THE UNIVERSITY of EDINBURGH

Edinburgh Research Explorer

Psychological risk factors for childhood nonhuman animal cruelty

A systematic review

Citation for published version:
Hawkins, RD, Hawkins, EL & Williams, J 2017, 'Psychological risk factors for childhood nonhuman animal cruelty: A systematic review', *Society & Animals: Journal of Human-Animal Studies*, vol. 25, no. 3, pp. 280-312. https://doi.org/10.1163/15685306-12341448

Digital Object Identifier (DOI):
10.1163/15685306-12341448

Link:
Link to publication record in Edinburgh Research Explorer

Document Version:
Peer reviewed version

Published In:
Society & Animals: Journal of Human-Animal Studies

General rights
Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

OPEN ACCESS

Download date: 12. Oct. 2024

Psychological Risk Factors for Childhood Animal Cruelty: A Systematic Review

Roxanne D. Hawkins[1], Emma L. Hawkins[2] and Joanne M. Williams[1],

The University of Edinburgh

Author Note

[1]School of Health in Social Science, the University of Edinburgh

[2] Division of Psychiatry, University of Edinburgh

Correspondence concerning this article should be addressed to Roxanne Hawkins, School of Health in Social Science, the University of Edinburgh Medical School, Teviot Place, Edinburgh

Contact: s1477956@sms.ed.ac.uk

Abstract

Despite growing research into human-animal relationships, little is known about childhood cruelty to non-human animals. The purpose of this review was to investigate the potential psychological risk factors for childhood cruelty to animals. The aim was to assemble, synthesise and evaluate the quality and breadth of existing empirical research and highlight areas in need of further study. The review reveals a myriad of potential psychological risk factors associated with childhood animal cruelty, but highlights the decrease in publications on this topic over time and the lack of high quality publications. Investigating the factors underlying cruel behaviour towards animals has great implications for animal welfare and child wellbeing, as well as being vital for designing and implementing successful universal and targeted interventions to prevent cruelty to animals.

***Key words*:** Animal Cruelty, Childhood, Human-Animal Interactions, Prevention, Risk Factors

Childhood Animal Cruelty

Ascione (1993) defined animal cruelty as "socially unacceptable behavior that intentionally causes unnecessary pain, suffering, or distress to and/or the death of an animal" (p.228). Motivation can be defined as "an internal force originated from a need not satisfied which impels the individuals to be involved in a specific behaviour" (Schiffman & Kanuk, 2004). Ascione (2005) proposed a classification system for the underlying motivations of animal cruelty behaviour. The first category, explorative/curious animal abuse, likely applies to very young children who may hurt non-human animals unintentionally due to a lack of supervision and/or a lack of knowledge about the humane treatment of animals; they may lack the cognitive maturity needed to understand cruelty to animals and may benefit through appropriate animal related education. The second category, pathological animal abuse, is likely to apply to children who are slightly older, where cruelty to animals may be symptomatic of psychological difficulties. Children who fall into this category may suffer from personality, conduct or other psychiatric disorders but may not yet have had professional diagnosis (animal cruelty is part of the diagnostic criteria for Conduct Disorder; American Psychological Association, 2013). The third category, delinquent animal abuse, applies to adolescents where animal cruelty may be part of a broader pattern of delinquent and antisocial behaviour (Walters & Noon, 2015). Other factors associated with childhood animal cruelty include: peer reinforcement, behaviour imitation, mood enhancement, sexual gratification, forced animal abuse, attachment to animals, phobias of particular animals, abusive experiences and post-traumatic play, self-injury, rehearsal for interpersonal violence and participating in animal abuse as a vehicle for emotional abuse (Ascione et al., 1997).

On initial inspection, research on childhood animal cruelty emerges from many disciplines and, without systematic review, it is difficult to draw firm conclusions from the literature. To date, there have been no systematic reviews on the topic of childhood animal cruelty.

The Cochrane Collaboration and the National Institute for Health and Clinical Excellence assess available evidence to inform guidelines, policy and practice (Saks & Allsop, 2007). Systematic reviews are becoming common practice in research and are widely believed to be at, or close to, the top of a hierarchy of evidence. With emphasis on judging the quality of evidence, systematic reviews help to map out areas of uncertainty and identify research gaps, as well as helping to ensure that clinical practice is kept up to date with the best research evidence available. “A systematic review enables the reader to appraise critically the most robust evidence available in an attempt to synthesize what is known, and not known, about the efficacy of particular interventions” (Saks & Allsop, 2007, p. 34).

Our aim was to conduct a systematic review of published studies that have investigated psychological risk factors associated with childhood animal cruelty. Psychological risk factors can be defined as “a characteristic at the biological, psychological, family, community, or cultural level that precedes and is associated with a higher likelihood of problem outcomes” (O’Connell, Boat & Warner, 2009, p.28). Our study aims to provide an unbiased synthesis of research in this area for the use of academics, policymakers, practitioners and any others interested in this topic. It is vital that we understand any potential factors that may play a role in children’s cruel behaviour toward animals in order to successfully intervene and foster a positive and beneficial relationship between children and animals. It is equally important that we identify strengths and weaknesses in the current literature to better inform future studies.

The aims are to 1) identify the scope of research on psychological risk factors for childhood animal cruelty and identify knowledge gaps, 2) assemble, summarise and evaluate the empirical research base for psychological risk factors for childhood animal cruelty and 3) provide recommendations for future research.

Research Questions

1) What are the psychological risk factors for childhood animal cruelty?
2) Are there age and gender differences in childhood animal cruelty?
3) How many published peer-reviewed articles have investigated psychological risk factors for childhood animal cruelty?

Method

Protocol

To identify valid literature, the PRISMA guidelines (Moher et al., 2009) were consulted and a Boolean search was conducted on July 20, 2015 and again on February 01, 2016.

Search Procedure

Studies were identified by searching a large and varied range of electronic databases to increase coverage and account for the diversity of journals that animal cruelty literature is published in. The eighteen databases that were searched include: ERIC, Child Development and Adolescent Studies, Environment Complete, GreenFILE, Family Studies Abstracts, SocINDEX, Peace Research Abstracts, Psychology and Behavioural Sciences Collections, EMBASE (including EMBASE classic), CAB Abstracts, MEDLINE (including MEDLINE daily update), The Joanna Briggs Institute EBP Database, PsychINFO, ASSIA, PubMed, Web of Science, Science Direct and Scopus. Search terms (Table 1.) for all of the databases

included at least one identifier for psychological risk factors, at least one identifier for animal cruelty and at least one identifier for the target age group.

Table 1 here

Eligibility Criteria

Eligible studies were identified by applying pre-defined inclusion and exclusion criteria. The criteria stated that a) studies had to be written in English, b) articles were in peer-reviewed journals, c) primary research had to be empirical, and d) the study population had to include children, adolescents, or adults retrospectively reporting on their childhood. Review studies, books, dissertations, media analyses, magazine articles and conference abstracts were excluded as well as non-English articles and those that did not include animal cruelty as a stated measure in the investigation.

Study Selection

The study selection process consisted of three stages. Firstly, duplicate studies were removed. Secondly, titles and abstracts were screened for relevance to animal cruelty. Finally, studies were checked for eligibility using the pre-defined inclusion and exclusion criteria.

The literature search resulted in a total of 838 citations. Following the removal of duplicates, a total of 449 citations remained. During title and abstract screening, 269 papers were removed, leaving a total of 180 articles for eligibility assessment. At this stage, 91 studies were removed as they were not directly relevant to childhood animal cruelty, 46 studies were removed due to article type, and 4 studies were removed as they were not

available in the English language. The final sample included 39 articles (4.7% of the total initial pool). A flowchart of the study selection process is presented in Figure 1.

Figure 1 here

Data Extraction and Evaluation

Information was extracted from each of the final papers in order to achieve the aims of the review. Data items included the psychological factors that were investigated and the results of each study in order to identify commonly reported associations (see Table 2). Data items also included the study type, animal cruelty measurement, participants (number, age, and gender), and country of study and setting of research (Table 3). Additional data items were extracted for exploratory purposes, including first author, date of publication and name of journal.

Table 2 and 3 here

Quality Assessment

Individual studies were assessed using a validated quality assessment tool for studies with diverse designs (QATSDD, Sirriyeh, 2012). These guidelines consist of 16 quality criteria, all of which apply to mixed methods, 14 apply to qualitative studies and 14 apply to quantitative studies. Each paper was scored from 0-3 for each item and entered into a scoring grid by two independent researchers. A total score and percentage were then computed for

each study (Table 4). Case studies could not be easily assessed using this criteria and so were not included in the quality assessment procedure. Using the obtained overall quality score, each paper was categorised into the following: 1) quality criteria are very well met (80-100%) , 2) quality criteria are well met (60-79%) , 3) quality criteria are fairly met (40-59%), 4) quality criteria are slightly met (20-39%) and 5) quality criteria are hardly met (below 20%). The publications were scored by two authors independently (K=.78), with the Cohen's kappa demonstrating a substantial strength of agreement (Landis & Koch, 1977).

Table 4 here

Results

The final sample articles reviewed were published between 1971 and 2014, with the majority of these published between 2001 and 2010 (51.3%). Despite the limitation to English-language articles, there was an international representation of research, with the majority (66.6%) from the USA (n=26). Other countries included Australia (n=6), the UK (n=2) and Canada, Italy, Switzerland, Malaysia and China (1 study each).

The articles were published in a wide variety of disciplines, with the majority (n=17) published in interdisciplinary journals including Child Abuse & Neglect (n=3) and the Journal of Interpersonal Violence (n=9). Specific disciplines that articles were published in included psychology (e.g., Journal of Applied Developmental Psychology, n=1), psychotherapy (Journal of Child Psychotherapy, n=1), criminology (International Journal of Offender Therapy and Comparative Criminology, n=2), child health and welfare (e.g., Child: Care, Health and Development, n=1), psychiatry (e.g., Child Psychiatry and Human Development, n=3), social sciences (Human Relations, n=1) and human-animal interactions

(Anthrozoos: A Multidisciplinary Journal of the Interactions of People & Animals, n=4; Society & Animals, n=3). Meta-analysis was not appropriate due to the heterogeneous nature of the included study designs, participants, measures and reported outcome measures; thus the results of this review are in a descriptive and qualitative narrative synthesis.

Age Group and Sample Sizes

The majority of studies relied on retrospective reporting of childhood cruelty to animals (41%), focusing on adults (n=17) or adolescents (n=16). A smaller number of studies focused on children aged 5-11 years (n=14) or young children under 5 years (n=1). One study did not specify the age group studied. Out of the 39 studies included, only 12.8% collected data from children directly.

Excluding case studies and studies that used existing data, good sample sizes were used overall (mean=300, range 38-893). Good size samples were used for children (mean=291, range 50-532), adolescents (mean=182, range 50-281), adults (mean=281, range 102-860), parent report studies (mean=427, range 38-893) and mother and child reports (mean=330, range 131-496).

Methodology of Studies

Questionnaires were the most common method of investigation (n=20, 51.3%), half of which involved retrospective reporting with convicted adults. The second and third most common methods used existing data (n=7) and data from psychiatric and/or behavioural assessments (n=6). Other methods included interviews (n=5), retrospective interviews (n=4), telephone interviews (n=2) and case studies (n=5).

The most common research settings were school classrooms (n=6) and prisons (n=6). Other research settings included a child's home (n=2), therapy sessions (n=1), over the telephone (n=1), an inpatient psychiatric hospital (n=2) and within a safe house (n=1). The

majority of studies (n=21, 53.8%) relied on existing data or did not specify the research setting.

Studies used a varied selection of animal cruelty measures, including the Animal-Related Trauma Inventory (Boat, 1994) (n=3), an item within the Child Behavior Checklist (Achenbach, 1991) (n=5), Physical and Emotional Tormenting Against Animals Scale (Baldry, 2004) (n=2), Children's Attitudes and Behaviours towards Animals Questionnaire (Guymer et al., 2001) (n=2), Children and Animals Inventory (Dadds et al., 2004) (n=3), Children's Treatment of Animals Questionnaire (Thompson & Gullone, 2003) (n=2) and Attitudes Toward the Treatment of Animals Scale (Henry, 2004) (n=2). The following measures were used in a single study each: Experiences with Animals (a modified version of Flynn, 1999), item within the Child Assessment Schedule (Hodges et al., 1982), Pet Maltreatment Assessment (Ascione & Weber, 1995), item from the Child Sexual Behavior Inventory (Friedrich, 1997) and an item from the Children and Animals Assessment Instrument (Ascione et al., 1997).

Prevalence of Childhood Animal Cruelty

Three studies found a relatively high rate of exposure to animal cruelty (Miller, 1997; Thompson & Gullone, 2006; DeGue & DiLillo 2008). For example, DeGue and DiLillo (2008) found that 22.9% of 860 college students in America reported some exposure to animal cruelty. Three studies (Baldry, 2005; Gullone, 2008; Kellert & Felthous, 1985) found a relatively high prevalence of animal cruelty behaviour: 40%, 20.6% and 60% respectively. Lucia and Killias (2011) found that 48% of 3,648 pupils in 7th, 8th, and 9th grades (ages 13-16 years) admitted to have maltreated an animal at least once.

Psychological Risk Factors for Childhood Animal Cruelty

The most common risk factor investigated in relation to childhood animal cruelty was behavioural problems (n=19, 48.7%). The second and third most common factors were child abuse and neglect by caregivers (n=14) and domestic abuse (n=10). Other factors included witnessing animal abuse (n=8), bullying and victimisation (n=8), personality (n=8), psychiatric problems and/or mental illness (n=8), family functioning/context (n=7), sexual abuse (n=6), empathy (n=3) and coping style (n=1). The majority of studies investigated a combination of several of these factors.

The most common finding was that childhood animal cruelty is one of many symptoms of behavioural disturbance (n=16) and in particular, a symptom of conduct disorder (n=4), fire setting, or within a triad with enuresis and fire setting (n=4). Animal cruelty is common amongst those with general behavioural problems (Sanders, 2013), such as problems with peers and sexually acting out (Boat, 2011), as well as aggression (n=4). Childhood animal cruelty was also associated with more severe behavioural problems, such as destructiveness and stealing (Tapia, 1971), temper tantrums, assaultive outbursts, childhood fights and truancy (Felthous, 1980).

Anger, leading to aggression, was a commonly reported motivation of animal cruelty behaviour. Overton (2011), for example, found that one quarter of 180 adult inmates were motivated out of anger to be cruel to animals as a child. Sakheim et al. (1991) found that children who were cruel to animals developed aggressive fantasies or became easily enraged by peers or adults and that children's poorly controlled aggression took the form of behaving in a cruel and sadistic manner towards animals (as well as towards younger children). Sakheim also reports a link between childhood animal cruelty and severe fire setting, intense anger at maternal rejection, neglect or abandonment and poor social comprehension and judgement.

Childhood animal cruelty was found to be associated with bullying and victimisation experiences in 7 studies (Sanders et al., 2013; Baldry, 2005; Henry & Sanders, 2007; Boat, 2011; Tapia, 1971; DeGue & DiLillo, 2008; Gullone, 2008). Abusing animals during childhood 'for fun', an indicator of sadism, was one of 9 motivations reported (Hensley et al., 2011; Hensley & Tallichet, 2005). Hensley et al. (2011) and Overton et al. (2011) found that over 60% of adult inmate respondents reported that they were cruel to animals as a child 'for fun'. Dadds (2006) found that animal cruelty in boys was associated with an early psychopathy pathway characterised by callous and unemotional traits (often seen in Conduct Disorder; American Psychiatric Association, 2013), disregard and callous-lack of empathy for others. Animal cruelty within this sub-group of children displaying conduct disorder may reflect low meta-cognition or low reflective function (Patrick et al., 1994).

Animal cruelty is a symptom of various psychiatric and mental health issues as highlighted by 9 studies (Felthous, 1980; Shapiro et al., 2006; Kruesi, 1989; Tapia, 1971; Rogeness et al., 1984, Sverd et al., 1994; Ascione et al., 2003; Luk, 1999; Dadds, 2006). The studies that investigated this link were mainly case studies or clinical data (e.g., from Diagnostic and Statistical Manual of Mental Disorders classification criteria) and so animal cruelty was one of many reported problematic symptoms. Shapiro (2006) describes a study of a 7 year old girl who displayed social withdrawal, low productivity in school, 'odd behaviour' as well as cruel fantasies and both real and symbolic cruelty to animals, suggesting a possible link between early life stress, psychiatric illness and childhood animal cruelty. Tapia (1971) found that factors relating to animal cruelty ranged from biological factors (e.g., Organic Brain Syndrome) to mental illness, to environmental factors or a combination of psycho-bio-social factors in 18 cases of children, all boys (ages 5-15 years). Other psycho-biological studies have found associations between animal cruelty and low levels of serotonin (5HIAA; Kruesi, 1989) and zero dopamine (Rogeness, 1984).

Three studies considered empathy in relation to childhood animal cruelty (Henry 2006; Lucia, 2011; and Thompson, 2008). Thompson and Gullone (2008) for example, found that empathy and (to a lesser degree) attachment to parents and peers, negatively correlated with animal cruelty but is positively associated with the humane treatment of animals. Furthermore, animal cruelty was negatively correlated with prosocial behaviour. Thompson and Gullone (2008) concluded that humane animal treatment fosters the normal development of empathy and that empathy serves as a mediating role in the associations between animal cruelty, attachment to parents and peers and humane animal treatment.

Adverse Childhood Experiences

A common finding was that childhood animal cruelty is associated with a cumulative burden of aversive childhood experiences including: trauma and neglect (n=3), harsh parenting (n=2), family conflict (n=1), parent's low education (n=1), and prolonged separation from a father figure (n=1). Various forms of abuse were commonly related to childhood cruelty to animals in the studies reviewed including domestic abuse (n=9), child abuse (n=4) and sexual abuse (n=6). McEwan et al. (2014), for example, found that children who were cruel to animals were more likely to have been maltreated by family members than other children, but highlighted that not all children who are cruel to animals have been maltreated. There seems to be an overlap between various forms of abuse within the home; DeGue (2008) found that 60% of 860 college students who had witnessed or perpetrated animal cruelty as children also reported experiences of childhood maltreatment and domestic violence. Becker et al. (2004) concluded that family variables (such as marital violence and harsh parenting) increase the likelihood of childhood animal cruelty. Although childhood adversities were not included in the original search terms, these studies represented the majority of studies on childhood animal cruelty. Therefore, these results may not be a

comprehensive synthesis in relation to childhood adversities and childhood animal cruelty behaviour.

Witnessing Animal Cruelty

Witnessing animal cruelty could lead to the imitation of this behaviour (Overton, 2011) and was another common factor associated with childhood animal cruelty behaviour (n=8). Children who frequently witnessed animal abuse reported higher levels of animal cruelty behaviour (Thompson, 2006). Thompson concluded that the damaging effects of witnessing animal cruelty are cumulative and animal cruelty is a widespread phenomenon. The age of the child who witnesses animal cruelty and who the child observes may have an effect. Hensley and Tallichet (2005) found that inmates who had observed a friend abuse animals as a child were more likely to hurt or kill animals more frequently, while those who were younger when they first witnessed animal cruelty hurt or killed animals at a younger age.

Age and Gender

A number of gender and age differences were found in the literature. Childhood animal cruelty is most commonly observed or reported in boys (n=5), male teenagers (n=1) and retrospectively reported in adult males (n=6). However, Currie (2006) found no gender or age differences and Mellor and Yeow (2008) found no gender differences in child animal cruelty behaviour, although there were gender differences for risk factors of animal cruelty.

There seems to be conflicting evidence for age trends of animal cruelty. Much of the animal cruelty literature focuses on teenagers, and animal cruelty as part of delinquency, which greatly increases during adolescence. Some of the findings highlighted in this review however, suggests that animal cruelty is also an issue with younger children. For example, Tapia (1971) reported an average onset age for animal cruelty of 9.5 years, Boat (2011)

observed animal cruelty in children aged 3-17, and McEwan et al. (2014) found that most reports of animal cruelty were in young children. Moreover, Hensley and Tallichet (2005) found that those who had committed animal cruelty at a younger age were more likely to have engaged in multiple acts of animal cruelty. There may be different developmental trajectories for animal cruelty with risk factors specific to different age groups. The family will be of great importance for younger children but peer group influence may become focal to teenagers (Compas, Hinden & Gerdhardt, 1995).

Discussion

The aim of this study was to systematically review the existing literature to answer three main research questions, 1) what are the psychological risk factors for childhood animal cruelty? 2) Are there age and gender differences in childhood animal cruelty? And 3) how many published peer-reviewed articles have investigated psychological risk factors for childhood animal cruelty? The systematic review revealed a range of potential psychological risk factors associated with childhood animal cruelty including, but not limited to: sadism, callous and unemotional traits, and lack of empathy, mental health, conduct disorder, abuse, fire setting, aggression, destructiveness and bullying. However, the review also highlights a lack of high quality publications, and confirms the need for more stringent methodological procedures to better explore these factors.

Within recent years, there has been a growing interest in the positive aspects of human-animal relationships, although relatively little research has focused on negative relationships between children and animals. Within the wealth of research into child development, studies focusing on children's relationships with animals, specifically childhood animal cruelty, remains underrepresented (McCardle et al., 2011). Few studies were published prior to 2000 with scientific interest peaking between 2001 and 2010 (20

published studies), with only ten studies published since 2011. Psychologists working with children tend to ignore reports of animal cruelty (Signal et al., 2013) and the cross-disciplinary interest in animal cruelty may be hindering the gathering and interpretation of findings. Since the 1970s to present, only two studies have been published in psychological journals: Journal of Applied Developmental Psychology (Gullone & Robertson, 2008) and Psychology of Violence (Lucia & Killias, 2011). Only seven studies have been published in human-animal interaction journals: Anthrozoos: A Multidisciplinary Journal of the Interactions of People & Animals (e.g., Henry, 2006), and Society & Animals (e.g., Thompson & Gullone, 2006).

The overall quality of the published research was relatively low; only 2 papers (5.9%) scored 1 (‘quality criteria are very well met’). Despite the majority of publications (not including case studies) receiving a score of 2 (‘quality criteria are well met’; rater 1: 61.8%; rater 2: 64.7%), a large number of papers (rater 1: 29.4%; rater 2: 26.5%) received a score of 3 (‘quality criteria are fairly met). One paper received a score of 4 (‘quality criteria are slightly met’) and no publications received a score of 5 (‘quality criteria are hardly met’). See Sirriyeh (2012) for full assessment criteria. The lack of high quality publications needs to be addressed in future studies.

The results from this review indicate a wide range of potential psychological risk factors for childhood animal cruelty and highlights possible social and environmental factors that may have an impact on child-animal relationships. Many studies in this review focused on forms of abuse as a risk factor of animal cruelty (e.g., Baldry, 2005). The relationship between family violence and animal cruelty appears to be comorbid; one form of abuse appears to coexist with another. Children observe treatment of companion animals at home and will vicariously learn this behaviour. Witnessing animal cruelty is a risk for childhood animal cruelty. Hensley and Tallichet (2005) concluded that the onset and reoccurrence of

childhood animal cruelty is influenced by the behaviours of a child's family. Exposure to violence can disrupt the development of empathy, which may lead to 'empathy deficits' and thus increasing the likelihood of aggression (Ascione, 1993; Flynn, 1999). Normative empathy levels emerge during childhood and may serve as a protective factor against engaging in aggressive behaviour (Thompson & Gullone, 2003).

Children who are cruel to animals are at risk of developing conduct-disordered behaviours (Boat, 2011) and delinquency, especially those who demonstrate aggression (Lucia, 2011). Felthous and Kellert (1986) concluded that childhood animal cruelty may represent a pattern of impulsive, diffuse aggression, antisocial behaviours (see also Arluke et al., 1999), and is included under antisocial behaviour (The International Classification of Diseases, World Health Organisation, 2004). Research linking cruelty to animals and other forms of behavioural disturbance (see Lockwood & Ascione, 1998) led to the inclusion of animal cruelty within the diagnosis for conduct disorder, first appearing in the revised third edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1987). However, research establishing the diagnostic significance of animal cruelty behaviour is still almost non-existent (Gleyzer et al., 2002). The roots of cruelty may be first apparent in preschool years and so very early interventions may prevent antisocial behaviour from escalating (Lewchanin & Randour, 2008).

Childhood animal cruelty was not specifically mentioned within the aims or hypotheses in many of the published studies on mental health, and was instead one of many symptoms reported as part of wider investigations. The results from this review indicate that childhood animal cruelty can be one of many symptoms of various psychiatric and mental health issues which can either occur as an isolated act (associated with a psychotic mental state) or as a repeated act associated with a history of violent offending. Seven studies in this review were published in psychiatric journals but animal cruelty was not the sole focus and

was often reported as a side note in case studies or as part of a diagnosis. Previous research has found associations between cruelty to animals (during lifetime) and psychiatric disorders, characterized by self-control deficits including lifetime alcohol use disorder, pathological gambling, conduct disorder and personality disorders (Vaughn et al., 2009) and so childhood animal cruelty may be a warning sign for compromised mental health. Future animal cruelty research could investigate associations between mental health, animal cruelty behaviour, and other behavioural disturbances, thus filling an important gap in the current human-animal interaction research.

Gullone (2008) concluded that animal abuse is not an uncommon childhood behaviour and appears more common in those who witness others committing animal cruelty. McEwan et al. (2014) however, concluded that childhood animal cruelty was a relatively rare phenomenon, having been reported in 9% of a sample of 2,232 children (5-12 years of age). Three studies found a relatively high rate of exposure to animal cruelty and animal cruelty is most commonly witnessed in boys, as indicated by various studies in this review. Exposure to animal cruelty in childhood appears to be widespread and cumulative in nature, being a 'normal rite of childhood' beginning as early as 3 years of age (Boat, 2011), steadily declining between 5 and 10 years (McEwan et al., 2014) and levelling off at around 12 years of age (Boat, 2011). Frick et al. (1993) revealed that the median age that animal cruelty appears is 6 ½ years, which is earlier than bullying and vandalism. The majority of studies on childhood animal cruelty have not directly observed or measured animal cruelty in children, instead focusing on retrospective reports from adults or reports of care-givers. If exposure to animal cruelty and the act of animal cruelty in children is common, and children are influenced and affected by members of their primary social environment, it may be more beneficial to investigate children directly and intervene early on in childhood to prevent the cycle of abuse before it begins.

Research Gaps and Recommendations

This review identified a number of gaps in the childhood animal cruelty literature. Firstly, empathy (cognitive and affective) as well as compassion, were underrepresented in the animal cruelty literature; three studies in this review investigated empathy whilst none examined compassion. Empathy and compassion should be considered in future research as studies have demonstrated a link between empathy and violence (McPhedran, 2009), compassion and violence (Ascione & Arkow, 1999) and between violence toward animals and violence toward humans (Ascione, 2001; Merz-Perez & Heide, 2003).

Another possible consideration that has been overlooked in relation to childhood animal cruelty, but appears to be linked to cognitive empathy, is children's beliefs about animal mind. Believing that non-human animals are sentient could have an effect on attitudes towards the treatment of animals and may determine the nature of interactions with animals. For example, Knight et al. (2004) found that lower scores on beliefs about animal mind were related to higher acceptance of animals being used in experimentation, using animals for personal decoration, for entertainment and for financial gain in adult males. Hills (1995) found a link between empathy and beliefs about animal mind, concluding that conceptualising animals as insentient may lead to unacceptable behaviours due to the relief of ethical and moral impediments (Knight et al., 2004). Furthermore, children's beliefs about animal minds may be related to attitudes towards animal cruelty, as well as compassion toward animals, humane and caring behaviour toward animals, emotional attachment and attitudes towards animals (Hawkins & Williams, *in press*). Therefore, perceived animal sentience may have an effect on how children treat animals and requires further research; if children believe animals are unemotional and insentient, are they more likely to harm them? And if so, how can we change children's beliefs about animal mind to promote humane behaviour towards animals?

Personality refers to individual differences in characteristic patterns of thinking, feeling and behaving and may have a driving influence on intentions and acts of animal cruelty in childhood, although personality variables in relation to childhood animal cruelty are not well quantified (Oleson & Henry, 2009). The 'Dark Triad' for example, is characterised by a lack of empathy as well as callousness and manipulation towards both human and non-human animals (Kavanagh et al., 2013). Callousness has been studied extensively in relation to aggression among children (Frick et al., 2003) and has been associated with animal cruelty in children (Dadds, Whiting, & Hawes, 2006). Therefore, researchers should consider integrating research methodologies for callousness into the study of animal cruelty (e.g., Gupta, 2008).

Conversely, traits such as agreeableness, low extraversion and narcissism have been associated with the opposition to the use of animals in research (Furnham et al., 2003). Eight studies in this review investigated personality variables to some extent, with the majority of the findings indicating an association between childhood animal cruelty and sadism (e.g., Hensley & Tallichet, 2005). Further research investigating individual differences and personality could open up new avenues in this area and provide potentially useful and significant discoveries, especially for the development of animal cruelty prevention programmes. Moreover, neurobiology may be implicated in childhood animal cruelty (e.g., Tapia, 1971, Kruesi, 1989, Rogeness, 1984) and cannot be overlooked given recent research on the link with callousness and violent behaviour (Rosell & Siever, 2015).

Despite an international representation of research in this area, the cultural spread was heavily biased towards the USA, which represented the majority of the studies included in this review (66.6%), followed by Australia (15.4%). Therefore, results from this review lack generalisability to other cultures and societies. Indeed, cultural differences in the treatment of

animals appear to be an important factor (Serpell, 1996) and future research should take this into consideration.

The current research base relied heavily on retrospective reports, which are potentially biased or inaccurate. Retrospective reports have been used to identify risk factors and links between animal cruelty in childhood and future violence in adulthood (Flynn, 1999). However, the reliability and validity of long-term recall is questionable (Hardt & Rutter, 2004). Future studies should place greater value on observational and cognitive research methods to explore child-animal relationships in order to elevate the integrity of animal cruelty research. However, due to the sensitivity of this topic, childhood animal cruelty may be difficult to measure and experimental research may not be appropriate, which may explain the lack of studies currently investigating this topic. Future research needs to overcome these methodological difficulties to elevate the potential quality of future research in this area. One possibility is to measure children's attitudes towards animal cruelty, which may be predictive of behaviour (Hawkins & Williams, *in press*; Hawkins et al., *under review*).

Across this review, there was little consistency in the animal cruelty measures used and there is currently no strong psychometric evidence to support the reliability or validity of these measures, thus limiting cross-study comparisons and the possibility of meta-analysis. Animal cruelty was commonly only one of many items on a checklist of behavioural symptoms, such as within the Child Behaviour Checklist (Achenbach, 1991). Future studies should aim to create standardised animal cruelty measures that are designed specifically for animal cruelty in children. This would enable the use of consistent outcome measures and allow greater comparisons between studies.

Animal cruelty is one symptom of a wide range of behavioural problems, such as conduct disorder, and future research should explore this in greater depth; is animal cruelty

just one of a host of behavioural issues or is animal cruelty a specific form of behaviour problems with a distinct causal pathway? Miller (2001) suggests that once a clearer picture of childhood animal cruelty has been established through further investigation, methods to prevent cruelty can be designed; childhood animal cruelty could potentially be prevented through animal cruelty prevention programmes (Hawkins et al., *under review*).

Conclusion

This systematic review provides the first narrative meta-synthesis of empirical research on psychological risk factors for childhood animal cruelty. Results show a range of potential risk factors involved in childhood animal cruelty behaviour but these factors are complex, multifaceted and may be interrelated. It is important to highlight the lack of high quality research in this area. Due to the significant implications for society, child well-being and safety, and animal welfare, it is important that future research addresses and improves upon the methodological flaws outlined in this review.

Research on childhood cruelty to animals seems to have come to a standstill during more recent years. The lack of standardised childhood animal cruelty measures as well as sensitivity issues may be impeding the advancement of research in this area. There are considerable advantages in addressing these problems. Research into childhood animal cruelty will not only provide significant information to advance our scientific understanding of animal cruelty behaviour and child-animal relationships in general, but could also produce significant benefits for developing animal cruelty prevention programmes aimed to promote compassionate and humane behaviour towards animals.

References

Achenbach, T. (1991). *Manual for the child behavior checklist/4-18 and 1991 profile*. Burlington: University of Vermont Department of Psychiatry.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders. (5th Edition)*. Washington, DC.

Arluke, A., Levin, J., Luke, C., & Ascione, F. (1999). The relationship of animal abuse to violence and other forms of antisocial behavior. *Journal of Interpersonal Violence, 14*(9), 963-975.

Ascione, F. R. (1993). Children who are cruel to animals: A review of research and implications for developmental psychopathology. *Anthrozoös, 6*(4), 226-247.

Ascione, F. R. (1997). Battered women's reports of their partners' and their children's cruelty to animals. *Journal of Emotional Abuse, 1*(1), 119-133.

Ascione, F. R. (2001). *Animal abuse and youth violence*. US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Ascione, F. R. (2005). *Children and animals: Exploring the roots of kindness and cruelty*. West Lafayette: Purdue University Press.

Ascione, F. R., & Arkow, P. (1999). *Child abuse, domestic violence, and animal abuse: Linking the circles of compassion for prevention and intervention*. Purdue University Press

Ascione, F. R., Friedrich, W. N., Heath, J., & Hayashi, K. (2003). Cruelty to animals in normative, sexually abused, and outpatient psychiatric samples of 6-to 12-year-old children: Relations to maltreatment and exposure to domestic violence. *Anthrozoös, 16*(3), 194-212.

Ascione, F. R., Thompson, T. M., & Black, T. (1997). Childhood cruelty to animals: Assessing cruelty dimensions and motivations. *Anthrozoös, 10*(4), 170-177.

Ascione, F. R., & Weber, C. (1995). *Battered partner shelter survey (BPSS).* Logan: Utah State University.

Baldry, A. C. (2004). The development of the PET scale for the measurement of physical and emotional tormenting against animals in adolescents. *Society & Animals, 12*(1), 1-17.

Baldry, A. C. (2005). Animal abuse among preadolescents directly and indirectly victimized at school and at home. *Criminal Behaviour and Mental Health, 15*(2), 97-110.

Becker, K. D., Stuewig, J., Herrera, V. M., & McCloskey, L. A. (2004). A study of firesetting and animal cruelty in children: Family influences and adolescent outcomes. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*(7), 905-912.

Boat, B.W. (1994). *Boat inventory on animal-related experiences.* Cincinnati, OH: University of Cincinnati.

Boat, B. W., Pearl, E., Barnes, J. E., Richey, L., Crouch, D., Barzman, D., & Putnam, F. W. (2011). Childhood cruelty to animals: Psychiatric and demographic correlates. *Journal of Aggression, Maltreatment & Trauma, 20*(7), 812-819.

Clinical Commentary (2008). *Journal of Child Psychotherapy, 34*(2), 278-290,

DOI: 10.1080/00754170802208081.

Compas, B. E., Hinden, B. R., & Gerhardt, C. A. (1995). Adolescent development: Pathways and processes of risk and resilience. *Annual review of Psychology, 46*(1), 265-293.

Currie, C. L. (2006). Animal cruelty by children exposed to domestic violence. *Child Abuse & Neglect, 30*(4), 425-435.

Dadds, M. R., Whiting, C., Bunn, P., Fraser, J. A., Charlson, J. H., & Pirola-Merlo, A. (2004). Measurement of cruelty in children: The cruelty to animal's inventory. *Journal of Abnormal Child Psychology, 32*(3), 321-334.

Dadds, M. R., Whiting, C., & Hawes, D. J. (2006). Associations among cruelty to animals, family conflict, and psychopathic traits in childhood. *Journal of Interpersonal Violence, 21*(3), 411-429.

DeGue, S., & DiLillo, D. (2008). Is animal cruelty a" red flag" for family violence? Investigating co-occurring violence toward children, partners, and pets. *Journal of Interpersonal Violence*. DOI: 10.1177/0886260508319362.

Duncan, A., Thomas, J. C., & Miller, C. (2005). Significance of family risk factors in development of childhood animal cruelty in adolescent boys with conduct problems. *Journal of Family Violence, 20*(4), 235-239.

Felthous, A. R. (1980). Aggression against cats, dogs and people. *Child Psychiatry and Human Development, 10*(3), 169-177.

Felthous, A. R., & Kellert, S. R. (1986). Violence against animals and people: is aggression against living creatures generalized? *Journal of the American Academy of Psychiatry and the Law Online, 14*(1), 55-69.

Flynn, C. P. (1999). Animal abuse in childhood and later support for interpersonal violence in families. *Society & Animals, 7*(2), 161-172.

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457-470.

Friedrich, W.N. (1997). *Child Sexual Behavior Inventory: Professional Manual.* Odessa, FL: Psychological Assessment Resources.

Furnham, A., McManus, C., & Scott, D. (2003). Personality, empathy and attitudes to animal welfare. *Anthrozoös, 16*(2), 135-146.

Gleyzer, R., Felthous, A. R., & Holzer, C. E. (2002). Animal cruelty and psychiatric disorders. *Journal of the American Academy of Psychiatry and the Law Online, 30*(2), 257-265.

Gullone, E., & Robertson, N. (2008). The relationship between bullying and animal abuse behaviors in adolescents: The importance of witnessing animal abuse. *Journal of Applied Developmental Psychology, 29*(5), 371-379.

Gupta, M. (2008). Functional links between intimate partner violence and animal abuse: Personality features and representations of aggression. *Society & Animals, 16*(3), 223-242.

Guymer, E. C., Mellor, D., Luk, E. S., & Pearse, V. (2001). The development of a screening questionnaire for childhood cruelty to animals. *Journal of Child Psychology and Psychiatry*, *42*(08), 1057-1063.

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: review of the evidence. *Journal of Child Psychology and Psychiatry, 45*(2), 260-273.

Hawkins, R. & Williams, J.M. (in press). Children's beliefs about animal minds (Child-BAM): associations with positive and negative child-animal interactions. *Anthrozoös*.

Hawkins, R., Williams, J.M. and Scottish SPCA. The impact of the 'Prevention through Education' programme on children's knowledge, attitudes, beliefs about animal minds and attitudes towards animal cruelty. *Journal of Applied Animal Welfare Science* (under review).

Henry, B. C. (2004). The relationship between animal cruelty, delinquency, and attitudes toward the treatment of animals. *Society & Animals, 12*(3), 185-207.

Henry, B. C. (2006). Empathy, home environment, and attitudes toward animals in relation to animal abuse. *Anthrozoös, 19*(1), 17-34.

Henry, B. C., & Sanders, C. E. (2007). Bullying and animal abuse: Is there a connection? *Society & Animals, 15*(2), 107-126.

[a]Hensley, C., & Tallichet, S. E. (2005). Learning to be cruel? Exploring the onset and frequency of animal cruelty. *International Journal of Offender Therapy and Comparative Criminology, 49*(1), 37-47.

[b]Hensley, C., & Tallichet, S. E. (2005). Animal cruelty motivations assessing demographic and situational influences. *Journal of Interpersonal Violence, 20*(11), 1429-1443.

Hensley, C., Tallichet, S. E., & Dutkiewicz, E. L. (2011). Examining demographic and situational factors on animal cruelty motivations. *International Journal of Offender Therapy and Comparative Criminology, 55*(3), 492-502.

Hills, A.M. (1995). Empathy and belief in the mental experience of animals. *Anthrozoös, 8*(3), 132–142.

Hodges, K., McKnew, D., Cytryn, L., Stern, L., & Kline, J. (1982). The Child Assessment Schedule (CAS) diagnostic interview: A report on reliability and validity. *Journal of the American Academy of Child Psychiatry, 21*(5), 468-473.

Kavanagh, P. S., Signal, T. D., & Taylor, N. (2013). The Dark Triad and animal cruelty: Dark personalities, dark attitudes, and dark behaviors. *Personality and Individual Differences, 55*(6), 666-670.

Kellert, S. R., & Felthous, A. R. (1985). Childhood cruelty toward animals among criminals and noncriminals. *Human Relations, 38*(12), 1113-1129.

Knight, K. E., Ellis, C., & Simmons, S. B. (2014). Parental predictors of children's animal abuse findings from a national and intergenerational sample. *Journal of Interpersonal Violence, 29*(16), 3014-3034.

Knight, S., Vrij, A., Cherryman, J. & Nunkoosing, K. (2004). Attitudes towards animal use and belief in animal mind. *Anthrozoös*, *17*(1), 43–62.

Kruesi, M. J. (1989). Cruelty to animals and CSF 5HIAA. *Psychiatry Research, 28*(1), 115-116.

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159-174.

Lewchanin, S., & Randour, M. L. (2008). Assessing children's experiences with animal cruelty: assessment, treatment, community needs, and policy considerations. In. F. Ascione (Ed) *The International Handbook of Animal Abuse and Cruelty: Theory, Research, and Application*, *423*. Purdue University Press: West Lafayette, Ind.

Lockwood, R. & Ascione, F.R. (Eds.). (1998). *Cruelty to Animals and Interpersonal Violence: Reading in Research and Application*. West Lafayette, Indiana: Purdue University Press.

Lucia, S., & Killias, M. (2011). Is animal cruelty a marker of interpersonal violence and delinquency? Results of a Swiss national self-report study. *Psychology of Violence, 1*(2), 93-105.

Luk, E. S., Staiger, P. K., Wong, L., & Mathai, J. (1999). Children who are cruel to animals: A revisit. *Australian and New Zealand Journal of Psychiatry, 33*(1), 29-36.

654 Mccardle, P., Mccune, S., Griffin, J. A., & Maholmes, V. (2011). *How Animals Affect Us:*
655 *Examining the Influence of Human–Animal Interaction on Child Development and Human*
656 *Health*. USA. American Psychological Association.

657 McEwen, F. S., Moffitt, T. E., & Arseneault, L. (2014). Is childhood cruelty to animals a
658 marker for physical maltreatment in a prospective cohort study of children? *Child Abuse &*
659 *Neglect, 38*(3), 533-543.

660 McPhedran, S. (2009). A review of the evidence for associations between empathy, violence,
661 and animal cruelty. *Aggression and Violent Behavior, 14*(1), 1-4.

662 Mellor, D., & Yeow, J. (2008). The relationship between childhood cruelty to animals and
663 psychological adjustment: a Malaysian study. *Anthrozoös*, 21(4), 363-374.

664 Merz-Perez, L., & Heide, K. M. (2003). *Animal cruelty: Pathway to violence against people*.
665 Rowman Altamira.

666 Miller, K. S., & Knutson, J. F. (1997). Reports of severe physical punishment and exposure
667 to animal cruelty by inmates convicted of felonies and by university students. *Child Abuse &*
668 *Neglect, 21*(1), 59-82.

669 Miller, C. (2001). Childhood animal cruelty and interpersonal violence. *Clinical Psychology*
670 *Review, 21*(5), 735-749.

671 Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for
672 systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine,*
673 *151*(4), 264-269. DOI: 10.7326/0003-4819-151-4-200908180-00135.

674 O'Connell, M. E., Boat, T., & Warner, K. E. (Eds.). (2009). Preventing Mental, Emotional,
675 and Behavioral Disorders Among Young People: Progress and Possibilities. National
676 Academies Press.

677 Oleson, J. C., & Henry, B. C. (2009). Relations among need for power, affect and attitudes
678 toward animal cruelty. *Anthrozoös, 22*(3), 255-265.

679 Overton, J. C., Hensley, C., & Tallichet, S. E. (2011). Examining the relationship between
680 childhood animal cruelty motives and recurrent adult violent crimes toward humans. *Journal*
681 *of Interpersonal Violence*, *27*(5), 899-915.

682 Patrick, M., Hobson, R. P., Castle, D., Howard, R., & Maughan, B. (1994). Personality
683 disorder and the mental representation of early social experience. *Development and*
684 *Psychopathology, 6*, 375-388.

685 Ressler, R. K., Burgess, A. W., Hartman, C. R., Douglas, J. E., & McCormack, A. (1986).
686 Murderers who rape and mutilate. *Journal of Interpersonal Violence, 1*(3), 273-287.

687 Rogeness, G. A., Hernandez, J. M., Macedo, C. A., Mitchell, E. I., Amrung, S. A., & Harris,
688 W. R. (1984). Clinical characteristics of emotionally disturbed boys with very low activities
689 of dopamine-β-hydroxylase. *Journal of the American Academy of Child Psychiatry, 23*(2),
690 203-208.

691 Rosell, D. R., & Siever, L. J. (2015). The neurobiology of aggression and violence. *CNS*
692 *spectrums, 20*(3), 254-279.

693 Sakheim, G. A., Osborn, E., & Abrams, D. (1991). Toward a clearer differentiation of high-
694 risk from low-risk fire-setters. *Child Welfare: Journal of Policy, Practice, and Program*,
695 *70*(4), 489-503.

696 Saks, M., & Allsop, J. (2007). *Researching Health: Qualitative, Quantitative and Mixed*
697 *Methods*. SAGE Publications Ltd.

Sanders, C. E., Henry, B. C., Giuliani, C. N., & Dimmer, L. N. (2013). Bullies, victims, and animal abusers: do they exhibit similar behavioral difficulties? *Society & Animals, 21*(3), 225-239.

Schiffman, L. G., & Kanuk, L. L. (2004). *Consumer Behavior* (8th ed.). Englewood Cliffs, NJ: Prentice Hall.

Serpell, J. (1996). *In The Company of Animals: A Study of Human-Animal Relationships*. Cambridge University Press.

Shapiro, H. L., Prince, J. B., Ireland, R., & Stein, M. T. (2006). A dominating imaginary friend, cruelty to animals, social withdrawal, and growth deficiency in a 7-year-old girl with parents with schizophrenia. *Journal of Developmental & Behavioral Paediatrics, 27*(3), 231-236.

Signal, T., Ghea, V., Taylor, N., & Acutt, D. (2013). When do psychologists pay attention to children harming animals? *Human-Animal Interaction Bulletin, 1*(2), 82-97.

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse designs: the development and evaluation of a new tool. *Journal of Evaluation in Clinical Practice, 18*(4), 746-752.

Sverd, J., Sheth, R., Fuss, J., & Levine, J. (1994). Prevalence of pervasive developmental disorder in a sample of psychiatrically hospitalized children and adolescents. *Child Psychiatry and Human Development, 25*(4), 221-240.

Tapia, F. (1971). Children who are cruel to animals. *Child Psychiatry and Human Development, 2*(2), 70-77.

Thompson, K. L., & Gullone, E. (2003). Promotion of empathy and prosocial behaviour in children through humane education. *Australian Psychologist, 38*(3), 175-182.

721 Thompson, K. L., & Gullone, E. (2006). An investigation into the association between the
722 witnessing of animal abuse and adolescents' behavior toward animals. *Society & Animals,*
723 *14*(3), 221-243.

724 Thompson, K. L., & Gullone, E. (2008). Prosocial and antisocial behaviors in adolescents:
725 An investigation into associations with attachment and empathy. *Anthrozoös*, *21*(2), 123-137.

726 Vaughn, M. G., Fu, Q., DeLisi, M., Beaver, K. M., Perron, B. E., Terrell, K., & Howard, M.
727 O. (2009). Correlates of cruelty to animals in the United States: Results from the national
728 epidemiologic survey on alcohol and related conditions. *Journal of Psychiatric Research,*
729 *43*(15), 1213-1218.

730 Vaughn, M. G., Fu, Q., Beaver, K. M., DeLisi, M., Perron, B. E., & Howard, M. O. (2011).
731 Effects of childhood adversity on bullying and cruelty to animals in the United States:
732 Findings from a national sample. *Journal of Interpersonal Violence*, *26*(17), 3509–3525.

733 Volant, A. M., Johnson, J. A., Gullone, E., & Coleman, G. J. (2008). The relationship
734 between domestic violence and animal abuse an Australian study. *Journal of Interpersonal*
735 *Violence, 23*(9), 1277-1295.

736 Walters, G. D., & Noon, A. (2015). Family context and externalizing correlates of childhood
737 animal cruelty in adjudicated delinquents. *Journal of Interpersonal Violence*, *30*(8), 1369-
738 1386.

739 Wong, J., Mellor, D., Richardson, B., & Xu, X. (2013). Childhood cruelty to animals in
740 China: the relationship with psychological adjustment and family functioning. *Child: Care,*
741 *Health and Development, 39*(5), 668-675.

742 World Health Organization. (2004). *International Statistical Classification of Diseases and*
743 *Related Health Problems (Vol. 1).* World Health Organization.

Table 1. Search Terms

Category	Search Terms
Age	“Child*” OR “preteen*” OR “preadolescen*” OR “juvenile*” OR “infan*” OR “minor* OR “subteen*” OR “young*”
Animal cruelty	(“Animal*” or “pet*”) AND (“cruel*” OR “abus*” OR “tortur*” OR “neglect*” OR “harm*” OR “brutality” OR “mistreatment” or “maltreatment”)
Psychological risk factors	“Personality” OR “behavio* disorder” OR “callous*” OR “conduct disorder” OR “antisocial*” OR “psychopath*” OR “sociopath*” OR “sadis*” OR “sentien*” OR “psychiat*” OR “empath*” OR “apath*” OR “psychology*” OR “mental disorder”.

Note. The search terms were combined so that the results included at least one term from each of the main categories.

. Overview of the Findings

irst Author ublication year)	Psychological Factor(s) Investigated	Identified Psychological Risk Factors for Childhood Animal Cruelty
iller (1997)	Abuse	• AC experiences and aversive punitive and acrimonious childhood histories
ecker (2004)	Family risk factors and delinquency	• Exposure to marital violence, harsh parenting and AC. AC related to self-reportec
elthous (1980)	Aggression and parental brutality	• Aggression, brutal punishments by parents, temper tantrums, destructive or assa outbursts, childhood fights and school truancy, prolonged separation from father f alcoholic father figure, and setting uncontrolled fires
hompson (2006)	Witnessing abuse	• Witnessing AC. Higher levels of AC if witnessed a friend, relative, parent, or siblir animal. "Frequently" witnessing AC reported higher levels of AC.
enry (2006)	Empathy, family environment, sexual abuse	• Sexual abuse. Caregiving subscale (ATTAS) differentiated abusers. AC scored h Fantasy subscale.
aldry (2005)	Abuse, bullying and victimisation	• Witnessing violence, abuse from parents, bullying and other adverse experiences
urrie (2006)	Domestic abuse	• Exposure to domestic violence
scione (1997)	Domestic abuse	• Domestic abuse
anders (2013)	Bullying and victimisation	• Bullying, victimization and behavioural problems
enry (2007)	Bullying and victimization	• Multiple acts of AC associated with bullying and low sensitivity to cruelty-related a
hapiro (2006)	Psychological/psychiatric disorder (schizophrenia)	• Schizophrenia. Patient had symptoms of social withdrawal, low productivity in sch behaviour', cruel fantasies, and both real and symbolic cruelty to animals.
/ong (2013)	Psychological adjustment and Family functioning	• Family functioning and child's externalizing coping style predicted only modest ar variance in AC. Family functioning more of a role in boys AC
oat (2011)	Aggression, abuse, mental health	• Bullying, problems with peers, sexual abuse and sexually acting out. AC reported as young as 3 and as old as 17
ellert (1985)	Aggression	• Family violence, particularly alcoholism and paternal abuse. AC mostly minor anc AC more often reported in aggressive criminals.
ruesi (1989)	Psychological/psychiatric disorder	• Low serotonin levels
apia (1971)	Aggression, behavioural problems/disorders, mental illness/brain disorder	• Behavioural problems/disorders, all boys, usually young (average age 9.5), norm intelligence, aggressiveness, destructiveness, bullying, fighting, stealing, and fire
/A 2008 (clinical ommentary)	Personality traits, behavioural disorders, neglect and early life stress	• Early life stress of neglect, sadism towards animals and severe conduct disorder.
aughn (2011)	Childhood adversities, sexual abuse, bullying	• Swearing and saying hurtful things, having a parent or other adult living within the went to jail or prison, and sexual abuse
eGue (2008)	Family violence	• Child maltreatment, domestic violence and victimisation.
/alters (2015)	Family context	• Family context and proactive and reactive externalizing variables
ensley (2011)	Sadism, aggression	• AC motivations: 64% (of sample) for fun, 24% out of anger or witness AC, 22% s motivation, 20% hated the animal, 16% to shock others (16%) and 14% for reven

= *animal cruelty*

Overview of the Findings

Sadism, aggression/violence	• AC motivations: almost two thirds for fun, one fourth out of anger or imitation and one fifth out o hatred of the animal.
Empathy, delinquency, personality and family context	• AC motivations: 2.4% answered animals deserve it or it is fun. AC associated with vandalism and serious violent acts and lack of empathy
Childhood experiences (witnessing animal cruelty)	• Those who observed a friend abuse animals were more likely to hurt or kill animals more frequently and those who were younger when they first witnessed animal cruelty also hurt or killed animals at a younger age
Sexual abuse	• Sexual abuse
Psychological/psychiatric disorder	• Zero dopamine
Abuse and domestic violence	• Child maltreatment. AC not associated with domestic violence
Domestic violence	• Violence within the home
Empathy, attachment	• Empathy and (to a lesser degree) attachment significantly negatively correlated with animal cruelty
Conduct disorder, sexual abuse, domestic violence	• Histories of physical and/or sexual child abuse and domestic violence
Psychiatric disturbance	• AC one of many symptoms of psychiatric disturbance
Bullying, family conflict	• Witnessing abuse, bullying others and family conflict
Mental health and behavioural problems	• Parent-reported hyperactivity in boys, self-reported conduct problems in girls and parent-reported total difficulties
Behavioural problems	• Behavioural problems such as fire setting, intense anger at maternal rejection, neglect, or abandonment and poor social comprehension and judgment
Domestic abuse	• Domestic abuse
Domestic abuse, sexual abuse, psychiatric distress	• Maltreatment history, domestic abuse and sexual abuse.
Personality, aggression	• AC motivations: almost half out of anger, more than a third did so for fun.
Psychopathic traits, family factors	• Callous-unemotional traits, children's temperamental characteristics and parents low education
Psychological and behavioural disorders	• Conduct symptoms, higher self-esteem/self-perception, difficulties in family functioning

scription of Studies Found Following a Systematic Review into Childhood Animal Cruelty

Author cation year) ournal Name	Study Type	Animal Cruelty Measures/ Instruments	Participants	Setting and Country of Study
(1997)	Retrospective, self-report questionnaire	A-RTI	314 adults (inmates), 84% males (mean age 31)	Prisoner classification centre, US
r (2004)	10-year prospective study. Interviews and juvenile court records	CAS, CBCL	363 mothers and one of their children between ages 6 and 12 (mean 9.1)	Not specified,
us (1980)	Structured clinical interviews and multiple choice questionnaires	Not specified	346 adult male psychiatric patients Animal Cruelty Group subjects (N= 18)	Inpatient psych service, US
oson (2006)	Self-report survey	CAI, CAAI, CTAQ	Community sample of 281 adolescents, 12-18 years (mean 14.8), 113 males, 168 females	School, Austra
(2006)	Retrospective self-report questionnaire	ATTAS, A-RTI	286 college students, 53.5% women, 18-50 years (mean 22.7)	Not specified Country: US
(2005)	Self-report questionnaire	PET Scale	Italian preadolescents, 268 girls, 264 boys, aged 9-12 years	School, Italy
(2006)	Interviews	CBCL	Community sample of 47 mothers with 2 children (5-17 years), domestic abuse victims	Not specified, Canada
ne (1997)	Surveys (mothers report)	PMA	38 women, domestic abuse victims	Safe house/sh US
rs (2013)	Retrospective surveys	EWA	241 male undergraduate students	Not specified,
(2007)	Surveys	A-RTI, ATTAS	185 college males, 18-48 years (Mean 22.2)	Not specified,
o (2006)	Case studies/observations	N/A	7 year old girl	Not specified,
(2013)	Matched case surveys	CABTA	Mothers and fathers of 729 children, 393 female and 336 male children, aged 6-12 years (mean 8.7)	School, China
2011)	Retrospective study using psychiatric intake assessment	Other	Psychiatric intake children, 110 children, 11-17 years (mean 11.3), 71.8% male	N/A, US
(1985)	Retrospective interviews	Other	152 male adult criminals, mostly in 30's	Prison, US
(1989)	Case study/observations/interview	Other	12 year old girl	Not specified,
(1971)	Case studies	N/A	18 children, aged 5-15 (average 9.5) years, all boys	Not specified,
008 (clinical entary)	Case study/clinical commentary	N/A	Boy aged 8	Therapy, UK

d: Description of Studies Found Following a Systematic Review into Childhood Animal Cruelty

1)	Data derived from Waves I and II of the National Epidemiologic Survey on Alcohol and Related Conditions (structured psychiatric interviews), retrospective reporting	Other	709 adults, 18 years and older	N/A, US
)	Retrospective, computer-based, self-report measure	AVI	860 college students, 75.6% female	Not specified, US
5)	Retrospective. Data from Pathways to Desistance sample (Mulvey, 2012), baseline interviews	Other	Data from 1354 adjudicated delinquents aged 14-19 years (mean 16 years), 86.4% male	N/A, US
1)	Retrospective, self-administered questionnaires	Other	180 adult inmates	Prison, US
1)	Retrospective questionnaires	Other	180 adult inmates (mean age 35)	Prison, US
	Data from the 2006 Swiss National Self-Reported Delinquency Survey Interviews or questionnaires	Other	3,648 pupils in 7th, 8th, and 9th grades Ages 13-16 years	N/A, Switzerland
05)	Self-report questionnaires	Other	261 adult male inmates	Prison, US
6)	Data from various US prisons collected by FBI special agents. In-depth interviews by FBI agents. Retrospective	Other	36 sexually orientated murderers (adult men)	N/A, US
984)	Clinical data (e.g. DSM classification)	Other	20 boys , ages 6-16 years (mean 11)	Psychiatric hospital, US
4)	Data from the Environmental Risk (E-Risk) Longitudinal Twin Study. Assessments/interviews (mothers reports)	CBCL	2,232 children, 5-12 years (49% boys)	Home visits, UK
)	National, longitudinal, and multigenerational sample collected by the National Youth Survey Family Study (Multistage cluster sampling design, interviews)	Other	1,614 individuals, 11-31 years old	N/A, US
008)	Self-report questionnaires	CTAQ, CAI	281 students (12-18 years, mean 14.8, 113 males, 168 females)	Classroom, Australia
5)	Coding sheet for information from files of boys who had received residential treatment	Other	50 early- to late adolescent boys	N/A, US
	Survey of psychiatrically hospitalized children and adolescents (diagnosed via interviews). Case studies	N/A	388 children and adolescents/adults, 13-24 years old, 249 were boys	N/A, US

Description of Studies Found Following a Systematic Review into Childhood Animal Cruelty

Self-report questionnaires	PET scale	249 adolescents, aged 12 to 16 (mean 14) years, 144 female	Classroom, Australia
Questionnaire (parent report)	CABTA	496 children aged between 6 and 12 years and parents, 148 boys	Classroom, Malaysia
Psychological test data, psychiatric evaluations, and social histories examined.	Other	50 children in residential care, predominantly male, age 6-17 (mean 12)	N/A, US
Mothers report, telephone interview	Other	102 adult women, 23 to 66 years (mean 38.5)	Over the phone, Australia
Caregivers reports	CBCL, CSBI	6-12-year-old children, sexually abused sample (N=481), psychiatric comparison group (n=412)	Not stated, US
Retrospective questionnaires	Other	261 adult inmates	Prison, US
Parent and child self-report questionnaires	CAI	131 children aged 6 to 13 years (mean 10), 67 males and 64 females	At child's home, Australia
Questionnaires for children, teachers (telephone interview) and parents reanalysis of previously collected data	CBCL	Clinic sample of 141 children, ages of 5–12 years	In school/over the phone/at child's home, Australia

Violence Inventory (modified version of the Boat Inventory on Animal-Related Experiences (A-RTI); Boat, 1994), our Checklist (Achenbach, 1991), CAI: The Children and Animals Inventory (Dadds et al., 2004), CAAI: Children and Instrument (Ascione et al., 1997), CTAQ: Children's Treatment of Animals Questionnaire (Thompson & Gullone, e Physical and Emotional Tormenting against animals scale (Baldry, 2004), CABTA: The Children's Attitudes and Animals questionnaire (Guymer et al., 2001), CSBI: Child Sexual Behaviour Inventory (Friedrich, 1997), CAS: Child e (Hodges et al., 1982), ATTAS: Attitudes Toward the Treatment of Animals Scale (Henry, 2004), EWA: Experiences ified version of Flynn, 1999) and PMA: Pet Maltreatment Assessment (Ascione & Weber, 1995).

Table 4. Quality Assessment Results

	Rater 1		Rater 2	
Paper	Quality Score %	Category	Quality Score %	Category
1	**76.2**	2	**76.2**	2
2	**76.2**	2	**76.2**	2
3	**27.1**	4	**27.1**	4
4	**66.7**	2	**66.7**	2
5	**66.7**	2	**66.7**	2
6	**61.9**	2	**61.9**	2
7	**52.4**	3	**50**	3
8	**52.1**	3	**52.1**	3
9	**57.1**	3	**57.1**	3
10	**66.7**	2	**66.7**	2
12	**73.8**	2	**73.8**	2
13	**50**	3	**50**	3
14	**68.8**	2	**68.8**	2
18	**85.7**	1	**88.1**	1
19	**64.3**	2	**64.3**	2
20	**76.2**	2	**76.2**	2
21	**61.9**	2	**61.9**	2
22	**57.1**	3	**57.1**	3
23	**73.8**	2	**73.8**	2
24	**61.9**	2	**64.3**	2
25	**47.9**	3	**47.9**	3
26	**64.3**	2	**64.3**	2
27	**71.4**	2	**71.4**	2
28	**83.3**	1	**83.3**	1
29	**71.4**	2	**73.8**	2
30	**73.8**	2	**73.8**	2
32	**69**	2	**71.4**	2
33	**66.7**	2	**66.7**	2
34	**45.2**	3	**42.9**	3
35	**56.3**	3	**56.3**	3
36	**57.1**	3	**61.9**	2
37	**59.5**	3	**59.5**	3
38	**71.4**	2	**71.4**	2
39	**66.7**	2	**66.7**	2

Note: (Reliability: $_K$=.78). Case studies not included.

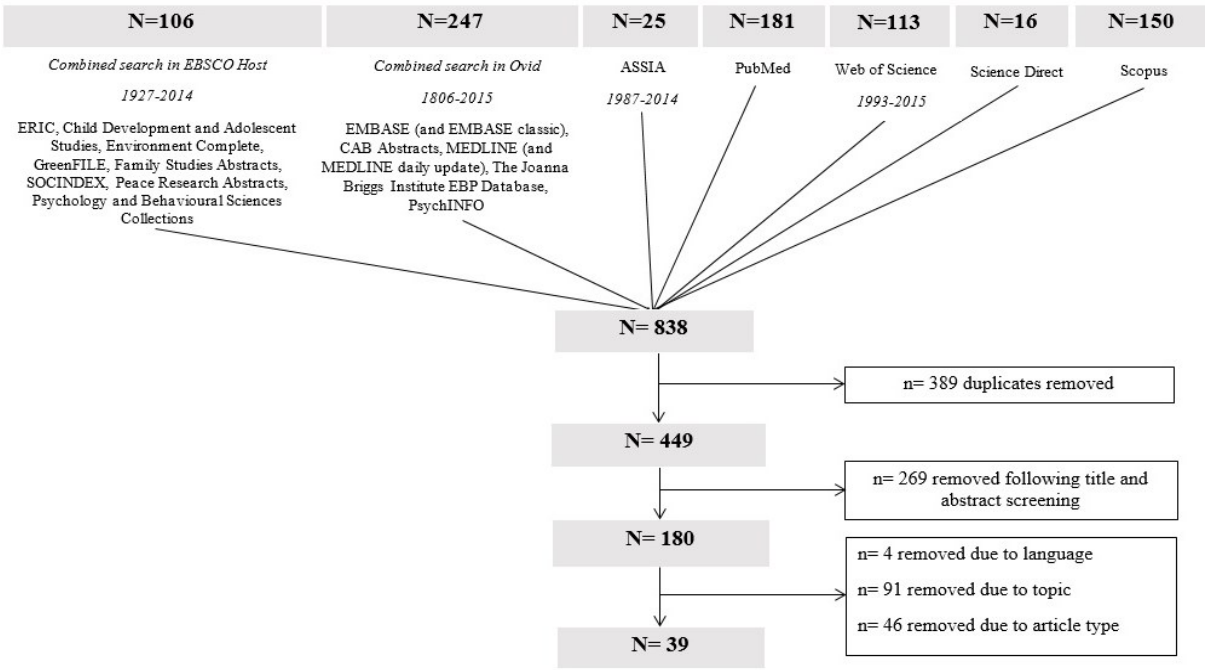

Figure 1. A Flowchart of the Study Selection Process