included a fascination for weapons, which was introduced to him at a young age. The variables in this theme give a Cronbach's α of 0.58 which is quite low but may be a consequence in part of the low frequencies of some of these items. A summary of the three scales derived from their Cronbach's α is given in Table II. No statistically significant relationships were found between this theme and family background.

Table II	Scales of offender characteristics (or risk factors) themes		
Disturbed	*Rejected*	*Criminal*	
Medication (0.71)	Relationship Break up (0.69)	Weapon fascination (0.60)	
Mental illness (0.69)	Past suicide attempt (0.47)	Past convictions (0.32)	
Violent media (0.69)	Abused at home (0.65)	Past violent behaviour (0.54)	
Bullied (0.66)	Suspension-expulsion (0.68)	Violence against family (0.54)	
Male (0.72)		Multiple offenders (0.58)	
Suicidal thoughts (0.70)			
Violent writings (0.72)			
Loner (0.72)			
Journal (0.70)			
$\alpha = 0.73$	$\alpha = 0.69$	$\alpha = 0.58$	

Note: With α if item deleted in parentheses

Testing the framework – distribution of cases across themes

Although the SSA indicates that the offender characteristics (or risk factors) can be classified in terms of three psychologically meaningful themes, it does not classify the offenders themselves. In order for the model of school shooter characteristics to be meaningful it is important to examine whether it is actually possible to classify individual cases as belonging to one of the three themes outlined. Therefore, ach of the 40 cases in the data set was individually examined to ascertain whether it could be assigned to a particular theme on the basis of the variables which occurred during each case. Every case was given a percentage score for each of the three major themes, reflecting the proportion of Disturbed, Rejected and Criminal School Shooter. The criterion for assigning a case to a particular theme was that the dominant theme had a greater number of offender characteristics (or risk factors) present than the sum of the other two themes. The percentage of intratheme occurrences was used rather than the actual number of occurrences, because the actual total number of offender characteristics (or risk factors) in each theme varied. This method of classification was also employed by Canter and Fritzon (1998), Salfati and Canter (1999), Youngs and Ioannou (2013) and Ioannou and Oostinga (2015). A case was considered to be non-classifiable if it contained less than a third of the variables in any theme or if it contained equal numbers of variables from more than two themes or simply when there was no predominant theme.

Using this system (see Table III), a total of 90 per cent (36 out of 40 cases) could be classified as pure types either exhibiting a dominantly Disturbed, Rejected or Criminal theme. Breaking these 36 cases down, it could be seen that in 24 (60 per cent) cases could be classified as Disturbed, nine (22.5 per cent) cases Rejected and only three (7.5 per cent) cases Criminal. Four cases (10 per cent) could not be classified. These results would seem to suggest that the regions as revealed by the SSA (see Figure 1) are a very good representation of distinct psychologically meaningful themes of offender characteristics (or risk factors).

Discussion

The present study explored the potential of developing a model of differentiating school shooters based on their characteristics. Three very distinct psychologically meaningful themes were

Table III	Distribution of cases across themes
Theme	*Number of cases*
Disturbed	24 (60%)
Rejected	9 (22.5%)
Criminal	3 (7.5%)
Non-classifiable	4 (10%)

identified: the Disturbed School Shooter, the Rejected School Shooter and the Criminal School Shooter. Most of the cases fell clearly within one of the three themes, highlighting the importance of differentiating among offender characteristics (or risk factors) and allowing the integration of a number of previously identified characteristics and risk factors in the literature.

The most dominant theme, evident in 60 per cent of the cases was the Disturbed School Shooter. Offender characteristics (or risk factors) in this region were concerned with emotional and/or mental health problems. School shooting emerged out of a person's self-destructive emotions. A history of mental illness, being on medication and/or receiving treatment due to mental health issues, suicidal thoughts, being bullied, being a loner and evidence of keeping a journal, violent media and violent writings strongly correlate. Mental disorders (McGee and DeBernardo, 1999; Verlinder *et al.*, 2000; Harding *et al.*, 2003; Leary *et al.*, 2003; Gerard *et al.*, 2015), suicidal thoughts (Marano,1998; Verlinden *et al.*, 2000; Kidd and Meyer, 2002; Vossekuil *et al.*, 2002; Fritzon and Brun, 2005; Langman, 2009), victimisation (Pellegrini *et al.*, 1999; Verlinden *et al.*, 2000; Vossekuil *et al.*, 2000; Leary *et al.*, 2003; Wike and Fraser, 2009; Gerard *et al.*, 2015), being a loner (McGee and DeBernardo, 1999; Weisbrot, 2008), interest in violent media and writings (Anderson and Dill, 2000; Kidd and Meyer, 2002; Vossekuil *et al.*, 2002; Fritzon and Brun, 2005; Ferguson, 2008; Langman, 2009) have all been identified by previous research and clearly are associated with the Disturbed School Shooter. Further analysis showed that offender characteristics (or risk factors) in this region have a significant relationship to the family background of the offender. Offenders who lived with their grandparents and those with a history of family suicide scored higher in this theme.

The second theme, evident in 12.5 per cent of the cases was the Rejected School Shooter. Here the school shooting may be used by the offenders to send a message to those individuals who hurt or excluded them. It is seen as a direct means of affecting a person significant to the school shooter and as a device the offender may use to achieve focused revenge. The "rejected" label is derived from the fact that all these variables express a real or imagined interpersonal rejection. The offender made a suicide attempt in the past, he/she was physically and/or psychologically abused at home, was suspended or expelled from the school and experienced a recent relationship breakup resulting in feelings of rejection. Rejection has been identified in previous studies (Guerra *et al.*, 2003; Leary *et al.*, 2003; Gerard *et al.*, 2015) and it has been suggested that it may act as a proximal risk factor in individuals who already possess existing dynamic risk factors (Wike and Fraser, 2009).

Leary *et al.* (2003) found evidence to support that a school shooting can be provoked by real or imagined interpersonal rejection, for example a relationship ending. The school shooting can be seen/may be used by the offenders to send a message to those individuals who hurt or excluded them (Newman, 2004). This is further strengthened by the fact that significant relationships were identified between this theme and the offender being either fostered or adopted, had a family member with a criminal history and parents with drug or alcohol issues. Research has shown that a child is also more likely to have aggressive outbursts where there is abuse in the home, criminal histories within the family and also where there is parental substance abuse (Lewis *et al.*, 1988; McGee and DeBernardo, 1999; Shumaker and Prinz, 2000).

The final rarer theme, evident in only 7.5 per cent of the cases, is one where school shooting is seen as part of a generalised criminal activity. Here we have an offender who has a fascination with weapons, past criminal convictions, has been violent in the past, has been violent against family members and who planned and/or implemented the offence with another individual. The Criminal School Shooter represents general criminality and a violent past which has been identified in previous research (Vossekuil *et al.*, 2002; Gerard *et al.*, 2015). The enthusiasm for weapons can be a part of the perpetrators planning. No statistically significant relationships were found between this theme and family background.

To the authors' knowledge this is the first attempt to differentiate offender characteristics (or risk factors) of school shooters. The present paper provides preliminary support for a model of school

shooter characteristics. These findings have both significant theoretical implications in our understanding of school shooters and of the crime in general, and the potential for practical applications in terms of prevention and intervention strategies. It is important to note that caution should be exercised when interpreting the current findings in order to avoid the labelling of individuals as being potentially violent. A more predictive model wherein certain offender characteristics could be taken as indicative of the potential for violence should be approached with care. Many authors have cautioned against such an attempt of this kind (Mulvey and Cauffman, 2001; Fritzon and Brun, 2005). This research should be used as a basis for understanding the psychological functions of the prior characteristics and risk factors, especially in the case of those who either surrender or do not manage to commit suicide, towards a more informed approach to clinical intervention.

Although the present study identified a model for differentiating school shooter characteristics a number of limitations should be noted. The findings are based upon secondary data and media reports. Media are able to manipulate information to speed up the process of reporting accounts of the incident. Those portrayals of the incidents can lead to faulty assumptions and stereotyping of the perpetrators. Certain details that are omitted from media reports, due to a possible lack of public interest, could be essential to empirical studies. Kidd and Meyer (2002) state that the use of the media to gain this information may be a limitation as there may be details that can be misreported as a result of strict deadlines for reporters. Future research should seek to overcome this limitation. Studies would benefit from using data from other sources, as well as from conducting interviews with family members and school shooters who survived after the attacks. In addition, caution should be exercised when one refers to characteristics (or risk factors) such as loner, violent media, rejection as they are difficult to quantify, we do not know how many young people have experienced them and in what degree and they are generally derived from third-party accounts that may be biased and inaccurate or incomplete.

Studies within this area of research are heavily weighted on the sample size that is used. Within the present study the sample size consisted of 40 cases, which was the number of cases that met the inclusion criteria. Although the literature in the area of rampage school shooters is heavily publicised, these incidents are still very rare. The current study aimed to include as many cases as possible that could be defined as a rampage school shooting and met the inclusion criteria. By increasing the sample size of this study the inclusion criteria would have needed to be expanded. This would have taken the current research in a different direction. While the present study included cases from around the world, cultural and gun law differences were not taken into account. Future studies should take into account cultural differences as well as the countries' laws concerning weapons.

The present study is only the first step in the development of the current model notably through the identification of the variations of offender characteristics. The results of this study contribute to a theoretical understanding of the offender characteristics. The fact that the majority of the cases could be classified according to the framework is a validation of the hypothesis that offenders who commit school shootings can be differentiated according to their characteristics (or risk factors). The study can form the basis for clinical intervention grounded on the recognition of risk factors in the background of the youths and early recognition of signs of psychological distress, dysfunction and feelings of rejection. While the study does not address prevention methods directly, it does provide a good framework for them.

References

Anderson, C.A. and Huesmann, R. (2003), "Human aggression: a social-cognitive view", in Hogg, M.A. and Cooper, J. (Eds), *The Sage Handbook of Social Psychology*, Sage Publications, Thousand Oaks, CA, pp. 296-323.

Anderson, M., Kaufman, J., Simon, T., Barrios, L., Laulozzi, L., Ryan, G., Hammond, R., Modzeleski, W., Feucht, T. and Potter, L. (2001), "School associated violent deaths in the United States, 1994-1999", *Journal of the American Medical Association*, Vol. 286 No. 21, pp. 2695-702.

Borg, I. and Lingoes, J.C. (1987), *Facet Theory: Form and Content*, Springer-Verlag, New York, NY.

Canter, D. (2004), *Criminal Shadows*, HarperCollins, London.

Canter, D. and Heritage, R. (1990), "A multivariate model of sexual behaviour: developments in 'offender profiling'", *Journal of Forensic Psychiatry*, Vol. 1 No. 2, pp. 185-212.

Canter, D.V. and Fritzon, K. (1998), "Differentiating arsonists: a model of firesetting actions and characteristics", *Legal and Criminological Psychology*, Vol. 3 No. 1, pp. 73-96.

Canter, D.V. and Ioannou, M. (2004), "A multivariate model of stalking behaviours", *Behaviormetrika*, Vol. 31 No. 2, pp. 113-30.

Donald, I. (1995), "Facet theory: defining research domains", in Breakwell, G., Hammond, S. and Fife-Schaw, C. (Eds), *Research Methods in Psychology*, Sage, London, pp. 116-37.

Federal Bureau of Investigation Law Enforcement Bulletin (2011), "Addressing school violence", available at: www.fbi.gov/ (accessed 22 June 2015).

Ferguson, C.J. (2008), "The school shooting/violent video game link: causal relationship or moral panic?", *Journal of Investigative Psychology and Offender Profiling*, Vol. 5 Nos 1-2, pp. 25-37.

Fritzon, K. and Brun, A. (2005), "Beyond columbine: a faceted model of school-associated homicide", *Psychology, Crime & Law*, Vol. 11 No. 1, pp. 53-71.

Gerard, F.J., Whitfield, K.C., Porter, L.E. and Browne, K.D. (2015), "Offender and offence characteristics of school shooting incidents", *Journal of Investigative Psychology and Offender Profiling*, doi:10.1002/jip.1439

Guerra, N.G., Huesmann, L.R. and Spindler, A. (2003), "Community violence exposure, social cognition, and aggression among urban elementary school children", *Child Development*, Vol. 74 No. 5, pp. 1561-76.

Harding, D.J., Mehta, J.D. and Newman, K. (2003), "No exit: mental illness, marginality and school violence in West Paducah, Kentucky", in Moore, M.H., Petrie, C.V., Braga, A.A. and McLaughlin, B.L. (Eds), *Deadly Lessons: Understanding Lethal School Violence*, National Academies Press, Washington, DC, pp. 132-62.

Ioannou, M. and Oostinga, M. (2015), "An empirical framework of control methods of victims of human trafficking for sexual exploitation", *Global Crime*, Vol. 16 No. 1, pp. 34-49.

Kidd, S.T. and Meyer, C.L. (2002), "A comparison of fatal school shootings in rural communities", *Journal of Rural Community Psychology*, Vol. 5 No. 1, pp. 2-10.

Langman, P. (2009), "Rampage school shooters: a typology", *Aggression and Violent Behaviour*, Vol. 14 No. 1, pp. 79-86.

Leary, M.R., Kowalski, R.M., Smith, L. and Phillips, S. (2003), "Teasing, rejection, and violence: case studies of the school shootings", *Aggressive Behaviour*, Vol. 29 No. 3, pp. 202-14.

Lewis, D.O., Lovely, R., Yeager, C., Ferguson, G., Friedman, M., Sloane, G., Friedman, H. and Pincus, J.H. (1988), "Intrinsic and environmental characteristics of juvenile murderers", *The American Academy of Child and Adolescent Psychiatry*, Vol. 27 No. 5, pp. 582-7.

Lingoes, J. (1973), "The Guttman-Lingoes non-metric program series", MA thesis, University of Michigan, Michigan.

McGee, J.P. and DeBernardo, C.R. (1999), "The classroom avenger", *The Forensic Examiner*, Vol. 8 Nos 5-6, pp. 1-16.

Marano, H.E. (1998), *Why Doesn't Anybody Like Me?* Morrow, New York, NY.

Meadows, R.J. (2007), *Understanding Violence and Victimization*, 4th ed., Prentice Hall, Upper Saddle River, NJ.

Mulvey, E.P. and Cauffman, E. (2001), "The inherent limits of predicting school violence", *American Psychologist*, Vol. 56 No. 10, pp. 797-802.

Muschert, G.W. (2007), "The columbine victims and the myth of the juvenile superpredator", *Youth Violence and Juvenile Justice*, Vol. 5 No. 4, pp. 351-66.

Newman, K. (2004), *Rampage: The Social Roots of School Shootings*, Basic Books, NY.

O'Toole, M.E. (2000), *The School Shooter: A Threat Assessment Perspective*, FBI Academy National Centre for the Analysis of Violent Crime, Quantico.

Pellegrini, A.D., Bartini, M. and Brooks, F. (1999), "School bullies, victims and aggressive victims: factors relating to group affiliation and victimization in early adolescence", *Journal of Educational Psychology*, Vol. 91 No. 2, pp. 216-4.

Pittaro, M.L. (2007), "School violence and social control theory: An evaluation of the columbine massacre", *International Journal of Criminal Justice Sciences*, Vol. 2 No. 1, pp. 1-12.

Salfati, C.G. (2000), "The nature of expressiveness and instrumentality in homicide: Implications for offender profiling", *Homicide Studies*, Vol. 4 No. 3, pp. 265-93.

Salfati, C.G. and Canter, D. (1999), "Differentiating stranger murders: profiling offender characteristics from behavioural styles", *Behavioural Sciences and the Law*, Vol. 17 No. 3, pp. 391-406.

Shumaker, D.M. and Prinz, J. (2000), "Children who murder: a review", *Clinical Child and Family Psychology Review*, Vol. 3 No. 2, pp. 97-115.

Twemlow, S.T., Fonagy, P., Sacco, F.C., O'Toole, M.E. and Vernberg, E. (2002), "Premeditated mass shootings in schools: threat assessment", *Journal of American Academy of Child & Adolescent Psychiatry*, Vol. 41 No. 4, pp. 475-7.

Verlinden, S., Hersen, M. and Thomas, J. (2000), "Risk factors in school shootings", *Clinical Psychology Review*, Vol. 20 No. 1, pp. 3-56.

Vossekuil, B., Fein, R.A., Reddy, M., Borum, R. and Modzeleski, W. (2002), *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, United States Secret Service, Washington, DC.

Wike, T.L. and Fraser, M.W. (2009), "School shootings: making sense of the senseless", *Aggression and Violent Behaviour*, Vol. 14, pp. 162-9.

Youngs, D.E. and Ioannou, M. (2013), "A model of client-related violence against female street sex workers", *Journal of Forensic Social Work*, Vol. 3 No. 3, pp. 244-60.

Further reading

Weisbrot, D.M. (2000), "Prelude to a school shooting? Assessing threatening behaviors in childhood and adolescence", *Journal of the American Academy of Child and Adolescent Psychiatry*, Vol. 47 No. 8, pp. 847-52.

Appendix. Variable content dictionary

1. Relationship breakup – offender experienced a recent relationship breakup resulting in feelings of rejection.

2. Past suicide attempt – offender made suicide attempt in the past.

3. Abused at home – offender was physically abused at home.

4. Suspension-expulsion – offender was recently suspended or expelled from the school.

5. Medication – offender was on medication due to mental health issues.

6. Mental illness – offender was suffering from a diagnosed mental disorder.

7. Violent media – offender was playing violent video games and/or watching violent films.

8. Bullied – offender was bullied at school.

9. Male – offender was male.

10. Suicidal thoughts – offender had suicidal thoughts evidenced in conversation, writings or drawings.

11. Violent writings – there was evidence of offender's violent writings and/or drawings.

12. Loner – offender was a loner without many friends and/or socially excluded.

13. Journal – offender kept a journal.

14. Weapon fascination – there was evidence that offender had a fascination with weapons.

15. Past convictions – offender had past convictions.

16. Past violent behaviour – offender was violent in the past.

17. Violence against family – offender was violent in the past against family members.

18. Multiple offenders – planned and/or implemented the offence with another individual.

Corresponding author

Dr Maria Ioannou can be contacted at: m.ioannou@hud.ac.uk

This article has been cited by:

1. Paul M. W. HackettPerceptual Content, Process and Categorial Ontologies 51-88. [CrossRef]
2. Dr Maria Ioannou and Dr Laura Hammond Maria Ioannou International Research Centre for Investigative Psychology (IRCIP), University of Huddersfield, Huddersfield, UK Laura Hammond International Research Centre for Investigative Psychology (IRCIP), University of Huddersfield, Huddersfield, UK . 2015. The changing face of homicide research: the shift in empirical focus and emerging research trends. *Journal of Criminal Psychology* **5**:3, 157-162. [Abstract] [Full Text] [PDF]