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The Co-occurrence of Risk Factors for Intra-familial Child Homicides and Suspicious Child Deaths in England and Wales.

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Abstract

This study aimed to examine the co-occurrence of known risk indicators for intra-familial child death, to identify any themes which may exist. Data consisted of 100 child intra-familial deaths recorded by Police forces in England and Wales from 2006-2012. Categorical principal component analysis was used to assess relationships between 10 risk factors for intra-familial child death, resulting in the creation of four risk conditions, representing themes drawn from the literature, 'abusive and unstable co-parenting', 'multiple parent stressors', 'parental social issues' and 'neglectful parenting'. Implications for police practice and risk management strategies are discussed.

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1. Literature Review

The United Nations Convention on the Rights of the Child (1989: Article 1) defines a child as any individual below 18 years of age. Using this definition, figures from England and Wales suggest that a family member is the primary suspect in two thirds of all cases involving the death of a child at the hands of another (Office for National Statistics: ONS, 2013). Although there have been successful efforts to identify individual factors which increase a child's risk of death within the home (Haapasalo & Petäjä, 1999), only a marginal number of studies have attempted to distinguish co-occurring factors that could result in more effective identification of those at-risk (Brandon, 2009).

Intra-familial child deaths are regarded within this study as those were a family member has caused the death of a child through criminal activity (Mayes et al., 2010). This includes occasions where the criminal activity was a direct cause of death (Haapasalo & Petaäjä, 1999), where a number of aggravating factors rather than a single act has contributed to the death (i.e. physical abuse), or where there has been a lack of actions to prevent the child's death (i.e. neglect; Marshall, 2012). Research suggests a variety of precipitating factors (Palermo, 2002) related to victim and offender characteristics as well as, context specific features that increase the likelihood of intra-familial child death (Marshall, 2012).

Victim characteristics

Research indicates that children face different risk levels at varying ages, defined by the developmental stages of childhood (Crittenden & Craig, 1990). Children below 5 years of age have consistently been found to face an elevated risk of death (Finkelhor & Ormerod, 2001; Marks & Kumar, 1996). Children under 2 years (Lawrence, 2004), especially those below 12 months old (Brown & Lynch, 1995), are reported to be most at-risk due to their physiological vulnerabilities, and dependence on parents (Mayes et al., 2010). Deaths amongst children aged 0-5 years are associated with parental stress, with the most likely cause of death, asphyxiation (Cavanagh, Dobash & Dobash, 2007), neglect (Silverman & Kennedy, 1988), and shaken-baby syndrome where the violent shaking of the child causes head injuries (Stroud, 2008).

Children between 6 and 12 years old are less frequent victims of intra-familial child death, possibly linked to the outgrowing of characteristics that make younger children vulnerable (Finkelhor & Ormerod, 2001). Stabbings and beatings are common causes of death in children of this age and are found in cases of familicide (Hatters-Freidman, Hrouda, Holden, Noffsinger & Resnick, 2005) were a male offender (Leveillee et al., 2005), kills one or more children, their partner or ex-partner and often then themselves (Wilczynski, 1997). Familicide is often triggered by stressors unrelated to the child, and more likely associated with financial stress and the breakdown of an offender's relationship (Hatters-Freidman et al., 2005).
Those aged 13 to 17 years are the least likely victims of intra-familial child death, indicating decreasing risk levels with increasing age (Hatters-Freidman et al., 2005). This group are most at-risk of serious violent assaults (Fattore & Lawrence, 2002) including those involving a weapon (Briggs & Cutright, 1994). Deaths are often caused alongside sexual assaults (Donnelly, Cumines & Wilczynski, 2001) and parental mental health issues (Marks & Kumar, 1996).

Gender has also been the subject of much research, with some claiming that male children face a higher risk of intra-familial child death (Daly & Wilson, 1988). However, the vast amount of studies have found no gender differences (Lucas, Wezner, Milner, McCanne & Harris, 2002; De Silva & Oates, 1993).

Offender characteristics of intra-familial child homicide

The gender of the offender has been found to be a risk factor (Overpeck, Brenner, Trumble, Trifiletti & Berendes, 1998), with similar patterns of filicide (i.e. the killing of a child by a parent, Liem & Koenraadt, 2008). Mothers, fathers and step-parents have been reported the most likely offenders of intra-familial child death (Cavanagh et al., 2007). Some suggest that maternal and paternal filicide occurrence is approximately equal (Bourget, Grace & Whitehurst, 2007), but the majority have found fathers (Putkonen et al., 2010; Bennett et al., 2006) then step-fathers (Cavanagh et al., 2007) as the most common offenders, mirroring typical gendered homicide patterns (Somander & Rammer, 1991). Stress is cited as a reason for the infrequent involvement of fathers in the deaths of very young children, as they often lack parenting and coping skills to deal with neonates (Cavanagh et al., 2007). Fathers are more likely to offend against older children (Bourget & Gagńe, 2005), which often occurs in the context of familicides (Hatters-Freidman et al., 2005),

linking with mental disturbance in other cases (Fattore & Lawrence, 2002). However, mothers are often over-represented in cases involving the deaths of very young children (Kunz & Bahr, 1996, Sorensen & Peterson, 1994), which is arguably linked to increased opportunities to commit such offences as primary caregivers (Haapasalo & Petäjä, 1999). Post-natal depression, a stressor unique to mothers, is often a feature in such cases, with mothers more vulnerable to mental illness during pregnancy and early childhood (Jennings, Ross, Popper & Elmore, 1999).

Parental mental health issues is a known risk factor for intra-familial child death (Bourget & Gagńe, 2005; Karakus, Ince & Ince, 2003) and is estimated to be present in around one quarter (Webb, Pickles, Appleby, Mortensen & Abel, 2007) to one third of all cases (Dolan, Guly, Woods & Fulham, 2003). Child abuse and neglect literature cites drug and alcohol abuse as commonly co-occurring alongside parental psychiatric disturbance (Wells, 2009). Furthermore, drug and alcohol abuse has been found to increase likelihood for child maltreatment (Barth, Gibbons & Guo, 2006) and increase the risk of child death threefold (Chaffin, Kelleher & Hollenberg, 1996).

Although fatal abuse can be linked to a singular isolated event (Janson, 2005), sustained periods of abuse (i.e. infliction of injury) and neglect (i.e. failure to provide care) are among the leading causes of intra-familial child death (Haapasalo & Petäjä, 1999). Previous abuse of a child is most common in the histories of male offenders and is one of the most significant indicators of increased risk to a child's life (Strang, 1995). It is estimated that at least 10% of all deaths classified as sudden infant death syndrome (i.e. sudden unexpected, unexplained death of a child) are actually caused by abuse or neglect which is blamed on difficulties in establishing a cause of death in young children (Wolkind, Taylor, Waite, Dalton & Emery, 1993).

Child death caused by physical abuse often occurs in homes where other forms of intra-familial violence are present (Jaffe, Campbell & Olszowsky, 2013; McKibben, De Vos & Newberger, 1989). There is a reported overlap between domestic and child murders that occur in the context of drug or alcohol abuse, with males the most likely offenders (Kantor & Little, 2003). Websdale's (1999) study of 83 child homicide cases found male-to-female domestic violence present in over half, and a history of child abuse was also prevalent, a finding recently replicated in England

and Wales by Brandon (2009). Relationship breakdown is often a trigger for both domestic and child deaths (Liem & Koenraadt's, 2008), and may increase the risk when combined with parental substance abuse (Marleau, Poulin, Webanck, Roy and Laporte, 1999), and mental health issues (Brandon, 2009).

Family structure may also play an important role (Wolfner & Gelles, 1993). Parents, who are single, separated or divorced, may pose higher risks to children (Daly & Wilson, 1985). Young single mothers may have an elevated risk (Dolan et al., 2003) to young children (Bourget et al., 2007), especially when combined with poor education (Crittenden & Craig, 1990) and having multiple children to multiple partners (Overpeck et al., 1998). Jaudes, Ekwo and Voorhis (1995), and Zuravin (1991) reported family size as a risk factor due to increased parental stress associated with caring for multiple children. Parental stress is also paradoxically cited as a specific reason for child death in single children families (Thompson & Wilson, 1989; Jacquot & Roberts, 1988).

Although a variety of individual risk indicators for intra-familial child death have been identified, only small numbers of studies have specifically explored co-occurrence of risk factors despite indications from child maltreatment literature suggesting that risk increases when multiple risk factors are present (Brown, Cohen, Johnson & Salzinger, 1998). Exploration of factors that are specifically predictive of intra-familial child death is also lacking. A study in Australia has had some success in developing a list of indicators for child death, however, equivalent research based on a U.K. population has not been conducted (Jaffe et al., 2013).
This paper was commissioned by the ACPO Homicide Working Group to gain a better understanding of the victims and suspects in cases of intra-familial child homicides and suspicious child deaths within England and Wales. This study will also explore the risk conditions under which intra-familial child death is more likely to occur.

2. Method

Data Collection

The data used within this study consisted of case information of 100 intra-familial child deaths recorded by police forces across England and Wales from 2006-2012 using the Form 76 during the period of 01/01/2006 to 31/12/2012. Data was provided by The Homicide Working Group (HWG), an organisation that investigates all forms of homicide and aims to develop knowledge in order to reduce its prevalence (HWG, 2013). The data consisted of victim and suspect background information and some contextual information surrounding the child's death. Data from 27 of the 43 police forces across England and Wales were analysed within this work.

Within this research the term child homicide refers to cases related to 'unlawful killings' including murder, manslaughter and causing or allowing the death of a child. The term 'suspicious deaths' refers to cases were the actual cause of death could not be attributed to a specific criminal act, but included factors that 1) may have contributed to the death or 2) were a criminal offence in their own right. Furthermore, the term 'suspects' is used throughout this report due to 43% of cases not providing information on the final outcome (the case may still be on-going / missing information / lack of update on outcome). Also, the use of 'suspects' allows those child homicides and suspicious child deaths to be grouped together.

All suspects within this report are classed as 'intra-familial suspects' which, for the purposes of this research, refers to a biological parent, step parent, adopted parent, family member, legal guardian, carer or a resident or non-resident partner of the victims carer or any individual charged with having responsibility for the well-being of the child.

Design

The results are split into two sections. The first section looks at the descriptive information of all 100 intra-familial cases. Part two involved conducting a Categorical Principal Component Analysis (CATPCA) to identify any themes in risk conditions of intra-familial child deaths.

Cases were content analysed, extracting information relating to the victim, suspect and context specific characteristics of the incident i.e. risk factors. Cases were coded using a dichotomous approach (i.e. based on presence/absence) in order to reduce

the potential of missing data distorting results and to ensure maximum reliability (Canter & Ioannou, 2004). To assess the reliability of the variables an independent researcher coded their presence or absence in 10 randomly selected cases. This resulted in a Cohen's Kappa of 0.806, significant at the $p<0.05$ level, demonstrating an acceptable inter-rater reliability.

3. Analysis 1: Descriptive Information

Victim Information

There were 110 victims across the 100 cases, 62 male (56.4%) and 48 female (43.6%). The age of victims ranged between 0 months to 17 years of age (see Table 1). The majority of victims were under two years of age (68%) with approximately half of the sample under one year (47%). In over a third (37 of 100), the victim had at least one sibling. In total, nine cases within the sample involved multiple victims.

Table 1: Victim ages by age group

Age	No. of victims	% of victims
0-3 months	24	21.8
4-6 months	13	11.8
7-9 months	4	3.6
10-12 months	11	10.0
13 months- 2 years	23	20.9
3-5 years	17	15.5
6-12 years	8	7.3
13-17 years	10	9.1

Cause of death

Head injury was the largest cause of death with around 20% of deaths attributed to this cause (see Table 2). A further 5 victims were found to have suffered RADI head injuries. 'Multiple injuries' and 'stab wounds' were the next most common with each being a cause of death of around 1 in 10.

Table 2: Causes of death to victims

Cause of death	No. of victims	% of victims
Head injury	22	20.0
Multiple injuries	14	12.7
Stab wounds	12	10.9
Asphyxiation	9	8.2
Strangulation	8	7.3
Smoke inhalation	5	4.5
RADI* head injury	5	4.5
Overdose	3	2.7
Drowned	3	2.7
Poisoned	3	2.7
Internal injuries	1	0.9
Broken neck	1	0.9
Back/Spinal injury	1	0.9
Dehydration	1	0.9
Exposure	1	0.9
Unascertained	7	6.4
Not known	14	12.7

***R**otational **A**cceleration **D**eceleration **I**mpact Injuries (injuries to the head/brain caused by shaking a young child)

Previously known to social services

From the 110 victims, 45 (40.9%) were known to Social Services prior to their death. Nine (8.2%) of these were subject to a child protection plan, with a further 8 (7.3%) who had siblings subject to a child protection plan.

Suspect information

There were 114 suspects in the 100 cases. 69 were male (60.5%) and 45 were female (39.5%). Suspects were aged between 14 and 64 (see Table 3) with an average age of 32 years (SD=10.23). Fathers were on average 35 years of age, whilst mothers were 30 years of age at the time of the incident.

Table 3: Suspects age by age group

Age	No. of suspects	% of suspects
Under 20	9	7.9
20-30	39	34.2
31-40	42	36.8
40-50	15	13.2
Over 50	5	4.4
Not known	4	3.5

Relationship to victim

Fathers were the principal suspect in 42 cases followed closely by mothers in 39 cases and together made up 71% of suspects. Mothers' partner/step-father was recorded as the suspect in around 13% of cases (Table 4).

Table 4: Suspects relationship to victim

Relationship	No. of suspects	% of suspects
Father	42	36.8
Mother	39	34.2
Mothers partner/ Step father	15	13.2
Child minder/carer	4	3.5
Family acquaintance	3	2.6
Brother	2	1.8
Uncle/Step uncle	2	1.8
Grandmother	1	0.9
Proposed adoptive father	1	0.9
Proposed adoptive mother	1	0.9
Partner of victims sister	1	0.9

Ethnicity

The majority of suspects were identified as 'White Northern European' (67.5%). This figure is below the national average (80.5%) (Office for National Statistics, 2011a) and therefore indicates an overrepresentation of ethnic minorities in the sample under study.

Risk factors

Thirty-eight of the 114 suspects were identified as having some form of mental health condition (33.3%) and in at least 9 of these cases this information was known by another individual prior to the incident. In two further cases it was noted that the suspect had been 'acting strangely' in the days prior to the incident. Twenty-five of the 114 suspects (21.9%) attempted to commit suicide. Out of these 25 individuals, 11 (44%) who attempted suicide were successful.

Around 30% of suspects (35/114) were recorded as having used illegal drugs or alcohol. However, it is not clear by the way in which the information was recorded which of these substances suspects had used and whether this was a factor in the commission incident or a long-standing addiction issue.

Thirty-nine of the 114 suspects (34.2%) were identified as having committed acts of domestic abuse prior to the incident or at the time the incident occurred. Around 20% of suspects (22/114) had a criminal record prior to the incident under study; however, this information was not recorded in over half of cases (51%). Therefore, in the cases where this information was recorded 43% of suspects had a criminal record.

Children aged 2 years or younger

There were 75 victims under two years of age, 39 male (52%) and 36 female (48%), the most common cause of death was head injury (33%). Around 40% of these victims (29/75) were known to social services at the time of their death, with 6 of these children (8%) subject to a child protection plan.

There were 84 suspects and of these 47 were male and 37 were female. The average age of suspects was 30 years (SD=9.1), a large proportion of suspects were aged between 20-25 years of age (23.8%) with those aged 31-35 (22.6%) the next most common age group.

Approximately 30% of suspects (26/84) had other children, 26.2% had issues with illegal drug or alcohol abuse (22/84) and one third had mental health issues (27/84). Out of the 84 suspects, 14 (16.7%) attempted suicide with 8 (9.5%) of those successful in their attempts. Twenty-four of the 84 suspects were known to have perpetrated domestic abuse either at the time of the incident or historically (28.6%), further to this 7 (8.3%) had a history of violence against children

4. Analysis 2: Types of Risk Conditions

This section involved conducting a Categorical Principal Component Analysis (CATPCA) to identify any themes in risk conditions. In order to run this analysis variables that occurred infrequently amongst the data or were subject to large amounts of missing information (e.g., information on their criminal record) were removed. This process resulted in the retention of 82 cases and 10 variables representative of risk factors for child death (see Table 5) these factors were then subject to CATPCA in order to cluster variables into more meaningful themes, named risk conditions (Field, 2013). Cases involving multiple victims were only included if all victim ages in the case were within the same age category as defined by Crittenden and Craig (1990).

CATPCA is suitable for use in exploratory and confirmatory research (Field, 2013) using categorical variables (i.e. present/absent). The method identifies interrelating clusters of variables and works on the assumption that there are higher order themes (i.e. components) that cause such observed patterns between variables (Field, 2013). Variables that relate highly often occur together in the subject under study and are grouped by CATPCA to create clusters that constitute individual components (Dancey & Reidy, 2007). Variables are reduced into more meaningful themes (Joliffe, 2002). Component loadings, which are calculated as part of the CATPCA output, indicate how much contribution each variable makes to the overall factor (Field, 2013). Factors with loadings above 0.4 were deemed acceptable for this study due to the small sample size and such scores were found to be significant according to Pearson's table (Stevens, 2002).

CATCPA for dimensions of child death

CATPCA was conducted on the 10 variables with factors permitted to load onto two components in order to better represent trends in intra-familial child death (Chu et al., 2012). The risk conditions (i.e. components) created from this process each coincided with themes drawn from the literature. Component scores for each condition were calculated by totalling the loading score for each significantly loaded variable within each component. Table 5 shows descriptive statistics for the 10 risk factors for the 82 cases of intra-familial child death used for CATCPA.

Table 5: Risk factors for child death

Variables	**N of cases**	**%**
Only child	40	59
Evidence of neglect	36	44
Drug and or alcohol abuse	33	40
Domestic violence	28	34
Mental health issues	28	34
Single parent	22	27
Poor living conditions	20	24
Relationship breakdown	14	17
More than 2 other children	13	16
History of child abuse	12	15

The CATPCA was conducted on 10 risk factors for child death using varimax rotation, Barlett's test of sphericity demonstrated that correlations between variables were large enough for CATPCA (χ^2 (36)=63.13, p<0.05). 4. The CATPCA exposed four components that explained 76.5% of variance and each factor had an eigenvalue greater than 1.0 (Kaiser, 1960) indicating that they all represented distinct types of risk conditions. The component loadings following rotation suggest that the first cluster represents 'abusive and unstable co-parenting', cluster two represents 'multiple parental stressors', cluster three represents 'neglectful parenting' and the final cluster of variables represents 'parental social issues'.

Table 6 highlights the risk factors present for the four groupings. For example, abusive and unstable co-parental households were likely to contain domestic violence, history of child abuse and relationship breakdown. In contrast, this group were unlikely to be single parents and unlikely to have one child. Furthermore, 'Mental health issues' loaded onto both 'multiple parental stressors' and 'neglectful parenting', 'single parent household' also loaded onto both 'abusive and unstable co-parenting' and 'multiple parental stressors', and 'only child' also had significant loadings for both 'abusive and unstable co-parenting' and 'multiple parental stressors'.

Table 6: Inter-correlations for intra-familial child death risk factors

Factor	**1**	**2**	**3**	**4**
	Abusive & unstable co-parental households	Multiple stressors	Neglectful parenting	Parental social issues
	Component loading score			
Eigenvalues	2.27	2.11	1.77	1.5
Variance %	22.7	21.07	17.72	15
Variables		**Rotated components**		
Mental health issues	-0.28	**0.52***	**-0.58**	0.33
Illegal drug and/or alcohol use	0.23	**0.46***	-0.04	**0.82***
Domestic violence	**0.87***	-0.06	0.16	**0.41***
Relationship breakdown	**0.53***	-0.29	-0.08	0.31
History of child abuse	**0.58***	0.04	-0.03	-0.2
Evidence of neglect	-0.08	**0.46***	**0.83***	-0.09
Poor living conditions	-0.25	0.29	**0.76***	0.25
Single parent	**-0.61***	**0.4***	-0.19	0.24
More than two other children	0.36	**0.79***	-0.32	-0.39
Only child	**-0.44***	**-0.67***	-0.05	0.37

5. Discussion

This paper was commissioned by the ACPO Homicide Working Group to further understand victims and suspects in cases of child homicide and suspicious child deaths within England and Wales. Analysis explored the types of child deaths

reported, with exploratory risk factor analysis conducted on intra-familial child deaths.

Victim information

When exploring age, the majority of victims within the sample were under two years of age, with approximately half of the sample under one year. Previous child death research has indicated that there are different levels of risk faced by children of different ages that are associated with the varying developmental stages of childhood (Crittenden & Craig, 1990; Chirstoffel, 1984). Children below five years are often found to be at an elevated risk of death caused by an intra-familial offender (Finkelhor & Ormerod, 2001; Marks & Kumar 1996) with children under two years consistently found to be most vulnerable (Lawrence, 2004; Brown & Lynch, 1995) as supported in this study. Statistics suggest that those below one year are more at risk than any other single year age group and are seven times more likely to be killed by an intra-familial offender than older aged children (Office of National Statistics 2013).

It has been suggested that young aged children are particularly vulnerable due to their physiological vulnerabilities (Smithey, 1998), total dependence on parents and inability to escape assaults (Brown & Lynch, 1995). Other research also suggests that the increased risk of death amongst this group can also be linked to a heightened risk of post-natal depression amongst mothers with young children (Jennings et al. 1999). Within the current sample, at least one mother was known to have been suffering from post-natal depression at the time of the offence, with an additional suspected case.

Head injury was the most common causes of death in the majority of years under study. The high rate of this type of injury is commonly found in deaths of children under the age of 2. This has been linked to the physiological vulnerability of the head and brain in early life (Smithey, 1998)**.** Although some deaths within the sample may have been the result of a single incident, action or outburst of violence that can make such deaths potentially undetectable (Janson, 2005), it is imperative that recommendations from reviews of such deaths are followed-up and that research strives to improve intervention efforts.

Suspect information

Childbirth statistics from England and Wales have indicated that the national average age of fathers and mothers has increased in recent years with fathers approximately 32.6 years of age and mothers 29.7 years of age when their first child is born (Office for National Statistics, 2011b). It is, therefore, expected that suspects in cases involving the deaths of young children, identified as the most likely victims of these crimes, will be of these age ranges. This study found the average age of suspects to be 32, with fathers slightly older than mothers.

Research has indicated mothers as the most likely offender in cases involving very young children (Sidebotham, Bailey, Belderson & Brandon, 2011)**,** whilst fathers are most likely offenders in toddler aged children (Wilczynski, 1997). As a whole, fathers recorded a slightly higher frequency as principal suspect, compared to mothers in the current study. However, parents (mother and father) made up 71% of the suspects in intra-familial child deaths. The higher rate of male to females (i.e. father, mother's partner, step father, adoptive father) in such cases of child homicide and suspicious child death supports findings indicating males as the most common offenders (Putkonen et al., 2010; Cavannagh et al. 2007; Bennett et al. 2006; Schnitzer & Ewigman, 2005; Fornes, Druilne & Lecomte, 1995), therefore, mirroring typical homicide patterns (Marks & Kumar, 1996; Somander & Rammer, 1991). Results regarding the overrepresentation of ethnic minorities in the sample under study may be explained by language, social and cultural barriers reported by previous studies (US Department of Health and Human Services, 2013).

This paper identified that a third of suspects had evidence of some form of mental health condition, with around 24% with a known previous incident. Mental health problems have often been reported as a risk factor for intra-familial child homicide (Bourget & Gagńe, 2005; Karakus, Ince & Ince, 2003; Liem & Koenraadt, 2008). It is somewhat unique to this type of homicide given that statistics indicate that it only appears in 5% of general homicide cases (Time to Change, 2013). Post-natal depression is often found in cases involving the deaths of very young children, with mothers vulnerable to this condition following child birth (Mayes et al. 2010).

A number of high profile cases involving failings by child protection organisations in recent years have highlighted the importance of being able to identify warning signs that children may be in danger at the earliest possible opportunity (Munro, 2011). Identifying parents and carers who may be suffering from a mental health problem

could allow for interventions and provide such individuals with access to appropriate services (Bourget, Grace & Whitehurst, 2007; Hatters-Friedman et al., 2005). This may allow for more effective identification of those who potentially pose a risk to their own children (Brown & Lynch, 1995).

Research on alcohol and drug abuse has suggested that around 5.9% of adults in England (McManus et al. 2009) and Wales (Gartner, Cosh, Gibbon & Lester, 2009) have an alcohol misuse problem, with approximately 2.8% of the population reporting issues with frequent drug use (Home Office, 2013). Findings from this report indicate that alcohol and/or drug abuse was present in just under a third of suspects identified. The identification of these specific factors are key given that such problem behaviours have often been found in the background of offenders who have mistreated and later killed their children (Barth et al. 2006; Donnelly et al. 2001; Alder & Polk, 1996). Substance abuse can triple the risk of child maltreatment, abuse and neglect (Chaffin et al. 1996; Jaudes et al. 1995).

Over a third of suspects had a domestic abuse incident as present either prior to, or at the time the child death occurring. Much evidence suggests that child abuse often co-occurs alongside other forms of intra-familial violence including spouse abuse (Dolan et al. 2003; Edelson, 1999; Appel & Holden, 1998; McKibben et al. 1989), and children are at risk of homicide in the context of such abuse (Hamilton et al., 2013; Jaffe et al. 2013). Fathers were the most likely offenders, a finding supported by the higher incidence rate of domestic abuse perpetrated by male offenders (Edelson, 1999; McKibben et al. 1989). In such cases children are often collateral victims who are targeted by the offender in order to exact revenge upon a spouse in the context of a domestic dispute or a relationship breakdown (Jaffe et al. 2013; Sidebotham et al. 2011). Interestingly, out of the 100 intra-familial cases identified within the current study, ten were murder-suicides, where the suspect killed their child(ren), then themselves. Seven of the ten murder-suicides were committed by the father of the child. Two of these cases noted details of domestic dispute between the parents.

CATPCA results: intra-familial child homicides / suspicious deaths

This part of the study examined factors found to increase the risk of death to a child at the hands of an intra-familial offender. The first risk condition characterised

'abusive and unstable co-parenting' as having domestic violence present, a history of child abuse, and parental relationship breakdown. These factors are often associated with the occurrence of familicides (Hatters-Freidman et al., 2005) with the child being targeted as a secondary victim in parental conflicts (Jaffe et al., 2013). The negative association of the victim being an only child with this risk condition indicates that there may be multiple children at-risk when these issues occur together and would signal the need for high priority interventions.

Another risk condition identified from the data characterised 'multiple parent stressors'. The combination of a number of parental life stressors within this risk condition (mental health issues, drug and alcohol abuse, being a single parent and multiple children in the household) represents a risk condition in which a parent or carer may be facing extreme stress, with child neglect also positively associated with these factors. The co-occurrence between drug and alcohol abuse, parental mental health issues and neglect is similar to previous research findings (Wells, 2009; Barth et al., 2006) and their links to child deaths is attributed to risky and inadequate parenting behaviours associated with these issues (Welch & Bonner, 2013). The presence of multiple children within the household has been reported to increase stress experienced by parents (Jaudes et al., 1995; Zuravin, 1991). The addition of the offender being a single parent, which is a new finding, highlights how family structure can also have an impact on increasing risk when combined with other social issues.

'Neglectful parenting' was the third risk condition identified. It was associated with evidence of neglect towards the child and poor living conditions with parental mental health issues negatively associated with these factors. Although neglect is a well-known risk condition in this field (Haapasalo & Petäjä, 1999; Wolkind et al., 1993), the presence of poor living conditions has only been subject to a small amount of research, but has been reported as a common correlate of neglect (Webb et al., 2007; Hatters-Freidman et al., 2005). By allowing variables to be associated with more than one risk condition illustrates that this condition is distinctly different to 'multiple parental stressors' in which parental mental health issues was more likely to be present. However, the negative association between mental health issues and neglect within this risk condition is not supportive of previous research (Wells, 2009) and may be a result of the small sample size within the study.

The final risk condition 'parental social issues' was associated with drug and/or alcohol abuse, and domestic violence, with similar findings in previous research (Kantor & Little, 2003). As these factors were previously individually associated with other risk conditions, their co-occurrence here indicates that they also represent a different condition of risk when evident together. However, the inclusion of only two risk factors within this component may not provide enough descriptive information to be effective in assessing risk level across varying contexts (Sanders, Colton & Roberts, 1999). The inclusion of additional data sources in future research may allow further development of this risk condition.

Limitations and Future Research

Missing information was a problem encountered within research, which may affect the outcome of any statistical analyses used to analyse trends in child deaths. Due to this issue, only limited types of statistical analyses could be performed with the current dataset. Consequently, due to the amount of missing data within the sample under study (see Appendix 1), statements made within the report are merely speculative and should be used as a guide as to further areas for focussed research in the future.

Official statistics suggest that there were higher rates of child homicides than those reported within this research (Office of National Statistics, 2013)**.** For example, according to such statistics there were approximately 28 child homicide cases in which parents were the principal suspects in 2011/12 yet only 13 were included in the current study. This, therefore, suggests that inconsistencies in child death rates reported here may be due to issues with the return of information by police forces via the 'Form 76' 9 rather than an actual observed difference in such rates over the time period under study. This is further highlighted in that only 27 of the 43 police forces across England and Wales provided case information on child deaths within their area.

Subsequent studies should endeavour to use larger sample sizes which could result in a more enhanced and robust set of risk conditions that are more representative of the population under study. This may also allow risk factors not included within the current research due to limited reporting or a lack of recording in the data, such

as the offender having a criminal record (Mayes et al., 2010; Cavanagh et al., 2007), the previous death of another child (Brandon, Dodsworth & Rumball, 2005), lack of an education (Crittenden & Craig, 1990) and financial difficulties (Wolfner & Gelles, 1993) to be subject to statistical analysis. As missing data was also a problem in this research, future studies should seek out additional data sources in order to gain further information on the offence context and social factors that could have contributed to the commission of these crimes.

6. Conclusions

This exploratory research into intra-familial child deaths suggests that there are qualitatively different patterns associated with such deaths. Although this study cannot be presented as providing an exhaustive set of risk conditions under which these crimes take place, this research could be used as a foundation to continue research in this field in order to gain a better understanding of the circumstances under which these crimes take place. Research investigating the co-occurrence of risk factors is lacking and such knowledge is essential in order to be able to and effectively identify distinct situations of risk which would allow 'red flags' (Jaffe et al., 2013: 201) to be recognised by front-line staff (Strang, 1995). Such work could assist in the development of more effective risk assessment measures specifically when trying to identify those children most at-risk of intra-familial death (Palermo, 2002). The inclusion of risk of harm and/or homicide to children in domestic abuse risk assessments (e.g., DASH) should be further investigated. While some deaths are the result of singular isolated acts that are potentially undetectable (Jason, 2005) research indicates, as in this study, that a number of deaths may have been preventable as families often come to the attention of the police or child protection agencies before the child's death (Lewis & Bunce, 2003). Early identification of children facing elevated risk levels would then allow high priority interventions to be initiated, more support to be given to vulnerable families and allow more effective safeguarding procedures to be developed (Brown & Lynch, 1995).

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