



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

## Psychological risk factors for childhood nonhuman animal cruelty

**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](https://doi.org/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](mailto:openaccess@ed.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



1 Running head: CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

2

3

4 **Psychological Risk Factors for Childhood Animal Cruelty: A Systematic Review**

5

6 Roxanne D. Hawkins<sup>1</sup>, Emma L. Hawkins<sup>2</sup> and Joanne M. Williams<sup>1</sup>,

7

The University of Edinburgh

8

9

Author Note

10 <sup>1</sup>School of Health in Social Science, the University of Edinburgh

11 <sup>2</sup> Division of Psychiatry, University of Edinburgh

12

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

15 Contact: s1477956@sms.ed.ac.uk

16

17

18

19

20

21 **Abstract**

22

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

33

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

36

37

38

39

40

41

42

**43 Childhood Animal Cruelty**

44

45 Ascione (1993) defined animal cruelty as “socially unacceptable behavior that  
46 intentionally causes unnecessary pain, suffering, or distress to and/or the death of an animal”  
47 (p.228). Motivation can be defined as “an internal force originated from a need not satisfied  
48 which impels the individuals to be involved in a specific behaviour” (Schiffman & Kanuk,  
49 2004). Ascione (2005) proposed a classification system for the underlying motivations of  
50 animal cruelty behaviour. The first category, explorative/curious animal abuse, likely applies  
51 to very young children who may hurt non-human animals unintentionally due to a lack of  
52 supervision and/or a lack of knowledge about the humane treatment of animals; they may  
53 lack the cognitive maturity needed to understand cruelty to animals and may benefit through  
54 appropriate animal related education. The second category, pathological animal abuse, is  
55 likely to apply to children who are slightly older, where cruelty to animals may be  
56 symptomatic of psychological difficulties. Children who fall into this category may suffer  
57 from personality, conduct or other psychiatric disorders but may not yet have had  
58 professional diagnosis (animal cruelty is part of the diagnostic criteria for Conduct Disorder;  
59 American Psychological Association, 2013). The third category, delinquent animal abuse,  
60 applies to adolescents where animal cruelty may be part of a broader pattern of delinquent  
61 and antisocial behaviour (Walters & Noon, 2015). Other factors associated with childhood  
62 animal cruelty include: peer reinforcement, behaviour imitation, mood enhancement, sexual  
63 gratification, forced animal abuse, attachment to animals, phobias of particular animals,  
64 abusive experiences and post-traumatic play, self-injury, rehearsal for interpersonal violence  
65 and participating in animal abuse as a vehicle for emotional abuse (Ascione et al., 1997).

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

94 *Research Questions*

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

99 **Method**100 *Protocol*

101           To identify valid literature, the PRISMA guidelines (Moher et al., 2009) were  
102 consulted and a Boolean search was conducted on July 20, 2015 and again on February 01,  
103 2016.

104 *Search Procedure*

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

115 -----

116 Table 1 here

117 -----

### 118 *Eligibility Criteria*

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

### 126 *Study Selection*

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

138 -----

139 Figure 1 here

140 -----

#### 141 *Data Extraction and Evaluation*

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

149 -----

150 Table 2 and 3 here

151 -----

#### 152 *Quality Assessment*

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



## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

165 -----

166 Table 4 here

167 -----

## 168 **Results**

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

186 *Age Group and Sample Sizes*

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

192 Excluding case studies and studies that used existing data, good sample sizes were  
193 used overall (mean=300, range 38-893). Good size samples were used for children  
194 (mean=291, range 50-532), adolescents (mean=182, range 50-281), adults (mean=281, range  
195 102-860), parent report studies (mean=427, range 38-893) and mother and child reports  
196 (mean=330, range 131-496).

197 *Methodology of Studies*

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

### 220 *Prevalence of Childhood Animal Cruelty*

221         Three studies found a relatively high rate of exposure to animal cruelty (Miller, 1997;  
222 Thompson & Gullone, 2006; DeGue & DiLillo 2008). For example, DeGue and DiLillo  
223 (2008) found that 22.9% of 860 college students in America reported some exposure to  
224 animal cruelty. Three studies (Baldry, 2005; Gullone, 2008; Kellert & Felthous, 1985) found  
225 a relatively high prevalence of animal cruelty behaviour: 40%, 20.6% and 60% respectively.  
226 Lucia and Killias (2011) found that 48% of 3,648 pupils in 7th, 8th, and 9th grades (ages 13-  
227 16 years) admitted to have maltreated an animal at least once.

### 228 *Psychological Risk Factors for Childhood Animal Cruelty*

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

253 Childhood animal cruelty was found to be associated with bullying and victimisation  
254 experiences in 7 studies (Sanders et al., 2013; Baldry, 2005; Henry & Sanders, 2007; Boat,  
255 2011; Tapia, 1971; DeGue & DiLillo, 2008; Gullone, 2008). Abusing animals during  
256 childhood ‘for fun’, an indicator of sadism, was one of 9 motivations reported (Hensley et al.,  
257 2011; Hensley & Tallichet, 2005). Hensley et al. (2011) and Overton et al. (2011) found that  
258 over 60% of adult inmate respondents reported that they were cruel to animals as a child ‘for  
259 fun’. Dadds (2006) found that animal cruelty in boys was associated with an early  
260 psychopathy pathway characterised by callous and unemotional traits (often seen in Conduct  
261 Disorder; American Psychiatric Association, 2013), disregard and callous-lack of empathy  
262 for others. Animal cruelty within this sub-group of children displaying conduct disorder may  
263 reflect low meta-cognition or low reflective function (Patrick et al., 1994).

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

278 Three studies considered empathy in relation to childhood animal cruelty (Henry  
279 2006; Lucia, 2011; and Thompson, 2008). Thompson and Gullone (2008) for example, found  
280 that empathy and (to a lesser degree) attachment to parents and peers, negatively correlated  
281 with animal cruelty but is positively associated with the humane treatment of animals.  
282 Furthermore, animal cruelty was negatively correlated with prosocial behaviour. Thompson  
283 and Gullone (2008) concluded that humane animal treatment fosters the normal development  
284 of empathy and that empathy serves as a mediating role in the associations between animal  
285 cruelty, attachment to parents and peers and humane animal treatment.

286 *Adverse Childhood Experiences*

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

304 *Witnessing Animal Cruelty*

305           Witnessing animal cruelty could lead to the imitation of this behaviour (Overton,  
306 2011) and was another common factor associated with childhood animal cruelty behaviour  
307 (n=8). Children who frequently witnessed animal abuse reported higher levels of animal  
308 cruelty behaviour (Thompson, 2006). Thompson concluded that the damaging effects of  
309 witnessing animal cruelty are cumulative and animal cruelty is a widespread phenomenon.  
310 The age of the child who witnesses animal cruelty and who the child observes may have an  
311 effect. Hensley and Tallichet (2005) found that inmates who had observed a friend abuse  
312 animals as a child were more likely to hurt or kill animals more frequently, while those who  
313 were younger when they first witnessed animal cruelty hurt or killed animals at a younger  
314 age.

315 *Age and Gender*

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

**333 Discussion**

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

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



## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

359         The overall quality of the published research was relatively low; only 2 papers (5.9%)  
360 scored 1 ('quality criteria are very well met'). Despite the majority of publications (not  
361 including case studies) receiving a score of 2 ('quality criteria are well met'; rater 1: 61.8%;  
362 rater 2: 64.7%), a large number of papers (rater 1: 29.4%; rater 2: 26.5%) received a score of  
363 3 ('quality criteria are fairly met). One paper received a score of 4 ('quality criteria are  
364 slightly met') and no publications received a score of 5 ('quality criteria are hardly met'). See  
365 Sirriyeh (2012) for full assessment criteria. The lack of high quality publications needs to be  
366 addressed in future studies.

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

425 *Research Gaps and Recommendations*

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

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

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

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

476         The current research base relied heavily on retrospective reports, which are potentially  
477 biased or inaccurate. Retrospective reports have been used to identify risk factors and links  
478 between animal cruelty in childhood and future violence in adulthood (Flynn, 1999).  
479 However, the reliability and validity of long-term recall is questionable (Hardt & Rutter,  
480 2004). Future studies should place greater value on observational and cognitive research  
481 methods to explore child-animal relationships in order to elevate the integrity of animal  
482 cruelty research. However, due to the sensitivity of this topic, childhood animal cruelty may  
483 be difficult to measure and experimental research may not be appropriate, which may explain  
484 the lack of studies currently investigating this topic. Future research needs to overcome these  
485 methodological difficulties to elevate the potential quality of future research in this area. One  
486 possibility is to measure children's attitudes towards animal cruelty, which may be predictive  
487 of behaviour (Hawkins & Williams, *in press*; Hawkins et al., *under review*).

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

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

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

### 503 **Conclusion**

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

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

519

### 520 **References**

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 521 Achenbach, T. (1991). *Manual for the child behavior checklist/4-18 and 1991 profile*.  
522 Burlington: University of Vermont Department of Psychiatry.
- 523 American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental*  
524 *disorders. (5th Edition)*. Washington, DC.
- 525 Arluke, A., Levin, J., Luke, C., & Ascione, F. (1999). The relationship of animal abuse to  
526 violence and other forms of antisocial behavior. *Journal of Interpersonal Violence, 14*(9),  
527 963-975.
- 528 Ascione, F. R. (1993). Children who are cruel to animals: A review of research and  
529 implications for developmental psychopathology. *Anthrozoös, 6*(4), 226-247.
- 530 Ascione, F. R. (1997). Battered women's reports of their partners' and their children's cruelty  
531 to animals. *Journal of Emotional Abuse, 1*(1), 119-133.
- 532 Ascione, F. R. (2001). *Animal abuse and youth violence*. US Department of Justice, Office of  
533 Justice Programs, Office of Juvenile Justice and Delinquency Prevention.
- 534 Ascione, F. R. (2005). *Children and animals: Exploring the roots of kindness and cruelty*.  
535 West Lafayette: Purdue University Press.
- 536 Ascione, F. R., & Arkow, P. (1999). *Child abuse, domestic violence, and animal abuse:*  
537 *Linking the circles of compassion for prevention and intervention*. Purdue University Press
- 538 Ascione, F. R., Friedrich, W. N., Heath, J., & Hayashi, K. (2003). Cruelty to animals in  
539 normative, sexually abused, and outpatient psychiatric samples of 6-to 12-year-old children:  
540 Relations to maltreatment and exposure to domestic violence. *Anthrozoös, 16*(3), 194-212.
- 541 Ascione, F. R., Thompson, T. M., & Black, T. (1997). Childhood cruelty to animals:  
542 Assessing cruelty dimensions and motivations. *Anthrozoös, 10*(4), 170-177.



## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 543 Ascione, F. R., & Weber, C. (1995). *Battered partner shelter survey (BPSS)*. Logan: Utah  
544 State University.
- 545 Baldry, A. C. (2004). The development of the PET scale for the measurement of physical and  
546 emotional tormenting against animals in adolescents. *Society & Animals, 12*(1), 1-17.
- 547 Baldry, A. C. (2005). Animal abuse among preadolescents directly and indirectly victimized  
548 at school and at home. *Criminal Behaviour and Mental Health, 15*(2), 97-110.
- 549 Becker, K. D., Stuewig, J., Herrera, V. M., & McCloskey, L. A. (2004). A study of firesetting  
550 and animal cruelty in children: Family influences and adolescent outcomes. *Journal of the*  
551 *American Academy of Child & Adolescent Psychiatry, 43*(7), 905-912.
- 552 Boat, B.W. (1994). *Boat inventory on animal-related experiences*. Cincinnati, OH: University  
553 of Cincinnati.
- 554 Boat, B. W., Pearl, E., Barnes, J. E., Richey, L., Crouch, D., Barzman, D., & Putnam, F. W.  
555 (2011). Childhood cruelty to animals: Psychiatric and demographic correlates. *Journal of*  
556 *Aggression, Maltreatment & Trauma, 20*(7), 812-819.
- 557 Clinical Commentary (2008). *Journal of Child Psychotherapy, 34*(2), 278-290,  
558 DOI: 10.1080/00754170802208081.
- 559 Compas, B. E., Hinden, B. R., & Gerhardt, C. A. (1995). Adolescent development: Pathways  
560 and processes of risk and resilience. *Annual review of Psychology, 46*(1), 265-293.
- 561 Currie, C. L. (2006). Animal cruelty by children exposed to domestic violence. *Child Abuse*  
562 *& Neglect, 30*(4), 425-435.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 563 Dadds, M. R., Whiting, C., Bunn, P., Fraser, J. A., Charlson, J. H., & Pirola-Merlo, A.  
564 (2004). Measurement of cruelty in children: The cruelty to animal's inventory. *Journal of*  
565 *Abnormal Child Psychology*, 32(3), 321-334.
- 566 Dadds, M. R., Whiting, C., & Hawes, D. J. (2006). Associations among cruelty to animals,  
567 family conflict, and psychopathic traits in childhood. *Journal of Interpersonal Violence*,  
568 21(3), 411-429.
- 569 DeGue, S., & DiLillo, D. (2008). Is animal cruelty a "red flag" for family violence?  
570 Investigating co-occurring violence toward children, partners, and pets. *Journal of*  
571 *Interpersonal Violence*. DOI: 10.1177/0886260508319362.
- 572 Duncan, A., Thomas, J. C., & Miller, C. (2005). Significance of family risk factors in  
573 development of childhood animal cruelty in adolescent boys with conduct problems. *Journal*  
574 *of Family Violence*, 20(4), 235-239.
- 575 Felthous, A. R. (1980). Aggression against cats, dogs and people. *Child Psychiatry and*  
576 *Human Development*, 10(3), 169-177.
- 577 Felthous, A. R., & Kellert, S. R. (1986). Violence against animals and people: is aggression  
578 against living creatures generalized? *Journal of the American Academy of Psychiatry and the*  
579 *Law Online*, 14(1), 55-69.
- 580 Flynn, C. P. (1999). Animal abuse in childhood and later support for interpersonal violence in  
581 families. *Society & Animals*, 7(2), 161-172.
- 582 Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-  
583 unemotional traits and conduct problems in the prediction of conduct problem severity,  
584 aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology*, 31, 457-  
585 470.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 586 Friedrich, W.N. (1997). *Child Sexual Behavior Inventory: Professional Manual*. Odessa, FL:  
587 Psychological Assessment Resources.
- 588 Furnham, A., McManus, C., & Scott, D. (2003). Personality, empathy and attitudes to animal  
589 welfare. *Anthrozoös*, 16(2), 135-146.
- 590 Gleyzer, R., Felthous, A. R., & Holzer, C. E. (2002). Animal cruelty and psychiatric  
591 disorders. *Journal of the American Academy of Psychiatry and the Law Online*, 30(2), 257-  
592 265.
- 593 Gullone, E., & Robertson, N. (2008). The relationship between bullying and animal abuse  
594 behaviors in adolescents: The importance of witnessing animal abuse. *Journal of Applied*  
595 *Developmental Psychology*, 29(5), 371-379.
- 596 Gupta, M. (2008). Functional links between intimate partner violence and animal abuse:  
597 Personality features and representations of aggression. *Society & Animals*, 16(3), 223-242.
- 598 Guymer, E. C., Mellor, D., Luk, E. S., & Pearse, V. (2001). The development of a screening  
599 questionnaire for childhood cruelty to animals. *Journal of Child Psychology and*  
600 *Psychiatry*, 42(08), 1057-1063.
- 601 Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood  
602 experiences: review of the evidence. *Journal of Child Psychology and Psychiatry*, 45(2), 260-  
603 273.
- 604 Hawkins, R. & Williams, J.M. (in press). Children's beliefs about animal minds (Child-  
605 BAM): associations with positive and negative child-animal interactions. *Anthrozoös*.
- 606 Hawkins, R., Williams, J.M. and Scottish SPCA. The impact of the 'Prevention through  
607 Education' programme on children's knowledge, attitudes, beliefs about animal minds and  
608 attitudes towards animal cruelty. *Journal of Applied Animal Welfare Science* (under review).

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 609 Henry, B. C. (2004). The relationship between animal cruelty, delinquency, and attitudes  
610 toward the treatment of animals. *Society & Animals, 12*(3), 185-207.
- 611 Henry, B. C. (2006). Empathy, home environment, and attitudes toward animals in relation to  
612 animal abuse. *Anthrozoös, 19*(1), 17-34.
- 613 Henry, B. C., & Sanders, C. E. (2007). Bullying and animal abuse: Is there a connection?  
614 *Society & Animals, 15*(2), 107-126.
- 615 <sup>a</sup>Hensley, C., & Tallichet, S. E. (2005). Learning to be cruel? Exploring the onset and  
616 frequency of animal cruelty. *International Journal of Offender Therapy and Comparative*  
617 *Criminology, 49*(1), 37-47.
- 618 <sup>b</sup>Hensley, C., & Tallichet, S. E. (2005). Animal cruelty motivations assessing demographic  
619 and situational influences. *Journal of Interpersonal Violence, 20*(11), 1429-1443.
- 620 Hensley, C., Tallichet, S. E., & Dutkiewicz, E. L. (2011). Examining demographic and  
621 situational factors on animal cruelty motivations. *International Journal of Offender Therapy*  
622 *and Comparative Criminology, 55*(3), 492-502.
- 623 Hills, A.M. (1995). Empathy and belief in the mental experience of animals. *Anthrozoös,*  
624 *8*(3), 132–142.
- 625 Hodges, K., McKnew, D., Cytryn, L., Stern, L., & Kline, J. (1982). The Child Assessment  
626 Schedule (CAS) diagnostic interview: A report on reliability and validity. *Journal of the*  
627 *American Academy of Child Psychiatry, 21*(5), 468-473.
- 628 Kavanagh, P. S., Signal, T. D., & Taylor, N. (2013). The Dark Triad and animal cruelty: Dark  
629 personalities, dark attitudes, and dark behaviors. *Personality and Individual Differences,*  
630 *55*(6), 666-670.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 631 Kellert, S. R., & Felthous, A. R. (1985). Childhood cruelty toward animals among criminals  
632 and noncriminals. *Human Relations*, 38(12), 1113-1129.
- 633 Knight, K. E., Ellis, C., & Simmons, S. B. (2014). Parental predictors of children's animal  
634 abuse findings from a national and intergenerational sample. *Journal of Interpersonal  
635 Violence*, 29(16), 3014-3034.
- 636 Knight, S., Vrij, A., Cherryman, J. & Nunkoosing, K. (2004). Attitudes towards animal use  
637 and belief in animal mind. *Anthrozoös*, 17(1), 43-62.
- 638 Kruesi, M. J. (1989). Cruelty to animals and CSF 5HIAA. *Psychiatry Research*, 28(1), 115-  
639 116.
- 640 Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical  
641 data. *Biometrics*, 33(1), 159-174.
- 642 Lewchanin, S., & Randour, M. L. (2008). Assessing children's experiences with animal  
643 cruelty: assessment, treatment, community needs, and policy considerations. In F. Ascione  
644 (Ed) *The International Handbook of Animal Abuse and Cruelty: Theory, Research, and  
645 Application*, 423. Purdue University Press: West Lafayette, Ind.
- 646 Lockwood, R. & Ascione, F.R. (Eds.). (1998). *Cruelty to Animals and Interpersonal  
647 Violence: Reading in Research and Application*. West Lafayette, Indiana: Purdue University  
648 Press.
- 649 Lucia, S., & Killias, M. (2011). Is animal cruelty a marker of interpersonal violence and  
650 delinquency? Results of a Swiss national self-report study. *Psychology of Violence*, 1(2), 93-  
651 105.
- 652 Luk, E. S., Staiger, P. K., Wong, L., & Mathai, J. (1999). Children who are cruel to animals:  
653 A revisit. *Australian and New Zealand Journal of Psychiatry*, 33(1), 29-36.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 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.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 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- $\beta$ -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.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 698 Sanders, C. E., Henry, B. C., Giuliani, C. N., & Dimmer, L. N. (2013). Bullies, victims, and  
699 animal abusers: do they exhibit similar behavioral difficulties? *Society & Animals*, 21(3),  
700 225-239.
- 701 Schiffman, L. G., & Kanuk, L. L. (2004). *Consumer Behavior* (8th ed.). Englewood Cliffs,  
702 NJ: Prentice Hall.
- 703 Serpell, J. (1996). *In The Company of Animals: A Study of Human-Animal Relationships*.  
704 Cambridge University Press.
- 705 Shapiro, H. L., Prince, J. B., Ireland, R., & Stein, M. T. (2006). A dominating imaginary  
706 friend, cruelty to animals, social withdrawal, and growth deficiency in a 7-year-old girl with  
707 parents with schizophrenia. *Journal of Developmental & Behavioral Paediatrics*, 27(3), 231-  
708 236.
- 709 Signal, T., Ghea, V., Taylor, N., & Acutt, D. (2013). When do psychologists pay attention to  
710 children harming animals? *Human-Animal Interaction Bulletin*, 1(2), 82-97.
- 711 Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse  
712 designs: the development and evaluation of a new tool. *Journal of Evaluation in Clinical*  
713 *Practice*, 18(4), 746-752.
- 714 Sverd, J., Sheth, R., Fuss, J., & Levine, J. (1994). Prevalence of pervasive developmental  
715 disorder in a sample of psychiatrically hospitalized children and adolescents. *Child*  
716 *Psychiatry and Human Development*, 25(4), 221-240.
- 717 Tapia, F. (1971). Children who are cruel to animals. *Child Psychiatry and Human*  
718 *Development*, 2(2), 70-77.
- 719 Thompson, K. L., & Gullone, E. (2003). Promotion of empathy and prosocial behaviour in  
720 children through humane education. *Australian Psychologist*, 38(3), 175-182.



## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

- 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.

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

744

745 **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".

746 *Note.* The search terms were combined so that the results included at least one term from

747 each of the main categories.

748

## . Overview of the Findings

First Author Publication year)	Psychological Factor(s) Investigated	Identified Psychological Risk Factors for Childhood Animal Cruelty
Miller (1997)	Abuse	<ul style="list-style-type: none"> <li>AC experiences and aversive punitive and acrimonious childhood histories</li> </ul>
Becker (2004)	Family risk factors and delinquency	<ul style="list-style-type: none"> <li>Exposure to marital violence, harsh parenting and AC. AC related to self-reported aggression</li> </ul>
Walters (1980)	Aggression and parental brutality	<ul style="list-style-type: none"> <li>Aggression, brutal punishments by parents, temper tantrums, destructive or assaultive outbursts, childhood fights and school truancy, prolonged separation from father and alcoholic father figure, and setting uncontrolled fires</li> </ul>
Thompson (2006)	Witnessing abuse	<ul style="list-style-type: none"> <li>Witnessing AC. Higher levels of AC if witnessed a friend, relative, parent, or sibling mistreat an animal. "Frequently" witnessing AC reported higher levels of AC.</li> </ul>
Henry (2006)	Empathy, family environment, sexual abuse	<ul style="list-style-type: none"> <li>Sexual abuse. Caregiving subscale (ATTAS) differentiated abusers. AC scored high on Fantasy subscale.</li> </ul>
Malloy (2005)	Abuse, bullying and victimisation	<ul style="list-style-type: none"> <li>Witnessing violence, abuse from parents, bullying and other adverse experiences</li> </ul>
Currie (2006)	Domestic abuse	<ul style="list-style-type: none"> <li>Exposure to domestic violence</li> </ul>
Scione (1997)	Domestic abuse	<ul style="list-style-type: none"> <li>Domestic abuse</li> </ul>
Walters (2013)	Bullying and victimisation	<ul style="list-style-type: none"> <li>Bullying, victimization and behavioural problems</li> </ul>
Henry (2007)	Bullying and victimization	<ul style="list-style-type: none"> <li>Multiple acts of AC associated with bullying and low sensitivity to cruelty-related acts</li> </ul>
Shapiro (2006)	Psychological/psychiatric disorder (schizophrenia)	<ul style="list-style-type: none"> <li>Schizophrenia. Patient had symptoms of social withdrawal, low productivity in school, 'antisocial behaviour', cruel fantasies, and both real and symbolic cruelty to animals.</li> </ul>
Yong (2013)	Psychological adjustment and Family functioning	<ul style="list-style-type: none"> <li>Family functioning and child's externalizing coping style predicted only modest variance in AC. Family functioning more of a role in boys AC</li> </ul>
Boat (2011)	Aggression, abuse, mental health	<ul style="list-style-type: none"> <li>Bullying, problems with peers, sexual abuse and sexually acting out. AC reported as young as 3 and as old as 17</li> </ul>
Walters (1985)	Aggression	<ul style="list-style-type: none"> <li>Family violence, particularly alcoholism and paternal abuse. AC mostly minor and AC more often reported in aggressive criminals.</li> </ul>
Truesi (1989)	Psychological/psychiatric disorder	<ul style="list-style-type: none"> <li>Low serotonin levels</li> </ul>
Capia (1971)	Aggression, behavioural problems/disorders, mental illness/brain disorder	<ul style="list-style-type: none"> <li>Behavioural problems/disorders, all boys, usually young (average age 9.5), normal intelligence, aggressiveness, destructiveness, bullying, fighting, stealing, and fire setting</li> </ul>
Walters 2008 (clinical commentary)	Personality traits, behavioural disorders, neglect and early life stress	<ul style="list-style-type: none"> <li>Early life stress of neglect, sadism towards animals and severe conduct disorder.</li> </ul>
Laughn (2011)	Childhood adversities, sexual abuse, bullying	<ul style="list-style-type: none"> <li>Swearing and saying hurtful things, having a parent or other adult living within the home who went to jail or prison, and sexual abuse</li> </ul>
McGue (2008)	Family violence	<ul style="list-style-type: none"> <li>Child maltreatment, domestic violence and victimisation.</li> </ul>
Walters (2015)	Family context	<ul style="list-style-type: none"> <li>Family context and proactive and reactive externalizing variables</li> </ul>
Walters (2011)	Sadism, aggression	<ul style="list-style-type: none"> <li>AC motivations: 64% (of sample) for fun, 24% out of anger or witness AC, 22% sadistic motivation, 20% hated the animal, 16% to shock others (16%) and 14% for revenge</li> </ul>

AC = animal cruelty

## Overview of the Findings

Sadism, aggression/violence	<ul style="list-style-type: none"> <li>• AC motivations: almost two thirds for fun, one fourth out of anger or imitation and one fifth out of hatred of the animal.</li> </ul>
Empathy, delinquency, personality and family context	<ul style="list-style-type: none"> <li>• AC motivations: 2.4% answered animals deserve it or it is fun. AC associated with vandalism and serious violent acts and lack of empathy</li> </ul>
Childhood experiences (witnessing animal cruelty)	<ul style="list-style-type: none"> <li>• 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</li> </ul>
Sexual abuse	<ul style="list-style-type: none"> <li>• Sexual abuse</li> </ul>
Psychological/psychiatric disorder	<ul style="list-style-type: none"> <li>• Zero dopamine</li> </ul>
Abuse and domestic violence	<ul style="list-style-type: none"> <li>• Child maltreatment. AC not associated with domestic violence</li> </ul>
Domestic violence	<ul style="list-style-type: none"> <li>• Violence within the home</li> </ul>
Empathy, attachment	<ul style="list-style-type: none"> <li>• Empathy and (to a lesser degree) attachment significantly negatively correlated with animal cruelty</li> </ul>
Conduct disorder, sexual abuse, domestic violence	<ul style="list-style-type: none"> <li>• Histories of physical and/or sexual child abuse and domestic violence</li> </ul>
Psychiatric disturbance	<ul style="list-style-type: none"> <li>• AC one of many symptoms of psychiatric disturbance</li> </ul>
Bullying, family conflict	<ul style="list-style-type: none"> <li>• Witnessing abuse, bullying others and family conflict</li> </ul>
Mental health and behavioural problems	<ul style="list-style-type: none"> <li>• Parent-reported hyperactivity in boys, self-reported conduct problems in girls and parent-reported total difficulties</li> </ul>
Behavioural problems	<ul style="list-style-type: none"> <li>• Behavioural problems such as fire setting, intense anger at maternal rejection, neglect, or abandonment and poor social comprehension and judgment</li> </ul>
Domestic abuse	<ul style="list-style-type: none"> <li>• Domestic abuse</li> </ul>
Domestic abuse, sexual abuse, psychiatric distress	<ul style="list-style-type: none"> <li>• Maltreatment history, domestic abuse and sexual abuse.</li> </ul>
Personality, aggression	<ul style="list-style-type: none"> <li>• AC motivations: almost half out of anger, more than a third did so for fun.</li> </ul>
Psychopathic traits, family factors	<ul style="list-style-type: none"> <li>• Callous-unemotional traits, children's temperamental characteristics and parents low education</li> </ul>
Psychological and behavioural disorders	<ul style="list-style-type: none"> <li>• Conduct symptoms, higher self-esteem/self-perception, difficulties in family functioning</li> </ul>

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

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

Author (publication year) Journal 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
son (2006)	Self-report survey	CAI, CAAI, CTAQ	Community sample of 281 adolescents, 12-18 years (mean 14.8), 113 males, 168 females	School, Australia
(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
ers (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
5)	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	Other	3,648 pupils in 7th, 8th, and 9th grades	N/A, Switzerland
	Interviews or questionnaires	Other	Ages 13-16 years	
05)	Self-report questionnaires	Other	261 adult male inmates	Prison, US
3)	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
84)	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), Four Checklist (Achenbach, 1991), CAI: The Children and Animals Inventory (Dadds et al., 2004), CAAI: Children and Animals Instrument (Ascione et al., 1997), CTAQ: Children's Treatment of Animals Questionnaire (Thompson & Gullone, 2004), 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 Sexual Abuse Scale (Hodges et al., 1982), ATTAS: Attitudes Toward the Treatment of Animals Scale (Henry, 2004), EWA: Experiences with Animal Abuse Scale (Flynn, 1999) and PMA: Pet Maltreatment Assessment (Ascione & Weber, 1995).

## CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

754

755 **Table 4.** Quality Assessment Results

Paper	Rater 1		Rater 2	
	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

756 *Note:* (Reliability:  $\kappa=.78$ ). Case studies not included.

757

758

759

760

761

762



CHILDHOOD ANIMAL CRUELTY: A SYSTEMATIC REVIEW

763

764

765

766

767

768

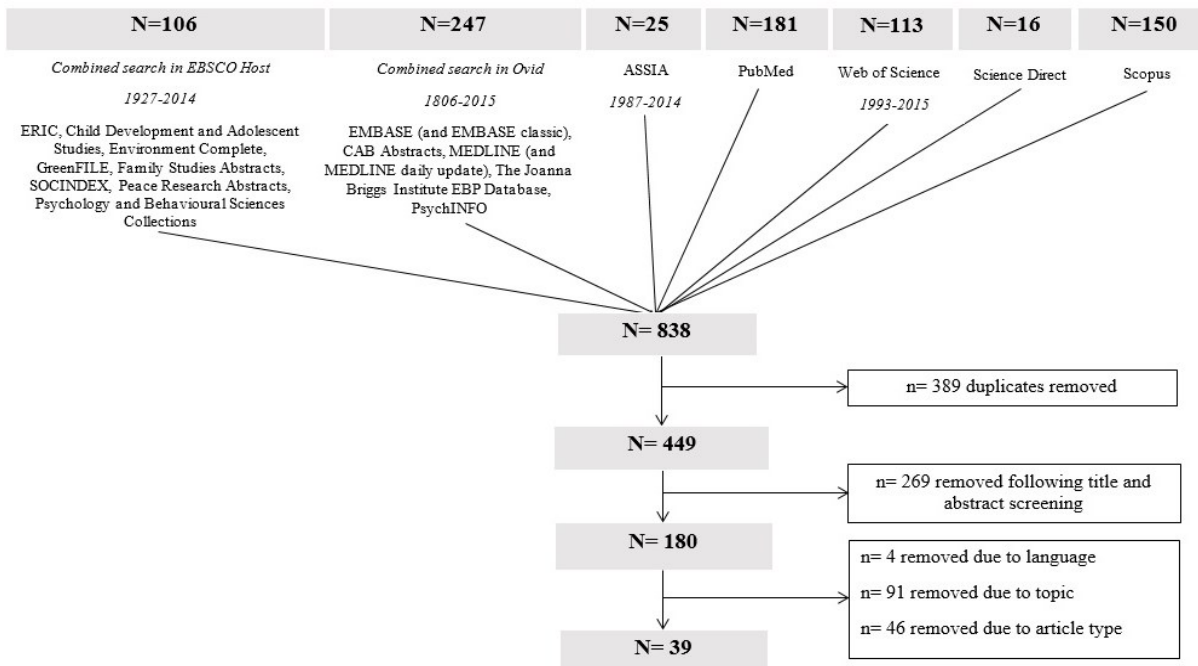
769

770

771

772

773



774 **Figure 1.** A Flowchart of the Study Selection Process

775

776

777

778

779

780