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The Relationship between Animal Cruelty, Delinquency, and Attitudes toward the Treatment of Animals

ABSTRACT

Previous research has identified a relationship between acts of cruelty to animals other than humans and involvement in other forms of antisocial behavior. The current study sought to extend these findings by examining this relationship among a sample of college students using a self-report delinquency methodology. In addition, the current study explored the relationship between a history of observing or engaging in acts of animal cruelty and attitudes of sensitivity/concern regarding the treatment of nonhuman animals. College students (n = 169) enrolled in an Introduction to Psychology course comprised the sample. Results indicated that those participants who observed acts of animal cruelty and those who participated in acts of animal cruelty had higher scores on a self-report delinquency scale than did those who had never observed or participated in acts of animal cruelty. Observation of acts of animal cruelty interacted with sex to predict attitudes toward the treatment of animals. Observation of animal cruelty and participation in animal cruelty affected delinquency scores independently. The current study discusses implications and directions for future research.

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Recent theoretical and empirical developments have highlighted the issue of cruelty to animals other than humans as one of importance within the fields of psychology, sociology, and criminology. Theoretically, efforts have been undertaken to provide sound philosophical bases for recognizing animal cruelty as a socially important phenomenon (Beirne, 1999; Flynn, 2001). Empirically, trends in the study of animal cruelty have linked animal maltreatment to significant antisocial tendencies, particularly interpersonal violence (Ascione, 2001). A growing awareness of the importance of this link suggests that mental health professionals, law enforcement, and policy makers no longer can afford to adopt a "boys will be boys" attitude toward individuals who perpetrate acts of cruelty against animals (Flynn, 2000). However, the strength of the animal cruelty-antisocial behavior relationship, the specific contexts within which the relationship is most potent, and the cognitive-emotional factors underlying this relationship are still being explored. The purpose of the current study is to examine the relationship between animal cruelty behaviors, attitudes tolerant of animal maltreatment, and delinquent behavior among a sample of college students representative of the general college population.

A growing body of research supports the contention that animal cruelty perpetrators are at increased risk for involvement in crimes against humans. Arluke, Levin, Luke, and Ascione (1999) found that a group of identified animal abusers were 3.2 times more likely than non-abusers to have a history of criminal behavior. The link between animal cruelty and crime was particularly strong with regard to other violent offenses, with the animal abusers being 5.3 times more likely than non-abusers to have a record of at least one violent crime. Felthous (1979) reported that a history of animal cruelty was more common among a group of aggressive psychiatric patients than among a group of non-aggressive patients. Felthous (1980) compared two groups of adult psychiatric patients, an animal abuser group, and an assaultive group, on a number of childhood characteristics. Although few differences between these groups emerged, subjects in the animal abuse group tended to show a history of serious violence toward other people. These studies indicate that there is a relationship between animal cruelty and other forms of antisocial behavior, at least among populations identified on the basis of significant aggressive or criminal conduct. However, no research to date has examined this relationship within non-adjudicated samples.

Flynn (1999a, 1999b) has examined animal cruelty behavior among samples of college students. In these studies, Flynn found that approximately 18% of college students reported perpetrating at least one act of animal cruelty; approximately 45% of his sample also reported observing at least one act of animal cruelty. Male students who participated in an act of animal cruelty reported having been more likely to be a subject of corporal punishment in childhood than were non-perpetrators; in addition, animal cruelty perpetrators were found to be more tolerant of within-family violence than were non-perpetrators. These results indicate a significant percentage of the general college population reports a history of involvement in acts of animal cruelty. Further, within this population, involvement in animal cruelty behavior is associated with other important behavioral and attitudinal outcomes. However, these results do not address specifically the issue of involvement in antisocial behavior among animal cruelty perpetrators within the general college population.

Researchers have suggested that involvement in animal cruelty behaviors, either as observer or participant, may be associated with the development of attitudes that reflect a general insensitivity toward the well-being of others (Ascione, 1992, 1993). Specifically, it is hypothesized that observing or participating in acts of animal cruelty, particularly among young children, may result in a callous, insensitive attitude toward the suffering of both humans and animals. In the absence of attitudes supporting concern for others, the individual is free to carry out acts of violence toward animals or humans. Although findings linking animal cruelty to other forms of criminal conduct and results linking animal cruelty to attitudes tolerant of within-family violence support this conclusion, as yet little research directly has assessed this hypothesis.

Threefold Purpose of the Study

The purpose of the current study was threefold. The first purpose was to examine the relationship between animal cruelty and involvement in other forms of antisocial behavior among a college sample using self-reports of animal cruelty behavior and delinquent behavior. Several published studies have relied upon self-report measures of animal cruelty behavior (Flynn, 1999a, 1999b; Miller & Knutson, 1997). Similarly, self-report measures of delinquent

behavior have been used extensively in studies of antisocial behavior (Huizinga & Elliott, 1986; Moffitt, Caspi, Harrington & Milne, 2002). Based on previous research, it was predicted that those participants who reported having been involved in acts of animal cruelty also would report a greater frequency of involvement in delinquent behaviors. Further, the differential relationship between delinquency and observing acts of animal cruelty as opposed to participating in acts of animal cruelty was examined.

The second purpose of this study was to examine further the relationship between observing and participating in acts of animal cruelty. Recently, Baldry (2003) reported that observing acts of animal cruelty was a significant predictor of participation in acts of animal cruelty. The current study attempted to expand on this finding by examining the relationship between observation and participation in a number of ways. First, the probability of participating in animal cruelty as a function of having observed acts of animal cruelty was explored. Based on Baldry's findings, it was expected that those who reported having observed animal cruelty would be more likely to report having participated in animal cruelty. Second, the relationship between observing and participating in animal cruelty as a function of the perpetrator of the observed act was explored. Finally, the relationship between observing and participating in animal cruelty as a function of the age at which the acts of animal cruelty were first observed was explored.

The third purpose of the study was to examine the relationship between animal cruelty behaviors and attitudes reflecting tolerance for animal maltreatment. As described earlier, theoretical formulations and circumstantial evidence suggest that those individuals exposed to acts of animal cruelty during childhood would have less sensitivity to the treatment of animals than would those with no such exposure. To assess this hypothesis, a survey examining sensitivity to the potential maltreatment of animals was developed. This sensitivity was assessed in relationship to reports of having observed or participated in acts of animal cruelty.

Methods

Participants

Participants in this study were 169 students enrolled in sections of Introduction to Psychology. Research participation was a requirement of the Introduction to Psychology course. Of the participants, 92 (54.4%) were women, and 77 (45.6%) were men.[2] The mean age of participants was 23.9 years (SD = 8.49), with a range of 17 to 55 years. Of the participants, 75 % identified themselves as White; 16%, Hispanic; 3%, Black; 6%, Asian; 4%, American Indian/Alaska Native; 1%, Pacific Islander; and 6%, Other. These percentages sum to more than 100% because participants could identify themselves as members of more than one race or ethnicity group.

Measures

Experiences with animals. Companion animal guardianship (ownership) history and history of animal cruelty were assessed using a modified version of the survey employed by Flynn (1999a, 1999b), which in turn was an adaptation of the Boat (1999) Inventory on Animal-Related Experiences. In the current study, the survey comprised two sections. The first section asked participants to report whether their family had owned pets during their childhood (and if so, what species), and whether they owned pets currently (and if so, what species). The second section explored participants' animal cruelty experiences. Participants were asked whether they had ever witnessed an animal being killed; whether they had ever witnessed an animal being tortured; whether someone had ever tried to control them by threatening or harming an animal; and whether someone had ever forced them to hurt an animal. In addition, participants were asked whether they had ever intentionally killed a pet; whether they had ever intentionally killed a stray/wild animal; whether they had ever tortured an animal; and whether they had ever tried to control someone by threatening or harming an animal. If the participants responded "yes" to any of the previous questions, they were asked a series of follow-up questions examining the type of animal(s) harmed, what was done to harm the animal(s), the number of separate incidents observed or participated in, and the age at which the incidents were first observed or participated in.

Modification of the survey involved the deletion of the section pertaining to sexual contact with animals. Self reports of this type of behavior have been shown to yield very low base rates (Flynn, 1999a, 1999b). In spite of this modification, the rates of animal cruelty reported in this study are very similar to those found in previous research using the original instrument (Flynn), suggesting that this change did not adversely affect the validity of the measure.

Self-reported delinquency. Delinquency was assessed using a modified version of the "Self-Reported Delinquency (SRD) Questionnaire," an instrument developed and used extensively in longitudinal research on delinquent behavior (Moffitt, Silva, Lynam & Henry, 1994; Henry, Caspi, Moffitt, Harrington & Silva, 1999). The original SRD is an interview schedule that asks participants about their involvement in a variety of types of antisocial behavior. For the purposes of this study, the SRD was adapted to a pencil-and-paper format that could be administered in a group setting. The survey examined involvement in 35 different behaviors, including acts such as theft, arson, fraud, and assault. For each behavior, participants were asked whether they had "ever" engaged in that behavior. If they indicated that they had engaged in that behavior, they were asked whether they had ever engaged in that behavior "within the past year." From this survey, two delinquency scores were generated. The "Ever" score was the number of the "ever" items to which the participant responded, "yes." The "Past Year" score was the number of "past year" items to which the participant responded, "yes."

Attitudes toward the treatment of animals scale (ATTAS). A 26-item attitude scale was developed to assess sensitivity to the maltreatment of animals. Participants were asked to indicate the extent to which they would be bothered by thinking about a particular type of treatment of an animal. Each item was phrased, "How much would it bother you to think about. . . ." The Appendix lists the specific types of treatment included in the survey. Participants responded to each item on a 5-point scale ranging from 5, "A lot" to 1, "None at all." Thus, higher scores reflect relatively greater discomfort with the type of treatment specified. The Attitudes toward the Treatment of Animals Scale (ATTAS) exhibited very good internal consistency in this sample (alpha = 0.93).

Pilot testing based on a separate sample of 104 Introduction to Psychology students (60 women, 44 men) indicated that men scored significantly lower

on the ATTAS than did women (indicating less sensitivity among men to the treatment of animals); ATTAS scores were not related to age. Scores on the ATTAS were significantly related to self-reported attachment to pets among participants in the pilot study, and a significant relationship was found between ATTAS scores and the extent to which the participant reported being bothered by having observed an act of animal cruelty. Among participants in the pilot study who reported having observed an act of animal cruelty, those who stated that it did not bother them at all had the lowest ATTAS scores, those who stated that it bothered them some had intermediate ATTAS scores, and those who stated that it bothered them a lot had the highest ATTAS scores.

Results

Descriptive Statistics

A total of 163 (96.4%) participants indicated that their family had owned at least one pet during their childhood, and 132 (78.1%) indicated that they currently owned a pet.

Eighty-six (50.9%) participants indicated that they had observed at least one act of animal cruelty. Table 1 presents the number of participants observing animal cruelty by sex. Men were more likely to report observing animal cruelty than were women (chi-square = 11.17, $p < .01$). Sixty-three (37.3%) participants indicated that they had observed animal cruelty more than once. Again, men were more likely to report observing animal cruelty more than once than were women (chi-square = 18.04, $p < .001$). Among these 86 participants who reported having observed at least one act of animal cruelty, 76% were White; 6% were Black; 5% were Asian; 5% were American Indian/Alaska Native; 15% were Hispanic; and 4% were Other. These percentages virtually are identical to the percentage of these groups in the sample as a whole, with the exception of Blacks, who were slightly over-represented in the group reporting having observed at least one incident of animal cruelty.

Thirty (17.8%) participants reported engaging in animal cruelty behavior at least once, and 21 (12.4%) reported engaging in animal cruelty more than once. Table 1 presents animal cruelty participation by sex. As can be seen, very few women reported participating in animal cruelty. Compared to women,

Table 1: Reports of Observing and Participating in Acts of Animal Cruelty by Sex

	Observed	
Sex	No	Yes
Male	27	50
	(35.1%)	(64.9%)
Female	56	36
	(60.9%)	(39.1%)
	Observed More Than Once	
Sex	No	Yes
Male	35	42
	(45.5%)	(54.5%)
Female	71	21
	(77.2%)	(22.8%)
	Participated	
Sex	No	Yes
Male	50	27
	(64.9%)	(35.1%)
Female	89	3
	(96.7%)	(3.3%)
	Participated More Than Once	
Sex	No	Yes
Male	58	19
	(75.3%)	(24.7%)
Female	90	2
	(97.8%)	(2.2%)

men were more likely to report participation in animal cruelty (chi-square = 29.04, $p < .001$), and to report participation more than once (chi-square = 19.50, $p < .001$). Among these 30 participants who reported engaging in at least one act of animal cruelty, 73% were White; 7% were Black; 7% were Asian; 3% were American Indian/Alaska Native; and 17% were Hispanic. Again, Blacks were overrepresented slightly in the group reporting having participated in at least one incident of animal cruelty.

Total self-report delinquency "Ever" and "Past Year" scores and mean attitude scores by sex are presented in Table 2. Men reported significantly more delinquent behavior ever ($F(1, 160) = 17.80$, $p < .001$) and more delinquent behavior in the past year ($F(1, 160) = 5.86$, $p < .05$) than did women. Men scored significantly lower on the ATTAS than did women ($F(1, 167) = 37.07$, $p < .001$.)

Table 2: Self-reported Delinquency and Attitudes toward the Treatment of Animals by Sex

	Male	Female
Delinquency—Ever	9.86	6.36
	(5.56)	(5.00)
Delinquency—Past Year	3.08	1.78
	(3.77)	(3.10)
Attitudes	3.35	3.91
	(0.64)	(0.54)

The relationship between observing animal cruelty and participating in animal cruelty.

Crosstabulations were used to examine the relationship between observing and participating in animal cruelty. Table 3 presents the results of these analyses. Observing animal cruelty was significantly related to participating in animal cruelty. Twenty-six percent of those who reported having observed an act of animal cruelty also reported participating in animal cruelty, compared to only 10% of those who reported never having observed animal cruelty (chi-square = 7.35, $p < .01$). The relationship is even stronger among those participants who reported having observed animal cruelty on more than one occasion. Thirty percent of those who reported having observed animal cruelty on more than one occasion participated in animal cruelty, compared to 10% of those who observed one or zero times (chi-square = 10.59, $p < .01$).

If participants indicated that they had observed an act of animal cruelty, they were asked to indicate who perpetrated that act. Response options included, "father/stepfather," "mother/stepmother," "sibling," "other relative," "friend or neighbor," or "other." "Friend or neighbor" was the most

Table 3: The Relationship between Observing and Participating in Animal Cruelty

	Never Observed	Observed
Never Participated	75	64
	(90.4%)	(74.4%)
Participated	8	22
	(9.6%)	(25.6%)
	Observed One Time or Less	Observed More Than Once
Never Participated	95	44
	(89.6%)	(69.8%)
Participated	11	19
	(10.4%)	(30.2%)

commonly identified perpetrator (70.9%), followed by "other" (32.6%), "other relative" (19.8%), "father/stepfather" (16.3%), and "sibling" (14.0%).[3] No participants reported having observed an act of animal cruelty perpetrated by their mother/stepmother.

Among those participants who reported that they had observed their father or stepfather commit an act of animal cruelty, 42.9% also indicated that they too had participated in animal cruelty. Participation rates for those who reported having seen siblings, friends or neighbors, or others commit acts of animal cruelty were very similar (33.3%, 32.8%, and 32.1%, respectively). The lowest participation rates were seen among those who reported having observed another relative (other than father, mother, or sibling) commit an act of animal cruelty (23.5%).

Finally, crosstabulation was used to examine the relationship between the age at which participants stated they first observed an act of animal cruelty and participation in animal cruelty. Of the 86 participants who reported having observed an act of animal cruelty, 7 reported that they had first observed such an act before the age of 5; 53 between the ages of 6 and 12; 20 between the ages of 13 and 18; and 6 after the age of 18. For the purposes of this analysis, these age categories were collapsed into "12 years or younger" and "older than 12." Rates of participation in animal cruelty varied substantially as a function of age at which animal cruelty first was observed. Approximately

32% of those who first observed animal cruelty at a relatively early age participated in animal cruelty, compared to only 11.5% of those who first observed animal cruelty at a relatively later age (chi-square = 3.86, $p < .05$).

The relationship between observing animal cruelty, self-report delinquency, and attitudes toward the treatment of animals.

Multivariate analysis of variance (MANOVA) was used to examine the relationship between reports of observing animal cruelty, delinquent behavior, and attitudes toward the treatment of animals. Table 4 presents results of analyses comparing those who reported observing at least one act of animal cruelty with those who reported never having observed animal cruelty.

Table 4: The Relationship between Observing Animal Cruelty, Delinquency, and Attitudes

	Observed		Never Observed	
	Male	Female	Male	Female
Delinquency —	11.09	7.92	7.72	5.36
Ever	(5.30)	(5.75)	(5.53)	(4.22)
Delinquency —	3.74	2.92	1.84	1.01
Past Year	(4.33)	(4.34)	(1.91)	(1.49)
Attitudes	3.26	3.98	3.54	3.83
	(0.64)	(0.42)	(0.49)	(0.62)
	Observed More Than Once		Observed One Time or Less	
	Male	Female	Male	Female
Delinquency —	11.76	9.86	7.72	5.32
Ever	(5.28)	(6.15)	(5.18)	(4.12)
Delinquency —	4.28	4.00	1.66	1.10
Past Year	(4.53)	(5.26)	(1.83)	(1.56)
Attitudes	3.16	4.02	3.59	3.85
	(0.61)	(0.40)	(0.51)	(0.58)

For the "Ever" delinquency score, significant main effects were found for observation status and sex. Those who reported observing animal cruelty had higher delinquency scores than those who did not observe animal cruelty

(F(1, 157) = 12.41, $p < .01$), and men had higher delinquency scores than did women (F(1, 157) = 10.82, $p < .01$).

For the "Past Year" delinquency score, a significant main effect was found for observation status. Those who reported observing animal cruelty had higher "Past Year" delinquency scores than did those who did not observe animal cruelty (F(1, 157) = 12.17, $p < .01$).

The attitudes toward the treatment of animals survey revealed a significant main effect for sex (F(1, 157) = 28.46, $p < .01$), with women exhibiting greater concern regarding the treatment of animals than did men. Additionally, a significant sex X observation status interaction was observed (F(1, 157) = 4.92, $p < .05$). Inspection of means revealed, among men, those who observed animal cruelty had lower ATTAS scores than did those who did not observe animal cruelty. However, among women, those who observed animal cruelty had higher ATTAS scores than did those who did not observe animal cruelty.

To explore the effect of observing multiple acts of animal cruelty, the above analyses were conducted a second time, this time contrasting those who reported observing two or more incidents of animal cruelty with those who reported observing one or fewer incidents. These results also are presented in Table 4. The pattern of results was the same, but the effects were stronger. For "Ever" delinquency scores, significant main effects were observed for sex (F(1, 157) = 6.48, $p < .05$) and observation status (F(1, 157) = 25.59, $p < .001$). For "Past Year" delinquency scores, significant main effect was observed for observation status (F(1, 157) = 25.13, $p < .001$). For the attitude scores, significant main effect was found for sex (F(1, 157) = 33.18, $p < .001$), and a significant sex X observation status effect was found (F(1, 157) = 9.62, $p < .01$).

The relationship between participating in animal cruelty, self-report delinquency, and attitudes toward the treatment of animals.

Because only three women reported participating in animal cruelty, analyses assessing the effect of animal cruelty participation were limited to men. Multivariate analysis of variance (MANOVA) was used to examine the relationship between reports of participating in acts of animal cruelty, delinquent behavior, and attitudes toward the treatment of animals. Table 5 presents results of analyses comparing those who reported participating in at least

Table 5: Relationship between Participation in Animal Cruelty, Delinquency, and Attitudes

	Participated	Never Participated
Delinquency—Ever	11.75	9.00
	(4.86)	(5.74)
Delinquency—Past Year	4.29	2.48
	(4.81)	(3.00)
Attitudes	3.21	3.43
	(0.59)	(0.61)
	Participated More Than Once	Participated One Time or Less
Delinquency—Ever	12.53	9.10
	(4.50)	(5.67)
Delinquency—Past Year	5.23	2.42
	(4.86)	(3.13)
Attitudes	3.14	3.43
	(0.56)	(0.61)

one act of animal cruelty with those who reported never participating in animal cruelty.

For the "Ever" delinquency score, a significant main effect was found for participation status. Those who reported participating in animal cruelty had higher delinquency scores than those who did not participate in animal cruelty ($F(1, 70) = 4.05$, $p < .05$). The main effects of participation status on "Past Year" delinquency and attitudes were not significant.

To explore the effect of participating in multiple acts of animal cruelty, the above analyses were conducted a second time, this time contrasting those who reported participating in two or more incidents of animal cruelty with those who reported participating in one or fewer incidents. These results also are presented in Table 5. In these analyses, effects of participation status on "Ever" delinquency ($F(1, 70) = 5.16$, $p < .05$) and "Past Year" delinquency ($F(1, 70) = 7.96$, $p < .01$) were significant. In both cases, those who reported participating in more than one incident of animal cruelty also reported more delinquent involvement than did those who did not engage in multiple acts

of animal cruelty. Again, the effect of animal cruelty participation on attitudes was not significant.

The combined effect of observation and participation in animal cruelty on delinquency and attitudes.

There was substantial overlap between observation of animal cruelty and participation in acts of animal cruelty. Among men, of the 19 who reported engaging in more than one act of animal cruelty, 12 (63.2%) also reported observing animal cruelty on more than one occasion. To explore the combined effect of observing and participating in animal cruelty, a 2 X 2 MANOVA was conducted with observation status and participation status as the independent variables. The two delinquency scores and the ATTAS score were the dependent variables. Again, these analyses were limited to men. Additionally, these analyses should be considered exploratory, because the number of participants who indicated that they had participated in, but had not observed, animal cruelty was quite small (Table 6).

For the "Ever" delinquency scores, a significant main effect was found for observation status ($F(1, 68) = 6.27$, $p < .05$), and the effect for participation status approached significance ($F(1, 68) = 3.87$, $p = .053$). The highest delinquency scores were exhibited by those who reported both observing and participating in animal cruelty on more than one occasion (mean = 13.82).

For the "Past Year" delinquency scores, significant main effects were found for observation status ($F(1, 68) = 8.37$, $p < .01$) and participation status ($F(1, 68) = 5.40$, $p < .05$). Again, the highest delinquency scores were found for those who reported both observing and participating in animal cruelty on more than one occasion (mean = 6.55).

For the attitude scores, main effects for observation status ($F(1, 68) = 2.97$, $p < .10$) and participation status ($F(1, 68) = 3.00$, $p < .10$) approached significance. Again, the lowest attitude scores (reflecting the least concern regarding the treatment of animals) were found for those who reported both observing and participating in animal cruelty on more than one occasion (mean = 3.12).

Table 6: The Combined Effect of Animal Cruelty Participation and Observation on Delinquency and Attitudes

"Ever" delinquency		Participated More Than Once
Observed More Than Once	No	Yes
No	7.19	10.17
	(5.25)	(4.40)
Yes	10.96	13.82
	(5.51)	(4.19)
"Past Year" delinquency		Participated More Than Once
Observed More Than Once	No	Yes
No	1.41	2.83
	(1.80)	(1.60)
Yes	3.39	6.55
	(3.79)	(5.59)
Attitudes		Participated More Than Once
Observed More Than Once	No	Yes
No	3.68	3.17
	(0.50)	(0.36)
Yes	3.18	3.12
	(0.61)	(0.66)

Discussion

Results of this study provided answers to some questions but also raised several others. Briefly, this study demonstrated that those who reported engaging in or observing animal cruelty also were more likely to report greater involvement in a variety of delinquent behaviors, both within the past year and over the course of their lives. Observation of animal cruelty appeared to be more strongly related to attitudes regarding the treatment of animals than was actual participation in acts of animal cruelty. This effect was moderated by the sex of the observer. Men who observed animal cruelty presented a more callous attitude toward the treatment of animals, while women who observed animal cruelty exhibited greater sensitivity regarding the treatment of animals. Finally, both participation in animal cruelty and observation

of animal cruelty had independent and additive effects on delinquency among men.

These results support the general findings in the literature showing a relationship between animal cruelty and involvement in other forms of anti-social behavior. This study adds to the existing literature by demonstrating that this relationship exists within the general population (or at least the population of college students) and is not a function simply of the selection criteria used in previous studies. That is, previous research has tended to use samples identified on the basis of conviction records, incarceration status, or psychiatric status. The generalizability of results derived from these samples can be questioned. However, the consistency between the current results (based on a college sample and using a self-report delinquency measure) and the previous research lends confidence to the conclusion that animal cruelty tends to occur within the matrix of other antisocial behaviors.

This study also lends limited support to the idea that exposure to animal cruelty is related to the development of sensitivity and concern regarding the experiences of other living creatures. ATTAS was developed for use in this study to assess individual differences in sensitivity toward the treatment, or maltreatment, of animals. The current results suggest that observation of animal cruelty is more critical than participation in animal cruelty for the development of concern toward animals and that the effect of observation on sensitivity/concern differs between men and women.

The finding that the relationship between observation of animal cruelty and ATTAS scores was moderated by sex was unexpected and should be explored further in future research. It is possible that an individual's emotional and cognitive response to observing animal cruelty may be dependent upon the context within which the act occurs. An individual who associates willingly with a perpetrator of animal cruelty likely will respond differently to observing animal cruelty than will an individual who is not a willing observer. In this regard, women may be more likely than men to be coerced into observing animal cruelty.

Unfortunately, little is known about the social or group dynamics associated with the occurrence of animal cruelty. To the extent that acts of animal cruelty occur within a group context (a group of adolescent peers agreeing to torture an animal), it would be likely that the responses expected and rein-

forced by the group would differ among men and women. It is likely that men would be expected to express callous, insensitive attitudes; in contrast, the group well may expect women to exhibit more emotional distress. Indeed, "getting a rise out of" female members of the group may provide motivation for some acts of animal cruelty.

Only three female participants in this study reported actually engaging in acts of animal cruelty. Thus, the effect of animal cruelty participation on the delinquent behavior and attitudes of women could not be explored thoroughly. Again, the reasons for the low level of participation among women and the effects of such participation on the subsequent social development of women warrant further investigation. It should be noted, however, that women in this study who reported observing animal cruelty had higher delinquency scores than those who did not. This suggests that observation of animal cruelty was associated with antisocial predispositions even among women. Nonetheless, this increased level of antisocial behavior did not include actually engaging in animal abuse. Thus, theoretical models seeking to describe the links between observing animal abuse, participating in animal abuse, and being involved in other antisocial behavior will need to incorporate sex as an important moderator of those relationships.

Consistent with the findings of Baldry (2003), those who reported having observed animal cruelty were more likely to report participating in animal cruelty. The strength of this relationship was found to differ as a function of the observed perpetrator and age at which the participant first observed animal cruelty. Specifically, those who observed animal cruelty perpetrated by their father/stepfather were most likely to participate in animal cruelty. Those who reported observing animal cruelty at age 12 or earlier were more likely to participate in animal cruelty than those who first observed such acts after the age of 12. The early observation of animal cruelty may be likely particularly to hamper the development of the social and cognitive prerequisites of concern for others (Thompson, 1987).

Conclusion

Overall, 51% of participants in this study reported observing at least one incident of animal cruelty, and 18% reported engaging in at least one incident of

animal cruelty. These rates are consistent with previous research using similar measures of animal cruelty (Flynn, 1999a, 1999b; Miller & Knutson, 1997). The relatively high base rate of this phenomenon suggests that there is likely to be substantial heterogeneity within these groups. It is possible that some individuals who participated in acts of animal cruelty did so only during their early childhood, "growing out" of the behavior as they moved into later childhood and became less egocentric. Conversely, it is possible that some participants engaged in these behaviors during adolescence but did so only because of a desire to fit in with a particular peer group. Either of these scenarios suggests that there may be a host of ecological factors (age of perpetrator, relationship to peer group, use of drugs/alcohol, degree of premeditation) that moderate the relationship between animal cruelty and involvement in other forms of antisocial behavior. Future research will be necessary to examine these ecological factors and their relationship to the developmental trajectory of animal cruelty.

There are limitations to this study that should be noted. First, the data included in this study are based on retrospective reports drawn from a college-age sample. As such, participants were asked to report on events that may have occurred several years earlier. The limitations of retrospective recall are well documented (Henry, Caspi, Moffitt, & Silva, 1994). At this time, there are very few prospective longitudinal studies of the development of animal cruelty. Rigdon and Tapia (1977) have written one of the few studies of this type. Thus, reliance upon retrospective recall is characteristic of much of the existing literature on animal cruelty. Ultimately, prospective longitudinal studies of children will be needed to test thoroughly the hypotheses generated by the current literature.

Second, results derived from the ATTAS in relationship to animal cruelty should be interpreted with care. Although the measure has very good internal consistency and scores on the ATTAS relate in meaningful ways to reports of other types of behavior and experience, it remains unclear exactly what scores on the ATTAS assess. Individual differences on the ATTAS may be related to empathy (Lennon & Eisenberg, 1987), moral reasoning (Kohlberg, 1976), or more general personality traits such as agreeableness (McCrae & Costa, 1987). However, at this time the cognitive and affective underpinnings

of scores on the ATTAS have yet to be identified. Further research will be required to explore the construct validity of this measure

Appendix
Questions Included in the Attitudes toward the Treatment of Animals Scale

1. How much would it bother you to think about someone intentionally killing a domestic stock animal (horse, cow, pig) other than for food or to help the animal because the animal was hurt, old, or sick?
2. How much would it bother you to think about someone intentionally killing a wild animal (deer, rabbit, squirrel) other than for food, while hunting, or to help the animal because the animal was hurt or sick?
3. How much would it bother you to think about someone intentionally killing a companion animal (pet dog, cat, rabbit) other than to help the animal because the animal was hurt, old or sick?
4. How much would it bother you to think about someone intentionally killing a domestic stock animal or wild animal for food?
5. How much would it bother you to think about someone intentionally killing a wild animal while hunting?
6. How much would it bother you to think about someone intentionally killing an animal because the animal was hurt, old, or sick (euthanasia)?
7. How much would it bother you to think about someone intentionally killing (euthanizing) a companion animal or domestic stock animal because the owner is unable to care for the animal (the person is moving out of state and cannot take the animal to the new home)?
8. How much would it bother you to think about someone intentionally hurting a domestic stock animal (horse, cow, pig) other than for training, branding?
9. How much would it bother you to think about someone intentionally hurting a wild animal (deer, rabbit, squirrel)?
10. How much would it bother you to think about someone intentionally hurting a companion animal (pet dog, cat, rabbit) other than for training?
11. How much would it bother you to think about someone having sexual contact with an animal?
12. How much would it bother you to think about someone using mice/birds/reptiles in research that results in serious injury, illness, or death of the animal?

13. How much would it bother you to think about someone using mice/birds/reptiles in research that does NOT result in serious injury, illness, or death of the animal?
14. How much would it bother you to think about someone using dogs or cats in research that results in serious injury, illness, or death of the animal?
15. How much would it bother you to think about someone using dogs or cats in research that does NOT result in serious injury, illness, or death of the animal?
16. How much would it bother you to think about someone using primates (monkeys, chimpanzees) in research that results in serious injury, illness, or death of the animal?
17. How much would it bother you to think about someone using primates (monkeys, chimpanzees) in research that does NOT result in serious injury, illness, or death of the animal?
18. How much would it bother you to think about someone failing to provide medical care for a domestic stock animal who is clearly injured or ill?
19. How much would it bother you to think about someone failing to provide medical care for a companion animal who is clearly injured or ill?
20. How much would it bother you to think about someone failing to provide domestic stock animals or companion animals with food or water for 24 hours?
21. How much would it bother you to think about someone leaving domestic stock animals outside without shelter for 24 hours?
22. How much would it bother you to think about someone leaving companion animals outside without shelter for 24 hours?
23. How much would it bother you to think about someone leaving a companion animal in a locked car with the windows cracked with an outside temperature of 70° for one hour?
24. How much would it bother you to think about someone intentionally hurting a domestic stock animal for the purposes of training the animal (hitting the animal to encourage it to behave in a particular manner)?
25. How much would it bother you to think about someone intentionally hurting a companion animal for the purposes of training the animal (using a shock collar to train a dog)?
26. How much would it bother you to think about someone intentionally encouraging or causing animals to fight one another (dog fighting, cock fighting, etc.)?

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Notes

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[2] The overrepresentation of women in this sample reflects the sex distribution of students in sections of Introduction to Psychology. During the semester in which these data were collected, 52.8% of Introduction to Psychology students was female.

[3] These percentages sum to more than 100% because participants could identify more than one type of perpetrator.

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