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Taylor and Francis Ltd.
2024-05-14

Vähä-Aho, V & Kaakinen, M 2024, 'Juveniles and Animal Abuse in Finland - Prevalence and Associations with Antisocial Behavior', Deviant Behavior. https://doi.org/10.1080/01639625.2024.2350984

http://hdl.handle.net/10138/576036
10.1080/01639625.2024.2350984

Deviant Behavior

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/udbh20

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To cite this article: Vilja Vähä-Aho & Markus Kaakinen (14 May 2024): Juveniles and Animal Abuse in Finland – Prevalence and Associations with Antisocial Behavior, Deviant Behavior, DOI: 10.1080/01639625.2024.2350984

To link to this article: https://doi.org/10.1080/01639625.2024.2350984

Published online: 14 May 2024.

DEVIANT BEHAVIOR
https://doi.org/10.1080/01639625.2024.2350984

Juveniles and Animal Abuse in Finland – Prevalence and Associations with Antisocial Behavior

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ABSTRACT

In this paper, we analyze the prevalence of animal abuse and its associations with antisocial behavior using representative random school sample from Finnish adolescents ($N = 5674$; $M_{age} = 15.3$). According to our results, the lifetime prevalence of animal abuse in adolescents was 5%, with 13% reporting exposure to animal abuse. The likelihood of animal abuse was positively associated with bullying and nonviolent delinquent behavior, low empathy toward animals, and exposure to animal abuse. Violent offending was not found to be associated with animal abuse, highlighting bullying-specific dynamics. Our findings partly comply with the deviance generalization hypothesis, which suggests that animal abuse is part of a more generic pattern of antisocial behavior among adolescents. We conclude that because animal abuse and antisocial behavior are related many of the same tools used to address and prevent bullying or criminal behavior can be expected to work, at least partly, in preventing animal abuse. Collaboration and information-sharing between animal and child welfare agencies are important and warrant further investigations and development.

ARTICLE HISTORY
Received 18 August 2023
Accepted 29 April 2024

Introduction

Non-human animal (hereinafter,"animal") abuse is a societal and ethical problem. A growing body of research on animals' welfare needs and the ability to experience emotions, previously associated only with humans, has accelerated the debate on animal rights and changed our conceptions of inhumane animal treatment (Tuomivaara 2019). Moreover, several studies have linked animal abuse to human welfare issues, including victimization experiences such as child abuse (for systematic review see Hawkins, Hawkins, and Williams 2017), interpersonal violence, and a range of other antisocial behaviors (for systematic review see Longobardi and Badenes-Ribera 2019).

Violent or cruel behavior toward animals during childhood or adolescence may be among the earliest indicators of underlying psychosocial problems and may also predict other antisocial and delinquent behavior (Hawkins, Hawkins, and Williams 2017; Longobardi and Badenes-Ribera 2019). The earlier the onset and the more persistent the animal abuse, the more likely that children will manifest antisocial and delinquent behavior later in life (Chan and Wong 2019).

Animal abuse is difficult to define universally or comprehensively, as there are many socially accepted activities that harm animals and varying attitudes toward different species (Petersen and Farrington 2009). This article adopts Frank Ascione's (1993:28) widely cited definition of animal abuse. According to this definition, animal abuse refers to "non-accidental, socially unacceptable behavior that causes pain, suffering, or distress to and/or the death of a non-human animal." The definition excludes societally acceptable practices, such as hunting and animal husbandry, although

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these practices often involve measurable animal suffering. It also emphasizes deliberateness that is a significant factor particularly in children and adolescents, as it is strongly related to developmental and responsibility issues.

In this study, we use a representative sample of adolescents ($N = 5674$) to describe animal abuse and its prevalence among Finnish juveniles and to analyze how animal abuse is related to juvenile delinquent and antisocial behavior. Currently there is a lack of studies addressing animal abuse and the associated risk factors in adolescence, especially using representative samples and criminologically relevant measures. Previous studies have mainly been based on small datasets and retrospective samples and have often been drawn from risky populations, e.g., violent offenders (Longobardi and Badenes-Ribera 2019).

As only a proportion of crimes are reported to the authorities, self-reporting methods are needed to provide more comprehensive information on animal abuse among adolescents. By utilizing an extensive self-reported delinquency survey data, we are able to account for a wide range of factors relevant to delinquent and antisocial behavior. In addition, in order to draw conclusions about the relationship between animal abuse and antisocial behavior and the possible ways to prevent animal abuse, more information is needed on how common the phenomenon is in the general adolescent population and the main risk factors in this population. Our research provides representative data and several theoretically central measures that has not been available before. Thus, our analysis will help to better identify the prevalence of animal abuse among the adolescent population and the associated theory-based and practically relevant risk factors.

Childhood and adolescence animal abuse

Relationships with animals are a significant part of many children's social environment. According to the Finnish Household Budget Survey, almost every third household had a pet in 2016, and the number is on the rise. Pet ownership was most common in families with children (Official Statistics of Finland 2016), and, at the same time, children's interactions with animals are not limited to pets. These interactions are usually multidimensional and have various nuances. Positive engagement with animals, especially pets, may benefit a child's development (Purewal et al. 2017), and relationships with animals may provide support in a difficult life situation (Risley-Curtiss 2009). Even so, relationships might also contain negative or adverse dimensions such as fear of a particular species or experiences of being attacked by an animal (Purewal et al. 2017; Wynne, Dorey, and Udell 2011). Furthermore, occasionally, some children are cruel or abusive toward animals.

It has been estimated that the most common animal abuse manifestation in childhood is transient, exploratory, and uncomprehending behavior, particularly in younger children (Lee-Kelland and Finlay 2018). This unintentional form of abuse is typically due to children's young age, ignorance of animals' welfare needs, and/or lack of adult guidance and supervision (Hawkins, Hawkins, and Williams 2017). In contrast, intentional animal abuse in childhood or adolescence may be a sign of underlying psychological and social problems. The deliberate form of animal abuse more often occurs in slightly older children, where the behavior can be an early symptom of a psychiatric disorder or a part of the juvenile's broader antisocial behavior repertoire (Hawkins, Hawkins, and Williams 2017). Other underlying factors for animal abuse may include, among others, social pressure, behavior imitation, or sexual motives (Ascione 2001).

The intentional animal abuse prevalence rates vary depending on the study design and the measures chosen. In the United States, the largest nationally representative study ($N > 43\ 000$) to date found a lifetime prevalence of animal abuse of 1.8% in adults (Vaughn et al. 2009). In Europe, a French study with a large representative sample ($N > 12\ 000$) of adolescents the prevalence was 7.3% (Bègue 2022), whereas in Switzerland, with a smaller but also representative sample ($N < 3600$), the corresponding figure was 12% (Lucia and Killias 2011). Similarly, in a Scottish cohort study ($N > 4300$) 13% of juveniles reported having abused an animal on purpose at some point between the ages of 13 and 17 years (McVie 2007). In these youth studies, participants mainly reported individual acts (hurt

an animal on purpose once or twice), but there was also a small proportion of adolescents who commit abusive acts against animals frequently (Bègue 2022; Lucia and Killias 2011; McVie 2007).

Potential animal abuse risk factors in childhood include behavioral disorders, callous-unemotional traits, and low empathy (for systematic review see Hawkins, Hawkins, and Williams 2017). Animal abuse is indeed included in the international behavioral disorders' classification (World Health Organization 2019), and animal abuse may be one of the first conduct disorder manifestations in children (Hawkins, Hawkins, and Williams 2017). Animal abuse, as well as conduct disorder, is more common among males. However, it has been estimated that with certain types of animal abuse, particularly neglect and hoarding, the prevalence may be equal or even greater in females (Felthous and Calhoun 2018). This is difficult to assess, however, since females are under-represented in many animal abuse studies. Animal abuse in childhood is further associated with victimization and adverse childhood experiences, such as being abused or being exposed to abuse (McEwen, Moffitt, and Arseneault 2014; Vaughn et al. 2011), and it appears that children who repeatedly and deliberately abuse animals are more often vulnerable and disadvantaged than their peers (Bègue 2022; Lee-Kelland and Finlay 2018; McVie 2007).

Animal abuse and its connections to antisocial behaviors

Antisocial behavior is generally defined as actions and attitudes that violate the social rules or norms of a particular society. The concept is somewhat vague and culture-specific, and its manifestations vary widely, from more or less normative behavior to less common but more serious behavior (Morgado and da Luz Vale-Dias 2013). Delinquency may be seen as one form of antisocial behavior and in the literature, the two are often mentioned concurrently and as synonyms. The definitions usually distinguish between aggressive (e.g., fighting, bullying) and non-aggressive (e.g., vandalism, stealing) antisocial behavior (Burt 2012). As for animal abuse, it can be considered a severe form of aggressive antisocial behavior, along with interpersonal violence (Gullone 2011; Morgado and da Luz Vale-Dias 2013).

Antisocial behavior in childhood nonspecifically predicts problems in the transition to adulthood (Sourander and Marttunen 2016). Research literature suggests that the earlier the onset of deviant behavior the more likely the offending trajectory is to be severe and persistent. However, it is worth noting that some rule-breaking behavior is normal in adolescence, and a continuum of such behavior from childhood to adulthood is rare (Acquaviva, Ellul, and Benarous 2018). Moreover, several individual and environmental factors (such as mental resilience, family conditions, peer interactions) have both protective and risk-increasing effects on antisocial pathways (Morgado and da Luz Vale-Dias 2013).

Several theoretical models have been developed to describe the relationship between animal abuse and antisocial behavior. One of these is the deviance generalization hypothesis, which suggests that animal abuse and interpersonal violence, as well as other forms of antisocial behavior, are positively correlated and likely to co-occur (Longobardi and Badenes-Ribera 2019). The deviance generalization hypothesis suggests that this is because one form of deviance can lead to another, and different forms of deviance may have the same underlying causes. For example, according to the hypothesis, antisocial behaviors in adolescents, such as bullying, substance abuse, criminal behavior, defiance of authority, and cruelty to animals, are not directly related to each other but stem from the same genetic and environmental factors, such as family circumstances, coping skills, and peer relationships (Walters 2023).

Different forms of antisocial behaviors can also reflect a distinctive psychosocial dynamic. Bullying refers to persistent and power imbalance peer abuse (the more powerful bullies less powerful), where the perpetrator or perpetrators intend to harm or disturb the victim (Nansel et al. 2001). In criminological research, a distinction is often made between violent and nonviolent criminal behavior as well. Although the same persons typically commit different types of crimes, violent criminals stand out from others, for example, in terms of personality and risk factors (Lynam, Piquero, and Moffitt

2004; Osgood and Schreck 2007). Young violent criminals are more often persistent and frequent offenders and have on average lower intelligence and higher impulsivity and various social risk factors such as child maltreatment, disrupted families, and criminally active peers (Farrington and Loeber 2000).

The deviance generalization hypothesis proposes that animal abuse is equally correlated with violent and nonviolent antisocial behavior (Walters 2023). The more extreme theories (e.g., violence graduation hypothesis), on the other hand, propose a causal relationship between animal abuse and interpersonal violence, in which animal abuse is seen to precede human-directed violence (Longobardi and Badenes-Ribera 2019).

The deviance generalization hypothesis is supported by findings from many previous studies, whereas the more extreme theories have been widely criticized due to methodological limitations (for systematic review see Wauthier and Williams 2022). Although the more extreme models have also received some empirical support, at least in high-risk populations (e.g., inmates, where animal abuse has been found to be more prevalent in the violent group than in the nonviolent group), the results are not generalizable to the general population (Walters 2013). Overall, there seems to be evidence to indicate that animal abuse and antisocial behavior are associated, but they are more likely to be explained by other factors rather than being directly causal (Longobardi and Badenes-Ribera 2019).

Abuse and crime against animals and related law enforcement can vary from country to country. Burchfield, Markowitz, and Koskela (2022), who examined the association between violent crime and animal crime at the community level in Finland using reported animal crime data from 2010 to 2019, found no association between the two types of crime. The only common correlate they found between animal and violent crime was poverty. The results are interesting and somewhat contradictory to the international literature. However, the animal crimes detected by the authorities in Finland comprise mostly neglect (Väärikkälä, Hänninen, and Nevas 2019; Valtonen et al. 2021), while the international literature tends to focus mainly on intentional, active abuse of animals. Many international studies also do not necessarily distinguish between different forms of abuse.

Furthermore, much animal abuse occurs in private and goes unreported, and it is particularly difficult for authorities to detect direct violence against animals (Valtonen et al. 2021). The diversity of the phenomenon should be considered when investigating animal abuse. For example, Valtonen et al. (2023) found that animal offenders had different profiles depending on the type of crime: large-scale neglect-type crimes (e.g., hoarding) were often committed by older women living in small communities, whereas violent crimes prevailed in young men in more urban areas who were also accused of other crimes.

This study

The aims of this study were 1) to determine the prevalence of animal abuse among adolescents in Finland and 2) to examine the associations between animal abuse and antisocial behavior. These issues are addressed using a nationally representative sample of Finnish adolescents. This study is important since this area has not been extensively investigated with nationally representative samples of adolescents using criminologically relevant measures. The Finnish Self-Report Delinquency Study (FSRD) 2020 included questions on animal abuse for the first time in Finland. In Europe, similar questions were included in a survey on juvenile delinquency in Switzerland in 2006 (Lucia and Killias 2011). This study uses the same animal abuse measures with some additions.

Methods

Data

The research data consist of the Finnish Self-Report Delinquency Study (FSRD) collected in spring 2020 by the Institute of Criminology and Legal Policy (see Kaakinen et al. 2022). The survey covers

self-reported offending, attitudes toward crime, and victimization experiences among Finnish adolescents. The survey also includes a series of questions about background factors on individual and family-level factors as well as personality features. The first FSRD was conducted in 1995, and recently, the survey has been carried out every four years.

The nationally representative FSRD study's participants are ninth-grade students in Finnish-speaking secondary schools, typically aged 15–16 years. The representative FSRD studies are based on a random sampling of schools. Schools in the study are drawn by Statistics Finland from educational institutions' registers using stratified random sampling. Schools' sizes and regional locations are considered in the sampling method applied (probability proportional to size sampling). In the surveys, information is gathered with the self-report method; students fill out the electronic questionnaire about their criminal or forbidden activities. The survey is carried out at a pre-arranged time during a school day. The 2020 FSRD study data were gathered in January – May 2020, and the final dataset had 5674 ($M_{age} = 15.3$; 48.5% male, 49.5% female, 2% other) respondents from 74 schools in various parts of Finland, with a response rate of 78%.

Part of the data was gathered during a period when schools were widely closed due to the outbreak of coronavirus disease (COVID-19) and the epidemic situation in Finland. Between 18 March and 14 May 2020, schools had widely switched from contact teaching to distance learning, and other restrictions were also nationally in place. Of all participants, 774 (13.6%) completed the survey during the lockdown period as part of their distance-learning lessons from home (Kaakinen et al. 2022). Considering that most of the participants responded to the survey outside of restraints and this study explores primarily lifetime delinquent behavior, the overall impact of the COVID-19 pandemic on this study is minimal.

Participation in the study was based on informed consent from adolescents. Participants were given information about the study, its purpose, and anonymity of the data that would be processed in the study. In addition, the guardians were informed about the study beforehand and were allowed to opt-out of their child's participation. The study was subject to a prior review by the University of Helsinki Research Ethics Committee in the Humanities and Social and Behavioral Sciences. The committee concluded that the study complies with the guidelines of the Finnish National Board of Research Integrity and is ethically acceptable (Statement 33/2019).

Measures

The *animal abuse measure* included in the FSRD 2020 was adopted from the 2006 Swiss National Self-Reported Delinquency Survey (Lucia and Killias 2011; see also Dadds et al. 2004). The dichotomous item measured whether the respondents had ever hurt an animal on purpose. Those who answered "yes" were asked follow-up questions about how often they had done so (once or twice; three to six times; more than six times), the type of animal or animals they had maltreated, and if they had done this alone or in a group. The type of animal was a multiple-choice question with several response options and included also the category "other, what?," which was an open-ended question. In our multivariate analysis we treat the dichotomous variable indicating whether the respondent had hurt an animal (no, yes) as our outcome.

For the descriptive results, the open-ended responses were cleaned up and reclassified into the correct categories (e.g., a duck was coded as a bird). Observations that clearly indicated hunting (hurting moose in a group, or open-ended answer was e.g., "game animals") were removed. Similarly, those who only responded having maltreated insects (e.g., mosquitoes, flies) or said they had hurt an animal because it was a threat (e.g., a snake almost bit a dog) were removed as well. This was done because the indicated hunting, insect, and threat responses included too much interpretation, and it was unclear whether these responses reflected what we originally intended to measure. For the final analysis, sensitivity analyses were performed with the inclusion of both categories to determine whether the results were affected by the removals.

Empathy towards animals was measured by the question "How do you feel about people hurting animals?," with possible responses "it makes me sad," "they deserve it," "it is fun," and "I don't know." The measure was adopted as such from the Swiss study (Lucia and Killias 2011). To summarize the data, the categories "they deserve it" and "it's fun," which relate to low empathy and accepting attitudes toward animal abuse, were combined. For our analyses, the empathy measure was coded into two dummy variables (0 = no, 1 = yes) indicating whether the respondents chose options"they deserve it" or"it is fun" (indicating low empathy and accepting attitude) or the option"I don't know" (indicating neutral attitude). The option"it makes me sad" was used as a reference category.

Witnessing animal abuse was measured with a survey item modified from the 2006 Swiss National Self-Reported Delinquency Survey (Lucia and Killias 2011). We wanted to explore exposure to animal abuse alongside engaging in animal abuse because previous research literature shows that observing animal abuse is associated with adolescents' participation in animal abuse (Chan and Wong 2019). The chosen measure assesses whether respondents had ever been in a situation where somebody else hurt an animal on purpose (with the clarification that this does not include hunting or fishing animals for food), with possible responses "no," "once," and "multiple times." For our analyses, the witnessing animal abuse measure was coded into two dummy variables indicating whether the respondents had witnessed animal abuse once (0 = no, 1 = yes) or more than once (0 = no, 1 = yes). The option"no" was used as a reference category.

Delinquent behavior was measured by the standard indicator system initially developed from the international self-report delinquency study questionnaire (Junger-Tas, Terlouw, and Klein 1994). For the final analysis, we combined dichotomous lifetime (Have you ever in your life ... ?) offense variables into two categories: *property offense* (included graffiti writing/painting, destruction of someone's property, shoplifting, stealing, burglary) and *violent offense* (included taking part in a fight, assaulting, threatening with intent to steal, carrying a weapon, being accused of sexual harassment). Based on this information, the lifetime variables in each category were summed to create count variables that indicate how many different types of offenses the respondent has committed in their lifetime. The higher the number, the broader the range of offenses. Since only a small part of the respondents had the highest value in the violent offending count variable (i.e. had committed all measured offenses), the highest value was combined with the second highest category for this variable.

Bullying is measured in the FSRD study as part of delinquent behavior. In our model, we wanted to explore it separately because it is not an actual crime and its dynamics, such as motives, power structure, and duration, are slightly different from other violent offenses (Montes et al. 2022). Bullying was combined from two dichotomous lifetime variables that included both offline and online bullying. Offline bullying was measured with a survey item asking respondents whether they had ever bullied another person at school or on the way to school. Online bullying was measured with an item "Have you ever knowingly threatened, bullied, or otherwise harassed another person via email, text message, online discussion boards, or other social media (e.g., Facebook, YouTube, Snapchat, Instagram, Twitter, WhatsApp)?." For the analysis, a count variable was also created for bullying, which had the same idea as the property and violent offense variables: the higher the number, the higher the level of bullying (which in this case means bullying both online and offline).

Low self-control (Cronbach alpha = 0.84) was summed from the nine-item standard International Self-Reported Delinquency study (ISRD) self-control scale (Marshall and Enzmann 2012), with a higher value indicating lower self-control. Items scaled from one to four (1 = disagree, 4 = agree) were as follows: 1) "I often act on the spur of the moment," 2) "I often do whatever brings me pleasure here and now, even at the cost of some long-time goal," 3) "I'm more concerned with what happens to me in the short run than in the long run," 4) "I like to test myself every now and then by doing something a little risky," 5) "Sometimes I will take a risk just for the fun of it," 6) "Excitement and adventure are more important to me than security," 7) "I try to look out for myself first, even if it means making things difficult for other people," 8) "If things I do upset people, it's their problem, not mine," 9) "I will try to get the things I want even when I know it causes problems for other people."

The *parental control* variable (Cronbach alpha = 0.87) was based on a combined set of six items on parental supervision from Stattin and Kerr (2000), with a higher value indicating higher perceived parental monitoring. On a scale from 1 to 5 (1 = never, 5 = always), the items were 1) "Do you need your parents' permission to go out on weekday evenings?," 2) "If you are going out on a Saturday night, do you have to tell your parents in advance who you are going with and where?," 3) "If you don't come home as agreed, do your parents ask you to explain why you are late and with whom you were?," 4) "Do your parents insist on knowing where you are at night, with whom, and what you are doing?," 5) "Do you need to ask your parents before you can plan with your friends what you're going to do on Saturday night?," 6) "Do your parents insist that you tell them how you spend your money?."

The *peer delinquency behavior* variable (Cronbach alpha = 0.79) was constructed from peer cannabis use, shoplifting, and fighting, with a higher value indicating more peer delinquency behavior. Questions queried whether the respondent's friends had 1) used marijuana or hashish, 2) stolen from a store, or 3) participated in a fight in a public place, with the response options being "none of my friends," "one of my friends," and "several of my friends."

In addition, our study included covariates about substance abuse: got *drunk in the previous year* or *ever used illegal drugs*; *migrant background* (the respondent or at least one of the parents born abroad); a single-item measure of *perceived socioeconomic status relative to other families* (on a scale 1 = much worse, 7 = much better); *residential area* (urban, rural); and *gender* (girl, boy, other), which have been identified as risk factors for animal abuse and juvenile delinquency in previous studies (e.g., Agnew 1998; Connor, Currie, and Lawrence 2021; Mowen and Boman 2020). For our analyses, the gender was coded into two dummy variables indicating whether the respondents identified as male (0 = no, 1 = yes) or other than male or female (0 = no, 1 = yes). Female was used as a reference category.

In addition, the model included a covariate for *pet ownership* (household currently or previously had pets or domestic animals), as it has earlier been found to influence children's attitudes toward animal abuse (Hawkins, Williams, and Scottish Society for the Prevention of Cruelty to Animals 2020) and abusive behavior toward animals (Akdemir and Gölge 2020; Connor, Currie, and Lawrence 2021). Descriptive measures of all study variables are reported in Table 1. Two-way correlations between our study variables are reported in the Appendix.

Analytical approach

We use binary logistic regression analysis to analyze the associations between our categorical dependent variable (ever hurt an animals on purpose) and independent variables. For our model, we report the odds ratios (ORs) as well as the coefficients of average marginal effects (AMEs). The OR indicates how much the odds of the groups being compared differ. Marginal effects, on the other hand, express how the independent variables are associated to the probability of the studied outcome (here animal abuse; see Mood 2010). The AME coefficient indicates the changes in the probability of animal abuse in percentages for a one-unit increase in the independent variable. The figures for the marginal effects have been reported as percentages. The statistical significances of the variables, 95% confidence intervals, and pseudo-coefficients of the determination (Nagelkerke pseudo R2) are also shown in Table 2. To assess possible multicollinearity in the logistic regression model, we analyzed variance inflation factor (VIF) coefficients. VIF coefficients with values exceeding 5 can be considered problematic (Kim 2019). According to the analysis, multicollinearity was not problematic, as the highest observed VIF coefficient was 1.95 (for property offense).

The following study variables had some missing values: low self-control (2.5% of observations), parental control (2.1% of observations) and peer delinquency (1.5% of observations). In our multivariate analysis, listwise deletion was used. This means that observations having missing values in at least one of the study variables were not included in the analysis. The final sample included 5533 observations (total sample had 5674 observations). The

Table 1. Main descriptive statistics for participants ($N = 5674$).

Categorical variable	Coding	n	%
Ever hurt an animal on purpose	no = 0, yes = 1	292	5.15
Empathy toward animals			
Makes me sad	0	4856	85.58
Animals deserve it/it's fun	1	96	1.69
I don't know	2	722	12.72
Witnessing animal abuse			
Never	0	4924	86.78
Once	1	524	9.24
Several times	2	266	3.98
Illegal drug use (lifetime)	no = 0, yes = 1	571	10.06
Been drunk (past 12 months)	no = 0, yes = 1	2131	37.56
Migrant background	no = 0, yes = 1	695	12.25
Residential area			
Urban	0	1814	31.97
Rural	1	3860	68.03
Pet/domestic animal ownership	no = 0, yes = 1	4 601	81.09
Gender			
Female	0	2 811	49.54
Male	1	2 751	48.48
Other	2	112	1.97
Continuous variables	Range	M	SD
Property offense	0–6	1.28	1.55
Violent offense	0–4	.43	.87
Bullying	0–2	.41	.66
Low self-control	0–27	9.84	5.16
Parental control	0–24	12.47	6.16
Peer delinquency	0–6	1.83	2.00
Perceived socioeconomic status	1–7	4.42	1.16

Table 2. Predicting the likelihood of animal abuse by antisocial behavior and control variables ($n = 5533$).

	OR	p	95% CI	AME
Property offense	1.22	.000	1.12–1.33	.007
Violent offense	1.06	.504	.90–1.24	.002
Bullying	1.89	.000	1.54–2.31	.020
Empathy toward animals (ref. = "makes me sad")				
Animals deserve it/it's fun	17.73	.000	10.18–30.88	.193
I don't know	7.31	.000	5.17–10.33	.096
Witnessing animal abuse (ref. = no)				
Once	4.77	.000	3.44–6.62	.069
Several times	8.25	.000	5.65–12.04	.114
Been drunk (past 12 months)	.97	.879	.68–1.38	−.001
Illegal drug use (lifetime)	1.14	.605	.70–1.90	.004
Peer delinquency	.93	.073	.86–1.01	−.002
Low self-control	1.02	.162	1.00–1.10	.001
Parental control	1.02	.112	1.00–1.05	.001
Pet/domestic animal ownership	1.41	.100	.94–2.12	.011
Migrant background	1.53	.045	1.01–2.33	.014
Perceived socioeconomic status	.92	.194	.81–1.04	−.003
Rural area (ref. = urban)	.77	.180	.53–1.13	−.008
Gender (ref. = female)				
Male	1.36	.092	.95–1.93	.010
Other	1.54	.272	.71–3.31	.014

Pseudo $R^2 = .37$

questionnaire utilized the forced-choice (FC) format, requiring respondents to answer each question before proceeding with the survey. The use of FC enabled us to conduct the analyses without managing a large number of missing observations. Prior research has shown that FC generally yields similar results to other methods when measuring sensitive topics (Wetzel and Frick 2020).

Results

Approximately 5% of all participants ($N = 5674$) reported having hurt an animal or animals on purpose in their lifetime (see Table 1). 9% had witnessed animal abuse once and 4% several times, and in most of these cases the perpetrator was a peer. Most of the participants (86%) felt sad about animal maltreatment and only a small proportion (less than 2%) said that it is fun or that the animals deserved it. In addition, in the whole sample, pet ownership was common; approximately 81% currently had or previously have had a pet or domestic animal.

When looking more closely at those who had deliberately hurt an animal or animals ($n = 292$), hurting animals evoked different feelings in the subjects compared with all respondents ($Chi^2(2) = 891.91$, $p < .001$). In this category, the attitude was more neutral (46% "I don't know"), and a relatively high proportion responded that it is fun or that the animals deserved it (19%) when compared to respondents who had never hurt an animal (11% neutral, 1% "it is fun" or "the animals deserved it"). Most respondents had hurt an animal once or twice (58%), but almost one-fourth (24%) reported having done so more than six times. The most typical animal to hurt on purpose was a fish, lizard, or frog (43%), followed by a pet or domestic animal (34%). A slightly higher proportion responded that they had been acting alone (53%), but acting in a group was also common (47%), and more than half of those who had deliberately hurt an animal had also witnessed animal abuse (57%).

According to our logistic regression model (see Table 2), the likelihood of animal abuse was positively associated with bullying (AME = .020, $p < .001$) and nonviolent (AME = .007, $p < .001$) delinquent behavior, accepting (AME = .193, $p < .001$) and neutral (AME = .096, $p < .001$) attitudes toward animal abuse, and exposure to animal abuse once (AME = .069, $p < .001$) or several times (AME = .114, $p < .001$).

According to the average marginal effects, a one-unit increase in the lifetime bullying measure was associated with a 2% higher likelihood of animal abuse. In addition, a one-unit increase in the lifetime nonviolent delinquency measure was related to a 0.7% higher likelihood of animal abuse. Thus, a one standard deviation increase in the bullying variable (SD = 0.66, see Table 1) was associated with a 1.3% higher likelihood of animal abuse, while a one standard deviation increase in nonviolent delinquency (SD = 1.55, see Table 1) was associated with a 1.1% higher likelihood.

Those with an accepting attitude toward animal abuse were 19% more likely to abuse animals than those for whom animal abuse evoked sad emotions. Those with neutral attitudes, in turn, were 10% more likely to have engaged in animal abuse. Respondents who had witnessed animal abuse once were 7% more likely to engage in animal abuse, and those who had witnessed animal abuse multiple times were 11% more likely to engage in animal abuse. However, it is worth noting that the high values of the coefficients in empathy and witnessing animal abuse variables are likely affected by the relatively small proportion of all participants in the extreme categories (1.7% "animals deserve it"/"it's fun" and 4% "have witnessed animal abuse multiple times"). Of sociodemographic factors, only migrant background (AME = .014, $p = .045$) was positively and significantly related to animal abuse, with migrant background slightly increasing the risk of animal abuse.

Sensitivity analyses were performed by including hunting and insect categories in the data. Neither of these changed the magnitude and direction of most of the estimated association parameters. The exceptions were peer delinquency and male gender. In the sensitivity analysis, the association of peer delinquency with animal abuse was significant and negative (AME = −.003, $p = .023$). In the case of male gender, the association was significant and positive (AME = .014, $p = .019$).

Discussion

This study was the first to investigate adolescence animal abuse in Finland. We used the nationally representative FSRD survey data to examine the prevalence and nature of animal abuse among Finnish adolescents and to test whether associations exist between animal abuse and other forms of antisocial behaviors. Animal abuse measures were adopted from the corresponding Swiss juvenile delinquency study (Lucia and Killias 2011).

The lifetime prevalence of animal abuse among Finnish adolescents was approximately 5%, which is significantly lower than among adolescents in Switzerland, where it was 12% in 2006 (Lucia and Killias 2011). On the other hand, in a French study (Bègue 2022) conducted in the 2020s, which relied on a highly similar item to measure animal abuse, the prevalence rate (7%) was closer to our finding. The differences in prevalence rates are likely due to different study populations, age groups, and measurement methods, but we can also speculate that the temporal dimension may have some influence on the results – as the youth behavior toward animals might also have changed over time. More research using replicated study designs and targeting similar age groups is needed to answer this question.

In our study, the most commonly abused animal was a fish, lizard, or frog, whereas in other studies with youth participants (Bègue 2022; Lucia and Killias 2011) it has been a pet animal such as a cat or dog. In our study, a slightly higher proportion reported acting alone (53.4%), although acting in a group was also common (46.6%). The finding is consistent with the Swiss study (Lucia and Killias 2011). In contrast, in the French study (Bègue 2022), the majority of adolescents (75%) had acted alone. This implies that there is likely some variance in juvenile animal abuse internationally. Future studies should investigate this variance with designs that allow for cross-national comparison.

Our findings in general supported the deviance generalization hypothesis (Longobardi and Badenes-Ribera 2019). However, some types of delinquency were more strongly related animal abuse than others which implies offending specific dynamics. Animal abuse was most strongly related to tendency to bully others, that is, for imbalanced abuse toward less powerful peers (Nansel et al. 2001). The relationship between bullying and animal abuse has also been reported in earlier research (e.g., Bègue 2022; Gullone 2011). Interestingly, according to our findings, violent offending was not related to animal abuse, highlighting bullying-specific dynamics.

In line with the deviance generalization hypothesis, the property offending was significantly associated with animal abuse. Our study found that higher lifetime participation in nonviolent offenses such as vandalism, shoplifting, theft, and burglary was associated with a higher likelihood of animal abuse. This finding is consistent with previous studies, except that in many of these studies, animal abuse has been associated equally with both violent and nonviolent offending (for meta-analyses see Walters 2013). It is worth noting, however, that many previous studies have included bullying in the definition of "violent offending," which limits comparability across studies.

As discussed above, many previous studies have specifically linked violent offending to animal abuse and, for example, when compared violent offenders, nonviolent offenders, and non-offenders, violent offenders typically have higher levels and more severe acts of animal abuse (for systematic review see Longobardi and Badenes-Ribera 2019). There are exceptions, however, for example, a study of Finnish national crime report data found no relationship between violent crime and animal crime (Burchfield, Markowitz, and Koskela 2022). Our study suggests that animal abuse among youth in Finland, at least, seems to resemble a tendency to bully one's peers and is part of a broader pattern of antisocial behavior, rather than a specialization in violent behavior.

Besides bullying and property offending, low empathy toward animals was a strong explanatory factor for reported animal abuse; i.e. the less empathy toward animals that a respondent reported, the more likely the respondent was to be involved in animal abuse. These findings are consistent with previous research showing that low empathy in general (Hawkins, Hawkins, and Williams 2017; Hawkins, Williams, and Scottish Society for the Prevention of Cruelty to Animals 2020) as well as speciesism (Bègue 2022) and cruelty accepting attitudes (Connor, Currie, and Lawrence 2021) are associated with animal abuse.

Similarly, in line with earlier reports (e.g., Chan and Wong 2019), witnessing animal abuse was strongly associated with abusive behavior toward animals in our analysis, with more frequent exposure increasing the likelihood of also participating in animal abuse. This may be explained by the fact that some abuse occurs in groups and may also involve a dimension of social pressure or learned behavior (Ascione 2001; Chan and Wong 2019).

In addition, having a migrant background slightly increased the risk of being involved in animal abuse. This may be at least partly explained by the fact that recent studies on children and adolescent victimization experiences in Finland (Mielityinen et al. 2023; School Health Promotion Study 2021) found that having a migrant background was associated with an increased likelihood of various victimization experiences (e.g., domestic or sexual violence), which have been identified as risk factors for animal abuse (Hawkins, Hawkins, and Williams 2017).

Cultural differences may also play a role in the treatment of animals. However, research on this matter is particularly scarce (Hawkins, Hawkins, and Williams 2017). A few studies have found some differences in the risk of animal abuse by ethnic background among adults (Vaughn et al. 2009) and serious juvenile offenders in the United States (Mowen and Boman 2020). In these studies, African Americans were slightly more likely to report animal abuse than the other studied groups. One explanation given for this is the accumulation of disadvantage in predominantly African American neighborhoods in the United States (Mowen and Boman 2020). In summary, it is possible that the higher risk of animal abuse among migrant youth in our study is partly explained by experiences of victimization, which were not included in our analysis, and partly by culturally different attitudes toward animals. This is an issue warranting further investigations.

Consistent with existing studies (e.g., Bègue 2022; Lucia and Killias 2011), animal abuse was more common among boys. However, somewhat surprisingly, the difference was not statistically significant in our regression model. This may be because gender is likely mediated by other variables in the analysis such as those measuring other antisocial and delinquent behaviors.

Contrary to expectations, low self-control, substance abuse, perceived socioeconomic status, low parental control, and peer delinquency, which have been identified as risk factors for animal abuse and juvenile delinquency elsewhere (e.g., Agnew 1998; Bègue 2022; Hawkins, Hawkins, and Williams 2017; Mowen and Boman 2020), were not significant explanatory factors in our analysis. Similarly, previous studies (Akdemir and Gölge 2020; Connor, Currie, and Lawrence 2021; Hawkins, Williams, and Scottish Society for the Prevention of Cruelty to Animals 2020; Vaughn et al. 2009) have linked pet ownership and area of residence (urban vs. rural) to animal abuse, but these variables were not found to be significant in this study. At least some of these variables are likely to be mediated by other variables in our analysis such as those measuring antisocial behavior. Overall, research on socio-demographic factors in relation to animal abuse is very limited and further studies are required.

Future research directions and study limitations

The knowledge gained from our study is valuable but preliminary. Witnessing animal abuse has been linked to victimization, and studies have found that animal-abusing youth are particularly vulnerable and disadvantaged. In the future, it would be useful to examine animal-abusing youths' own adverse experiences such as maltreatment or bullying. More research is also required from the perspective of agencies working with children and families. In particular, there is a need to understand how collaboration between animal welfare and child protection could be further developed to promote both human and animal welfare. Comparative international research is also needed. In order to make robust cross-national comparisons, animal abuse should be studied in more countries using similar measures and comparable groups of adolescents.

This study has some limitations. Cross-sectional data cannot be used to establish causal relationships, only statistical associations. A longitudinal design is needed to better estimate causal relationships. A retrospective setting is also generally associated with some problems (e.g., reliability when looking back over a long period of time), but these are minimized in our study by using a prevalence measure rather than a frequency measure in the analysis. In addition, the recall interval for adolescents is not as long as it would be for adults.

When interpreting the results, it is important to note that the school sample was partly collected during the COVID-19 pandemic. This can be reflected in the results, even though a significant part

of the data was collected before the start of the pandemic and associated restrictive measures in Finland (82%). However, new studies with representative data are needed to analyze the possible COVID-19 effect.

Finally, because the juvenile delinquency instrument had limited space for additional items, we were able to include only a few items assessing animal abuse. Therefore, it was not possible to explore the nature of the abuse, its temporal dimension, or its context in more detail. In part because of this, it is somewhat difficult to assess how well participants ultimately understood the question of intentional animal abuse. To improve measurement accuracy and remove ambiguity, we decided to exclude from the final analysis the responses involving insects (e.g., mosquitoes, flies) and hunting (hurting moose in a group, or open-ended answer was e.g., "game animals"), as well as those in which the animal was harmed because it was perceived as a threat (e.g., a snake almost bit a dog). The classification of mistreated animals should also have been better, as we received many responses in the "other" category. However, the use of established measures allowed comparisons to be made between Finland and Switzerland.

Conclusion

The results of our study are mainly consistent with the deviance generalization hypothesis, which states that animal abuse is part of a wider pattern of antisocial behavior. However, some forms of the antisocial behavior seem to be more significant than others. According to our findings, animal abuse appears to be a behavior most strongly characterized by bullying, where there is a power imbalance between the perpetrator and the target (Nansel et al. 2001). Additionally, the likelihood of animal abuse was positively associated with nonviolent delinquent behavior, low empathy toward animals, and exposure to animal abuse. All in all, the implied offending-specific logic requires more theorizing and research in the future.

Of those adolescents who have abused an animal, a clear majority reported single acts, but a small proportion reported frequent animal abuse (more than six times). This latter group can be considered particularly worrying because, according to previous research, repeated and persistent animal abuse in childhood predicts future violent behavior (Longobardi and Badenes-Ribera 2019), and overall, these children tend to be more disadvantaged and at risk than their peers (e.g., McVie 2007).

Animal abuse must be addressed and taken seriously, regardless of the perpetrator's age. However, the phenomenon is complex, and especially in the case of young children, it is important to consider the developmental perspective of childhood in terms of intentionality and responsibility. Educating children and adolescents about animal welfare is important to raise their awareness, potentially influencing their attitudes and behavior toward animals. Since animal abuse and antisocial and delinquent behaviors are related, many of the same tools used to address antisocial behavior, especially bullying, and prevent marginalization or criminal behavior can be expected to work, at least partly, in preventing animal abuse.

Adults in children's lives and those who work with children need to have sufficient knowledge about childhood animal abuse and its risk factors. In particular, adolescents who repeatedly harm animals and engage in other antisocial behaviors should be identified early to prevent later problems from developing and escalating. To facilitate this there is an important role for collaboration and information-sharing between animal and child welfare agencies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The study was funded by Koneen Säätiö. The funder had no role in the research or writing of the article.

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Code availability

Upon request.

Data availability statement

Upon request.

Ethical approval

The study was subject to a prior review by the University of Helsinki Research Ethics Committee in the Humanities and Social and Behavioral Sciences. The committee concluded that the study complies with the guidelines of the Finnish National Board of Research Integrity and is ethically acceptable (Statement 33/2019).

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Appendix

Pearson correlation coefficients of sample variables (N = 5674).

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Ever hurt an animal on purpose	–																					
2. Property offense	**.25**	–																				
3. Violent offense	**.23**	**.53**	–																			
4. Bullying	**.23**	**.49**	**.41**	–																		
5. Witnessing AB "no"	**-.30**	**-.21**	**-.16**	**-.18**	–																	
6. Witnessing AB "once"	**.14**	**.12**	**.10**	**.10**	**-.82**	–																
7. Witnessing AB "several times"	**.31**	**.18**	**.15**	**.16**	**-.52**	**-.07**	–															
8. Empathy "makes me sad"	**-.33**	**-.17**	**-.19**	**-.13**	**.17**	**-.08**	**-.18**	–														
9. Empathy "deserve it / it's fun"	**.31**	**.17**	**.20**	**.15**	**-.15**	**.03**	**.22**	**-.32**	–													
10. Empathy "I don't know"	**.23**	**.12**	**.12**	**.08**	**-.12**	**.07**	**.10**	**-.93**	**-.05**	–												
11. Been drunk (past 12 months)	**.09**	**.42**	**.28**	**.28**	**-.04**	**.03**	**.03**	**-.03**	**.07**	.01	–											
12. Illegal drug use (lifetime)	**.13**	**.42**	**.40**	**.26**	**-.06**	**.03**	**.06**	**-.08**	**.12**	**.04**	**0.35**	–										
13. Low self-control	**.11**	**.37**	**.27**	**.28**	**-.09**	**.05**	**.08**	**-.13**	**.08**	**.11**	**.30**	**.21**	–									
14. Parental control	**-.07**	**-.17**	**-.16**	**-.10**	**.05**	-.02	**-.06**	**.17**	**-.08**	**-.14**	**-.13**	**-.14**	**-.13**	–								
15. Peer delinquency	**.10**	**.50**	**.40**	**.35**	**-.12**	**.08**	**.09**	**-.05**	**.06**	**.03**	**.47**	**.43**	**.36**	**-.10**	–							
16. Pet/domestic animal ownership	-.00	**.07**	.02	**.03**	-.01	.01	-.01	**.10**	**-.05**	**-.09**	**.08**	.01	**.05**	**-.04**	**.05**	–						
17. Migrant background	**.05**	.02	**.09**	-.00	**-.04**	.02	**.04**	-.02	**.06**	-.00	**-.03**	**.07**	.01	.02	**.04**	**-.10**	–					
18. Perceived socioeconomic status	-.02	**-.04**	.01	.01	.02	-.00	**-.04**	-.02	-.00	.02	-.01	**-.06**	-.01	.00	.00	**-.08**	-.01	–				
19. Female	**-.11**	**-.12**	**-.30**	**-.11**	**.06**	-.02	**-.08**	**.26**	**-.09**	**-.24**	-.01	**-.08**	**-.11**	**.25**	**-.10**	**.07**	-.01	**-.11**	–			
10. Male	**.10**	**.10**	**.26**	**.10**	**-.04**	.01	**.06**	**-.24**	**.06**	**.22**	.01	**.06**	**.10**	**-.23**	**.10**	**-.07**	-.00	**.11**	**-.96**	–		
21. Other gender	**.09**	**.09**	**.12**	**.04**	**-.07**	**.03**	**.07**	**-.10**	**.12**	**.06**	-.00	**.06**	.02	**-.06**	.02	.01	**.04**	-.01	**-.14**	**-.14**	–	
22. Rural area	**-.05**	-.01	.01	-.02	**.03**	-.01	**-.04**	**.07**	**-.03**	**-.06**	**-.04**	**.06**	-.02	**.03**	**.09**	**-.11**	**.08**	.00	.01	-.01	-.01	–

AB = animal abuse. Statistically significant correlations ($p < .05$) highlighted in bold.