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Intentional Harm to Animals: A Multidimensional Approach

Laurent Bègue[1] | Serge Garcet[2] | David Weinberger[3]

[1]Université Grenoble Alpes, LIP/PC2S, Saint-Martin-d'Heres, France | [2]Criminology Department, University of Liège, Liège Sart-Tilman, Belgium | [3]Institut de relations internationales et stratégiques, French National Institute of Higher Studies on Security and Justice, Paris, France

Correspondence: Laurent Bègue (Laurent.Begue@univ-grenoble-alpes.fr)

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ABSTRACT

Despite growing awareness of the social and psychological issues linked with animal abuse, there is a lack of large-scale research on the multidimensional factors at play in relation to such abuse in the adult population. In this first survey on animal abuse carried out in higher education in France and based on a highly powered sample ($N = 55{,}040$ participants), we investigated the relative weight of risk factors pertaining to major criminological dimensions in a multivariate model controlling for relevant demographics: General Strain Theory (GST), Social Bond Theory (SBT), and Generalized Deviance Theory (GDT), as well as three key psychological dimensions: Callousness, Sensation seeking, and Impulse control difficulties. We observed that 6.4% of the participants declared having perpetrated animal abuse in the past, with males having done so about three times more often than females. Animal abuse was linked with callousness, difficulties in impulse control and sensation seeking. Participants who reported a climate of violence in their family, or who had witnessed acts of violence by their father against their mother, were particularly prone to abuse animals, which supported GST predictions. To a lesser extent, in line with SBT, animal abuse was higher among students with lower attachment to their mother, and who had a weaker belief in justice. Finally, animal abuse was perpetrated significantly more often by participants reporting higher alcohol consumption, as predicted by GDT. In summary, animal harm is related to a combination of risk factors pertaining to major criminological and psychological perspectives on aggression and violence, knowledge of which is useful in prioritizing future research directions and prevention strategies.

1 | Introduction

Animal abuse is defined as a "socially unacceptable behavior that intentionally causes unnecessary pain, suffering, or distress to/or death of an animal" (Ascione 1993, 228). Because of its obvious implications for animal welfare as well as its significant connection with human mental health and interpersonal violence (Chan and Wong 2019; Cleary et al. 2021; Longobardi and Badenes-Ribera 2018; Monsalve et al. 2017; Mota-Rojas et al. 2022; Vähä-Aho and Kaakinen 2024), animal abuse has attracted research attention from scholars working in various fields, including psychiatry and psychology (Bright et al. 2018; Chan and Wong 2024; Gullone 2012; Henry 2018; Holoyda and Newman 2016; Muri et al. 2022; Rock et al. 2021), criminology (Agnew 1998; Arluke et al. 2018; Chan and Wong 2024; Taylor and Fitzgerald 2018), social work (Hartman et al. 2019), forensic research (Ascione et al. 2018; Johnson 2018), and veterinary science (Monsalve et al. 2017).

While the social and psychological correlates of animal abuse have stimulated countless research papers, many first generation studies were limited to clinical samples. This focus on the pathological profiles of offenders was notably illustrated through the pioneering study by MacDonald (1961), who reviewed the

childhood characteristics of psychotic and nonpsychotic inpatients who had threatened to commit homicide, and discovered that they had frequently perpetrated acts of cruelty to animals (see Parfitt and Alleyne 2020). Since the 1987 American Psychiatric Association Diagnostic and Statistical Manuel of Mental Disorders (DSM IIIR), physical cruelty toward animals has been included on the list of criterion symptoms for the diagnosis of Conduct Disorder (see Louise Petersen and Farrington 2007), and also appears as a criterion on the Child Behavior Checklist (Achenbach and Ruffle 2000). This introduction into a reference diagnostic tool may have contributed to promoting a focus on cruelty toward animals among clinicians. However, comparison samples were not always included in studies, and further research on nonclinical populations remains necessary. So far, most of the available literature has focused on children and adolescent perpetrators, an emphasis which may have inadvertently stunted progress toward understanding adult-perpetrated animal abuse (Alleyne and Parfitt 2019). In addition, to further understand the specific weight of the multiple identifiable factors involved in animal abuse, there is a need for studies based on large sample enabling multivariate analysis and including a wide range of variables (Vaughn et al. 2009). To fill these gaps, the current study targeted a national nonclinical adult sample in higher education, and included an extended range of key measures pertaining to major criminological approaches.

1.1 | Aim of the Study

The principal aim of this study was to assess the relative explanatory power of key predictors of animal abuse in a single analytic model using a large national university sample. Most prior studies have only included a few variables, and a limited sample size often prevents firm conclusions from being reached regarding the hierarchy of the variables introduced in a multidimensional model. To select and structure our predictors, we relied on two dominant criminological perspectives on delinquency (Akers and Sellers 2017; Bègue 2003, 2018; Cullen et al. 2006): General Strain Theory (Agnew 2001) and Social Bond Theory (Hirschi 2001). In addition to the perspective offered by Generalized Deviance Theory (GDT), they are relevant to understanding animal abuse (Agnew 1998).

A final category of predictors comprised the psychological factors involved in the self-regulation of behavior (sensation seeking and self-control; see Gottfredson and Hirschi 1990) and interpersonal sensitivity (callousness), which are particularly important in explaining aggression and delinquency and are critically involved in externalizing behavior and animal abuse (Alleyne and Parfitt 2019; Amiot and Bastian 2015; Levitt 2018; Louise Petersen and Farrington 2007).

1.2 | Animal Abuse and Strain

According to the General Strain Theory (GST, Agnew 1992, 2001), individuals facing certain sources of strain and stress sometimes try to cope by engaging in criminal behavior. GST identifies three main categories of criminogenic strain: the failure to achieve a desired goal, the removal of positive stimuli (i.e., losing something good), and exposure to negative or aversive stimuli (see Brezina 1996; Hoffmann and Cerbone 1999). When animals destroy property, cause injury, or interfere in some way with a person's valued goals, they can represent a source of strain (Kellert and Felthous 1985). For example, some frustrated individuals displace their aggression and address it toward an animal, which is generally weaker than another human and less likely to retaliate (Wright and Hensley 2003). Moreover, even chronic strain experienced by individuals, which has not been caused by the animal themselves, may lead to their abuse. Adolescents and young adults sometimes face stress within the educational system (e.g., negative school experiences, or unjust treatment by authorities), which may lead to delinquency and violence. Previous studies have linked animal abuse to traditional bullying, and also to cyberbulling (Baldry 2003; Bègue 2022; Gullone and Robertson 2008; Sanders and Henry 2017; Parkes and Signal 2017; Vähä-Aho and Kaakinen 2024).

Another source of strain is exposure to parental violence or child abuse, which are significant risk factors for engaging in animal abuse (DeGue and Dilillo 2009; Flynn 2012; Volant et al. 2008). Becker et al. (2004) noted that negative family variables (such as marital violence and harsh parenting) increased the likelihood of childhood animal cruelty. In a national, longitudinal, and multigenerational study based on a sample of 1614 individuals collected by the National Youth Survey Family Study from 1990 to 2004, it was shown that parents' intimate partner violence was predictive of their children's history of animal abuse, as measured 14 years later (Knight et al. 2014).

Compared to the general population, the rate of animal cruelty is higher in families in which child abuse or neglect has taken place (it occurs in 60% of these families, as indicated by DeViney et al. 1983). Other studies have shown that 50% of young people who witnessed parental domestic abuse engaged in animal cruelty (Baldry 2003), and that children exposed to domestic abuse are three times more likely to be cruel to animals (Currie 2006; see also DeGue and Dilillo 2009), rising to six times more likely if they have been sexually abused (Ascione and Arkow 1999). Moreover, children who are cruel to animals are more likely to have been maltreated by family members than other children (McEwen et al. 2014). According to a systematic review, the prevalence of animal abuse in households with intimate partner violence ranges from 21% to 89% (Cleary et al. 2021).

Finally, a common source of strain in Agnew's model is financial frustration. In some studies, strain, which is potentially related to a lower socioeconomic background (Vaughn et al. 2009) or lack of economic resources and poverty, increases the chance of animal abuse (Levinthal 2010; however, see also Bègue 2022, who observed no relationship between *perceived* family affluence and animal cruelty in adolescents).

1.3 | Social Bonding Factors

Social bond theory is a major criminological approach explaining animal abuse (Agnew 1998). According to this perspective, individuals conform to conventional (nondelinquent) norms to the extent that they are attached to others who accept

the legitimacy of such norms. Conversely, they deviate from conventional norms when they lack such attachments (Hirschi 2001; Stark and Bainbridge 1996). Attachment is a key component of social bond theory. It describes the psychological and emotional connection a person feels toward other people or groups, and the extent to which they care about others' opinions and feelings. Animal abuse has been reported to be more frequent among adolescents who have a weaker bond with their parents (Alleyne and Parfitt 2019; Bègue 2022) and with school (Bègue 2022; Mowen and Boman 2020), or who come from "non loving homes" (Fielding et al. 2011). Likewise, children who are referred to an intervention for harming animal(s) are more likely to display insecure attachment (Wauthier and Williams 2022a; see also Wauthier et al. 2023).

A belief in justice also represents a relevant symbolic determinant of commitment toward conventional (i.e., nondelinquent) modes of conduct. According to experimental and survey studies, a person's belief that the world is a fundamental motive (Lerner 1980; Hafer and Bègue 2005) that contributes to their commitment to long-term goals and is inversely related to aggressive cognitions and behaviors and delinquent conduct (Bègue and Muller 2006; Hafer 2000; Hafer et al. 2005; Kong et al. 2021).

1.4 | General Deviance Theory

According to the GDT, "a wide range of criminal behaviors are positively correlated with one another either because one form of deviant behavior leads to involvement in other forms of deviance or because different forms of deviance have the same underlying causes" (Arluke et al. 1999, 965). From that perspective, animal cruelty is a single marker of a more general propensity toward deviance, and is also a symptom of a host of maladaptive behaviors (Louise Petersen and Farrington 2007). Cruelty toward animals has been associated with many psychiatric comorbidities (Vaughn et al. 2009), as well as with alcohol and drug use (Bègue 2022; Knight et al. 2014; Mowen and Boman 2020; Vaughn et al. 2009). For example, in a prospective, longitudinal study of about 4300 youths, four out of five animal abusers reported drinking alcohol weekly (McVie 2007). In another study examining 456 arrests of authors of the sexual mistreatment of animals, 19% of the offenders had alcohol or drug abuse issues (Edwards 2019). In a sample of more than 43,000 participants in a nationally representative survey, Vaughn et al. (2009) observed that alcohol use disorder was the most common psychiatric disorder related to a history of animal cruelty (Vaughn et al. 2009). Other studies have offered similar observations (Finkelhor et al. 2007; Ford et al. 2021; Gleyzer et al. 2002; Levitt et al. 2016; Mowen and Boman 2020; Simmons et al. 2015; Van Wijk et al. 2018). Likewise, studies have reported a relationship between animal cruelty and cannabis use (Simmons et al. 2015) and between animal cruelty and substance abuse (Levitt 2024).

According to an alternative theory of deviance at variance with GDT, animal abuse in an individual's formative years progresses developmentally, desensitizes children, and escalates into subsequent violence. This graduation theory is supported in the literature on serial killers and school shooters (Wright and Hensley 2003), and by some studies on prisoners (Hensley and Tallichet 2009). However, some critics have noted that the evidence of the hypothesized progression is inconsistent (Gullone 2014). GDT seems more parsimonious and is more relevant here than graduation theory, given the cross-sectional design of our study. Regarding specific markers of deviance, the current study focuses on alcohol and cannabis consumption.

1.5 | Psychological Dimensions

1.5.1 | Callous-Unemotional Traits (CU)

Empathy in children and adults is frequently observed to be negatively related to mistreatment of, and violence toward, animals (Gullone 2012; McPhedran 2009; Plant et al. 2019; Poresky 1990; Stanger et al. 2012; Vidović et al. 1999). This is similarly the case for callousness-unemotional traits, with the relationship running in the opposite direction to empathy (Dadds et al. 2006; Gupta 2019; Hartman et al. 2019; Stupperich and Strack 2016; Walters 2014; Hawkins et al. 2017). For exemple, one study involving 290 children aged 7–12 found that about 16% had hurt an animal, and that callousness-unemotional traits predicted this behavior (Hartman et al. 2019). Studies enabling the concurrent analysis of empathy and CU concluded that the link between CU and cruelty toward animals was stronger than the link relating empathy measures to cruelty (Hartman et al. 2019; Kotler and McMahon 2005). This reflects results obtained on violence toward humans in both youth (Ritchie et al. 2022) and adult samples (Vachon et al. 2014).

1.5.2 | Sensation Seeking

Some people engage in acts of animal cruelty merely in pursuit of excitement (Arluke 2002; Hensley and Tallichet 2000). Sensation seeking is a personality drive to seek out novel or exciting behaviors which has been linked to adolescent risk taking, including aggressive and violent behavior (Joireman et al. 2003). A meta-analysis involving 43 independent studies (comprising a total of 32,217 participants) provided support for higher levels of aggression in high sensation seekers (Wilson and Scarpa 2011). This includes animal abuse (Mowen and Boman 2020; Patterson-Kane 2012) which is perpetrated for thrill-seeking purposes. A study using the Animal Abuse Proclivity Scale (Alleyne et al. 2015) showed that participants who were thrilled when thinking about animal abuse were less bothered by causing intentional harm to animals (Zalaf 2024).

1.5.3 | Emotion Regulation

Emotion regulation is the ability to engage in goal-directed behavior and refrain from impulsive behavior when experiencing negative emotions. Maladaptive emotion regulation and experiencing difficulty in exercising self-restraint is a recurrent risk factor for aggression (Vaughan et al. 2024), and there are conceptual as well as empirical reasons to expect that animal abuse similarly represents an outcome of poor emotion regulation (Parfitt and Alleyne 2017).

A relevant but more specific dimension of emotion regulation is self-control (Gratz and Roemer 2004), which is commonly liked to reactive aggression (Denson et al. 2011, 2012) and can be expected to relate to animal abuse (Agnew 1998). Individuals who are low in self-control have been described as "impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and non-verbal" (Gottfredson and Hirschi 1990, 90). Many empirical tests have rendered low self-control as one of the most consistently valuable predictors of crime (for reviews, see Britt and Gottfredson 2003; DeLisi 2005). Moreover, adolescents scoring one standard deviation above the mean on the Self-Control Scale have an odds ratio of 5.36 of becoming a career criminal (DeLisi and Vaughn 2008). Previous studies have shown that impulsivity or low self-control are related to animal abuse (Hughes et al. 2020; Mowen and Boman 2020; Newberry 2017; Parfitt and Alleyne 2017; Ramírez and Andreu 2006). Similarly, a large adult study ($N = 43{,}093$) found that impulse control disorders and animal cruelty were related (Vaughn et al. 2009).

2 | Methods

2.1 | Procedure

The study sample included participants in a large national government-funded web-based survey aimed at students from all over France. The survey was presented as a study on student social relationships. Participants were compensated with various incentives such as entry into a lottery with the chance of winning various prizes including smartphones and Bluetooth speakers. The survey was implemented using the Qualtrics survey platform between November 2023 and February 2024. All the responses were anonymous and confidential. The respondents were allowed to skip any question on the survey at any point during completion to ensure the quality of the responses, and limit any negative reaction that may have been induced by forced answers (Buchanan and Hvizdak 2009; Sischka et al. 2022).

2.2 | Study Sample

Those participants who failed either of the two quality check items or did not answer the item on animal abuse ($N = 653$) were excluded. The final sample included 55,040 participants from all 101 French departments (including overseas departments), with a median age of 20 years (age range 16–65 years old). A total of 66.8% of the respondents self-defined as female at birth and 32.8% as males (0.4% did not answer). Regarding their year of study, 29.1% were in the first year of higher education, 20.7% in the second year, 18.5% in the third year, 12.8% in the fourth year, 11.3% in the fifth year, and 7,2% in the sixth year or more.

2.3 | Measures

2.3.1 | Demographics

The participants were asked to report their age ($M = 21.24$, SD = 3.93; Age range was 16–65 years, but 97% of the participants were under 30 years old). They also reported their gender, coded 1 = male 2 = female, and their father's educational level (a proxy of socioeconomic status, see Aarø et al. 2009) which were combined into six levels: below baccalaureate[1] (31.4%), baccalaureate (11.8%), one or 2 years after baccalaureate (13.3%), 3 or 4 years after baccalaureate (14.6%), and 5 or more years after baccalaureate (29%).

2.3.2 | Financial Situation

As a proxy for their parent's economic situation (Martinez et al. 2009; Rubin and Wright 2015), the participants were asked if they had been in paid employment during their university studies. Their replies were coded 1 = Yes (29.3%) and 0 = No (69.7%),

2.3.3 | Social Bonding Variables

2.3.3.1 | Attachment to Parents. The following two questions from Bègue et al. (2016) were proposed to measure attachment to parents, with options ranging from 1 (completely false) to 7 (absolutely right): *I feel very close to my father* ($M = 4.68$, SD = 1.89); *I feel very close to my mother* ($M = 5.57$, SD = 1.49).

2.3.3.2 | Belief in a Just World. Belief in a just world was measured with a three-item BJW for others scale based on Lipkusa et al. (1996) and Bègue and Bastounis (2003), with the scale having been used in this form in France previously (Bègue and Muller 2006). Example items*: I feel the world treats people fairly*; and *I feel that people get what they deserve*. A 7-point Likert-type survey was used, with options ranging from 1 (completely false to 7 [absolutely right]. The items were aggregated and averaged ($M = 3.51$, SD = 1.16, Cronbach's $\alpha = 0.73$).

2.3.4 | Strain Factors

2.3.4.1 | Strain During Childhood and/or Adolescence. Four questions (see below) were introduced by the following sentence: "We are going to talk about situations that some people have experienced during their childhood and adolescence. Have you ...?"

2.3.4.1.1 | Material Deprivation. We measured adverse social experience with the following single item: *Have you suffered from material deprivation (insufficient food, economic insecurity; housing problems, access to medical care)*; (Yes (coded 1) = 11.8%); No (Coded 0) = 88.2%.

2.3.4.1.2 | Conflict With Parents. Conflict with parents was measured with the following single item: *Have you had a very serious conflict with your parents, or one of your parents?* Yes (coded 1) = 16.1%; No (Coded 0) = 83.9%.

2.3.4.1.3 | Violence in the Family. Three separate items measured violence in the family: *Have you witnessed physical violence by your father against your mother?* Yes (Coded 1) = 8%; No (Coded 0) = 92%; *Have you witnessed physical violence by your mother against your father?* Yes (Coded 1) = 3.5%; No

(Coded 0) = 96.5%; *Have you Noticed serious tensions or a climate of violence between your parents?* Yes (Coded 1) = 24.7%; No (Coded 0) = 75.3%.

2.3.5 | Current Psychological Distress

We relied on the Mental Health Inventory 5 (MHI-5, Ware and Sherbourne 1992) to assess psychological distress. This brief measure of general mental health is based on five items and is used to screen for depressive symptoms and feelings of anxiety (Rumpf et al. 2001; Ten Have et al. 2024; Yamazaki et al. 2005). Example items: *How much of the time in the previous 4 weeks have you been a nervous person; How much of the time in the previous 4 weeks have you felt downhearted and blue?* A 6-point Likert-type survey was deployed, with options ranging from 1 (*Never or almost never*) to 6 (*Most of the time*) ($M = 3.23$; SD = 1.07; Cronbach's $\alpha = 0.85$).

2.3.6 | Substance Use

We relied on Alcohol Use Disorder Identification Test C (Audit C, Bohn et al. 1995) to measure alcohol consumption. This short screening test developed by the World Health Organization is based on three questions ($M = 1.52$; SD = 0.92; $\alpha = 0.84$). Example items: *How often did you have a drink containing alcohol?* The response options were Never, Monthly or less, two or four times a month, two or three times a week, or four or more times a week; *How many drinks did you have on a typical day when you were drinking in the past year?* The response options were: None, I do not drink; 1 or 2, 3 or 4, 5 or 6, 7 to 9, or 10 or more. Cannabis use was measured with the single question: *In the last 12 months, have you smoked cannabis?* Yes (coded 1) = 18.2%; No (coded 0) = 81.8%.

2.3.7 | Psychological Dimensions

2.3.7.1 | Callousness. We used the Callousness Scale, an 11-item subscale of the Inventory of Callous-Unemotional Traits (ICU) scale by Essau et al. (2006). Example items: *I do not care who I hurt to get what I want*; *I do not feel remorseful when I do something wrong*; and *I do not care who I hurt to get what I want*. A 7-point Likert-type survey was used, with options ranging from 1 (*Completely false*) to 7 (*Absolutely right*) ($M = 2.48$; SD 0.69; Cronbach's $\alpha = 0.70$).

2.3.7.2 | Lack of Self-Control. This dimension was measured with the 6-item *Impulse Control Difficulties*, a subscale of the DERS (Difficulties in Gratz and Roemer 2004). Example items include: *When I'm upset, I have difficulty controlling my behaviors;* and *I experience my emotions as overwhelming and out of control*. A 7-point Likert-type survey was used, with options ranging from 1 (*Completely false*) to 7 (*Absolutely right*) ($M = 2.52$; SD 1.187; Cronbach's $\alpha = 0.88$).

2.3.7.3 | Sensation Seeking. Sensation seeking was measured using the Sensation Seeking Scale-Form V (SSS-V, Stephenson et al. 2003) based on four items. Example items: *I like to do frightening things*; *I like new and exciting experiences, even if I have to break the rules*. A 7-point Likert-type survey was used, with options ranging from 1 (*Completely false*) to 7 (*Absolutely right*) ($M = 3.49$; SD = 1.30: Cronbach's $\alpha = 0.78$).

2.4 | Animal Abuse Perpetration

Several scales are currently available with which to measure animal abuse perpetration, such as the ATAS scale (Gupta and Beach 2001), the Inventory on animal-related experience (Flynn 1999), and the Experience with animals self-report survey (Henry and Sanders 2007). However, in the context of the limited available space in our survey, we relied on a single-item measure: *I have already intentionally hurt an animal*. Possible responses were coded 1 (Yes) or 0 (No), following some prior large-scale studies on animal abuse (Mowen and Boman 2020; Vaughn et al. 2009).

3 | Results

3.1 | Descriptive Analysis

We observed that 6.4% of the participants ($N = 3536$) declared that they had harmed an animal on purpose. We compared animal abusers (AA) to animal nonabusers (ANA) based on χ^2 and *t*-tests applying Bonferroni corrections (see Table 1). The results showed that at a bivariate level, all the hypothesized differences between animal abusers and nonabusers were observed in the expected direction, except for financial situation, for which we found no significant variation between the two groups.

3.2 | Multivariate Analysis

A logistic regression analysis was performed to estimate the odds ratio (OR) and 95% confidence interval (95% CI) of every variable to predict the commission of animal abuse (coded 1), as opposed to the noncommission of this behavior (coded 0). Age and gender were entered into the first block of a multivariate analysis. In block 2, each potential predictive factor was added stepwise to the model using an automated forward selection procedure. The significance level used to select the variables to remain in the model was $p < 0.05$. Missing values in the data set were not replaced, so the number of respondents varies in the analysis. The overall model accounted for 8.5% of the variance (Nagelkerke pseudo *R*2).

The results showed that animal abuse was related to demographics, especially gender, but also slightly to the participant's age and their father's educational level (see Table 2). As we expected, two measures pertaining to General Strain Theory increased the odds of committing acts of cruelty: having experienced a climate of violence in the family, and having witnessed acts of violence by one's father against one's mother. All three of the selected psychological dimensions measured here were found to be relevant predictors of animal abuse: especially impulse control difficulties, callousness, and to a lesser extent, sensation seeking.

TABLE 1 | Univariate comparisons between animal abusers and animal nonabusers.

	Animal Nonabusers $N = 51,504$	Animal Abusers $N = 3536$	Statistical tests
Age	21.21 (3.88)	21.58 (4.48)	T*cor* (3904.97) = 4.79, $p < 0.001$
Gender (% males)	30.9%	60.1%	χ^2cor (1) = 1265.17, $p < 0.001$
Father's educational level	0.96 (1.63)	1.10 (1.65)	T*cor* (3462.81) = 4.48, $p < 0.001$
Financial situation (% paid work)	29.3%	28.9%	χ^2cor (1) = 0.22, *ns*
Attachment to one's mother	5.58 (1.48)	5.41 (1.53)	T*cor* (4000,25) = 6.86, $p < 0.001$
Attachment to one's father	4.68 (1.90)	4.58 (1.88)	T*cor* (54897) = 3.29, $p < 0.001$
Just world belief	3.51 (1.15)	3.44 (1.22)	T*cor* (3954.36) = 3.35, $p < 0.001$
Material deprivation (% yes)	11.6%	14.7%	χ^2cor (1) = 30.76, $p < 0.001$
Conflict with parents (% yes)	16.0%	18.4%	χ^2cor (1) = 13.81, p.<0.001
Clim. of family violence (% yes)	24.3%	30.1%	χ^2 (1) = 59.14, $p < 0.001$
Violence father to mother (% yes)	7.8%	10.9%	χ^2 (1) = 41.94, $p < 0.001$
Violence mother to father (% yes)	3.3%	5.2%	χ^2 (1) = 34.12, $p < 0.001$
Psychological distress (MHI-5)	3.24 (1.07)	3.07 (1.07)	T*cor* (4024.86) = 8.91, $p < 0.001$
Alcohol use (AUDIT)	1.51 (0.92)	1.70 (0.99)	T*cor* (3954.18) = 11.22, $p < 0.001$
Cannabis use (% yes)	17.9%	22.7%	χ^2cor (1) = 49.93, $p < 0.001$
Sensation seeking	3.46 (1.29)	3.85 (1.31)	T*cor* (4009.20) = 17.12, $p < 0.001$
Impulse control difficulties	2.50 (1.17)	2.70 (1.26)	T*cor* (3562.17) = 8.26, $p < 0.001$
Callousness	2.45 (0.68)	2.74 (0.74)	T*cor* (3921.49) = 21.9, $p < 0.001$

Note: $N = 55,040$.
Abbreviation: Cor = corrected test.

TABLE 2 | Multivariate logistic regression predicting animal abuse.

	Odds ratio	CI	*p* value
Age	1.01	1.0–1.02	0.001
Gender	0.31	0.29–0.35	0.001
Father's educational level	1.04	1.02–1.07	0.001
Attachment to one's mother	0.96	0.93–0.98	0.006
Just world belief	0.95	0.91–0.98	0.004
Climate of violence in family	1.21	1.09–1.35	0.001
Violence father against mother	1.35	1.16–1.58	0.001
Psychological distress (MH5)	0.90	0.86–0.94	0.001
Alcohol use (audit)	1.07	1.03–1.12	0.002
Sensation seeking	1.05	1.01–1.09	0.004
Impulse control difficulties	1.23	1.19–1.28	0.001
Callousness	1.28	1.20–1.36	0.001
Constant	0.10		0.001

Two variables pertaining to Social Bond Theory were also related to animal abuse, albeit quite less than GST and personality variables. Attachment to one's mother and just world beliefs, were thus inversely related to the commission of harm toward animals. In addition, as predicted by Generalized Deviance Theory, alcohol consumption was related to animal abuse.

Surprisingly, the results indicated that students who scored higher on the Mental Health Inventory-5 tended to be less involved in animal cruelty.

4 | Discussion

In this first large-scale survey on animal abuse carried out in a higher education context in France, and based on a highly powered sample (> 55,000 participants), we observed that 6.4% of the participants declared that they had perpetrated animal abuse in the past. The percentage reported in our study is close to the results observed in another recent study in France carried out in a sample of 12,344 adolescents, in which 7.3% reported having committed acts of animal abuse in the past (Bègue 2022). The 6.4% prevalence of those who have harmed animals observed in our study is also congruent with a study from more than 50 years ago by Wolfgang et al. (1972), who observed that 6% of adolescents from the Philadelphia birth cohort of nearly 10,000 boys contributed strongly to the overall delinquency in the cohort. Contemporary criminological

research has consistently demonstrated that approximately 5% of study populations are comprised of pathological offenders who account for a preponderance of serious violence (Martinez et al. 2017; Moffitt 2018; Vaughn et al. 2011, 2014).

However, this 6.4% represents a rather lower value than has been reported in some other studies on similar higher education samples, which have given various estimations ranging between 5% and 30% regarding the proportion of their participants who had engaged in animal cruelty; more specifically, 4.3% (DeGue and Dilillo 2009), 17.8% (Henry 2004), 18% (Flynn 1999), and 30% (Henry and Sanders 2007). Some disparities in the way behavior was assessed and/or in the composition of the samples may have produced these discrepancies. For example, the study by Henry and Sanders (2007) included only males, which may explain the 30% observed prevalence. Studies that use a broad definition of animal abuse, including acts of harm to insects and reptiles, would also be expected to find larger numbers of abusers in the general population, whereas studies that limit animal abuse to dogs and cats or to sadism may be expected to find fewer cases (Levin and Arluke 2009).

As in previous studies, gender was a robust predictor of animal abuse in the present results (see Baldry 2003; Bègue 2022; DeGue and Dilillo 2009; Flynn 1999; Gullone and Robertson 2008; Henry 2004; Herzog 2007; Lucia and Killias 2011). In our study, 3.8% of female participants reported having perpetrated animal harm, compared to 11.8% of males. Beyond gender, two variables had important effects on animal abuse. In line with the General Strain Theory (Agnew 1992), acts of violence by the participant's father toward their mother explained a 35% increase in odds, and a climate of violence in the family also explained a 21% increase in odds. This is consistent with numerous prior studies showing that family violence and animal abuse are often related, including in general public, community, or student samples (Cleary et al. 2021; DeGue and Dilillo 2009; Fitzgerald et al. 2022; Giesbrecht et al. 2023; Randour et al. 2021; Riggs et al. 2021; Volant et al. 2008; Wauthier and Williams 2022b; White and Quick 2018), among survivors in online intimate partners forums (Newberry 2017), in women's shelters for victims of domestic violence (Barrett et al. 2020; Fitzgerald et al. 2021) and according to police officers' observations (Campbell et al. 2021; Richard and Reese 2019).

Two personality variables also appeared to be robust predictors. First, in line with previous studies, callousness was related to animal harm (Dadds et al. 2006; Gupta 2019; Hartman et al. 2019; Stupperich and Strack 2016; Walters 2014; Hawkins et al. 2017), increasing the odds in the model by 28%. Moreover, consistent with self-control theory (Gottfredson and Hirschi 1990), and as further elaborated by Agnew (1998), impulse control difficulties also appeared to be an important statistical predictor (23% increased odds), while sensation seeking had a more limited contribution to animal abuse (5% increased odds).

Compared to these two categories of predictors (family violence and personality), we observed that the effect size of the remaining variables, while significant, remained limited. In our multivariate model which controlled for relevant demographics, we showed that levels of animal abuse were slightly higher among students with lower attachment to their mother, which confirms the relevance of family variables that have protective effects regarding animal cruelty in younger samples (Alleyne and Parfitt 2019; Bègue 2022). In a previous study with a sample of 12,706 adolescents, maternal attachment was similarly inversely related to delinquency (Bègue et al. 2016).

The inverse relationship between a belief in justice, which is predictive of commitment to long-term goals and inversely related to delinquent and aggressive behavior (Bègue and Muller 2006; Hafer 2000; Hafer et al. 2005; Kong et al. 2021), was also confirmed in relation to animal abuse. Finally, and consistent with a deviance generalization perspective, animal abuse was perpetrated significantly more often by participants reporting higher alcohol consumption. This result suggests that animal abuse forms part of a more generic pattern of problem-behavior syndrome (Jessor 1991).

Several limitations of this study have to be mentioned. First, animal harm was measured with a single item. A more detailed measure should be considered in the future (e.g., see Connor et al. 2021; Gupta and Beach 2001; Flynn 1999; Henry and Sanders 2007), especially to clarify the underlying motives behind the perpetration of animal harm (Patterson-Kane 2012), which are multiple. For example, a study based on case reports and interviews with children revealed that motivations such as curiosity, mood enhancement, peer pressure, sexual gratification, abuse, imitation, posttraumatic play, self-injury, and rehearsal were present (Ascione et al. 1997). A more extended measure would also enable a deeper description of the nature and intensity of animal harm (DeViney et al. 1983; Munro 1996). The constraints inherent to our national student survey led us to use short measures and single-item measures in other domains. Our measure was particularly limited in the field of attachment. We believe that the available high quality and multidimensional scales (e.g., the *Relationship Structures Questionnaire* by Fraley et al. 2011, or the *State Adult Attachment Measure* by Gillath et al. 2009) would have been an important asset here. The nature of the large-scale survey involved the use of short measures to widen the social-psychological scope of the analysis and to provide an estimation of the relative weight of many relevant variables. However, this may have affected the quality of the measures of some variables.

Moreover, animal abuse was assessed retrospectively without specifying a timeframe, which may have introduced bias into some replies (Hardt and Rutter 2004). In addition, although some research on the validity of self-reported data has concluded that people are sincere about sensitive matters when appropriate precautions are taken (e.g., Hindelang et al. 1979; Ross et al. 2022; Winters et al. 1990), it is not possible to estimate the possible bias in relation to under- or over-reporting animal cruelty. Furthermore, our cross-sectional data cannot be used to establish etiological issues between the measured variables.

Moving beyond individual factors, normative beliefs regarding the value of animals and their human use may also be involved in animal mistreatment. It cannot be expected that the variables predicting pet abuse can be similarly related to individuals' behavior with pest and profit animals (Signal et al. 2018). As Nurse (2013) has suggested, thinking of animal offenders as

individuals with a psychological or social adversity reflects a commonsense logic that may miss a major structural features of animal cruelty. Cultural norms potentially contribute to mistreatment by ordinary and nonpathological individuals. Animal harm is not independent of the attitudes of individuals and groups toward animals (Nurse 2013). At a global level, most animal mistreatment and killing is not actually performed by deviant individuals; rather, it is institionalized through various human activities, and therefore represents a routine, normative (Bègue 2022, 2025), and globalized practice (Cudworth 2015) as can be seen in factory farming, hunting and blood sports, the lethal trade in wildlife, animal experimentation (Vezirian et al. 2024), and environmental pollution, among other areas (Beirne 2018; see also Sollund 2017). For example, in a French study on animal harm involving a large sample of 12,344 adolescents, participants' speciesism (a form of categorical thinking which attributes a higher value and a hierarchic position to humans than animals; see Ryder 2000; Singer 1975) predicted animal harm beyond many social and psychological dimensions, and the relative weight of speciesism was found to be important. The endorsement of speciesism also predicted animal killing in a behavioral experiment paralleling biomedical research (Bègue and Vezirian 2022, 2024). Another aspect of animal abuse that was not covered by the present study are situations where abuse is the consequence of neglect (Lockwood 2018) or even prosocial intentions, such as mercy release (Wong 2024).

5 | Conclusion

Our study extends the current literature on adult-perpetrated animal abuse (Alleyne and Parfitt 2019). It indicated that strain, social bond, and general deviance are relevant dimensions alongside psychological factors, especially callousness. It also provides large-scale confirmation of the significant role played in animal abuse by poor emotion regulation (Parfitt and Alleyne 2017; Vaughn et al. 2009), which is an important factor in aggressive behavior directed toward humans (Roberton et al. 2012). By identifying the relative weight of the key dimensions involved in this phenomenon among adults, this study contributes to the preliminary construction of a multifactorial theory of animal abuse (Alleyne and Parfitt 2019), and also illustrates the relevance of major criminological perspectives in dealing with this issue.

Ethics Statement

All procedures performed were in accordance with the ethical standards for questionnaire studies at University Grenoble Alpes, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon request.

Endnotes

[1] Baccalaureate is a French national examination taken at the end of high school, upon completion of the 11th and 12th grade. It marks the successful conclusion of secondary studies, and is the required qualification in France for students wishing to continue their studies in a higher education setting.

References

Aarø, L. E., A. J. Flisher, S. Kaaya, H. Onya, F. S. Namisi, and A. Wubs. 2009. "Parental Education as an Indicator of Socioeconomic Status: Improving Quality of Data by Requiring Consistency Across Measurement Occasions." *Scandinavian Journal of Public Health* 37, no. 2: 16–27.

Achenbach, T. M., and T. M. Ruffle. 2000. "The Child Behavior Checklist and Related Forms for Assessing Behavioral/Emotional Problems and Competencies." *Pediatrics in Review* 21, no. 8: 265–271.

Agnew, R. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30: 47–88.

Agnew, R. 1998. "The Causes of Animal Abuse: A Social-Psychological Analysis." *Theoretical Criminology* 2, no. 2: 177–209.

Agnew, R. 2001. *Juvenile Delinquency: Causes and Control*. Roxbury.

Akers, R., and C. Sellers. 2017. *Criminological Theories: Introduction, Evaluation, and Application*. Oxford University Press.

Alleyne, E., and C. Parfitt. 2019. "Adult-Perpetrated Animal Abuse: A Systematic Literature Review." *Trauma, Violence & Abuse* 20, no. 3: 344–357.

Alleyne, E., L. Tilston, C. Parfitt, and R. Butcher. 2015. "Adult-Perpetrated Animal Abuse: Development of a Proclivity Scale." *Psychology, Crime & Law* 21, no. 6: 570–588.

Amiot, C. E., and B. Bastian. 2015. "Toward a Psychology of Human–Animal Relations." *Psychological Bulletin* 141, no. 1: 6–47.

Arluke, A. 2002. "Animal Abuse as Dirty Play." *Symbolic Interaction* 25, no. 4: 405–430.

Arluke, A., A. Lankford, and E. Madfis. 2018. "Harming Animals and Massacring Humans: Characteristics of Public Mass and Active Shooters Who Abused Animals." *Behavioral Sciences & the Law* 36, no. 6: 739–751.

Arluke, A., J. Levin, C. Luke, and F. Ascione. 1999. "The Relationship of Animal Abuse to Violence and Other Forms of Antisocial Behavior." *Journal of Interpersonal Violence* 14, no. 9: 963–975.

Ascione, F. R. 1993. "Children Who Are Cruel to Animals: A Review of Research and Implications for Developmental Psychopathology." *Anthrozoös* 6, no. 4: 226–247.

Ascione, F. R., and P. Arkow. 1999. *Child Abuse, Domestic Violence, and Animal Abuse: Linking the Circles of Compassion for Prevention and Intervention*. Purdue University Press.

Ascione, F. R., S. E. McDonald, P. Tedeschi, and J. H. Williams. 2018. "The Relations Among Animal Abuse, Psychological Disorders, and Crime: Implications for Forensic Assessment." *Behavioral Sciences & the Law* 36: 717–729.

Ascione, F. R., T. M. Thompson, and T. Black. 1997. "Childhood Cruelty to Animals: Assessing Cruelty Dimensions and Motivations." *Anthrozoös* 10, no. 4: 170–177.

Baldry, A. C. 2003. "Animal Abuse and Exposure to Interparental Violence in Italian Youth." *Journal of Interpersonal Violence* 18: 258–281.

Barrett, B. J., A. Fitzgerald, R. Stevenson, and C. H. Cheung. 2020. "Animal Maltreatment as a Risk Marker of More Frequent and Severe Forms of Intimate Partner Violence." *Journal of Interpersonal Violence* 35, no. 23–24: 5131–5156.

Becker, K. D., J. Stuewig, V. M. Herrera, and L. A. McCloskey. 2004. "A Study of Firesetting and Animal Cruelty in Children: Family Influences and Adolescent Outcomes." *Journal of the American Academy of Child and Adolescent Psychiatry* 43: 905–912.

Bègue, L. 2003. "Expliquer la délinquance: les théories majeures [Explaining Delinquency : The Major Theories]." in *En quête de sécurité. Causes de la délinquance et nouvelles réponses*, edited by S. Roché, 81–99. Armand Colin.

Bègue, L. 2018. "Pour une criminologie animale [Toward Animal Criminology]." *Revue Semestrielle de Droit Animalier*: 211–218.

Bègue, L. 2022. "Explaining Animal Abuse Among Adolescents: The Role of Speciesism." *Journal of Interpersonal Violence* 37, no. 7–8: NP5187–NP5207.

Bègue, L. 2025. *The Social Psychology of Human-Animal Bond (in press)*. Routledge.

Bègue, L., and M. Bastounis. 2003. "Two Spheres of Belief in Justice: Extensive Support for the Bidimensional Model of Belief in a Just World." *Journal of Personality* 71, no. 3: 435–463.

Bègue, L., and D. Muller. 2006. "Belief in a Just World as Moderator of Hostile Attributional Bias." *British Journal of Social Psychology* 45, no. 1: 117–126.

Bègue, L., S. Roché, and A. A. Duke. 2016. "Young and Armed: A Cross-Sectional Study on Weapon Carrying Among Adolescents." *Psychology, Crime & Law* 22, no. 5: 455–472.

Bègue, L., and K. Vezirian. 2022. "Sacrificing Animals in the Name of Scientific Authority: The Relationship Between Pro-Scientific Mindset and the Lethal Use of Animals in Biomedical Experimentation." *Personality and Social Psychology Bulletin* 48, no. 10: 1483–1498.

Bègue, L., and K. Vezirian. 2024. "Instrumental Harm Toward Animals in a Milgram-Like Experiment: The Role of Non-Pathological Personality Traits." In *Animal Abuse and Interpersonal Violence: A Psycho-Criminological Understanding*, edited by O. Chan and R. Wong, Wiley.

Beirne, P. 2018. *Murdering Animals: Writings on Theriocide, Homicide, and Non-Speciesist Criminology*. Palgrave McMillan.

Bohn, M. J., T. F. Babor, and H. R. Kranzler. 1995. "The Alcohol Use Disorders Identification Test (AUDIT): Validation of a Screening Instrument for Use in Medical Settings." *Journal of Studies on Alcohol* 56, no. 4: 423–432.

Brezina, T. 1996. "Adapting to Strain: An Examination of Delinquent Coping Responses." *Criminology* 34, no. 1: 39–60.

Bright, M. A., M. S. Huq, T. Spencer, J. W. Applebaum, and N. Hardt. 2018. "Animal Cruelty as an Indicator of Family Trauma: Using Adverse Childhood Experiences to Look Beyond Child Abuse and Domestic Violence." *Child Abuse & Neglect* 76: 287–296.

Britt, C. L. and Gottfredson, M. R., ed. 2003. *Advances in Criminological Theory: Vol. 12. Control Theories of Crime and Delinquency*. Transaction.

Buchanan, E. A., and E. E. Hvizdak. 2009. "Online Survey Tools: Ethical and Methodological Concerns of Human Research Ethics Committees." *Journal of Empirical Research on Human Research Ethics* 4, no. 2: 37–48.

Campbell, A. M., S. L. Thompson, T. L. Harris, and S. E. Wiehe. 2021. "Intimate Partner Violence and Pet Abuse: Responding Law Enforcement Officers' Observations and Victim Reports From the Scene." *Journal of Interpersonal Violence* 36, no. 5–6: 2353–2372.

Chan, H. C., and R. W. Y. Wong. 2019. "Childhood and Adolescent Animal Cruelty and Subsequent Interpersonal Violence in Adulthood: A Review of the Literature." *Aggression and Violent Behavior* 48: 83–93.

Chan, O., and R. Wong. 2024. *Animal Abuse and Interpersonal Violence. A Psycho-Criminological Understanding*. Wiley.

Cleary, M., D. K. Thapa, S. West, M. Westman, and R. Kornhaber. 2021. "Animal Abuse in the Context of Adult Intimate Partner Violence: A Systematic Review." *Aggression and Violent Behavior* 61: 101676.

Connor, M., C. Currie, and A. B. Lawrence. 2021. "Factors Influencing the Prevalence of Animal Cruelty During Adolescence." *Journal of Interpersonal Violence* 36, no. 7–8: 3017–3040.

Cudworth, E. 2015. "Killing Animals: Sociology, Species Relations and Institutionalized Violence." *Sociological Review* 63: 1–18.

Cullen, F. T., J. P. Wright, and K. R. Blevins. 2006. "Introduction: Taking Stock of Criminological Theory." *Taking Stock: The Status of Criminological Theory—Advances in Criminological Theory* 15: 1–36.

Currie, C. L. 2006. "*Animal* Cruelty by Children Exposed to Domestic Violence." *Child Abuse & Neglect* 30, no. 4: 425–435.

Dadds, M. R., C. Whiting, and D. J. Hawes. 2006. "Associations Among Cruelty to Animals, Family Conflict, and Psychopathic Traits in Childhood." *Journal of Interpersonal Violence* 21: 411–429.

DeGue, S., and D. Dilillo. 2009. "Is Animal Cruelty a 'Red Flag' for Family Violence? Investigating Co-Occurring Violence Toward Children, Partners, and Pets." *Journal of Interpersonal Violence* 24, no. 6: 1036–1056.

DeLisi, M. 2005. *Career Criminals in Society*. Sage.

DeLisi, M., and M. G. Vaughn. 2008. "The Gottfredson-Hirschi Critiques Revisited: Reconciling Self-Control Theory, Criminal Careers, and Career Criminals." *International Journal of Offender Therapy and Comparative Criminology* 52, no. 5: 520–537.

Denson, T. F., M. M. Capper, M. Oaten, M. Friese, and T. P. Schofield. 2011. "Self-Control Training Decreases Aggression in Response to Provocation in Aggressive Individuals." *Journal of Research in Personality* 45, no. 2: 252–256.

Denson, T. F., C. N. DeWall, and E. J. Finkel. 2012. "Self-Control and Aggression." *Current Directions in Psychological Science* 21, no. 1: 20–25.

DeViney, E., J. Dickert, and R. Lockwood. 1983. "The Care of Pets Within Child Abusing Families." *International Journal for the Study of Animal Problems* 4, no. 4: 321–329.

Edwards, M. J. 2019. "Arrest and Prosecution of Animal Sex Abuse (Bestiality) Offenders in the United States, 1975–2015." *Journal of the American Academy of Psychiatry and the Law* 47, no. 3: 335–346.

Essau, C. A., S. Sasagawa, and P. J. Frick. 2006. "Callous-Unemotional Traits in a Community Sample of Adolescents." *Assessment* 13: 454–469.

Fielding, W. J., R. A. Oenbring, S. Brennen, M. C. Carroll, N. Bethel, and J. Minnis. 2011. "A First Look at Harm Toward Animals by Bahamians in Childhood." *International Journal of Bahamian Studies* 17, no. 2: 27–49.

Finkelhor, D., R. K. Ormrod, and H. A. Turner. 2007. "Poly-Victimization: A Neglected Component in Child Victimization." *Child Abuse & Neglect* 31, no. 1: 7–26.

Fitzgerald, A. J., B. J. Barrett, and A. Gray. 2021. "The Co-Occurrence of Animal Abuse and Intimate Partner Violence Among a Nationally Representative Sample: Evidence of 'The Link' in the General Population." *Violence and Victims* 36, no. 6: 770–792.

Fitzgerald, A. J., B. J. Barrett, A. Gray, and C. H. Cheung. 2022. "The Connection Between Animal Abuse, Emotional Abuse, and Financial Abuse in Intimate Relationships: Evidence From a Nationally Representative Sample of the General Public." *Journal of Interpersonal Violence* 37, no. 5–6: 2331–2353.

Flynn, C. 2012. *Understanding Animal Abuse*. Lantern Books.

Flynn, C. P. 1999. "Animal Abuse in Childhood and Later Support for Interpersonal Violence in Families." *Society & Animals* 7: 161–172.

Ford, J., E. Alleyne, E. Blake, and A. Somers. 2021. "A Descriptive Model of the Offence Process for Animal Abusers: Evidence From a Community Sample." *Psychology, Crime & Law* 27, no. 4: 324–340.

Fraley, R. C., M. E. Heffernan, A. M. Vicary, and C. C. Brumbaugh. 2011. "The Experiences in Close Relationships—Relationship Structures Questionnaire: A Method for Assessing Attachment Orientations Across Relationships." *Psychological Assessment* 23, no. 3: 615–625.

Giesbrecht, C. J., A. J. Fletcher, and M. A. Wuerch. 2023. "Intimate Partner Violence, Animal Maltreatment, and Barriers to Safety for Survivors With Companion Animals and Livestock: Findings From a Qualitative Study." *Violence Against Women* 28, no. 10: 2334–2358.

Gillath, O., J. Hart, E. E. Noftle, and G. D. Stockdale. 2009. "Development and Validation of a State Adult Attachment Measure (SAAM)." *Journal of Research in Personality* 43, no. 3: 362–373.

Gleyzer, R., A. R. Felthous, and C. E. Holzer, 3rd. 2002. "Animal Cruelty and Psychiatric Disorders." *Journal of the American Academy of Psychiatry and the Law* 30, no. 2: 257–265.

Gottfredson, M. R., and T. Hirschi. 1990. *A General Theory of Crime*. Stanford University Press.

Gratz, K. L., and L. Roemer. 2004. "Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale." *Journal of Psychopathology and Behavioral Assesment* 26: 41–54.

Gullone, E. 2012. *Animal Cruelty, Antisocial Behavior and Aggression: More Than a Link*. Palgrave Mc Millan.

Gullone, E. 2014. "An Evaluative Review of Theories Related to Animal Cruelty." *Journal of Animal Ethics* 4: 37–57.

Gullone, E., and N. Robertson. 2008. "The Relationship between Bullying and Animal Abuse Behaviors in Adolescents: The Importance of Witnessing Animal Abuse." *Journal of Applied Developmental Psychology* 29: 371–379.

Gupta, M. 2019. "Animal Abuse Issues in Psychotherapy." In *Clinician's Guide to Treating Companion Animal Issues*, edited by L. Kogan and C. Blazina, 347–363. Elsevier.

Gupta, M., and S. Beach. 2001. "Aggression Toward Animals Scale." In *Unpublished scale*. University of Georgia.

Hafer, C. L. 2000. "Investment in Long-Term Goals and Commitment to Just Means Drive the Need to Believe in a Just World." *Personality and Social Psychology Bulletin* 26, no. 9: 1059–1073.

Hafer, C. L., and L. Bègue. 2005. "Experimental Research on Just-World Theory: Problems, Developments, and Future Challenges." *Psychological Bulletin* 131, no. 1: 128–167.

Hafer, C. L., L. Bègue, B. L. Choma, and J. L. Dempsey. 2005. "Belief in a Just World and Commitment to Long-Term Deserved Outcomes." *Social Justice* 18, no. 4: 429–444.

Hardt, J., and M. Rutter. 2004. "Validity of Adult Retrospective Reports of Adverse Childhood Experiences: Review of the Evidence." *Journal of Child Psychology and Psychiatry* 45, no. 2: 260–273.

Hartman, C., T. Hageman, J. H. Williams, J. S. Mary, and F. R. Ascione. 2019. "Exploring Empathy and Callous–Unemotional Traits as Predictors of Animal Abuse Perpetrated by Children Exposed to Intimate Partner Violence." *Journal of Interpersonal Violence* 34, no. 12: 2419–2437.

Hawkins, R. D., E. L. Hawkins, and J. M. Williams. 2017. "Psychological Risk Factors for Childhood Nonhuman Animal Cruelty." *Society & Animals* 25, no. 3: 280–312.

Henry, B. 2018. "A Social-Cognitive Model of Animal Cruelty." *Psychology, Crime & Law* 24, no. 5: 458–478.

Henry, B. C. 2004. "The Relationship Between Animal Cruelty, Delinquency, and Attitudes Toward the Treatment of Animals." *Society & Animals* 12: 185–207.

Henry, B. C., and C. E. Sanders. 2007. "Bullying and Animal Abuse: Is There a Connection?" *Society & Animals* 15: 107–126.

Hensley, C., and S. E. Tallichet. 2000. "Animal Cruelty Motivations: Assessing Demographic and Situational Influences." *Journal of Interpersonal Violence* 20: 1429–1443.

Hensley, C., and S. E. Tallichet. 2009. "Childhood and Adolescent Animal Cruelty Methods and Their Possible Link to Adult Violent Crimes." *Journal of Interpersonal Violence* 24: 147–158.

Herzog, H. A. 2007. "Gender Differences in Human–Animal Interactions: A Review." *Anthrozoös* 20, no. 1: 7–21.

Hindelang, M. J., T. Hirschi, and J. G. Weis. 1979. "Correlates of Delinquency: The Illusion of Discrepancy Between Self-Report and Official Measures." *American Sociological Review* 44: 995–1014.

Hirschi, T. 2001. "Causes of Delinquency." Transaction. First Edition 1969.

Hoffmann, J. P., and F. G. Cerbone. 1999. "Stressful Life Events and Delinquency Escalation in Early Adolescence." *Criminology* 37, no. 2: 343–374.

Holoyda, B. J., and W. J. Newman. 2016. "Childhood Animal Cruelty, Bestiality, and the Link to Adult Interpersonal Violence." *International Journal of Law and Psychiatry* 47: 129–135.

Hughes, L. A., O. Antonaccio, and E. V. Botchkovar. 2020. "The Crime of Animal Abuse in Two Nonwestern Cities: Prevalence, Perpetrators, and Pathways." *Journal of Quantitative Criminology* 36: 67–94.

Jessor, R. 1991. "Risk Behavior in Adolescence: A Psychosocial Framework for Understanding and Action." *Journal of Adolescent Health* 12, no. 8: 597–605.

Johnson, S. A. 2018. "Animal Cruelty, Pet Abuse, and Violence: The Missed Dangerous Connection." *Forensic Research & Criminology International Journal* 6: 403–425.

Joireman, J., J. Anderson, and A. Strathman. 2003. "The Aggression Paradox: Understanding Links Among Aggression, Sensation Seeking, and the Consideration of Future Consequences." *Journal of Personality and Social Psychology* 84, no. 6: 1287–1302.

Kellert, S. R., and A. R. Felthous. 1985. "Childhood Cruelty Toward Animals Among Criminals and Noncriminals." *Human Relations* 38: 1113–1129.

Knight, K. E., C. Ellis, and S. B. Simmons. 2014. "Parental Predictors of Children's Animal Abuse: Findings From a National and Intergenerational Sample." *Journal of Interpersonal Violence* 29, no. 16: 3014–3034.

Kong, Y., L. Cui, Y. Yang, and M. Cao. 2021. "A Three-Level Meta-Analysis of Belief in a Just World and Antisociality: Differences Between Sample Types and Scales." *Personality and Individual Differences* 182, Article : 111065.

Kotler, J. S., and R. J. McMahon. 2005. "Child Psychopathy: Theories, Measurement, and Relations With the Development and Persistence of Conduct Problems." *Clinical Child and Family Psychology Review* 8: 291–325.

Lerner, M. J. 1980. *The Belief in a Just World. A Fundamental Delusion*. Plenum.

Levin, J., and A. Arluke. 2009. "Reducing the Link's False Positive Problem." In *The Link Between Animal Abuse and Human Violence*, edited by A. Linzey, 163–171. Sussex Academic Press.

Levinthal, J. 2010. "The Community Context of Animal and Human Maltreatment: Is There a Relationship Between Animal Maltreatment and Human Maltreatment: Does Neighborhood Context Matter?." https://repository.upenn.edu/edissertations/274/.

Levitt, L. 2018. "Animal Maltreatment: Implications for Behavioral Science Professionals." *Behavioral Sciences & the Law* 36, no. 6: 766–785.

Levitt, L. 2024. "Substance Abuse and Animal Maltreatment. An Overlooked Opportunity for Intervention?" In *Animal Abuse and*

Interpersonal Violence: A Psycho-Criminological Understanding, edited by O. Chan and R. Wong, Wiley.

Levitt, L., T. A. Hoffer, and A. B. Loper. 2016. "Criminal Histories of a Subsample of Animal Cruelty Offenders." *Aggression and Violent Behavior* 30: 48–58.

Lipkusa, I. M., C. Dalbert, and I. C. Siegler. 1996. "The Importance of Distinguishing the Belief in a Just World for Self Versus for Others: Implications for Psychological Well-Being." *Personality and Social Psychology Bulletin* 22, no. 7: 666–677.

Lockwood, R. 2018. "Animal Hoarding: The Challenge for Mental Health, Law Enforcement, and Animal Welfare Professionals." *Behavioral Sciences & the Law* 36, no. 6: 698–716.

Longobardi, C., and L. Badenes-Ribera. 2018. "The Relationship Between Animal Cruelty in Children and Adolescent and Interpersonal Violence: A Systematic Review." *Aggression and Violent Behavior* 46: 201–211.

Louise Petersen, M., and D. P. Farrington. 2007. "Cruelty to Animals and Violence to People." *Victims & Offenders* 2: 21–43.

Lucia, S., and M. Killias. 2011. "Is Animal Cruelty a Marker of Interpersonal Violence and Delinquency? Results of a Swiss National Self-Report Study." *Psychology of Violence* 1: 93–105.

MacDonald, J. 1961. *The Murderer and His Victim*. Charles C Thomas.

Martinez, J. A., K. J. Sher, J. L. Krull, and P. K. Wood. 2009. "Blue-Collar Scholars?: Mediators and Moderators of University Attrition in First-Generation College Students." *Journal of College Student Development* 50: 87–103.

Martinez, N. N., Y. Lee, J. E. Eck, and S. O. 2017. "Ravenous Wolves Revisited: A Systematic Review of Offending Concentration." *Crime Science* 6: 10.

McEwen, F. S., T. E. Moffitt, and L. Arseneault. 2014. "Is Childhood Cruelty to Animals a Marker for Physical Maltreatment in a Prospective Cohort Study of Children?" *Child Abuse & Neglect* 38, no. 3: 533–543.

McPhedran, S. 2009. "A Review of the Evidence for Associations Between Empathy, Violence, and Animal Cruelty." *Aggression and Violent Behavior* 14, no. 1: 1–4.

McVie, S. 2007. *Animal Abuse Amongst Young People Aged 13 to 17: Trends, Trajectories and Links With Other Offending*. Royal Society for the Prevention of Cruelty to Animals.

Moffitt, T. E. 2018. "Male Antisocial Behaviour in Adolescence and Beyond." *Nature Human Behaviour* 2, no. 3: 177–186.

Monsalve, S., F. Ferreira, and R. Garcia. 2017. "The Connection Between Animal Abuse and Interpersonal Violence: A Review From the Veterinary Perspective." *Research in Veterinary Science* 114: 18–26.

Mota-Rojas, D., S. Monsalve, K. Lezama-García, et al. 2022. "Animal Abuse as an Indicator of Domestic Violence: One Health, One Welfare Approach." *Animals : An Open Access Journal from MDPI* 12, no. 8: 977.

Mowen, T. J., and J. H. Boman, 4th. 2020. "Animal Abuse Among High-Risk Youth: A Test of Agnew's Theory." *Deviant Behavior* 41, no. 6: 765–778.

Munro, H. M. 1996. "Battered Pets." *Veterinary Record* 138, no. 23: 576.

Muri, K., E.-M. Augusti, M. Bjørnholt, and G. S. Hafstad. 2022. "Childhood Experiences of Companion Animal Abuse and Its Co-Occurrence With Domestic Abuse: Evidence From a National Youth Survey in Norway." *Journal of Interpersonal Violence* 37, no. 23–24: NP22627–NP22646.

Newberry, M. 2017. "Pets in Danger: Exploring the Link Between Domestic Violence and Animal Abuse." *Aggression and Violent Behavior* 34: 273–281.

Nurse, A. 2013. "Animal Harm." In *Perspectives on Why People Harm and Kill Animals*. Routledge.

Parfitt, C. H., and E. Alleyne. 2017. "Animal Abuse Proclivity: Behavioral, Personality and Regulatory Factors Associated With Varying Levels of Severity." *Psychology, Crime & Law* 24, no. 5: 538–557.

Parfitt, C. H., and E. Alleyne. 2020. "Not the Sum of Its Parts: A Critical Review of the MacDonald Triad." *Trauma, Violence & Abuse* 21, no. 2: 300–310.

Parkes, D., and T. Signal. 2017. "Human-Animal Interaction Bulletin, CABI International, Revisiting a Link: Animal Abuse, Bullying, and Empathy in Australian Youth." https://doi.org/10.1079/hai.0004.

Patterson-Kane, E. G. 2012. "The Causes of Violence Towards Animals: A Review." In *Handbook on the Psychology of Violence*, edited by H. R. Cunningham and W. F. Berry, 247–263. Nova Publishing.

Plant, M., P. van Schaik, E. Gullone, and C. Flynn. 2019. "'It's a Dog's Life': Culture, Empathy, Gender, and Domestic Violence Predict Animal Abuse in Adolescents. Implications for Societal Health." *Journal of Interpersonal Violence* 34, no. 10: 2110–2137.

Poresky, R. H. 1990. "The Young Children's Empathy Measure: Reliability, Validity and Effects of Companion Animal Bonding." *Psychological Reports* 66, no. 3 pt. 1: 931–936.

Ramírez, J. M., and J. M. Andreu. 2006. "Aggression, and Some Related Psychological Constructs (Anger, Hostility, and Impulsivity); Some Comments From a Research Project." *Neuroscience & Biobehavioral Reviews* 30, no. 3: 276–291.

Randour, M. L., M. Smith-Blackmore, N. Blaney, D. DeSousa, and A. A. Guyony. 2021. "Animal Abuse as a Type of Trauma: Lessons for Human and Animal Service Professionals." *Trauma, Violence & Abuse* 22, no. 2: 277–288.

Richard, C., and L. A. Reese. 2019. "The Interpersonal Context of Human/Nonhuman Animal Violence." *Anthrozoös* 32, no. 1: 65–87.

Riggs, D. W., N. Taylor, H. Fraser, C. Donovan, and T. Signal. 2021. "The Link Between Domestic Violence and Abuse and Animal Cruelty in the Intimate Relationships of People of Diverse Genders and/or Sexualities: A Binational Study." *Journal of Interpersonal Violence* 36, no. 5–6: NP3169–NP3195.

Ritchie, M. B., R. W. J. Neufeld, M. Yoon, A. Li, and D. G. V. Mitchell. 2022. "Predicting Youth Aggression With Empathy and Callous Unemotional Traits: A Meta-Analytic Review." *Clinical Psychology Review* 98: 102186.

Roberton, T., M. Daffern, and R. S. Bucks. 2012. "Emotion Regulation and Aggression." *Aggression and Violent Behavior* 17, no. 1: 72–82.

Rock, R. C., S. Haugh, K. C. Davis, et al. 2021. "Predicting Animal Abuse Behaviors With Externalizing and Psychopathic Personality Traits." *Personality and Individual Differences* 171: 110444.

Ross, J. M., A. T. Machette, and R. Gonzalez. 2022. "Testing the Reliability of Sexual Aggression Self-Reports." *Journal of Sexual Aggression* 30, no. 1: 129–143.

Rubin, M., and C. L. Wright. 2015. "Time and Money Explain Social Class Differences in Students' Social Integration at University." *Studies in Higher Education* 42, no. 2: 315–330.

Rumpf, H. J., C. Meyer, U. Hapke, and U. John. 2001. "Screening for Mental Health: Validity of the MHI-5 Using DSM-IV Axis I Psychiatric Disorders as Gold Standard." *Psychiatry Research* 105, no. 3: 243–253.

Ryder, D. 2000. *Animal Revolution: Changing Attitude Toward Speciecism*. Berg Publishers.

Sanders, C. E., and B. C. Henry. 2017. "The Role of Beliefs About Aggression in Cyberbullying and Animal Abuse." *Psychology, Crime & Law* 23, no. 9: 827–840.

Signal, T., N. Taylor, and A. MacLean. 2018. "Pampered or Pariah: Does Animal Type Influence the Interaction Between Animal Attitude and Empathy?" *Psychology, Crime & Law* 24, no. 5: 527–537.

Simmons, S., K. Knight, and C. Ellis. 2015. "Youthful Animal Abuse and Later Problem Behavior Outcomes: Findings From Two Generations." *Contemporary Justice Review* 18, no. 4: 435–448.

Singer, P. 1975. *Animal Liberation*. Avon Book.

Sischka, P. E., J. P. Décieux, A. Mergener, K. M. Neufang, and A. F. Schmidt. 2022. "The Impact of Forced Answering and Reactance on Answering Behavior in Online Surveys." *Social Science Computer Review* 40, no. 2: 405–425.

Sollund, R. 2017. "The Animal Other: Legal and Illegal Theriocide." In *Greening Criminology in the 21st Century: Contemporary Debates and Future Directions in the Study of Environmental Harm*, edited by M. Hall, T. Wyatt, N. South, et al., 79–99. Routledge.

Stanger, N., M. Kavussanu, and C. Ring. 2012. "Put Yourself in Their Boots: Effects of Empathy on Emotion and Aggression." *Journal of Sport & Exercise Psychology* 34, no. 2: 208–222.

Stark, R., and W. Bainbridge. 1996. *Religion, Deviance and Social Control*. Routledge.

Stephenson, M. T., R. H. Hoyle, P. Palmgreen, and M. D. Slater. 2003. "Brief Measures of Sensation Seeking for Screening and Large-Scale Surveys." *Drug and Alcohol Dependence* 72, no. 3: 279–286.

Stupperich, A., and M. Strack. 2016. "Among a German Sample of Forensic Patients, Previous Animal Abuse Mediates Between Psychopathy and Sadistic Actions." *Journal of Forensic Sciences* 61, no. 3: 699–705.

Taylor, N., and A. Fitzgerald. 2018. "Understanding Animal (Ab)Use: Green Criminological Contributions, Missed Opportunities and a Way Forward." *Theoretical Criminology* 22, no. 3: 402–425.

Ten Have, M., M. J. H. Van Bon-Martens, F. Schouten, S. Van Dorsselaer, L. Shields-Zeeman, and A. I. Luik. 2024. "Validity of the Five-Item Mental Health Inventory for Screening Current Mood and Anxiety Disorders in the General Population." *International Journal of Methods in Psychiatric Research* 33, no. 3: e2030.

Vachon, D. D., D. R. Lynam, and J. A. Johnson. 2014. "The (Non) Relation Between Empathy and Aggression: Surprising Results From a Meta-Analysis." *Psychological Bulletin* 140, no. 3: 751–773.

Vähä-Aho, V., and M. Kaakinen. 2024. "Juveniles and Animal Abuse in Finland—Prevalence and Associations With Antisocial Behavior." *Deviant Behavior* 46, no. 4: 403–418.

Van Wijk, A., M. Hardeman, and N. Endenburg. 2018. "Animal Abuse: Offender and Offence Characteristics. A Descriptive Study." *Journal of Investigative Psychology and Offender Profiling* 15, no. 2: 175–186.

Vaughan, E. P., J. S. Speck, P. J. Frick, et al. 2024. "Proactive and Reactive Aggression: Developmental Trajectories and Longitudinal Associations With Callous-Unemotional Traits, Impulsivity, and Internalizing Emotions." *Development and Psychopathology* 36, no. 3: 1090–1098.

Vaughn, M. G., M. DeLisi, T. Gunter, et al. 2011. "The Severe 5%: A Latent Class Analysis of the Externalizing Behavior Spectrum in the United States." *Journal of criminal justice* 39, no. 1: 75–80.

Vaughn, M. G., Q. Fu, M. DeLisi, et al. 2009. "Correlates of Cruelty to Animals in the United States: Results From the National Epidemiologic Survey on Alcohol and Related Conditions." *Journal of Psychiatric Research* 43: 1213–1218.

Vaughn, M. G., C. P. Salas-Wright, M. DeLisi, and B. R. Maynard. 2014. "Violence and Externalizing Behavior Among Youth in the United States: Is There a Severe 5%?" *Youth Violence and Juvenile Justice* 12, no. 1: 3–21.

Vezirian, K., L. Bègue, and B. Bastian. 2024. "Mindless Furry Test-Tubes: Categorizing Animals as Lab-Subjects Leads to Their Mind Denial." *Journal of Experimental Social Psychology* 114: 1–11.

Vidović, V. V., V. V. Štetić, and D. Bratko. 1999. "Pet Ownership, Type of Pet and Socio-Emotional Development of School Children." *Anthrozoös* 12, no. 4: 211–217.

Volant, A. M., J. A. Johnson, E. Gullone, and G. J. Coleman. 2008. "The Relationship Between Domestic Violence and Animal Abuse: An Australian Study." *Journal of Interpersonal Violence* 23, no. 9: 1277–1295.

Walters, G. D. 2014. "Testing the Direct, Indirect, and Moderated Effects of Childhood Animal Cruelty on Future Aggressive and Non-Aggressive Offending." *Aggressive Behavior* 40, no. 3: 238–249.

Ware Jr., J. E.,, and C. D. Sherbourne. 1992. "The MOS 36-ltem Short-Form Health Survey (SF-36): I. Conceptual Framework and Item Selection." *Medical Care* 30, no. 6: 473–483.

Wauthier, L., and J. M. Williams. 2022a. "A Qualitative Study of Children's Accounts of Cruelty to Animals: Uncovering the Roles of Trauma, Exposure to Violence, and Attachment." *Journal of Interpersonal Violence* 37, no. 9–10: NP6405–NP6438.

Wauthier, L. M., S. Farnfield, and J. M. Williams. 2023. "A Preliminary Exploration of the Psychological Risk Factors for Childhood Animal Cruelty: The Roles of Attachment, Self-Regulation, and Empathy." *Anthrozoös* 36, no. 3: 447–469.

Wauthier, L. M., and J. M. Williams. 2022b. "Understanding and Conceptualizing Childhood Animal Harm: A Meta-Narrative Systematic Review." *Anthrozoös* 35, no. 2: 165–202.

White, G., and L. D. Quick. 2018. "Animal Cruelty, Domestic Violence, and Social Disorganization in a Suburban Setting." *Deviant Behavior* 40, no. 8: 930–941.

Wilson, L. C., and A. Scarpa. 2011. "The Link Between Sensation Seeking and Aggression: A Meta-Analytic Review." *Aggressive Behavior* 37, no. 1: 81–90.

Winters, K. C., R. D. Stinchfield, G. A. Henly, and R. H. Schwartz. 1990. "Validity of Adolescent Self-Report of Alcohol and Other Drug Involvement." *International Journal of the Addictions* 25, no. 11A: 1379–1395.

Wolfgang, M. E., R. M. Figlio, and T. Sellin. 1972. *Delinquency in a Birth Cohort*. University of Chicago Press.

Wong, R. 2024. "Animal Abuse. Beyond Companion Animals and Domestic Households." In *Animal Abuse and Interpersonal Violence: A Psycho-Criminological Understanding*, edited by O. Chan and R. Wong. Wiley.

Wright, J., and C. Hensley. 2003. "From Animal Cruelty to Serial Murder: Applying the Graduation Hypothesis." *International Journal of Offender Therapy and Comparative Criminology* 47, no. 1: 71–88.

Yamazaki, S., S. Fukuhara, and J. Green. 2005. "Usefulness of Five-Item and Three-Item Mental Health Inventories to Screen for Depressive Symptoms in the General Population of Japan." *Health and Quality of Life Outcomes* 3: 48.

Zalaf, A. 2024. "Exploring Animal Abuse Proclivity, Everyday Sadism, and Attitudes Toward Animals in Cyprus." *Anthrozoös* 37, no. 1: 107–123.