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The Relationship between Animal Cruelty and Comorbid Disorders

Abstract

The prognosis for Conduct Disorder (CD) is guarded for individuals who develop symptoms of CD at an earlier age, particularly if the symptoms begin before the age of 10. Animal cruelty has been one of the earliest behaviors identified in the development of CD (*Diagnostic and Statistical Manual of Mental Disorders* or DSM-IV-TR, American Psychiatric Association, 2000). In this study, records of male adolescents with CD alone and with CD and other comorbid disorders were examined in relation to history of animal cruelty. Data were analyzed using a two-way contingency analysis and the odds ratio and relative risk were calculated. The results of the study indicated that there was not a statistically significant difference in adolescent males with comorbid diagnoses of CD and depression ($p = .35$) or CD and anxiety ($p = .72$) and a history of animal cruelty, when compared to adolescent males with only a diagnosis of CD. There was a statistically significant difference in adolescent males with comorbid diagnoses of CD and ADHD ($p = .01$), and a history of animal cruelty, when compared to adolescent males with only a diagnosis of CD. It is believed that depression and anxiety minimize the effects of CD and decrease the risk for animal cruelty, whereas ADHD exacerbates symptoms of CD and increases the risk for animal cruelty.

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THE RELATIONSHIP BETWEEN ANIMAL CRUELTY AND COMORBID
DISORDERS

A DISSERTATION
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ABSTRACT

The prognosis for Conduct Disorder (CD) is guarded for individuals who develop symptoms of CD at an earlier age, particularly if the symptoms begin before the age of 10. Animal cruelty has been one of the earliest behaviors identified in the development of CD (*Diagnostic and Statistical Manual of Mental Disorders* or DSM-IV-TR, American Psychiatric Association, 2000). In this study, records of male adolescents with CD alone and with CD and other comorbid disorders were examined in relation to history of animal cruelty. Data were analyzed using a two-way contingency analysis and the odds ratio and relative risk were calculated. The results of the study indicated that there was not a statistically significant difference in adolescent males with comorbid diagnoses of CD and depression ($p = .35$) or CD and anxiety ($p = .72$) and a history of animal cruelty, when compared to adolescent males with only a diagnosis of CD. There was a statistically significant difference in adolescent males with comorbid diagnoses of CD and ADHD ($p = .01$), and a history of animal cruelty, when compared to adolescent males with only a diagnosis of CD. It is believed that depression and anxiety minimize the effects of CD and decrease the risk for animal cruelty, whereas ADHD exacerbates symptoms of CD and increases the risk for animal cruelty.

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INTRODUCTION

Historically, there has been an argument about whether a relationship exists between childhood animal cruelty and adult interpersonal violence (Merz-Perez, Heide, & Silverman, 2001). Cruelty towards animals has been a popular topic for years. For example, the novels *Oliver Twist* (Dickens, 1893) and *Lord of the Flies* (Golding, 1954) describe characters committing heinous acts of animal cruelty. More recently, the American media has been attracted to the notion that childhood animal cruelty is a hallmark warning sign for violence. One of the many newspaper headlines on animal cruelty and violence stated “SCHOOL SHOOTINGS: Childhood animal abuse is a danger signal” (Barnard, 1998). Is childhood animal cruelty really a decisive marker for adult violence against humans?

The definitive answer to this question remains unclear. On one side of the argument are research studies indicating that there is a relationship between animal cruelty and interpersonal violence (Arluke, Levin, Luke, & Ascione, 1999; Merz-Perez, Heidi, & Silverman, 2001; Tallichet & Hensley, 2004), while on the other side are researchers who adamantly oppose the conclusions of these research studies, suggesting that the relationship between animal cruelty and interpersonal violence has yet to be determined (Felthous & Kellert, 1987; Hensley & Tallichet, 2005). There is one point both sides agree upon, and that is that additional research in the field of animal cruelty is warranted. Taking this point into account, this section of the paper presents a rationale for studying animal cruelty.

Interest in the field of animal cruelty has been gaining momentum since the 1980's. In large part, the increased attention on animal cruelty may be attributed to the

inclusion of this behavior in the criteria for diagnosing conduct disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III-R; American Psychiatric Association, 1987). With the added attention, it became evident that we really know very little about animal cruelty (Ascione, 1993). To date, research studies on animal cruelty have concentrated on the following topics: prevalence, assessment, risk factors, theories, association between animal cruelty and future violence, and the relationship between animal cruelty and psychiatric disorders. Despite the breadth of research, the majority of studies have focused on identifying risk factors (e.g., physical abuse, sexual abuse, exposure to animal cruelty) associated with animal cruelty. From this area of research emerged a recommendation for studying the relationship between animal cruelty and psychiatric disorders (Duncan, Miller, & Thomas, 2005). In fact, a thorough review of the literature indicates that there are only three research studies on the relationship between animal cruelty and psychiatric disorders. Most recently, Vaughn et al. (2009) conducted a study on the correlation of cruelty to animals and psychiatric disorders, arguing that despite a potential relationship between animal cruelty and interpersonal violence there is a disconnection between understanding the “etiological nature” of this relationship (p. 1214.)

Furthermore, the thought behind the recommendation made by Duncan et al. (2005) is that we may learn more about adolescents who commit acts of animal cruelty by examining psychopathology. As previously mentioned there are currently three research studies on animal cruelty and psychiatric disorders, all of which have contradictory conclusions (Becker, Stuewig, Herrera, & McCloskey, 2004; Luk, Staiger, Wong, & Mathai, 1999; Vaughn et al., 2009). The purpose of this study is to continue

examining the relationship between animal cruelty and psychiatric disorders in an adolescent population. Although this study is not intended to clarify the argument over whether childhood animal cruelty leads to adult interpersonal violence, the study is intended to focus on an area that may elucidate contradictions in existing research on animal cruelty and psychiatric disorders. Understanding more about adolescents who commit animal cruelty will lead to improvements in the assessment and intervention for these adolescents.

Animal Cruelty and Comorbidity

Luk et al. (1999) conducted a study on children who were cruel to animals. The authors examined the following questions: "Do children with persistent conduct problems who are cruel to animals have a more severe psychopathology than those who are not" and "is being cruel to animals linked with ADHD symptoms or internalising [*sic*] disorder symptoms" in a study they conducted (p. 30). The authors hypothesized that there would be an association between animal cruelty and ADHD, depression, and anxiety. The study consisted of 141 children referred for outpatient mental health services with conduct problems and a control group of 36 children from the community. The children were between the ages of 5 and 12. The conduct problems and history of animal cruelty were assessed by either a teacher or a parent on the Child Behavior Checklist (CBCL; Achenbach, 1991). In addition to the parent and teacher reports, children completed the Hart pictorial/normal (SPPFC; Harter, 1982) and the Birlson Depression Self-rating Scale (BDSRS; Birlson, Hudson, Buchanan, & Wolff, 1987). The results of the study did indicate that children who are cruel to animals had conduct disorder symptoms that were more severe (e.g., aggression) than children who were not cruel to

animals. The authors did not find an association between cruelty to animals, ADHD, depression, or anxiety.

In contrast to the results of the Luk et al. (1999) study, Becker et al. (2004) did find a correlation between animal cruelty and comorbid disorders. The purpose of the study was to examine the association between animal cruelty, firesetting, adolescent delinquency, and family risk factors. The study began in 1990, with 363 families, defined as a mother and a child between the ages of 6-12, with follow-up interviews in 1997 to 1998, and 1998 to 1999. In addition to the follow-up interviews, court records of the adolescents were reviewed. Animal cruelty was assessed by the Child Assessment Schedule (CAS; Hodges, 1990) and CBCL. The retention rate was 86%. The results of the study indicated a significant relationship between animal cruelty and symptoms of CD ($r = 0.24$), ODD ($r = 0.29$), ADHD ($r = 0.21$), and depression ($r = 0.16$).

Vaughn et al. (2009) conducted a study on the correlation between psychiatric disorders of individuals with a history of animal cruelty and individuals without a history of animal cruelty. The study was based on data that had been collected in a 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) and consisted of 43,093 residents of the United States over the age of 18. Psychiatric disorders were assessed by interviews conducted, in person, by US Census workers trained by the National Institute on Alcohol and Alcoholism and US Census Bureau and administration of the Alcohol Use Disorder and Associated Disabilities Interview Schedule – DSM-IV version (AUDADIS-IV; Grant & Hasin, 1992). A history of animal cruelty was assessed through asking respondents the following question: “In your entire life, did you ever hurt or be cruel to a animal or pet on purpose?” (Vaughn et al., 2009, p.

1214). The authors used a multivariate logistic regression model analysis to analyze the data. The results of the study indicated that individuals with a history of animal cruelty were more likely to be associated with the one or more of the following mental health diagnosis: alcohol use disorder (63.69%, CI = 58.71–68.38%), gambling disorder (AOR = 2.23, 95% CI = 1.04–4.78), conduct disorder (AOR = 9.53, 95% CI = 6.07–14.97), antisocial personality disorder (35.84%, CI = 31.53–40.40%), obsessive–compulsive personality disorder (AOR = 1.65, 95% CI = 1.24–2.20), paranoid personality disorder (AOR = 1.34, 95% CI = 0.93–1.94), and histrionic personality disorder (AOR = 1.62, 95% CI = 1.14–2.31).

Psychopathology

Conduct Disorder (CD). CD is a mental health disorder defined as behaviors consistent with a pervasive pattern of violating social rules (e.g., lying, stealing, truancy), aggression towards people and animals (e.g., bullying, cruelty towards people, cruelty towards animals) and destroying property (e.g., setting fires, intentionally destroying an individual's belongings) first appearing in either childhood or adolescence (American Psychiatric Association, 2000). In addition to the disruptive behaviors used as criteria for diagnosing CD, features such as lack of empathy, aggression, irritability, callousness, inappropriate guilt or remorse, and poor frustration tolerance are also associated with CD. According to the American Psychiatric Association, the following factors may increase the risk for developing CD:

Parental rejection and neglect, difficult infant temperament, inconsistent child rearing practices with harsh discipline, physical or sexual abuse, lack of supervision, early institutional living, frequent changes of caregivers, large family size, history of maternal smoking during pregnancy, peer rejection, association with delinquent peer group, neighborhood exposure to violence,

and certain familial psychopathology (e.g., Antisocial Personality Disorder, Substance Dependence, or Abuse). (p. 96)

CD may also co-occur with other mental health diagnoses such as Mood Disorders, Anxiety Disorders, Learning Disorders, and Substance-Related Disorders (American Psychiatric Association, 2000).

There is a large discrepancy in the estimates of prevalence of CD across research studies. Among the general population, some studies indicate that CD exists in less than 1% of the general population whereas other studies indicate that CD exists in over 10% of the general population (American Psychiatric Association, 2000). McMahon and Estes (1997) reported that the prevalence of CD in children is between 2% and 9%. The prevalence rate is higher among children and adolescents in outpatient or inpatient mental health treatment than in the general population. In addition, males are more likely than females to be diagnosed with CD.

The severity of CD ranges from Mild (e.g., staying out without permission) to Severe (e.g., physical cruelty). CD typically begins in either late childhood or early adolescence with a large percentage of those cases continuing to exhibit symptoms throughout adulthood, leading to a diagnosis of Antisocial Personality Disorder (ASPD). ASPD is "...a pervasive pattern of disregard for, and violation of, the rights of others that begins in childhood or early adolescence and continues into adulthood." (*Diagnostic Statistical Manual of Mental Disorders* or DSM-IV-TR, American Psychiatric Association, 2000, p. 701).

Searright, Rottneck, and Abby (2001) estimated that approximately 40 % of children diagnosed with CD would later develop ASPD. Early onset of symptoms of CD

has been associated with a poorer prognosis. According to the DSM-IV-TR, the prognosis for CD is poorer for individuals who develop symptoms of CD at an earlier age, particularly if the symptoms begin before the age of 10 (American Psychiatric Association, 2000). Because the prognosis of CD is related to both the severity and age of onset for symptoms of CD, it is critical to understand symptoms of CD that occur early in the course of development. Cruelty towards animals is one of the behaviors in CD that has been shown to occur at an early age. The average age of onset for animal cruelty is 6.75 years of age (Loeber, Keenan, Lahey, Green, & Thomas, 1993; Luk et al., 1999). Other behaviors in CD such as firesetting, bullying, cruelty to people, and vandalism emerge at a later age than cruelty towards animals. Animal cruelty has also been shown to be a symptom that differentiates milder cases of CD from more severe cases of CD (Ascione, 2001; Frick, Lahey, & Loeber, 1993).

In a study by Arluke et al. (1999), the prevalence of children diagnosed with CD who exhibited symptoms of cruelty towards animals was 25%. Burns et al. (1995) found a similar result, with 29% of the youth diagnosed with CD also meeting the criterion for animal cruelty. Lastly, Luk et al. (1999) also found that 28% of the children diagnosed with CD had a history of animal cruelty.

Comorbidity of CD with Other Disorders. According to the DSM-IV-TR (American Psychiatric Associations, 2000), CD has been associated with other mental health disorders such as mood Disorders, anxiety Disorders, and ADHD. In general, CD co-occurs with other mental health disorders at a level higher than chance (Angold, Costello, & Erkanli, 1999) and has been described as “pervasive” in diagnosing mental health disorders in youth (Ollendick, Seligman, & Butcher, 1999, p. 565). Comorbidity

influences the manifestation, the course, and the prognosis of the disorder (Ollendick et al., 1999). This raises the question of whether a co-occurring disorder with CD like anxiety or ADHD mitigates or exacerbates the symptom of animal cruelty. For example, Woolston et al. (1989) and Walker et al. (1991) found that an anxiety disorder had a mitigating effect on boys diagnosed with both an anxiety disorder and conduct disorder, whereas Ollendick et al. did not find any significant differences between boys diagnosed with conduct disorder and anxiety and those only diagnosed with conduct disorder on factors such as severity of criminal offenses. Another example is a study conducted by Wu and Lin (2009), in which the authors examined the association between cruelty to animals and a group of children with only symptoms of ADHD and a group of children with symptoms of ADHD and conduct problems. The authors did find a significant difference, in that children with ADHD and conduct problems were more likely to have been cruel to animals than children with only ADHD symptoms ($p < .01$). The following paragraph is a review of the literature on disorders that are comorbid with CD and the prevalence rates for each of these comorbid diagnoses.

A review of the literature on mental health disorders typically comorbid with CD include the following disorders: ADHD, oppositional defiant disorder (ODD), substance use disorders, depression, and anxiety (Stahl & Clarizio, 1999). Although Stahl and Clarizio found ODD and substance use disorders to be disorders typically co-occurring with CD, this review of literature will only pertain to ADHD, depression and anxiety because these are the three co-occurring disorders identified in previous studies examining the correlation between comorbid disorders and animal cruelty. The following section provides a general description of ADHD, depression, and anxiety.

ADHD and CD. ADHD is defined as a pattern of hyperactivity, impulsivity, and/or inattention that is not within the developmental norms. These symptoms typically emerge before the age of 7 and the impairment in social functioning must occur in at least two settings (i.e., school, home). There are three subtypes of ADHD and these include predominately inattentive type (e.g., difficulty sustaining attention, difficulty with organization, not following through on instructions), predominately hyperactive-impulsive type (e.g., talking excessively, always being “on the go,” often interrupting or intruding on others), and the combined type, with features of both the other two subtypes (American Psychiatric Association, 2000).

The prevalence rates for ADHD in childhood range from 3% to 7% (American Psychiatric Association, 2000). A study conducted by Acosta, Arcos-Burgos, and Muenke (2004) indicated that 20 % of the children diagnosed with ADHD also met the criteria for CD. In an inpatient clinical sample, it was estimated that nearly 70 % of the participants diagnosed with CD also met the diagnosis for ADHD (Stewart, Cummings, Singer, & DeBlois, 1981). Specifically, Volk, Neuman, and Todd (2005) found that CD was more likely to be diagnosed in children diagnosed with the combined type of ADHD.

Depression and CD. Depression is defined by a combination of symptoms that leads to a depressed mood and/or a loss of interest in pleasurable activities. The symptoms of depression in adolescents are similar to adults. The symptoms of depression include the following: sad or depressed mood, markedly diminished interest or pleasure in activities, significant change in appetite or weight, difficulties with sleep, psychomotor retardation or agitation, fatigue or loss of energy, feelings of worthlessness or inappropriate guilt, difficulty concentrating or indecisiveness, and recurrent thoughts of

death or suicide (American Psychiatric Association, 2000). The prevalence of depression in adolescents is between 6% and 9% (Williams, O'Connor, Eder, & Whitlock, 2009). A review of literature on CD and depression indicates that these disorders also co-occur at a higher frequency. For example, Green et al. (2002) found that approximately 50 % of the youth diagnosed with CD problems also met the criteria for depression.

Anxiety and CD. In general, an anxiety disorder is defined as an uncontrollable response to a situation that causes distress. There are a number of different anxiety disorders, including generalized anxiety disorder (GAD), social anxiety disorder, specific phobia, panic disorder with and without agoraphobia, obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD), acute stress disorder (ASD), anxiety secondary to medical condition, and substance-induced anxiety disorder (American Psychiatric Association, 2000). In general, the prevalence rates for anxiety disorders in children and adolescents range from 12% to 32% (Kessler, Berglund, Demler, Jin, & Walters, 2005).

A review of the literature indicates that CD and anxiety occur together at rates greater than chance (Zoccolillo, 1992). In fact, Angold et al. (1999) found that comorbidity of CD and anxiety occurred three times more frequently than what could be expected at chance. In terms of percentages, it is estimated that CD and anxiety, anxiety being defined to include all forms of anxiety, co-occur together at an estimated rate of 32-37% (Green et al., 2002). Prevalence rates of comorbidity for anxiety disorders and externalizing disorders, such as ADHD or CD, is between 8% and 69% (Beidel et al., 2007). Given this information, it is reasonable to question what effect, if any, comorbidity has on animal cruelty.

Defining Animal Cruelty

A definition for animal cruelty has not been standardized across research studies. Although progress has been made in this area, the lack of a standardized definition continues to be a problem in the research literature (Becker & French, 2004; Hensley & Tallichet, 2005). Inconsistent definitions of animal cruelty have led to both basic problems in research studies, such as determining the prevalence of animal cruelty, and to far more complex problems, such as identifying theories on the development of animal cruelty. It has even been suggested that the inconsistent findings across studies examining the relationship between childhood animal cruelty and future interpersonal violence is the result of differences in the definitions of animal cruelty used in the studies (Lockwood & Ascione, 1998). Ascione (1993) has stated that defining animal cruelty is more difficult than defining cruelty towards children because of complicating factors like culture and the problems inherent in identifying the different types of animals that should be included in the definition. For example, Felthous (1980) suggested that harming a fly is very different than harming a dog or cat.

The following three factors have led to complications in defining animal cruelty: differences in state laws, differences in the definitions utilized in the research literature, and cultural differences in what constitutes cruelty toward animals. Each factor will be briefly examined.

State laws. State laws on animal cruelty have made arriving at a standardized definition of animal cruelty difficult because each state individually defines the behaviors that constitute cruelty and the type of animal protected under these laws (Ascione, 1993;

Guymor, Mellor, Luk, & Pearse, 2001). Although there are a number of similarities and consistencies across state laws in defining animal cruelty, there are significant differences in the language used to define animal cruelty. One of the consistent elements across state laws is that all of the states have determined that animal cruelty is at least a misdemeanor offense; however, 30 of the states have determined that certain acts of animal cruelty constitute a felony offense (Ascione & Lockwood, 2001; Frasch, Otto, Olsen, & Ernest, 1999).

Some of these differences between state laws include the following: intent associated with harming the animal, type of animal protected, and acts of animal cruelty. For example, the definition of intent is different in Oklahoma than it is in Wyoming. The Oklahoma state statute (Okla. Gen. Ch. 21 § 67) defines intent as “willfully or maliciously” committing acts of animal cruelty whereas the Wyoming state statute (Wyo. Gen Ch. 3 § 6) defines intent as “knowingly” committing acts of animal cruelty (Okla. 1680-1; Wyo. 203). The primary difference between these two statutes is the discrepancy between “willfully” and “knowingly.” Willfully implies a direct intention in the behavior whereas the later state statute implies that not only does intent have to be established but that the individual must also be aware that their behavior would cause some sort of harm. Therefore, the issue of “knowingly” begins to raise questions about whether animal neglect is considered animal cruelty.

States also diverge in the language used to define what constitutes an animal. In Texas (Tex. Gen. Ch. 2 § 42.09) the state laws are very specific to the type of animal protected under the law: only domesticated animals or wild animals that have been domesticated are included. In Oklahoma, state laws are more general and define animals

as either “wild or tame” (Oka.1680-1) For example, an animal that is not being kept as a domestic animal such as deer would not be protected under the Texas state laws but may be protected under the Oklahoma state laws.

The language used to describe acts of animal cruelty can also be different across state laws. For example, Nebraska (Neb. Gen. Ch. 28 §10) uses very specific language to define acts of cruelty towards an animal and includes acts such as “kill, maim, disfigure, torture, beat, mutilate, burn, scald, or otherwise inflict harm upon any animal.” (28-1004). In comparison, Georgia (Ga. Gen. Ch. 12 § 16) state laws uses general language to define cruelty towards animals as that which “causes death or unjustifiable physical pain or suffering to any animal by an act, an omission, or willful neglect” (16-12-4).

Research literature. The legal terminology or language used by states has served as the basis for developing definitions of animal cruelty for research studies. Mirroring the differences across state laws, definitions of animal cruelty used in research studies also varies. As with state laws, intent varies across definitions of animal cruelty used in research studies. For example, whereas Felthous and Kellert (1987) specified that an act of animal cruelty must be deliberate, Vermeulen and Odendaal (1992) included acts of animal cruelty that were not intentional. It appears that this latter definition would include acts of cruelty that happened by accident and did not occur as the result of direct intention. Felthous and Kellert, acts of animal cruelty must have repeatedly occurred, whereas Vermeulen and Odendaal would consider single or repeated incidents to be acts of animal cruelty.

Animals are defined differently across research studies. For example, Ascione, Thompson, and Black (1997) defined animals in terms of whether they could be

classified as invertebrates (e.g., insects, worms), cold-water vertebrates (e.g., reptiles, fish), or warm-blooded vertebrates (e.g., dog, horse). On the other hand, Vermeulen and Odendaal (1992) only included animals that are companions or pets. Just from these two examples, it is apparent that the results of a study may be drastically different depending on how an animal is defined. It has even been hypothesized that cruelty towards companion pets evokes a different level of violence and is associated with a trajectory of interpersonal violence versus acts of cruelty towards a farm animal or a wild animal (Wright & Hensley, 2003).

Cultural differences. In general, defining animal cruelty has been associated with different cultural perspectives on the treatment of animals (Merz-Perez et al., 2001). Even though most cultures have very similar values and beliefs towards animals, there are some differences among cultures. Cultural differences may include socially acceptable forms of hunting or the use of animals for agricultural purposes that may be deemed by other cultures as physically harmful towards animals. The majority of cultures have specific values and beliefs around the proper treatment of animals (Ascione, 2001). Cultural values on cock fighting differing across cultures. While this is acceptable in some cultures, in the United States of America cock fighting is typically considered animal abuse and is illegal. Cultural differences in the treatment of animals may also pertain to religious ceremonies and consumption of animals. For example, a Hmong shaman may use animals, such as dogs or pigs, in religious sacrificial rituals. Santeria practitioners from Cuba also use animals in religious sacrificial rituals. In other cultures such as Cambodia, it is culturally acceptable to eat dogs. All three of these examples,

emerged from court cases across the United States involving animal cruelty laws and differing ethnic beliefs about the treatment of animals (Rentlen, 2004).

Clearly, there are multiple problems associated with defining animal cruelty. One author, Ascione (1993), developed a definition that has been widely cited in the literature. Ascione defined animal cruelty as “socially unacceptable behavior that intentionally causes unnecessary pain, suffering, or distress to and/or the death of an animal” (p. 51). Behaviors are clarified by whether they are acts of commission or acts of omission. Acts of commission may include strangling a cat while acts of omission may include depriving a house cat from food. Animals are categorized as invertebrates, cold-blooded vertebrates, or warm-blooded vertebrates. This definition incorporates some of the issues discussed above. The definition specifically addresses the issues of intentionality and forms of cruelty, while also referencing cultural factors. It is likely that Ascione’s definition of animal cruelty has become the most widely cited definition of animal cruelty because it is thorough and clearly defines what does and does not constitute animal cruelty.

Risk Factors Associated with Animal Cruelty

A vast majority of the research in the field of animal cruelty has focused on external risk factors pertaining to the social environment and family systems in the development of animal cruelty. For example, domestic violence has frequently been studied and cited as a risk factor for the development of animal cruelty (Becker & French, 2004; Faver & Strand, 2003). Additional risk factors identified in the literature include physical abuse, sexual abuse, paternal alcohol use, parental neglect, and general sources of exposure to animal cruelty.

Ascione (1993) conducted a study on the relationship between domestic violence and animal cruelty. The study was based on a sample size of 38 women who were living in a domestic violence shelter. Of the sampled population 71% of the participants reported that their partner had threatened to harm their pet, 57% of the participants had actually had their pet physically harmed, and 32% of the participants had children who had harmed the family pet. As cited in the article by Faver and Strand (2003), in an unpublished comparison study, Ascione, Weber, Edwards, and Openshaw (2000) used a sample of 101 women in a domestic violence shelter and a sample of 120 women in the community to determine prevalence of animal cruelty within the family. The authors found 14.5 % of the women in the comparison group and 72 % of the women in the domestic violence shelter reported threats or actual harm targeted at the pet. In addition, the study indicated 3% of the women in the control group and 62% of the women in the domestic violence shelter reported that their children had witnessed animal cruelty. The following study provides a rationale for the high association between animal abuse and domestic violence.

Faver and Strand (2003) also conducted a study on the relationship between domestic violence and animal cruelty. They began with conducting a literature review on the connection between domestic violence and animal cruelty that resulted in the development of a theoretical formulation. The theory proposed by the authors was that, animal abuse serves as an extension of the “tangled web of abuse” (Faver & Strand, p. 238).

Becker and French (2004) conducted a review of the research on the correlation between domestic violence, animal abuse, and child abuse. The authors argued that

studies on animal abuse could be classified into four categories. The first category includes the conceptualization that animal abuse is part of the abuse within the family dynamics. The second category is that children who abuse animals are likely to engage in aggressive behaviors in the future. The third category is that if animal abuse is occurring within a family then child abuse is equally likely to be occurring within the family. The fourth category includes the use of animals in therapy.

In the first category, there is evidence that animals are used during the course of child abuse as a means of intimidation or coercion. Child abuse is defined as sexual abuse and children exposed to domestic violence (Arkow, 1996; Firmani, 1997). For example, in the study conducted by Arkow victims of child sexual abuse reported that threats of violence directed at animals were used as a form of coercion.

In the second category, animal abuse perpetrated by children may be considered rehearsing for future violence against people and is likely to make children less sensitive. In the second category, animal abuse perpetrated by children may be “a form of rehearsal” for future violence against people and is likely to “desensitize” children (Becker & French, 2004, p. 403). In the third category, research has focused on the connection between child abuse and animal cruelty. In a study conducted by Friedrich et al. (1992), 35% of the boys who had been sexually abused had also abused animals, in comparison to 5% of the boys who had not been sexually abused. In the fourth category, animals have been used in the course of treatment for abused children. While this provides a review of different categories related to forms of child abuse and animal cruelty, it is useful to explore specific additional research on the association between childhood abuse and animal cruelty.

Baldry (2005) conducted a study on animal cruelty and specific forms of physical abuse. The purpose of this study was to determine the prevalence of animal cruelty among preadolescent boys and girls, who had experienced physical abuse at home, at school, or both. Baldry hypothesized that preadolescents were more likely to report animal cruelty if they had experienced abuse, regardless of whether it was at home or at school. In addition, boys who abused animals would also be more likely to bully other children in the school. In this study, the sample consisted of 264 boys and 268 girls, average age of the participants was 11.8, was predominately middle class, and had been recruited across five middle and elementary schools in Rome, Italy.

The participants were asked to complete a self-report questionnaire based on the Physical and Emotional Tormenting against Animal Scale (PET; Baldry, 2004). The PET is divided into two categories of items; one category pertains to self-report of actual animal cruelty while the other category has items that target exposure to animal cruelty. In addition, the participants were asked to fill three separate-self report questionnaire. The Conflict Tactic Scale (Straus, 1979) was used to measure potential influences of domestic violence, a separate self-report questionnaire directly asking questions about abuse at home and the Italian modified version of the Olweus bullying questionnaire (Genta, Menesini, Fonzi, Costabile, & Smith, 1996 ; Olweus, 1993).

The results of the study indicated the prevalence rate among the boys for animal cruelty was 46% and among girls was 36%. Four out of the five preadolescent participants had been the victim of abuse either at school or at home. One out of the three preadolescent participants had witnessed domestic violence. Animal cruelty among boys was associated with bullying; however, there was not a relationship between animal

cruelty and bullying among girls. For girls, there was an increased correlation between animal cruelty and physical abuse perpetrated by the father.

Becker et al. (2004) conducted a study to evaluate the relationship between family risk factors associated with childhood fire setting, animal cruelty, and juvenile delinquency. Previous research has indicated that family risk factors like family substance use, child abuse, violence between the parents, and cruelty of animals displayed by a parent is associated with fire setting and animal cruelty. The study used 363 mothers and children from domestic violence shelters. The children ranged in ages from 6 to 12 years old. The study was conducted over a 10-year period for a total of four sets of interviews. The results of the study indicated the most influential factors were violence between the parents, substance use, and cruelty of animals displayed by a parent. A relationship between violent offenses and animal cruelty were identified; however, the authors did not expand on this relationship.

In the research article by Duncan et al. (2005), the authors reviewed the association between family risk factors and animal cruelty perpetrated by children diagnosed with CD. The specific family risk factors reviewed in this study had been identified in previous research conducted on animal cruelty. The family risk factors included the following: (a) physical child abuse, (b) sexual child abuse, (c) paternal alcoholism, (d) paternal unavailability, (e) domestic violence, and (f) animal cruelty in parents.

Duncan et al. (2005) hypothesized that children with a history of animal cruelty would be more likely to have experienced these family risk factors than children without a history of animal cruelty. The research study consisted of reviewing clinical charts of

boys who had received residential treatment during the past 10 years. Clinical charts for 298 boys were reviewed. Of the 298 clinical charts, 50 of the clinical charts had some form of documentation indicating a history of animal cruelty. Incidents of animal cruelty were divided into three categories. There were 31 cases of “severe torture and/or killing an animal,” 9 cases of “moderate cruelty to an animal that did not result in significant injury,” 3 cases where there was “sexual inappropriateness with an animal,” and 7 cases where the information regarding the animal cruelty was vague. Clinical charts were then reviewed for the purpose of identifying and coding individual family risk factors. The majority of the adolescents included in the study had comorbid disorders, which included depressive disorders, ADHD, and/or a substance abuse/dependence disorder. Therefore, stratified random sampling was used to control for comorbid disorders.

The results of the study indicated that children who had experienced sexual or physical abuse were more likely to engage in animal cruelty. Although this result is consistent with individual family risk factors identified in previous research studies, there was no indication in this study that parental use of alcohol and parental unavailability made a significant difference. Frederich et al. (1992) found similar results in a study of children who had been sexually abused. Of those children who had been sexually abused, 34.8% of the boys and 27.5% of the girls had engaged in acts of animal cruelty. Of the children who had not been sexually abused only 4.9% of the boys 3.3% of the girls had engaged in acts of animal cruelty. The results of a research study conducted by DeViney, Dickert, and Lockwood (1993) indicated that 88% of the families with child abuse or child neglect also had incidents of animal cruelty. Furthermore, the animal cruelty was either perpetrated by the male in the family or the child. Additional studies supporting the

relationship between child abuse and animal cruelty are reviewed in the following paragraph.

Ascione, Friedrich, Heath, and Hayashi (2003) conducted a similar study on the affects of physical abuse, sexual abuse, and domestic violence in relation to animal cruelty. The results of the study indicated that the children who had been sexually abused had a higher frequency of animal cruelty incidents than children did in the control group or in an outpatient psychiatric group. Of the children who had been sexually abuse, 17.9 % had committed acts of animal cruelty compared to 3.1 % of the children in the control group and 15.6 % in the psychiatric outpatient group. Furthermore, the males in the sample who had been the victim of both physical abuse and witnessed domestic violence had increased rates of 60 % for committing acts of animal cruelty. The previously listed studies provide a review of risk factors associated with animal cruelty, while the next section reviews general demographic factors related to animal cruelty.

Hensley and Tallichet (2005) reviewed the onset and frequency of animal cruelty in relation to demographic characteristics and experiences of animal abuse during childhood in an adult incarcerated sample. In this retrospective study, the authors reviewed the following factors: “race, education, residence, witnessing of animal cruelty, the age when witnessed animal cruelty, and whether the animal abuser was a family member, friend, neighbor, or stranger” (Hensley & Tallichet, 2005, p. 41). The sample consisted of 261 inmates across three prisons in the southern region of the United States. Of the three prisons, one prison was classified as maximum-security and the other two prisons were classified as medium-security. Inclusion in the study was voluntary and consisted of completing a questionnaire. On the questionnaire, there was one question

about the age at which the individual had first engaged in animal cruelty and another question asked about the frequency of animal cruelty. These two questions represented the dependent variables. The remainder of the questions represented the independent variables, which contained questions about witnessing animal cruelty and demographic information. The results of the study indicated the inmates who perpetrated animal cruelty had been exposed to animal abuse at a younger age. Of those inmates that had perpetrated animal cruelty, they were also more likely to have witnessed animal abuse by a friend. The authors hypothesize that the younger age of onset and the rate of frequency may be related to desensitization of animal cruelty.

Theories of Animal Cruelty

An area of research recently gaining momentum has been on developing and using theories to explain the various reasons as to why individuals are cruel to animals. These theories are diverse and include psychopathy (Dadds, Whiting, & Hawes, 2006) and motivational theories (Ascione et al., 1997; Kellert & Felthous, 1985). The following section of this literature review provides a brief review of these theories. Ascione and Arkow (1999) noted that identifying and conceptualizing the motivation of adolescents who commit acts of animal cruelty will enhance assessment and interventions targeting these adolescents. As previously noted in the first section of the literature review, the reasons given for harming animals may vary drastically (e.g., killing a coyote to protect live stock, gaming, torturing a family cat).

Dadds and colleagues (2006) conducted a study on the association between childhood animal cruelty and psychopathy. First, a general definition of the construct of psychopathy is needed to understand the implications of animal cruelty as a potential

marker in the development of antisocial personality disorder. Psychopathy is a construct that evaluates the following characteristics: behavior (e.g., impulsivity, promiscuous sexual behavior, need for stimulation), interpersonal relations (e.g., glibness, lying, cunning, inflated sense of self-worth), and affect (e.g., callous, lack of remorse, emotionally shallow). The Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991) is a standardized assessment tool commonly used to measure the construct of psychopathy and the PCL-R consists of Factor 1 which measures interpersonal and affective characteristics and Factor 2 which measures deviant and antisocial behaviors (Guy, Edens, Anthony, & Douglas, 2005).

Taking the construct of psychopathy into account, Dadds and colleagues (2006) examined one of the traits in the Factor 1 construct of psychopathy, the callous or unemotional trait. It was hypothesized that this trait, callousness, would be associated with more and severer levels of aggression. The main objective of this study was to explore one of the many proposed developmental pathways to antisocial and violent behavior. To date, the majority of studies on the developmental pathways of antisocial and violent behavior have focused on identifying environmental risk factors such as child abuse, witnessing domestic violence, and parental use of alcohol. As mentioned previously in the literature review, these environmental risks have also been examined as risk factors for animal cruelty. The authors argued that there is a subpopulation of children who develop antisocial personality disorder and violent behavior regardless of whether they have been exposed to any of the identified environmental risk factors.

Dadds and colleagues (2006) used childhood cruelty to animals as a correlate in identifying developmental pathways of antisocial personality disorder and violent

behavior. The results of the study indicated that children identified as meeting the criteria for the callous or unemotional trait committed acts of animal cruelty more frequently than the children that did not meet the criteria for the callous or unemotional trait. Children meeting the criteria for the callous or unemotional trait were identified through the Antisocial Process Screening Device (APSD; Frick & Hare, 2001). The alpha reliability coefficient in this particular study for the callous or unemotional trait was .70. The results of the study indicated that the callous and unemotional trait in combination with animal cruelty might be an early marker in the development of psychopathy.

Luk et al. (1999) found another factor commonly associated with the construct of psychopathy, the role of self-perception, in a study they did on environmental factors and animal cruelty. The children who committed acts of animal cruelty had a higher self-perception than the comparison group. The authors attributed this finding to problems in personality development, which may lead to the development of antisocial personality disorder or violent behavior. While these two studies provide examples of affective traits associated with animal cruelty, the following section is a review of different theories about motivation for committing animal cruelty.

Kellert and Felthous (1985) conducted a study on underlying motivations for committing animal cruelty among an adult population. The study consisted of interviewing 102 criminals and 50 noncriminals in two separate states. Based on these interviews Kellert and Felthous developed the following motivations for engaging in animal cruelty: (a) to control an animal, (b) to retaliate against an animal, (c) to satisfy a prejudice against an animal, (d) to express aggression through an animal, (e) to enhance one's own aggressiveness, (f) to shock people for amusement, (g) to retaliate against

another person, (h) displacement of hostility from a person to an animal, and (i) nonspecific sadism. According to the authors, developing a classification scheme is essential because the motive for committing the animal cruelty can vary drastically across individuals. To emphasize the significance of this point, descriptions of two separate situations are described. In the first situation, a child who lives in a rural area kills a mouse that has been eating the food for the farm animals. In the second scenario, a boy living in the city kills his sister's pet mouse (Kellert & Felthous, 1985; Merz-Perez et al., 2001). This example clearly illustrates that the outcome is the same for both of the scenarios (i.e., the mouse is killed), but the motivation for killing the mouse differs significantly between the two scenarios.

Ascione et al. (1997) conducted a similar study on the motivations for committing animal cruelty specific but focused on an adolescent population. They compiled the following list of developmentally correlated motivations: (a) curiosity or exploration, (b) peer pressure, (c) mood enhancement, (d) sexual gratification, (e) forced abuse, (f) attachment to an animal, (g) animal phobias, (h) identification with the child's abuser, (i) posttraumatic play, (j) imitation, (k) self-injury, (l) rehearsal for interpersonal violence, and (m) vehicle for emotional abuse. Adolescent sex offenders have reported that they physically and sexually abused animals out of boredom or as a means of "elevating" their mood and reducing depression (Ascione & Arkow, 1999, p. 55) Ascione and Arkow theorized that adolescents commit acts of animal cruelty as a means of identifying with the abuser for the purpose of exerting power over a less powerful victim to experience dominance and control. Examples of posttraumatic play include sexual acts committed against animals, which are reenactments of the adolescent's sexual abuse.

Based on the two studies by Kellert and Felthous (1985) and Ascione et al. (1997), Hensley and Tallichet (2005) conducted a study on the motivations for animal cruelty among an adult incarcerated population. Of the 261 inmates in the study, half of the inmates reported that they had committed acts of animal cruelty out of anger and approximately a third of the inmates in the study committed acts of animal cruelty for fun. The inmates who reported committing acts of animal cruelty out of anger, were 7 times more likely to commit the acts of animal cruelty alone than those inmates who committed acts of animal cruelty alone. The authors believed that inmates were more likely to commit acts of animal cruelty alone, because these inmates were concerned about negative reactions from other people. One last significant result was that inmates who committed who had committed more than one act of animal cruelty were about three times more likely to have reported the acts of animal cruelty for control.

Theories explaining the reasons adolescents engage in acts of animal cruelty are in the initial stage of development and will continue to grow as more emphasis is placed on developing a “profile” for individuals who commit acts of cruelty (Hensley & Tallichet, 2005, p. 1441). By examining acts of animal cruelty through a theoretical perspective, improvements may be made in the assessment and treatment of animal cruelty. For example, Hadden and Scarpa (2005) suggested that given the wide range in motivations for committing acts of animal cruelty identified by Ascione et al. (2003), in-depth assessments should be used in evaluating histories of animal cruelty than assessments using only checklists.

Association between Animal Cruelty and Interpersonal Violence

The association between animal cruelty and interpersonal violence has been a controversial topic of debate for years (Ascione, 1993). The popular media has been quick to highlight the link between childhood animal cruelty and interpersonal violence towards humans. Is the association between animal cruelty and interpersonal violence merely a myth portrayed in the media or is there some credibility in the association between animal cruelty and interpersonal violence (Bell, 2001)? For example, 5 out of the 11 perpetrators responsible for the school shootings across the United States of America had engaged in some form of animal cruelty prior to the shootings (Ascione, 2001; Verlinden, Hersen, & Thomas, 2000). Given the publicity around animal cruelty, serial killers, and future violent offenders, it is necessary to first examine the current literature in the field of animal cruelty. Perpetrators of school shootings and serial murders are often examined by the popular press for any inkling of a possible history of animal cruelty. The results of studies have been mixed with some studies indicating animal cruelty may be a marker for future interpersonal violence and other research studies indicating that animal cruelty is not necessarily associated with future interpersonal violence (Merz-Perez et al., 2001).

The following section of this literature review provides a synthesis of research studies on animal cruelty and interpersonal violence, beginning in the early 1900's to the most recent studies. The earliest studies on animal cruelty were mostly, if not all, independent case studies (Ascione, 2001). Movement away from independent case studies appears to have gained momentum when Yarnell (1940) examined factors such as enuresis and parental relationships associated with adolescent firesetters. From this study,

the author theorized that there is a relationship between childhood behaviors of enuresis, firesetting, animal cruelty, and adult violent behavior. The theory was referred to as the “ego triad” and has been a source of debate ever since. Questions have been raised about the methods used in this study because the data was collecting from reviewing cases and projective measurements (Kaufman, Heims, & Reiser, 1961). Although the methods were criticized, this appears to mark the shift from independent case studies to retrospective case studies. This section of the literature review is organized according to research methodologies, gender, and types of interpersonal violence.

Ascione (1993) cited examples of case studies dating back to the early 1900's with an example from Krafft-Ebing (1906) and a case study from Ferenczi (1916) depicting children who were cruel to animals and humans. A case study by Bettelheim (1955) focused on a 5-year-old female child, Mary, who tried killing animals and was physically violent towards other children. These early case studies provided clinical observations about the relationship between animal cruelty and interpersonal violence, forming the foundation for advanced research examining this relationship.

Research examining histories of animal cruelty during childhood or adolescence in nonviolent and violent populations has typically used retrospective research methodologies (Haden & Scarpa, 2005). Hellman and Blackman (1966) conducted a study on incarcerated men in relation to histories of animal cruelty and types of crimes (i.e., violent, nonviolent). The results of the study indicated that the incarcerated men were three times more likely to report a history of animal cruelty if they had committed a violent crime in comparison to the incarcerated men who had not committed a violent crime. Merz-Perez et al. (2001) also examined the relationship between animal cruelty

and violent criminals. The author's hypothesized that violent offenders will have engaged in far more acts of animal cruelty than nonviolent criminals will. The study consisted of 45 nonviolent criminals and 45 violent criminals for 90 participants. The results of the study indicated that violent criminals committed more acts of animal cruelty than nonviolent criminals did.

It is equally important to examine the relationship between a history of animal cruelty and interpersonal violence in incarcerated and non-incarcerated populations. In a study conducted by Kellert and Felthous (1985), the authors examined the association between 152 incarcerated men and 373 non-incarcerated men on histories of animal cruelty. The authors found that 25% of the violent incarcerated men had a history of animal cruelty in comparison to the non-incarcerated men who had 0%. In a similar study, Miller and Knutson (1997) compared the percentage of 299 inmates and 308 undergraduates on self-reported histories of animal cruelty. The results of the study indicated the following: 16.4% of the inmates and 9.7% percent of the undergraduate students reported that they have "Hurt an animal," 32.8% of the inmates and 14.3% of the undergraduate students reported that they have "Killed a stray," and 12% of the inmates and 3.2% of the of the undergraduate students reported that they had "Killed a pet."

Although the majority of research studies have focused on men, there are some studies that examined the association between violence and histories of animal cruelty in women. Felthous and Yudowitz (1977) compared the histories of animal cruelty in assaultive women and non-assaultive women. The results of the study indicated that of the assaultive women, 36% reported a history of animal cruelty and of the non-assaultive women, 0% of these women reported a family history of animal cruelty.

The following is a review of research studies that focused on the relationship between specific forms of interpersonal violence, sexually based forms of violence, and histories of animal cruelty. Tingle, Barnard, Robbins, Newman, and Hutchinson (1986) conducted a study on the relationship between male sexual offenders and histories of animal cruelty. The authors found that of the 64 of the male sexual offenders, 48% of the rapists reported a history of animal cruelty in childhood or adolescence and 30% of those sexual offenders who reported a history of animal cruelty in childhood and adolescence had molested children. These authors examined two areas of sexual offending, rape and child molestation, the next study examines additional factors of sexually based interpersonal forms of violence including homicide. Ressler, Burgess, and Douglas (1988) evaluated the percentage of 28 male sexual homicide perpetrators who reported having a history of animal cruelty during childhood and adolescences. The results of the study indicated that 36% percent of the male sexual homicide perpetrators reported a history of animal cruelty during childhood and 46% percent of the male sexual homicide perpetrators reported having a history of animal cruelty during adolescence. In conclusion, there is sufficient evidence that there is a relationship between animal cruelty and interpersonal violence.

Hypotheses

Three hypotheses were proposed for data collected, which serve the purpose of extending and clarifying the research in the area of comorbid disorders and animal cruelty among an adolescent male population. The first hypothesis stated that there will be a higher frequency of adolescent males diagnosed with CD and depression who have a documented history of animal cruelty than adolescent males diagnosed with CD alone.

The second hypothesis stated that there will be a higher frequency of adolescent males diagnosed with CD and anxiety who have a documented history of animal cruelty than adolescent males diagnosed with CD alone. The third hypothesis stated that there will be a higher frequency of adolescent males diagnosed with CD and ADHD who have a documented history of animal cruelty than adolescent males diagnosed with CD alone.

METHOD

Participants

The sample size of this study consisted of 123 adolescent males from a child and adolescent program in a state hospital located in the Northwest region of the United States of America. The participants were between 12 and 18 years of age and had a diagnosis of conduct disorder (CD). Correctional facilities, child welfare, community mental health agencies, and parents typically made referrals to this program. Of the sample ($N=123$) the average age was 15.27 years ($SD = 1.68$). Female patients and adult patients were excluded from the study because the focus of the study was on adolescent males. The data were selected from an archival record review.

Procedure

An archival record review was conducted and participants were selected for the study based on three factors: a) history of animal cruelty, b) diagnosis of CD, and c) diagnosis of one of ADHD, anxiety, or depression. Animal cruelty was defined as intentionally causing pain, suffering, and distress to an animal (Ascione, 2001). Cases of animal neglect were differentiated from cases of animal cruelty and were not included in this study. Objective criteria used to judge whether animal abuse occurred or did not occur included: severe torture of and/or killing an animal (e.g., stabbing an animal,

dismembering an animal, burning an animal, strangling an animal), moderate cruelty that did not result in physical harm (e.g., spray painting an animal, throwing an animal, striking an animal), sexually inappropriate behavior with an animal, and police reports indicating harm to an animal, charges for animal cruelty, or conviction of animal cruelty. When documentation of animal cruelty was ambiguous, the research sponsor from the state hospital was asked to judge whether animal cruelty had occurred or had not occurred as a secondary opinion and to reduce bias. The mental health diagnoses for each of the participants were also obtained through archival record review.

Archival records used in the study were selected by scanning the state hospital's electronic records for cases of animal cruelty. It is estimated that there are approximately 60,000 electronic records at this state hospital. Electronic records were scanned by searching for records containing the word "animal." From those records identified, each record was reviewed for the age of the patient, history of animal cruelty, and mental health diagnoses. Physical records were requested when the information from the electronic records was deemed insufficient or ambiguous. There were not any restrictions on the date ranges for the records searched, as this would not have been possible given the electronic records system.

The data obtained from the records were de-identified and data obtained from a single participant were not used alone. A study identification number was assigned to each of the records used in the study. A list of the records and the study identification numbers was kept in a password protected file on the state hospital computer system. In addition to assigning a study identification number to each of the records, specific personal information like date of birth, social security numbers, and treatment participant

numbers were not included. Consent was waived at the state hospital, according to the Waiver of Consent form. The Waiver of Consent Form is a form that is signed when a patient enters the hospital and allows the hospital to collect data to be used in the future for research purposes.

The research sponsor from the state hospital and the principal investigator were the only researchers who had access to these data. In addition, both the research sponsor and the principal investigator had completed the research compliance and Health Insurance Portability and Accountability Act (HIPAA) trainings required by the state hospital. Topics included in this series of trainings include issues related to research ethics, confidentiality, protection of health information, and storage of research data. The principal investigator had also completed a separate HIPAA training as required by Pacific University. A further measure of privacy protection was adhering to the state hospital's guidelines for protecting confidential health information. Therefore, documents with identifiable information were kept in a locked file cabinet and reviewed in the office of the state hospital sponsor. Prior to collecting and performing any analysis on the data, approval from the Institutional Review Boards (IRB) at the state hospital and Pacific University was obtained in May of 2010.

The data collected from each of the records were recorded on a coding sheet and contained the following information: age of the participant at the time of treatment, mental health diagnoses, history of animal cruelty, and a brief description of the acts of animal cruelty when available. The coding process for recording the mental health diagnoses included yes or no for a diagnosis of CD, yes or no for CD and ADHD, yes or no for CD and anxiety, and yes or no for CD and yes or no for depression. As for

describing the acts of animal cruelty, reference to the severity of animal cruelty was not included because the documentation of animal cruelty was not standardized.

RESULTS

The following statistical analyses were conducted in this study: two-way contingency analysis, odds ratio, and relative risk. A two-way contingency table analysis was used to evaluate statistical significance of a comorbid diagnoses and a history of animal cruelty among an adolescent population. The odds ratio was used to analyze the strength of association between a comorbid diagnoses and history of animal cruelty. Lastly, the relative risk was used to analyze the probability of having both a comorbid diagnoses and a history of animal cruelty. Although these indices are related, each one provides a different perspective on the relationships. Table 1 provides an overview of the data.

Table 1

<i>Group Comparisons</i>		
Comparison	History of Animal Cruelty	No History of Animal Cruelty
CD	12	40
CD and Depression	4	24
CD and Anxiety	1	6
CD and ADHD	18	18

Table 2 displays the results for the contingency table analyses. Having comorbid diagnoses of CD and depression was not found to be significantly related to a history of animal cruelty [Pearson $\chi^2 (1, N = 80) = .88, p = .35$, Cramer's $V = .10$]. Therefore, adolescent males with a history of animal cruelty were not more likely to have a

diagnosis of CD and depression than CD alone. Having comorbid diagnoses of CD and anxiety also was not found to be significantly related to a history of animal cruelty [Pearson $\chi^2 (1, N = 58) = .13, p = .72$, Cramer's $V = .05$.] Therefore, adolescent males with a history of animal cruelty were not more likely to have comorbid diagnoses of CD and anxiety than CD alone. In both cases there were few adolescents with the comorbid diagnosis. Statistically this results in low power making it unlikely that an effect would be identified even if it exists. In contrast to the above findings, having comorbid diagnoses of CD and ADHD *was* found to be significantly related to a history of animal cruelty [Pearson $\chi^2 (1, N = 88) = 6.86, p = .01$, Cramer's $V = .23$.]. Therefore, adolescent boys with a history of animal cruelty were more likely to have comorbid diagnoses of CD and ADHD than CD alone.

Table 2

Results for the Two-Way Contingency Table Analysis

Comparison	Pearson Chi Square	<i>p</i> value	Cramer's V
CD and Depression vs. CD	.88	.35	.10
CD and Anxiety vs. CD	.13	.72	.05
CD and ADHD vs. CD	6.88*	.01	.23

**p* value \leq alpha

Table 3 presents the odds ratio analyses. In comparison to adolescent males with a history of animal cruelty and comorbid diagnoses of CD and depression, adolescent males with a history of animal cruelty and CD alone had an odds ratio of 0.56, with a 95% confidence interval of 0.17-1.85, Adolescent males with a history of animal cruelty and CD had an odds ratio of 0.67, with a 95% confidence interval of 0.10-5.00, in

comparison to adolescent males with history of animal cruelty and comorbid diagnoses of CD and anxiety. Lastly, Adolescent males with a history of animal cruelty and comorbid diagnoses of CD and ADHD had an odds ratio of 3.33, with a 95% confidence interval of 1.35-8.33, in comparison to adolescent males with CD alone. Given the contingency table analysis results reported above, only this last OR is of interest in this study.

Table 3

Results for the Odds Ratio Table Analysis

Comparison	Odds Ratio (OR)	Confidence Interval* (CI)
CD and Depression vs. CD	0.56	0.17-1.85
CD and Anxiety vs. CD	0.67	0.10-5.00
CD and ADHD vs. CD	3.33	1.35-8.33

* 95% Confidence Interval

The relative risk was also analyzed to determine whether there are differences in the probability of comorbid diagnoses among adolescent males with a history of animal cruelty. The results are shown in Table 4. An adolescent male with a history of animal cruelty is 0.60 times more likely to be diagnosed with CD alone, with a 95% confidence interval ranging from 0.73-1.12, than with CD and depression. An adolescent male with a history of animal cruelty is 0.74 times more likely to be diagnosed with CD alone, with a 95% confidence interval ranging from 0.64-1.26, than CD and anxiety. Adolescent males with a history of animal cruelty were 2.17 times more likely to have comorbid diagnoses of CD and ADHD, 95% confidence interval of 1.07-2.20, than CD alone. This last comparison is of interest in this study.

Table 4

Results for Relative Risk Table Analysis

Comparison	Relative Risk (RR)	Confidence Interval* (CI)
Depression and CD vs. CD	0.89	0.73-1.12
Anxiety and CD vs. CD	0.74	0.64-1.26
ADHD and CD vs. CD	2.17	1.07-2.20

*95% Confidence Interval

DISCUSSION

The purpose of this study was to examine the relationship between animal cruelty and comorbid disorders. Examining the correlation between animal cruelty and comorbid disorders is likely to have a beneficial effect on the treatment of animal cruelty in the following ways: assessment, treatment planning, developing treatment interventions, implementing treatment interventions, and measuring treatment outcomes. Russo and Beidel (1994) contended that comorbid disorders respond differently to treatment than do singular diagnosis and that treatment modalities need to be comprehensive. Furthermore, these authors suggested that it is nearly impossible to study the etiology or develop treatment modalities for a "pure" or singular mental health diagnosis such as anxiety or ADHD, because singular disorders rarely exist in the general population. This perspective underscores the necessity of examining the association between animal cruelty and comorbidity. In the assessment and treatment of animal cruelty, it is not enough to imply that comorbid disorders are simply an issue with nomenclatures in the DSM-IV-TR or the result of shared risk factors. In order to begin assessing and treating

an adolescent male with a history of animal cruelty, the manifestation and interaction between these symptoms must fully be understood. Overall, the results of the study indicated a correlation between a history of animal cruelty and comorbid diagnoses of CD and ADHD among male adolescents. There was not a correlation between history of animal cruelty and comorbid diagnoses of CD and anxiety and CD and depression among male adolescents.

It is likely that a correlation between histories of animal cruelty and comorbid diagnoses of CD and ADHD exists because ADHD exacerbates the symptoms of CD. This is consistent with previous research that has found an increased severity in symptoms of ADHD when ADHD co-occurred with CD (Connor & Doerfler, 2008). Of particular importance, the level of aggression increased when ADHD co-occurred with CD ($p < .001$). Additional symptoms that were exacerbated were academic performance, substance use, and interpersonal relations. Younger boys were more likely to be placed in special education if they had comorbid diagnoses of ADHD and CD (89%) than ADHD alone (59%) (Connor & Doerfler). In addition, the risk for substance use nearly doubles for adolescents with comorbid diagnoses of CD and ADHD than ADHD alone. Klassen, Miller, and Fine (2004) found that conflicts between siblings were higher for adolescents with comorbid diagnoses of CD and ADHD than ADHD alone.

Unlike the correlation found between history of animal cruelty and comorbid diagnoses of CD and ADHD, the results of the study did not indicate a correlation between history of animal cruelty and anxiety. This result is in direct contrast with the research that supports a higher level of impairment for adolescents diagnosed with a

comorbid diagnoses of CD and anxiety. This was not true for adolescents with a history of animal cruelty.

The effects of anxiety on the manifestation of conduct disorder has been questioned repeatedly. Although there is a consensus among researchers (e.g., Angold et al., 1999; Russo & Beidel, 1994; Zoccolillo, 1992) that anxiety does affect the presentation of conduct disorder, the question remains as to whether anxiety exacerbates or diminishes the symptoms of conduct disorder. In this study, anxiety appeared to diminish the severity of the symptoms of conduct disorder, specifically animal cruelty. Although the specific reasons for the moderating effect remains unclear, an emerging area of research focusing on psychopathy and anxiety indicates that adolescents with high levels of anxiety are less likely to meet the criteria for psychopathy because of the influence of anxiety on affective factors (Dadds et al., 2006).

Lastly, the results of the study did not indicate a correlation between history of animal cruelty and comorbid diagnoses of CD and depression. These results are consistent with the developmental theory of CD and depression proposed by Wolff and Ollendick (2006). According to the developmental theory, adolescents develop conduct problems and then the symptoms of depression emerge in response to the “social failures” that result from conduct problems (Wolff & Ollendick, p. 202). At least two studies have supported this theory. Nock, Kazdin, Hiripi, and Kessler (2006) found that in 72% of cases with comorbid diagnoses of CD and depression, CD preceded depression. In addition, Puig-Antich (1982) found that when the symptoms of depression improved so did the symptoms of CD.

In accordance with the developmental theory, it is likely that adolescents with a comorbid diagnoses of CD and depression have an awareness of problems caused by their behaviors (i.e., cruel to others, stealing, lying, etc.) and as a result internalize the negative consequences of these behaviors. Therefore, adolescents may be at a reduced risk for harming animals because they are concerned about the impact of their behaviors on others, including animals.

Limitations

A number of limitations exist for this study. The primary limitation was the documentation of animal cruelty. As mentioned in previous research studies, animal cruelty is often not documented and when it is documented, the documentation is poor. For example, in some of the charts reviewed specific acts of animal cruelty were described in detail whereas in other charts it was noted that the adolescent had a history of animal cruelty. Although the majority of the cases provided a brief account of the animal cruelty, a few of the cases simply stated, “There is a history of animal cruelty.” A standardized measurement to evaluate acts of animal cruelty such as the CAI was not used.

The second limitation in the study was the use of mental health diagnoses at the time of discharge by a single mental health provider. Although using the diagnosis at the time of discharge may have increased the chances of having an accurate diagnosis, no standardized measurement was used to identify the criteria for each of the diagnosis. Using a standardized measurement would have increased the reliability and validity of the mental health diagnosis.

A third limitation was the type of population included in this study. This study was limited to adolescent males who had been placed in a state hospital for mental health treatment. The results of this study may not be generalized to female adolescents, children under the age of 12 and individuals over the age of 18. The population included in the study may be representative of an inpatient clinical population and may not be generalized to an outpatient or non-treatment population. The fourth limitation was that the data obtained from the study was from archived charts prior to the termination of the Child and Adolescent program; therefore, the information may be out-of-date.

Future Directions

A longitudinal study on the epidemiology and severity of comorbid diagnoses and animal cruelty may clarify the role of comorbid diagnoses in the development of conduct disorder in adolescent males with a history of animal cruelty. It is likely that comorbid diagnoses in individuals with a history of animal cruelty change over course of time. Furthermore, a longitudinal study may clarify the role of animal cruelty in the development of antisocial personality disorder and/or individuals with psychopathy. Retrospective studies are frequently used to analyze the role of animal cruelty in violent offenders, particularly in criminal cases of notoriety (e.g., school shootings, serial murders, violent sexual homicides), which may lead to confirmation bias. Therefore, a longitudinal study may clarify the role of animal cruelty in the development of comorbid diagnoses. An informal observation from reviewing charts in this current study was that individuals with a sexual offense or homicide were more likely to be directly asked about whether they had a history of animal cruelty or not. The actual question (i.e., Have you ever harmed animals?, Do you have a history of animal cruelty?) and the response to the

question, whether it was a yes or no to a history of animal cruelty, was clearly documented in the reports or notes in the chart. If individuals who commit a violent offense are more likely to be asked about animal cruelty, does this lead to artificially inflated rates of individuals who commit a violent offense and have a history of animal cruelty?

Another recommendation for future research is to do a comprehensive analysis of the relationship between comorbid diagnoses of CD and ADHD and history of animal cruelty in children and adolescents. Is there a correlation between different subtypes of ADHD (e.g., predominately inattentive type, predominately hyperactive-impulsive type, mixed), conduct disorder, and history of animal cruelty? Are there specific risk factors (i.e., sexual abuse, domestic violence, child abuse) that differentiate cases of comorbid CD and ADHD with a history of animal cruelty and without a history of animal cruelty? How do the symptoms of CD and ADHD intersect to increase the frequency of adolescents with a history of animal cruelty? One way to explore the role of each of these disorders would be to compare items on measures for ADHD such as the Conners-Wells' Adolescent Self-Report Scale (CASSL:L; Conners, 2008) or the Vanderbilt ADHD Diagnostic Parent Rating Scale (VADPRS; Wolraich, Feurer, Hannah, Pinnock, & Baumgaertel, 1998) to self-report measure for CD such as the Impulsive and Premeditated Aggression Scale (IPAS; Stanford et al., 2003) and the Adolescent Anger Rating Scale (AARS; Burney & Kromery, 2001) for adolescents with and without a history of animal cruelty.

Lastly, future research should include an emphasis on factors such as the age of onset for animal cruelty in conjunction with each of the comorbid diagnoses, differences

in gender for each of the comorbid diagnoses and histories of animal cruelty, and cultural differences for each of the comorbid diagnoses and histories of animal cruelty. For example, how does age influence the development of mental health disorders in individuals with an early (i.e., age 7) history of animal cruelty versus individuals with a later history of onset for animal cruelty (i.e., age 15)? How does age of onset and development of comorbid diagnoses relate to treatment interventions? In terms of gender, this study focused on male adolescents but there is clear indication that females also commit acts of animal cruelty. What is the association of comorbid diagnoses and histories of animal cruelty for females? Culture also appears to play a significant role in identifying and treating adolescents with a history of animal cruelty as evidenced by the implications for defining animal cruelty. Exploring the role of culture, specifically cultural beliefs, in individuals with a history of animal cruelty and comorbid diagnoses is recommended.

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