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Abstract

This study examined effects of type of and cumulative burden of childhood adversities on bullying and cruelty to animals in the United States. Data were derived from Waves I and II of the National Epidemiologic Survey on Alcohol and Related Conditions, a nationally representative sample of U.S. adults. Structured psychiatric interviews were completed by trained lay interviewers between 2001–2002 and 2003–2004. Although the effects of childhood adversity diminished with the inclusion of confounding variables, several adversities remained significant. For bullying, these included being made to do chores that were too difficult or dangerous, threatening to hit or throw something, pushing, shoving, slapping, or hitting, and hitting that

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left bruises, marks, or injuries. With respect to cruelty to animals, swearing and saying hurtful things, having a parent or other adult living within the home that went to jail or prison, and adult/other person fondling/touching in a sexual way were significant. The final models indicated that the cumulative burden of childhood adversities had strong effects on the increased likelihood of bullying behavior but not cruelty to animals.

Keywords

aggression, bullying, animal cruelty, child abuse and neglect, childhood risk, violence

Bullying and cruelty to animals are two forms of aggressive behavior that have steadily garnered increased attention. Bullying behavior can be defined as repeatedly harming or intimidating persons with less power than oneself, whereas cruelty to animals is the treatment of animals (also with less power) that results in unjustifiable injury, harm or suffering, and death (Cook, Williams, Guerra, Kim, & Sadek, 2010). Both bullying behavior and cruelty to animals typically begin in childhood and are associated with aggression and violence in adulthood (Arluke, Levin, Luke, & Ascione, 1999; Miller & Knutson, 1997).

Approximately 30% of youth in the United States are affected by bullying (Douglas, Ressler, Burgess, & Hartman, 1986; Nansel et al., 2001). Bullies intimidate through physical aggression and verbal threats (Arluke et al., 1999). Longitudinal research has identified several consequences for victims of bullying that include a host of psychosocial adjustment dysfunctions (Espelage & Swearer, 2003; Nansel et al., 2001; Ressler, Douglas, Groth, & Burgess, 1980), even school problems (Currie, 2006), and interpersonal deficits (Duncan, Thomas, & Miller, 2005). Victimization by bullies during childhood has been linked to depression, conduct disorder, and attention deficit disorder (Duncan, 2002; Petersen & Farrington, 2007). Although bullying generally has an onset during childhood and adolescence (Felthous & Kellert, 1987), it can also become chronic with youthful bullies continuing to bully others as adults (Arluke et al., 1999; Einarssen & Skogstad, 1996; Espelage & Swearer, 2003; Ireland, 1999, 2001; Miller & Knutson, 1997; Oliver, Hoover, & Hazler, 1994).

Systematic research on cruelty to animals began to emerge in the 1980s (Douglas et al., 1986; Ressler et al., 1980). In 1987, the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised [*DSM-III-R*]; American Psychiatric Association, 1987) incorporated cruelty to animals as a diagnostic criterion for conduct disorder (CD) and antisocial personality disorder (ASPD). Much

greater research exists on the etiology of bullying compared with cruelty to animals. Extant research suggests that cruelty to animals is linked to exposure to criminogenic environments (Currie, 2006; Duncan, 2002; Duncan et al., 2005; Petersen & Farrington, 2007), observing cruelty to animals (Thompson & Gullone, 2006), and receiving physical punishment in childhood (Flynn, 1999; Miller, 2001). Other studies have linked animal cruelty to additional extreme forms of criminal offending including arson, bestiality, and violent interpersonal assault (Becer, Stuewig, Herrera, & McCloskey, 2004; Hensley & Tallichet, 2005, 2008; Hensley, Tallichet, & Dutkiewicz, 2009, 2010; Hensley, Tallichet, & Singer, 2006; Merz-Perez & Heide, 2004; Merz-Perez, Heide, & Silverman, 2001).

One important characteristic that may distinguish persons who bully from those who are cruel to animals is a deficit in the ability to empathize (Cook et al., 2010; Felthous & Kellert, 1987; Petersen & Farrington, 2007). A recent meta-analysis of 153 studies of the predictors of bullying shows that bullies exhibit both externalizing and internalizing symptoms, such as academic problems, negative views of others, poor conflict-resolution skills, susceptibility to peer influence, and often come from families experiencing disruption and are poorly monitored (Cook et al., 2010). Whereas bullying may have its etiological roots in social learning (i.e., learning and employing techniques that facilitate getting what one wants) and exposure to environmental adversity, cruelty to animals may involve a greater propensity toward callous unemotionality and sadism (i.e., enjoyment of inflicting pain and suffering on an animal). This is not to suggest that learning to be cruel to animals does not occur as this has shown to be plausible (Hensley & Tallichet, 2005) but that animal abuse likely involves a greater degree of callousness and uncaring. Indeed, prior research has suggested empathy deficits as a component of the animal abuser profile (Merz-Perez, & Heide, 2004; Tallichet & Hensley, 2009). As such, effects of exposure to childhood adversities (CAs) might have less effect on persons who are cruel to animals than bullies. Examining the relationship of CAs to bullying and cruelty to animals would, therefore, help to shed light on the developmental origins of these two forms of aggression.

Study Hypotheses

Although prior studies suggest that persons who bully and who are cruel to animals have significant psychiatric problems as adults (Vaughn et al., 2009, 2010), limited empirical research has accrued examining associations between CAs and these two forms of aggressive behavior, particularly in nationally

representative samples. If cruelty to animals involves greater empathy deficits, and research has indicated a high heritability of this trait (Viding, Blair, Moffitt, & Plomin, 2005), then we would expect to find persons who have been cruel to animals to be less sensitive to the effects of CA than those who have bullied. This hypothesis was tested by (a) comparing adults reporting a lifetime history of bullying or cruelty to animals to individuals without such a history with respect to sociodemographic variables and CAs and (b) examining the effects of CAs by specific type and cumulative burden on bullying and cruelty to animals while controlling for sociodemographic, psychiatric, and substance use correlates in a nationally representative sample of U.S. adults.

Method

Participants

Study findings are based on Waves I and II of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). NESARC is a nationally representative sample of 43,093 (Wave I) noninstitutionalized U.S. residents aged 18 years and older (Grant et al., 2003). The survey gathered background data and extensive information about substance use and comorbid psychiatric disorders, including personality disorders, from individuals living in households and group settings such as shelters, college dormitories, and group homes in all 50 states and the District of Columbia. NESARC used a multistage cluster sampling design, oversampling young adults, Hispanics, and African Americans in the interest of obtaining reliable statistical estimation in these subpopulations and to ensure appropriate representation of racial/ethnic subgroups. Multistage cluster sampling design is a commonly used design when attempting to provide nationally representative estimates. This is because interviewing all participants is not feasible so larger units (i.e., clusters) are identified and randomly selected from. With respect to the NESARC, 709 primary sampling units (PSUs) provided by the Census Supplementary Survey was selected (Stage 1). Within the sample PSUs, households were systematically selected (Stage 2). An individual aged 18 or older was randomly selected from each household. The response rate for Wave I data was 81% and for Wave II was 86.7% ($N = 34,653$) with a cumulative response rate of 70.0% for both waves. Data were weighted at the individual and household levels to adjust for oversampling and nonresponse on demographic variables (i.e., age, race/ethnicity, sex, region, and place of residence). Data were also adjusted to be representative (based on region, age, race, and ethnicity)

of the U.S. adult population as assessed during the 2000 Census. Study participants provided fully informed consent. The U.S. Census Bureau and the U.S. Office of Management and Budget approved the research protocol and informed consent procedures.

Diagnostic Assessment

Data were collected through face-to-face structured psychiatric interviews conducted by U.S. Census workers trained by the National Institute on Alcohol Abuse and Alcoholism and U.S. Census Bureau. Interviewers administered the Alcohol Use Disorder and Associated Disabilities Interview Schedule–*DSM-IV* version (AUDADIS-IV), which provides diagnoses for mood, anxiety, personality, and substance use disorders. The AUDADIS-IV has good-to-excellent reliability in assessing alcohol and drug use in the general population (Grant, Harford, Dawson, Chou, & Pickering, 1995; Hasin, Carpenter, McCloud, Smith, & Grant, 1997).

Dependent Variables: Bullying and Cruelty to Animals

Bullying and cruelty to animals were assessed with items embedded in the conduct disorder section and part of the antisocial behavior interview module. All NESARC participants were asked the following questions: “In your ENTIRE life, did you EVER have a time when you bullied or pushed people around or tried to make them afraid of you?” and “In your ENTIRE life, did you EVER hurt or be cruel to an animal or pet on purpose?” NESARC respondents who answered yes to these respective items were defined as having a history of bullying ($N = 1,968$) or cruelty to animals ($N = 475$). Measures did not assess recurrent bullying or recurrent animal cruelty. Interestingly, relatively few persons answered yes to both of these items and thus analysis was conducted separately. Although the reliability of these individual items are unknown, the test-retest reliability for the antisocial personality disorder diagnosis was adequate ($r = 0.69$; Grant et al., 2003). The internal consistency reliability for the entire antisocial personality disorder criterion set was also good ($\alpha = .86$; Blanco et al., 2008).

Independent Variables: CAs

Seventeen CAs were assessed retrospectively in Wave II. These items reflected exposure to neglect and emotional, physical, and sexual abuse; family member

drinking; and incarceration prior to age 17. These items were drawn from previously validated measures including the Childhood Trauma Questionnaire (Bernstein, Fink Hondelsman, Foote, & Lovejoy, 1994) and Conflict Tactics Scale (Straus, 1979). Items were coded 0 (*no*) or 1 (*yes*), depending on whether the respondent reported having experienced a specific CA. Individual items are listed in Table 1. Previous research with the NESARC has shown that the prevalence of CAs is similar for women and men and that approximately half of the sample reported at least one exposure (McLaughlin, Conron, Koenen, & Gilman, 2009).

Control Variables

Numerous control variables were used to reduce confounding, including socio-demographic variables (race/ethnicity, sex, age, marital status, educational background, nativity, and annual individual and family income), conduct disorder, and lifetime alcohol (alcohol abuse/dependence) and drug use (abuse/dependence on heroin, hallucinogens, cocaine/crack, marijuana, stimulants, painkillers, tranquilizers, and sedatives) disorders. Response categories for these variables are listed in Table 2.

Statistical Analyses

Weighted prevalence estimates and standard errors were computed using SUDAAN Version 9.0 (Research Triangle Institute, 2004). This system implements a Taylor series linearization to adjust standard errors of estimates for complex survey sampling design effects, including clustered data. The analyses proceeded first by examining cross-tabulations between socio-demographic variables and psychiatric disorders. Next, multivariate logistic regression analyses were conducted to assess the effects of individual CAs in unadjusted and adjusted analyses controlling for sociodemographic and lifetime psychiatric disorders. Thus, analyses were able to assess the effects of each CA in relation to bullying and cruelty to animals with and without controls for a full range of potentially confounding variables. In this way, we were able to isolate the effect of each CA on our dependent variables. Finally, ordinal logistic regression analyses were executed to assess the cumulative burden of CAs also using control variables. Adjusted odds ratios (AORs) and 95% confidence intervals (CIs) are presented to reflect association strength. AORs were considered statistically significant only if associated CIs did not include the value 1.0.

Table 1. Odds Ratios and Adjusted Odds Ratios of Childhood Adversities on Bullying and Cruelty to Animals (N = 34,653)

	Bullying		Cruelty to animals	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Chores too difficult or dangerous	1.84 [1.62, 2.09] ^a	1.20 [1.20, 1.41] ^a	1.66 [1.25, 2.20] ^a	1.30 [0.95, 1.78]
Left alone or unsupervised	1.95 [1.72, 2.22] ^a	1.15 [0.98, 1.35]	1.74 [1.37, 2.22] ^a	1.06 [0.75, 1.49]
Go without things needed items	1.76 [1.51, 2.05] ^a	1.01 [0.81, 1.26]	1.24 [0.83, 1.85]	0.76 [0.46, 1.24]
Go hungry or not prepare regular meals	2.21 [1.87, 2.60] ^a	0.99 [0.76, 1.30]	2.03 [1.33, 3.09] ^a	1.61 [0.97, 2.69]
Ignore/fail to get treatment when sick	1.86 [1.56, 2.22] ^a	0.87 [0.68, 1.12]	0.94 [0.58, 1.51]	0.54 [0.30, 0.97] ^a
Swear, insult, or say hurtful things	2.35 [2.11, 2.62] ^a	1.17 [0.99, 1.38]	2.26 [1.81, 2.82] ^a	1.46 [1.02, 2.07] ^a
Threaten to hit or throw something	2.27 [2.05, 2.52] ^a	1.19 [1.02, 1.40] ^a	2.09 [1.65, 2.63] ^a	1.21 [0.87, 1.70]
Push, shove, slap, or hit	2.27 [2.04, 2.52] ^a	1.29 [1.09, 1.53] ^a	2.01 [1.59, 2.56] ^a	1.20 [0.87, 1.66]
Hit and left marks or bruises or were injured	2.56 [2.28, 2.87] ^a	1.23 [1.04, 1.46] ^a	1.73 [1.32, 2.25] ^a	0.73 [0.51, 1.04]
Father/other adult male push, grab, or slap mother	2.12 [1.83, 2.44] ^a	1.17 [0.92, 1.50]	1.54 [1.15, 2.07] ^a	0.88 [0.55, 1.41]
Father/other adult male hit your mother with a fist or with something hard	2.04 [1.75, 2.39] ^a	0.83 [0.64, 1.09]	1.65 [1.14, 2.40] ^a	1.21 [0.67, 2.20]
Father/other adult male threaten your mother with a knife/gun or use a knife/gun to hurt her	1.98 [1.57, 2.49] ^a	0.95 [0.70, 1.30]	1.10 [0.47, 2.61]	0.62 [0.31, 1.23]
Parent/other adult living in home was problem drinker	1.75 [1.54, 2.00] ^a	1.05 [0.89, 1.23]	1.47 [1.14, 1.92] ^a	0.98 [0.70, 1.35]
Parent/other adult living in home went to jail/prison	2.08 [1.75, 2.44] ^a	1.08 [0.86, 1.33]	2.04 [1.37, 3.03] ^a	1.54 [1.03, 2.27] ^a
Adult/other person fondle/touch in sexual way	1.87 [1.60, 2.19] ^a	1.03 [0.80, 1.34]	1.71 [1.19, 2.46] ^a	2.46 [1.64, 3.67] ^a
Adult/other person attempt sexual intercourse	2.22 [1.84, 2.68] ^a	1.12 [0.78, 1.59]	1.33 [0.84, 2.10]	0.60 [0.23, 1.60]
Adult/other person have sexual intercourse	2.51 [2.01, 3.12] ^a	1.38 [0.96, 1.98]	1.25 [0.78, 2.00]	1.09 [0.37, 3.18]

Note: OR = odds ratio; CI = confidence interval. Odds ratios were adjusted for age, race, sex, education, marital status, income, nativity, conduct disorder, and any lifetime alcohol and drug use disorder.

a. Values are statistically significant.

Table 2. Characteristics of Individuals Reporting Bullying Behavior, Cruelty to Animals, and Neither Behavior (*N* = 34,653)

Characteristic	None (<i>N</i> = 31,986)	Bullying (<i>N</i> = 1,968)	Cruelty to animals (<i>N</i> = 475)	χ^2	<i>p</i> value
	% (SE)	% (SE)	% (SE)		
Sex				64.17	.0000
Male	89.83 (0.38)	7.75 (0.33)	2.52 (0.17)		
Female	95.26 (0.18)	4.26 (0.17)	0.48 (0.05)		
Race				1.87	.0994
Hispanic	92.94 (0.54)	6.16 (0.51)	0.89 (0.16)		
Asian/Alaskan/Indian/Native American	92.54 (0.89)	5.73 (0.78)	1.73 (0.48)		
African American	91.77 (0.47)	6.63 (0.41)	1.59 (0.20)		
White	92.78 (0.26)	5.79 (0.23)	1.43 (0.11)		
Age				29.32	.0000
65+	97.33 (0.22)	2.03 (0.20)	0.63 (0.10)		
50-64	93.72 (0.38)	4.56 (0.29)	1.72 (0.19)		
35-49	92.10 (0.36)	6.43 (0.33)	1.46 (0.15)		
18-34	88.80 (0.52)	9.57 (0.46)	1.63 (0.19)		
Marital status				9.19	.0000
Married	93.18 (0.25)	5.43 (0.22)	1.39 (0.11)		
Divorced	93.59 (0.39)	5.16 (0.35)	1.25 (0.15)		
Single	89.81 (0.54)	8.55 (0.49)	1.65 (0.20)		
Education				3.82	.0075
Less than high school	91.57 (0.55)	7.10 (0.52)	1.33 (0.23)		
High school graduate	92.50 (0.37)	6.29 (0.35)	1.21 (0.13)		
Some college or higher	93.01 (0.27)	5.47 (0.22)	1.52 (0.12)		
Income (US\$)				3.22	.0078
0-19,999	92.90 (0.31)	6.02 (0.29)	1.08 (0.11)		
20,000-34,999	92.36 (0.40)	6.27 (0.35)	1.37 (0.16)		
35,000-69,999	92.16 (0.42)	6.04 (0.37)	1.80 (0.20)		
70,000+	92.95 (0.54)	5.18 (0.48)	1.87 (0.28)		
Born in the United States				18.37	.0000
Yes	92.13 (0.23)	6.35 (0.20)	1.52 (0.09)		
No	96.05 (0.38)	3.25 (0.33)	0.71 (0.17)		
Conduct disorder				28.40	.0000
Yes	53.58 (3.47)	37.13 (3.09)	9.29 (2.48)		
No	93.06 (0.23)	5.61 (0.20)	1.33 (0.08)		
Lifetime alcohol use disorder				80.86	.0000
Yes	86.32 (0.42)	11.17 (0.38)	2.50 (0.18)		
No	95.98 (0.19)	3.18 (0.16)	0.84 (0.08)		
Lifetime illicit drug use disorder				63.84	.0000
Yes	79.28 (0.89)	16.90 (0.84)	3.82 (0.42)		
No	94.16 (0.21)	4.70 (0.17)	1.14 (0.09)		

Results

Characteristics of Persons Reporting a History of Bullying, Cruelty to Animals, or Neither Behavior

Table 2 shows the characteristics of adults reporting a history of bullying ($N = 1,968$), cruelty to animals ($N = 475$), and neither behavior ($N = 31,986$). Demographically, persons reporting a lifetime history of bullying and cruelty to animals were significantly more likely to be men ($\chi^2 = 64.17, p < .0001$), single ($\chi^2 = 9.19, p < .0001$), have less education ($\chi^2 = 3.82, p = .007$), have lower levels of income ($\chi^2 = 3.22, p < .008$), and to be born in the United States ($\chi^2 = 18.37, p < .0001$). Compared with respondents of age 18 to 34, persons 35 and older were less likely to report bullying behavior and cruelty to animals. No significant racial and ethnic differences were found.

With respect to psychiatric disorders, persons diagnosed with conduct disorder (CD), lifetime alcohol use disorder (AUD), and lifetime drug use disorder (DUD) were significantly more likely to report bullying and cruelty to animals than respondents without these disorders. The prevalence of conduct disorder among persons reporting bullying and cruelty to animals was high compared with those reporting neither behavior (37.13% vs. 5.61% for bullying; 9.29% vs. 1.33% for cruelty to animals). Although less striking due to the fact that these behaviors are part of the diagnosis of CD, the prevalence of lifetime alcohol and drug use disorder were also relatively high (11.17% vs. 3.18% for AUD; 2.50% vs. 0.84% for DUD).

Associations of CAs to Bullying and Cruelty to Animals

Table 1 displays unadjusted and AORs for the effects of 17 specific CAs on bullying and cruelty to animals. With respect to bullying, unadjusted analyses revealed that all 17 adversities were associated with significant and increased likelihood of bullying behavior. The strongest effects were found for swear, insult, or say hurtful things (OR = 2.35, CI = [2.11, 2.62]), hit and left marks or bruised or injuries (OR = 2.56, CI = [2.28, 2.87]), having an adult/other person have sexual intercourse with you (OR = 2.51, CI = [2.01, 3.12]). For cruelty to animals, unadjusted analyses showed that 12 specific adversities were found to increase the likelihood of this behavior with the strongest effects found for swear, insult, or say hurtful things (OR = 2.26, CI = [1.81, 2.82]), threaten to hit or throw something (OR = 2.09, CI = [1.65, 2.63]), and parent or other adult living within the home going to jail or prison (OR = 2.04, CI = [1.37, 3.03]).

Table 3. Cumulative Burden of Total Number of Childhood Adversities to Bullying and Cruelty to Animals ($N = 34,653$)

Number of adversities	Bullying	Cruelty to animals
	OR (95% CI)	OR (95% CI)
1	1.80 [0.83, 3.88]	0.29 [0.10, 0.84] ^a
2	1.53 [0.74, 3.88]	0.35 [0.14, 0.88] ^a
3	2.16 [1.02, 4.56] ^a	0.54 [0.20, 1.48]
4	2.64 [1.24, 5.60] ^a	0.67 [0.26, 1.73]
5	2.72 [1.27, 5.84] ^a	0.83 [0.32, 2.13]
6	3.44 [1.65, 7.19] ^a	0.64 [0.23, 1.76]
7	3.47 [1.64, 7.34] ^a	0.70 [0.27, 1.84]
8	3.72 [1.69, 8.17] ^a	0.78 [0.29, 2.05]
9	4.44 [1.96, 10.08] ^a	1.05 [0.37, 2.99]
10 or more	4.73 [2.23, 10.01] ^a	0.78 [0.28, 2.17]

Note: OR = odds ratio; CI = confidence interval. Odds ratios were adjusted for age, race, sex, education, marital status, income, nativity, conduct disorder, and any lifetime alcohol and drug use disorder. Reference group = persons not reporting lifetime bullying or cruelty to animals. a. Values are statistically significant.

Next, adjustments were made for all sociodemographic and psychiatric characteristics presented in Table 2. This resulted in substantial attenuation of the effects of each CA. For bullying, remaining significant adversities were being made to do chores that were too difficult or dangerous (OR = 1.20, CI = [1.20, 1.41]), threaten to hit or throw something (OR = 1.19, CI = [1.02, 1.40]), push, shove, slap, or hit (OR = 1.29, CI = [1.09, 1.53]), hit or left bruises, marks, or injuries (OR = 1.23, CI = [1.04, 1.46]). With respect to cruelty to animals, swear and say hurtful things (OR = 1.46, CI = [1.02, 2.07]), parent or other adult living within the home going to jail or prison (OR = 1.54, CI = [1.03, 2.27]), and adult/other person fondle/touch in a sexual way (OR = 2.46, CI = [1.64, 3.67]) significantly increased its likelihood.

What Is the Cumulative Burden of CAs on Bullying and Cruelty to Animals?

The goal of the next set of analyses was to examine the cumulative effect of CAs on bullying and cruelty to animals. Table 3 compares the number of experiences in increasing the odds of bullying and cruelty to animals. Results indicated an increasing likelihood of bullying based on each additional lifetime

adversity. Significant effects began at three adversities (OR = 2.16, CI = [1.02, 4.56]) and increased steadily to a powerful effect at 10 or more adversities (OR = 4.73, CI = [2.23, 10.01]). In contrast, increasing the number of adversities had no significant effect on cruelty to animals.

Discussion

To our knowledge, this is the largest national epidemiological study examining the association between CAs and bullying and cruelty to animals. Findings support the main hypothesis that CAs would have a greater relative effect on bullying behavior than cruelty to animals. In particular, the cumulative burden of CAs had an incremental and strong effect on bullying but not cruelty to animals. With respect to specific CAs, the effects were largely attenuated by confounding variables for both bullying and cruelty to animals. However, specific CAs that remained significant for bullying were three forms of physical abuse, namely, threatening to hit; pushing, shoving, slapping, or hitting; and hitting and leaving marks, bruises, and injury. With respect to cruelty to animals, sexual abuse (having someone fondle or touch in an inappropriate way), having a parent incarcerated, and swearing and saying hurtful things remained significant. Although having a parent incarcerated suggests social learning effects (Hensley & Tallichet, 2005), it also suggests that persons who have been cruel to animals have also inherited antisocial tendencies given that there is significant evidence for additive and molecular genetic effects across antisocial phenotypes (Gunter, Vaughn, & Philibert, 2010).

Although speculative, findings suggest that individuals who are cruel to animals are more likely possess a liability toward callous unemotional traits that are highly heritable and less etiologically malleable than bullying to environmental input. This is not to suggest that empathy-building interventions would have no effect on reducing cruelty to animals but only that the developmental origins of cruelty to animals may have a stronger biological basis than bullying behavior. Cruelty to animals could also involve sadism—enjoyment of the pain and suffering inflicted on the animal. This could reflect a behavior left over from our earlier roles as predators (i.e., killers of animals; Nell, 2006). Conversely, one could argue that bullying is often done for instrumental reasons, such as to increase social standing or to gain some material or interpersonal advantage. People may learn manipulative strategies to get what they want, like bullying, from social learning and the modeling of others in their families.

Bullying and cruelty to animals are associated with a broad array of antisocial behaviors such as getting into numerous physical altercations, school

attendance problems, lying, and stealing. As a consequence, they can be viewed as a marker for potential antisocial behavior syndromes. Yet their etiological underpinnings may not be the same.

Prevention Implications

Several antibullying intervention models have been developed to reduce or prevent bullying behavior during elementary and middle school. A systematic review of school-based antibullying interventions identified several protocols that resulted in reductions of 17% to 23% (Vreeman & Carroll, 2007). The Olweus intervention was found to be particularly effective in reducing bullying (Olweus, 2004). This intervention targets multiple systems in an effort to reduce bullying that includes developing a schoolwide antibullying culture and training staff and teachers in preventing the precipitating factors prior to escalation (Blanco et al., 2008). Evidence-based protocols for reducing cruelty to animals are not as highly developed and tested. Results from the present study suggest that practices and policies that reduce CAs could in turn diminish bullying behavior but perhaps not cruelty to animals. Animal abusers may benefit from emotion regulation training (Larson & Lochman, 2003) and related empathy-development skills.

Limitations

Current study findings should be interpreted in light of several limitations. First, measures of bullying and cruelty to animals did not capture recurrent bullying or animal cruelty, and they were also limited by any assessment of severity in these behaviors. Second, given that the study data are cross-sectional, temporal ordering of variables does not permit firm conclusions regarding causal determinants. An additional limitation is that the NESARC excludes persons below age 18 and therefore relies on respondent recall of CAs over potentially long periods of time. This could lead to underreporting or to biased reporting with younger respondents recalling better than older respondents. As such, results, though suggestive, cannot clarify the causal nature of the relationships between CAs and bullying and cruelty to animals. Longitudinal studies beginning earlier in the life course that examine gene-environment interactions dynamically over time provide one way to elucidate the causal structure of CAs and their effects on bullying and animal abusive behavior.

Although the NESARC is a nationally representative sample, it is uncertain how the associations between CA and bullying and cruelty to animals

would be similar or different if enriched correctional or clinical samples were employed. In addition, the data did not include important contextual, situational, and precipitating information, which is important to understanding the causal nexus of these events and behaviors. Future studies on this nexus would benefit from including these natural history features in such assessments. More extensive assessments of bullying and animal abuse that capture the frequency, harm inflicted, and at what age this occurred would be useful. Despite these limitations, findings from this study provide new and important epidemiologic insights into the relationships between CA, bullying, and cruelty to animals in the United States.

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Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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