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**Risk Factors for the Development of Animal Cruelty.**

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### **Abstract**

Research shows that animal cruelty shares many of the aetiological pathways and risk factors of other aggressive and antisocial behaviours. The shared aetiology aids understanding of the co-occurrence that has been documented between animal cruelty and other antisocial crimes. This article reviews current understandings about the development of antisocial behaviours. From the later childhood years onward, animal cruelty and other antisocial behaviours are indicators of non-normative development. Early detection of such behaviours can provide a valuable opportunity to engage in preventative and intervention strategies including sanctions where appropriate.

**Keywords:**

Animal cruelty; Aggression; Antisocial Behaviour; Witnessing of Violence; Family and Parenting Experiences; Cognitive factors; Empathy; Emotion Regulation.

## **Risk Factors for the Development of Animal Cruelty**

Research shows that animal cruelty shares many of the aetiological pathways and risk factors that have been shown for other aggressive behaviours. The shared aetiology not only aids understanding of the co-occurrence that has been documented between animal cruelty and other aggressive and antisocial crimes (Gullone, 2012), it also highlights the dangers over and above those to animals that are lurking where animal cruelty offenders remain unidentified and their crimes remain unsanctioned.

Prior to discussing the risk factors that predict the development of animal cruelty, definitions of the constructs that are central to this review will be discussed. Of particular note is the conceptualisation that has evolved over the past decade that aggressive behaviours mostly occur within the context of other antisocial behaviours including: lying, stealing, destruction of property, burglary, sexual assault and other violent crimes (Hartup, 2005). Significant co-occurrence has been noted between aggressive behaviour, most notably physical aggression and other forms of antisocial behaviour. Much empirical work (e.g., Farrington, 1991), has shown that “the frequency and variety of antisocial acts are the best predictors of more serious forms of antisocial behaviour, including violence.” (Dishion, French, & Patterson, 2005; p. 422).

Thus, animal cruelty and other aggressive behaviours are specific forms of antisocial behaviours that have been shown to co-occur along with other forms of antisocial behaviours. However other antisocial behaviours can primarily be differentiated from human aggression and animal cruelty behaviours on the basis that these latter behaviours have as their fundamental motivation the deliberate intention

to cause harm or injury to other sentient beings. This is clearly indicated in the definitions below.

### *Defining Human Aggression*

According to Dodge, Coie, and Lynam (2006), aggression can be defined as behaviour that aims to harm or injure another or others. Similar definitions have been put forth by others. For example, Anderson (2002) has defined aggression as behaviour performed by a person (the aggressor) with the immediate intention of harming another person (the victim). The perpetrator (aggressor) must believe that the behaviour will harm the victim and that the victim is motivated to avoid that intended harm.

### *Defining Animal Cruelty*

Animal definitions, not surprisingly, share many of the features that are common to definitions of aggression toward humans. Summarizing the different views on animal cruelty, Dadds, Turner, and McAloon (2002) noted that most definitions include a behavioural dimension that can include acts of omission (e.g., neglect) or acts of commission (e.g., beating) (c.f. Brown, 1988). Another key characteristic is indication that the behaviour occurred purposely, that is, with deliberateness and without ignorance. An additional definitional criterion is that the behaviour brings about physical and/or psychological harm. Incorporating these definitional criteria, Dadds (2008) defined animal cruelty as a repetitive and proactive behaviour (or pattern of behaviour) intended to cause harm to sentient creatures.

Gullone (2012) has elaborated further upon Dadds' definition. According to Gullone, animal cruelty can be defined as:

behaviour performed repetitively and proactively by an individual with the deliberate intention of causing harm (i.e. pain, suffering, distress and/or death) to an animal with the understanding that the animal is motivated to avoid that harm. Included in this definition are both physical harm and psychological harm.

Given shared manifestations as reflected in their definitions, it is not at all surprising that animal cruelty and aggressive behaviours should share risk factors and aetiological pathways of development.

#### *Risk Factors for the Development of Animal Cruelty*

Consistent with the broader literature on aggressive and other antisocial behaviour, empirical studies examining factors that are predictive of animal cruelty include a number of constitutional or biological risk factors and individual difference risk factors. Being male has been a consistently demonstrated risk factor across the developmental spectrum (Arluke & Luke, 1997; Coston & Protz, 1998). Age is another important constitutional variable (Arluke & Luke, 1997; Gullone & Clarke, 2008). Environmental factors have also been shown to be important. These factors include micro-environments that can also be referred to as proximal environments such as the child's family and parenting experiences (e.g., Kellert & Felthous, 1985; Rigdon & Tapia, 1977; Tapia, 1971). Also included are macro-environments which are considered to be more distal environments such as cultural attitudes and norms (Flynn, 1999a).

In his recent review, Flynn (2011) listed what he considers to be the leading predictive factors of children's animal cruelty. These include " a) being a victim of physical or sexual abuse, b) witnessing violence between one's parents, and c) witnessing parents or peers harm animals."(p. 455). Other predictors of animal cruelty that Flynn included were the experiences of being bullied or the behaviour of bullying. The research examining the proposed risk factors for the development of animal cruelty behaviours will be reviewed below beginning with biological and maturational variables.

#### *Temperamental Predisposition*

Differences in temperament (defined as an internal disposition that influences relatively stable styles of behaving over time and across situations; Schwartz, Wright, Shin, Kagan, & Rauch, 2003) have been reported to be important predictors. It is noteworthy that biological predispositions are just that – predispositions. It is their interaction with environmental factors (such as family and parenting experiences – to be reviewed in the next section) that is of most significance in understanding their aetiological role.

One particularly relevant constellation of temperamental predispositions is referred to as callous-unemotional traits. In particular, experiences of abuse or neglect in childhood interfere with otherwise normative development. Such childhood experiences have been shown to serve as incubators of callous-unemotional trait development in predisposed individuals (Anderson & Bushman, 2002; Repetti, Taylor, & Seeman, 2002).

Individuals characterised by callous-unemotional traits lack a sense of guilt and empathy, and callously use others for their own gain (Frick & White, 2008).

Research with antisocial youth has shown that callous-unemotional traits are predictive of a higher severity, and stability of aggressive and antisocial behaviour (Frick & Dickens, 2006). Youth who present with callous-unemotional traits tend to be less responsive to cues of punishment but rather tend toward a reward-dominant style. This contrasts with antisocial youth without callous-unemotional traits who tend to show less aggressive behaviour and whose behaviour tends to be reactive rather than proactive (Frick and Dickens, 2006).

### *Sex Differences*

A second important factor shown to be an important risk factor for animal cruelty is sex (and gender). Consistent with the broader antisocial behaviour literature showing that there are marked sex differences with the males outnumbering females on aggressive tendencies by a ratio of around 10 to 1 (Loeber & Hay, 1997), research has shown that males are more likely to be cruel to animals. This is true for childhood (e.g., Baldry, 2005), adolescence (Thompson & Gullone, 2006), and adulthood (Gullone & Clarke, 2008). Of note, Flynn (1999a; 1999b) found that not only were males more likely to commit animal cruelty, they were also more likely to witness it.

Investigating a childhood community sample involving 268 girls and 264 boys (aged 9 to 12 years), Baldry (2005) found that 35.9 percent of girls reported abusing animals compared with 45.7 percent of boys. The investigation by Thompson and Gullone (2006) involving 281 adolescents aged between 12 and 18 years, found that males scored significantly higher than females on two different self-report animal cruelty questionnaires. In their study, Gullone and Robertson (2008) also found that boys scored higher on measures of animal cruelty compared to girls.

Studies examining animal cruelty in adults have also found a higher prevalence amongst men compared to women. For example, in an investigation of all animal cruelty cases prosecuted in Massachusetts between 1975 and 1996, Arluke and Luke (1997) found that approximately 97% of the perpetrators were male. Similarly, in Gullone and Clarke's (2008) report of Australian data for all recorded offences in Victoria for the years spanning 1994 to 2001, when broken down by age and sex, the data showed that across crime categories including animal cruelty, offenders were characteristically male. Males were also found to be overrepresented across all age categories but most particularly between the ages of 18 and 35 years indicating the importance of maturational period or age.

#### *Age Differences*

As has been found for other forms of violence, late adolescence and early adulthood are the ages that are most typical for perpetrating animal cruelty for males and females, albeit with a markedly higher prevalence in males. For example, Arluke and Luke (1997) reported that the average age for committing animal cruelty was 30 years. They also found that just over one quarter of the offenders were adolescents and more than half (56%) were under 30 years. In their Australian study, Gullone and Clarke (2008) reported consistent findings in their examination of all recorded offences in the state of Victoria during the years between 1994 and 2001. In addition to being male, most offenders for all offences including animal cruelty, offences against the person, offences against property, and drug offences were aged between 18 and 35 years. When looking only at animal cruelty offences, there was a peak between 18 and 25 years.



In a study of 28 convicted and incarcerated male sexual homicide perpetrators, Ressler, Burgess, and Douglas (1988) found that prevalence of cruelty to animals was 36% in childhood and 46% in adolescence. Of note, in their study, Arluke and Luke (1997) also found differences depending on age, in the type of animal abused. Adults were more likely to be cruel to dogs whilst adolescents were more likely to kill cats. The type of cruelty also differed with shooting animals being more characteristic of adult animal cruelty and beating being more characteristic of adolescent cruelty.

The finding that there are age differences in the propensity to be cruel to animals is not surprising given the profound differences that are associated with different developmental milestones. Not only does physical strength increase as children mature, cognitive functioning and emotion regulation also develop. Emotion regulation involves processes that enable us to be aware of our emotions as well as processes that enable us to monitor, evaluate and change our emotions in order to achieve our goals in a manner that is appropriate for the particular situation. In addition to the maturation of cognitive and emotion processes with age, environmental experiences will vary in their intensity of impact depending on developmental stage, as has been shown for the witnessing of cruelty. This will be discussed in the next section.

#### *Witnessing of Violence and Animal Cruelty*

Research has consistently demonstrated the importance of witnessing aggression for the development of aggressive behaviour (e.g., Cummings, 1987; Davies, Myers, Cummings, & Heindel, 1999; Margolin & Gordis, 2000; Maughan & Cicchetti, 2002). A number of studies investigating the relationship between animal

cruelty and family violence have also examined children's witnessing of animal cruelty and children's engagement in animal cruelty. These studies have shown that between 29% and 75% of children in violent families have witnessed the animal cruelty and between 10% and 57% have engaged in animal cruelty. Parental reports of animal cruelty in normative samples of children (children who do not come from violent homes) are typically around 10% or lower (Ascione et al., 2007).

In her 2005 study, Baldry found that youth who witnessed violence between family members, or who witnessed harm to animals, were three times more likely to be cruel to animals compared to peers without such experiences. Currie (2006) also reported a significant relationship between the witnessing of aggressive behaviour (domestic violence) and animal cruelty via parent-report. Mothers' reports regarding their children's animal cruelty were compared for a group of 94 children (47 mothers) with a history of domestic violence and 90 children (45 mothers) without a history of domestic violence. According to the mother reports, exposed children were more likely to be cruel to animals compared to children who had not been exposed to violence. Additional support for this relationship was reported by DeGue and DiLillo (2009) who found that those participants who had witnessed animal cruelty were eight times more likely than those who had not, to perpetrate animal cruelty.

In research specifically examining the relationship between children's aggressive behaviours and their witnessing of domestic violence, Baldry (2003) found that children who engaged in bullying behaviours were 1.8 times more likely to have been exposed to domestic violence than those who were not. Similarly, in their study of 281 (113 males; 168 females) school-based adolescents ranging in age between 12 and 18 years, Thompson and Gullone (2006) found that those who reported witnessing animal cruelty on at least one occasion also reported significantly higher levels of animal cruelty, compared to youth who did not witness

animal cruelty. Particularly noteworthy is Thompson and Gullone's finding that witnessing a stranger abusing an animal predicted *lower* levels of animal cruelty. This contrasted with the finding that witnessing animal cruelty by a friend, relative, parent, or sibling predicted *higher* levels of cruelty.

Hensley and Tallichet (2005) reported similar findings to those of Thompson and Gullone. They not only found that inmates who reported witnessing animal cruelty were more likely to frequently be cruel to animals but also that those who witnessed a family member or a friend hurt or kill animals were more likely to commit animal cruelty with even greater frequency. The findings of these studies are consistent with Bandura's vicarious learning theory (1983) which proposes that observation of behaviour is more likely to lead to performance of the observed behaviour if the model has a meaningful relationship with the observer, or in other words if the model is a significant other. Also, consistent with Henry's (2004a) findings, it is noteworthy that those who were younger when they first witnessed someone hurt or kill animals were more likely to commit animal cruelty more frequently.

Further indicating the important aetiological role of witnessing cruelty is the study by Gullone and Robertson (2008) in which the possible pathways of acquisition for bullying and for animal cruelty behaviours were investigated. It was found that each type of behaviour was significantly predicted by the witnessing of animal cruelty. Thus, this study supports the co-existence of animal directed aggression and human directed aggression in youth. As with Baldry's (2005) results, it also further demonstrates the importance of observational learning (Bandura, 1978). In this case the observation of animal cruelty, as a pathway for the development of different aggressive behaviours was demonstrated.

Others (e.g., Flynn, 1999b; 2000; Henry, 2004b; Hensley & Tallichet, 2005) have examined this relationship by asking undergraduate students or imprisoned males about their childhood experiences and behaviours. A study by Henry (2004a) involved 169 university students who were asked about exposure to, and perpetration of, animal cruelty. Results indicated that animal cruelty was witnessed on at least one occasion by 50.9% of participants. Also, the witnessing of animal cruelty before the age of 13 years age was associated with higher perpetration rates (32%) compared to the witnessing of animal cruelty at 13 years or later (11.5%).

Witnessing significant others such as parents abusing animals has been demonstrated to play a large role in attitude formation for the child, contributing to the development of beliefs that aggressive and violent behaviours are somewhat normative, thereby supporting the development of what has been, in the general aggression literature, referred to as *normative beliefs* (Anderson & Huesmann, 2003). As has been consistently reported in the human aggression literature, children's beliefs about aggression are correlated with those of their parents (Huesmann, Eton, Lefkowitz, & Walder, 1984) as well as those of their peers (Huesmann & Guerra, 1997).

Whilst research has shown that witnessing significant others behave in an aggressive manner serves as a powerful pathway of acquisition, observing media violence also has a significant effect on attitudes and behaviours (Anderson & Huesmann, 2003). A large and robust body of research has consistently shown that exposure to media violence predicts an increase in aggressive thoughts, desensitization to later violence exposure and reductions in physiological arousal following violence exposure. It also predicts an increased acceptance and endorsement of violent behaviour (Anderson & Huesmann, 2003; Anderson et al.,

2010; Greeson & Williams, 1986; Hansen & Hansen, 1990). There is strong empirical evidence indicating that exposure to real life or media violence plays a strong role in the formation of cognitions related to aggression and violence (Flynn, 1999b), as well as the development of aggressive behaviour (e.g. Baldry, 2005; Becker, Stuewig, Herrera, McCloskey, 2004; Currie, 2006; Gullone & Roberston, 2008; Margolin & Gordis, 2000; Thompson & Gullone, 2006).

In sum, the above studies demonstrate the importance of witnessing animal cruelty (i.e. an aggressive behaviour) for the learning of, and engagement in, aggressive behaviour. Children who witness or directly experience violence or aggression have been documented to be more likely to develop ways of thinking and behaving that support aggression (Guerra, Huesmann, & Spindler, 2003) and a tendency to behave aggressively (Anderson & Huesmann, 2003). Given that studies have consistently reported that children exposed to domestic violence are more likely to engage in acts of animal cruelty than children who have not been exposed to domestic violence (Baldry, 2005; et al., 2004; Flynn, 2000; Hensley & Tallichet, 2005), it can be concluded that witnessing or experiencing of violence and/or aggression are important pathways for the development of these behaviours.

Of course, it is not only the witnessing of aggression and violence that contributes to the learning of behaviour and to the formation of attitudes and beliefs, the actual experiencing of behaviour is likely to contribute to learning and attitude formation even more powerfully. Therefore, it is not at all surprising that a relationship has been found between children's experiences of abuse and neglect and their engagement in animal cruelty. The next section will review the research looking at the relationships between family and parenting experiences and children's animal cruelty.

### *Family and Parenting Experiences*

Across different assessment methodologies, including retrospective reporting, a significant relationship between the experiencing of abuse in childhood (mostly within the family environment) and engagement in animal cruelty has emerged. Other factors placing children at risk of developing aggressive and antisocial behaviours, including animal cruelty behaviours, are those that characterise *risky families* (Repetti, et al., 2002).

Risky families include overt family conflict, expressions of negative affect and low nurturance and warmth. Risky parents are cold, unsupportive or neglectful. Risky parenting and risky family environments leave children vulnerable to the development of psychological and physical disorders. It is important to emphasise the interactional role played by both environment and biology. Whilst certain biologically-based characteristics, such as temperament are predictive of development along an antisocial behaviour trajectory, children whose aggression increases as they develop, rather than following the normative decreasing pathway, may also be expressing a learnt survival behaviour for their particular circumstance. This is highlighted by research showing the intergenerational transmission of aggression such as that described below.

In the earliest published investigation of the aetiology of animal cruelty by children, Tapia (1971) reported an analysis of 18 child cases of cruelty to animals selected from the clinic files of the Child Psychiatry Section of the University of Missouri's School of Medicine. In all selected cases, cruelty to animals was either the chief complaint or one of the referring complaints. Among the cases, there was a high male prevalence. The children were of normal intelligence and young in age,

spanning from 5 to 15 years with half of the cases being between 8 and 10 years. A chaotic home environment with aggressive parental models was the most common factor across the cases. On the basis of the case analysis, Tapia concluded that cruelty to animals occurs in conjunction with other hostile behaviour including bullying and fighting, lying, stealing and destructiveness, and that a chaotic home environment, together with aggressive parent models are common factors.

In 1977, Rigdon and Tapia conducted a follow-up study of Tapia's (1971) study in an attempt to determine whether the presence of cruelty to animals as a significant clinical feature provides information that is of prognostic value. The original data reported in 1971 were collected between 2 and 9 years earlier. Five of the original 18 children were not able to be located for this follow-up study. The detailed case by case analysis revealed that of the 13 cases followed up, 8 were still cruel to animals as many as 9 years later. The authors concluded that "Most of these children are the products of a chaotic home situation with aggressive parents who administered harsh corporal punishment." and that "The most effective form of therapy seemed to be removal from or a significant change in the chaotic home environment." (p. 36).

In other research, Deviney, Dickert, and Lockwood (1983) studied 53 families who had companion animals in their home and who met New Jersey legal criteria for child abuse and neglect. They found that compared to the general population, there were higher rates of animal cruelty in families where there was substantiated child abuse or neglect. Observations during home interviews revealed that companion animals were abused or neglected in 60% of these families. When the sample was classified according to type of abuse (physical abuse - 40%; sexual abuse - 10%; neglect - 58%), for an alarming 88% of families displaying physical

abuse, cruelty to animals was also present. As many as two-thirds of the companion animals in these homes were abused by the fathers in the family, and one-third were abused by the children in the family.

In their work comparing criminal (aggressive versus non-aggressive) and non-criminal retrospective reports of childhood experiences and abuse behaviours, Kellert and Felthous found that domestic violence and particularly paternal abuse and alcoholism, were common factors among aggressive criminals who had a history of childhood animal cruelty (Felthous, 1980; Felthous & Kellert, 1986; Kellert & Felthous, 1985). According to Kellert and Felthous (1985), the family and childhood experiences of many of the aggressive criminals were particularly violent. The domestic violence in the families of the aggressive criminals was most strongly characterised by paternal violence. Of note, three quarters of the aggressive criminals reported repeated and excessive child abuse compared to 31% of the non-aggressive criminals and 10% of the non-criminals. Among the non-aggressive criminals and non-criminals who were cruel to animals, reports of being physically abused as children were common. As many as 75% of non-criminals who reported experiences of parental abuse also reported being cruel to animals.

In a study by Ressler, Burgess, Hartman, Douglas, and McCormack (1986), 36 convicted sexually-oriented killers were interviewed about their childhood histories. The offenders who were sexually abused in childhood or adolescence were significantly more likely than those who were not abused to report a number of aggressive behaviours including cruelty to animals, cruelty to other children, and assaultive behaviour toward adults.

In research examining the relationships between childhood experiences and animal cruelty, Miller and Knutson (1997) compared the self-reports of 314 inmates



in a corrections department with those of a group of undergraduate university students. They found modest associations between animal cruelty and punitive and acrimonious childhood histories. On this basis, the authors concluded that there is an association between punitive childhood histories and antisocial behaviour.

Also based on retrospective self-reports, Flynn's (1999b) study involved 267 undergraduate students. The results showed a relationship between corporal punishment by parents and the perpetration of animal cruelty. Those who had perpetrated animal cruelty were physically punished more frequently before their teenage years compared to those who had never been cruel to an animal. Also, more than half of male teenagers who were hit by their fathers reported perpetrating animal cruelty.

Ascione, Friedrich, Heath, and Hayashi (2003) also examined the associations between children's cruelty to animals and physical abuse. In addition, they looked at the relationship between animal cruelty and parental physical fighting. Three groups of children (1. sexually abused group; 2. psychiatric sample with no sexual abuse; 3. control group) aged between 6 and 12 years were involved in the study. Cruelty to animals was associated with a history of abuse and the association was stronger for children who had been physically abused and those who had witnessed domestic violence.

A more recent study by Duncan, Thomas, and Miller (2005) yielded converging findings through the assessment of charts of boys (aged 8 to 17 years) with conduct problems. The children's histories were also examined to identify the occurrence of physical child abuse, sexual child abuse, paternal alcoholism, paternal unavailability, and domestic violence. Children were grouped according to whether they had or had not been cruel to animals. It was found that children who were cruel

to animals were twice more likely to have been physically and/or sexually abused or to have been exposed to domestic violence compared to children who were not cruel to animals.

In sum, these findings of research examining the relationships between childhood animal cruelty and parenting and family experiences are consistent with those from the larger literature relating to the development of antisocial behaviour. Such research, for example, has shown that within homes where there is greater family instability, more conflict, and problematic parenting strategies (i.e., physical punishment), children are more likely to develop along the trajectory of childhood-onset antisocial behaviour, also noted as being the more problematic trajectory with regard to stability of aggression and severity of aggression.

As victims of abuse, children experience a sense of powerlessness that, at a very basic level is likely to be experienced as a threat to survival. Identifying with their abuser enables a transformation from a sense of powerlessness to one of being in control (Marcus-Newhall, Pederson, Carlson, & Miller, 2000). For a child, those who are more vulnerable than oneself are likely to be small animals. Thus it is the animals who are the vulnerable others to whom aggression can be displaced.

### *Displacement of Aggression*

Displaced aggression constitutes a form of aggression against others (human or non-human animals) who did not play a direct role in the precipitating event (Marcus-Newhall et al., 2000; Pederson, Gonzales, & Miller, 2000). Displaced aggression increases if the target of such aggression provides even a minor trigger or the slightest of provocations (e.g. a dog barking). Displaced aggression also increases

if the target can be perceived to be a member of a disliked out-group (Anderson & Huesmann, 2003) or as having less social value (e.g. a non-human animal).

There are instances when animal cruelty by children constitutes the displacement of aggression from humans to animals that occurs through the child's identification with their abuser. Indeed, displaced aggression has been included as one of the nine motivations for animal cruelty reported by Kellert and Felthous (1985).

In addition to environmental variables including family and parenting influences, research has examined the important role played by cognitive constructs in better understanding the development of antisocial and aggressive behaviours. Such constructs include *knowledge structures* and *aggressive scripts*.

#### *Cognitive Errors, Aggressive Cues, and Exposure to Violence*

Cognitive structures are proposed to develop largely as a consequence of learning experiences. It would be expected therefore that individuals who experience or observe abuse in their formative years learn aggressive behaviours, hostile perceptions, attributions, and expectation biases. They are also more likely to learn callous attitudes and processes to enable disengagement from normative empathic reactions, reactions that would otherwise serve as aggression inhibitors.

Thus, in environments that are sympathetic to antisocial behaviours, the development of aggressive scripts and normative beliefs related to aggression, is promoted. Over time, through genetic and experiential or environmental factors, individuals develop neural pathways associated with these knowledge structures and behavioural scripts. Once stored in memory, these structures and scripts influence

information processing, perceptions and behaviour (Anderson, 2002; Huesmann, 1988).

### *Knowledge Structures*

Knowledge structures influence perception at multiple levels and in complex ways. They influence judgements and behaviour, and they incorporate emotions. For example, when a knowledge structure containing the emotion of anger is activated, anger will be experienced. Highlighting the broad-ranging role played by knowledge structures in everyday life, Anderson and Bushman (2002) note that knowledge structures influence the situations that an individual will seek out as well as those that they will avoid.

With increased use and over time, knowledge structures tend to become automatic in their influence and so increasingly function outside of conscious awareness (Schneider & Shiffrin, 1977; Todorov & Bargh, 2002). Also, over time knowledge structures become much more rigid and resistant to change. In relation to aggression-related knowledge structures, it is generally agreed upon that the hardening begins to take place at around ages 8 or 9 years. Another important cognitive construct is referred to as a *script*.

### *Script Theory*

Script theory was proposed by Huesmann (1986). Scripts are proposed to define situations and also to guide behaviour. Once scripts have been learned, they are available for retrieval at subsequent times as guides for behaviour. Scripts have been defined as “sets of particularly well-rehearsed, highly associated concepts in memory” (Anderson & Bushman, 2002; p. 31). They involve causal links, goals and action plans. The processing of social cues is guided by scripts which are stored in

memory and are the evolved representational product of experience. They influence selective attention to cues, the perception of stimuli and the consequent decisions made on the basis of those perceptions. Script theory has proven useful for explaining the generalisation of learning processes across different situations as well as the automization of perception-judgement-decision-behavioural processes (Anderson & Bushman, 2002).

Huesmann (1988) proposed that during the early developmental years, children acquire *memory scripts* which influence their perception of acceptable actions and their likely consequences. Research has shown that the most accessible social scripts for both aggressive children and adults are aggressive ones (Anderson & Huesmann, 2003). When compared to non-aggressive children, aggressive children are more likely to attend to aggressive social cues (Gouze, 1987). Aggressive children are also less likely to rely on external cues but more on their own stereotypes (Dodge & Tomlin, 1987) and they are more likely to describe their social relationships using such constructs (Stromquist & Strauman, 1991).

Shedding some light on the ways in which particular experiences can influence the development of particular information processing pathways, and consequently the selective attention to particular cues, Pollak and Tolley-Schell (2003) found that physically abused children are more likely to selectively attend to angry faces and to demonstrate reduced attention to happy faces. Such children also demonstrate difficulty disengaging from angry faces. Of additional concern, it is not only children who are abused or who directly experience violence who develop beliefs and scripts that support aggression and a tendency to behave violently but also children who witness abuse or violence (Anderson & Huesmann, 2003).

In sum, cognitive constructs including knowledge structures and behavioural scripts are useful for understanding why, when compared to non-aggressive individuals, aggressive individuals are more likely to perceive hostility in situations even where there is none. This tendency, referred to as a Hostile Attribution Bias, is particularly pronounced in ambiguous situations (Anderson & Bushman, 2002; Crick & Dodge, 1994; Dodge et al., 2006). In relation to animal cruelty, aggressive children may be more likely to attribute hostile intentions to animals since cues provided by animals are often more ambiguous than those provided by humans (Dadds, 2008). Such misattribution can also explain adult aggression toward animals. Although empirical research is required to confirm such processes, they are a logical extension of the Hostile Attribution Bias findings in relation to humans.

In addition to the cognitive constructs involved in understanding the underlying processes of aggressive and antisocial behaviours, there are processes underpinned more strongly by emotions. These will be discussed below in the next section.

### *The Development of Empathy and Emotion Regulation*

A number of emotion related processes play a role that is specifically relevant to aggressive behavior (Lemerise & Arsenio, 2000). Of particular relevance are the emotion-related competencies and strategies involved in regulating emotions.

From as early as one year of age, aggression, particularly peer-directed aggression, becomes evident. By the time children have begun school, their aggression levels begin to decrease. Some theorize that this decrease coincides with an increase in interpersonal skills and emotion regulation competencies including effortful control (Anderson & Huesmann, 2003; Eisenberg, Champion, & Ma, 2004;

Keenan & Shaw, 1997). Other developing abilities at this time include perspective-taking (Selman, 1980), empathy (Zahn-Waxler, et al., 1979), and emotion processing (Schultz, Izard, & Bear, 2004). According to Ascione, Thompson, and Black (1997), motivations driving young children's animal cruelty including *curiosity* and *exploration* likely occur as a consequence of younger children not yet having internalised society's values regarding the appropriate treatment of animals.

It is not surprising that the development of empathy and emotion regulation competencies predicts a decrease in aggressive behaviours while the compromised development of these competencies places children at risk of developing antisocial behaviours, including engaging in animal cruelty. Moreover, those children most at risk are likely to be that sub-group of children with Conduct Disorders who also present with callous-unemotional traits and an inability to experience guilt (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000; Luk, Staiger, Wong, & Mathai, 1999). These children tend to initiate and engage in persistent antisocial acts, including displays of aggression toward both people and animals (Miller, 2001). At this extreme end of the antisocial behaviour continuum, a lack of empathy and guilt in addition to an interpersonal style characterised by callousness are predictive of Psychopathy (Frick & White, 2008).

Thus, whilst low levels of empathy constitute a risk factor for antisocial and aggressive behaviour (McPhedran, 2009), higher levels of empathy can be a protective factor against the development of these behaviours. Empathic and prosocial youths are more inclined to treat their companion animals humanely (Poresky 1990; Vidovic, Stetic and Bratko 1999). Several empirical studies have demonstrated the importance that empathy has for interpersonal relationships and behaviours, including those with animals. For example, Poresky's (1990) study

assessed the relationship between bonds with companion animals and empathy levels among 38 children ranging in age from 3 to 6 years. As expected, children who had a strong bond with their companion animal scored higher on empathy than children who did not have companion animals.

In a related study, Vidovic, Stetic and Bratko (1999) assessed companion animal ownership and socio-emotional development among a sample of 826 youths ranging in age from 10 to 15 years. Participants who scored higher than average on a companion animal attachment scale yielded significantly higher scores on both empathy and prosocial orientation than those who scored lower than average. A more recent study involving 381 13 to 18 year-olds by Thompson and Gullone (2008) yielded supporting findings. These researchers examined the associations between empathy and prosocial as well empathy and antisocial behaviours. Behaviours toward humans and animals were investigated. As predicted, low empathy was found to be a significant predictor of antisocial behaviours and high empathy was found to be a significant predictor of prosocial behaviours towards both humans and animals.

### *Conclusion*

In conclusion, what is most apparent from the above review is that the risk factors, not surprisingly, for animal cruelty are not different to those for other aggressive and antisocial behaviours. What is also clear is that the co-occurrence of animal cruelty with other antisocial and aggressive behaviours is cause for significant concern in a number of regards. When a child or adolescent is found to have abused an animal, one needs to ask oneself, not only what other aggressive behaviours might this individual be engaged in, but also what is happening in this individual's life? Is



he/she a victim of child abuse, is he/she living in circumstances of domestic violence, and/or what is the aggression or violence that he may have been witness to?

A relatively recent study conducted by Vaughn and colleagues (2009) is one of the largest and most comprehensive studies to investigate risk factors that has been conducted to date. Given that there has been a relationship demonstrated between bullying and animal cruelty, Vaughn et al., also included bullying as a variable in their study. The study, which was conducted in the United States, was based on data derived from the first two waves of a national epidemiologic survey regarding alcohol and related disorders. The results showed a number of risk factors to be significant.

For bullying, the risk factors included:

- Being made to do chores that were too difficult or dangerous,
- Threatening to hit or throw something,
- Pushing, shoving, slapping, or hitting,
- Hitting that left bruises, marks, or injuries.

For animal cruelty, the risk factors included:

- Swearing and saying hurtful things,
- Having a parent or other adult living within the home that went to jail or prison,
- An adult/other person fondling/touching in a sexual way

Of significance is the finding that cruelty to animals was significantly associated with *all assessed* antisocial behaviours. Specifically, strong associations were found between animal cruelty and lifetime alcohol use disorders, conduct disorder, antisocial, obsessive–compulsive, and histrionic personality disorders, pathological gambling, and a family history of antisocial behaviour.

On the basis of their findings, the researchers concluded that:

“cruelty to animals is associated with elevated rates observed in young, poor, men with family histories of antisocial behavior and personal histories of conduct disorder in childhood, and antisocial, obsessive–compulsive and histrionic personality disorders, and pathological gambling in adulthood. Given these associations, and the widespread ownership of pets and animals, effective screening of children, adolescents and adults for animal cruelty and appropriate mental health interventions should be deployed.”

(Vaughn et al., 2009, abstract).

Animal cruelty has also been identified as one of the earliest indicators of what are referred to externalizing disorders, including Conduct Disorder as well as a predictor of the development of aggression along a more severe trajectory (Frick et al., 1993; Luk et al., 1999). Striving for its early identification would therefore seem to be of significant priority as such would provide an optimal opportunity for engaging preventative strategies.

The focus of preventative strategies should be guided by the risk factors reviewed in this work. Processes involved in the development of aggressive behaviours, most particularly the development of cognitive structures such as normative beliefs and aggressive scripts through exposure to antisocial behaviours, need also be addressed at a broader, community level. Given the pivotal roles for aggression learning played by witnessing cruelty, exposure to aggressive models, and media violence, concern is warranted also with regard to legalised aggressive behaviours such as hunting, rodeos, and fishing. On the basis of the reviewed research, it is reasonable to conclude that legalised aggression has an influence on

young people's development of relevant cognitive structures, and consequent aggressive behaviours. This would particularly be the case for individuals with a vulnerable disposition (e.g., a temperament characterised by callous-unemotional traits) toward the development of such behaviours, or those within a vulnerable environment or "risky" family.

Moreover, labelling certain aggressive behaviours as entertainment or sport because they are targeting particular species, and others as antisocial because they are targeting other species, such as companion animals, is incongruous. Mixed and confusing messages are communicated when cruelty is legalised in relation to some practices and species such as confined farming practices for pork production but outlawed for other species on the basis of the argument that they cause suffering.

For most individuals, the potential psychological discomfort caused by such conflicting messages may be managed through the use of cognitive mechanisms (e.g., vilifying the recipients, obscuring personal agency or cognitively reconstructing the conduct) that enable individuals to disengage self-sanctions for engaging in reprehensible behaviour (Bandura, 1983). However, for young people whose attitudes are undergoing processes of formation, such contradiction and inconsistency can only serve as barriers to the development of empathy and compassion. It follows that if we cultivate a culture of compassion toward our non-human citizens, current and future generations will benefit through reduced antisocial and violent behaviour toward all sentient beings.

## References

- Anderson, C.A. (2002). Aggression. (p. 68-78). In E. Borgatta & R. Montgomery (Eds). *The Encyclopedia of Sociology*. (2<sup>nd</sup> Ed.), New York: MacMillan.
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27-51.
- Anderson, C.A. & Huesmann, L.R. (2003). Human aggression: A social-cognitive view.: In M.A. Hogg & J. Cooper (Eds). *The Sage Handbook of Social Psychology*. (pp. 296-323). Thousand Oaks, CA: Sage Publications Inc.
- Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., et al. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, 136, 151-173.
- Arluke, A., & Luke, C. (1997). Physical cruelty toward animals in Massachusetts, 1975-1996. *Society and Animals*, 5, 195-204.
- Ascione, F. R., Friedrich, W. N., Heath, J., & Hayashi, K. (2003). Cruelty to animals in normative, sexually abused, and outpatient psychiatric samples of 6- to 12-year-old children: Relations to maltreatment and exposure to domestic violence. *Anthrozoos*, 16, 194-212.
- Ascione, F. R., Thompson, T. M., & Black, T. (1997). Childhood cruelty to animals: Assessing cruelty dimensions and motivations. *Anthrozoos*, 10, 170-179.
- Ascione, F. R., Weber, C. V., Thompson, T. M., Heath, J., Maruyama, M., & Hayashi, K. (2007). Battered pets and domestic violence: Animal abuse reported by women experiencing intimate violence and by nonabused women. *Violence Against Women*, 13, 354-373.
- Baldry, A. C. (2003). Animal abuse and exposure to interparental violence in Italian youth. *Journal of Interpersonal Violence*, 18(3), 258-281.
- Baldry, A. C. (2005). Animal abuse among preadolescents directly and indirectly victimized at school and at home. *Criminal Behaviour and Mental Health*, 15, 97-110.
- Bandura, A. (1978). Social learning theory of aggression. *Journal of Communication*, Summer, 12-29.

- Bandura, A. (1983). *Psychological mechanisms of aggression*. In R.G. Geen & E.I. Donnerstein (Eds.), *Aggression: Theoretical and Empirical Reviews (vol. 1)*. (pp. 1-40). New York: Academic Press.
- Becker, K. D., Stuewig, J., Herrera, V. M., & McCloskey, L. A. (2004). A study of firesetting and animal cruelty in children: Family influences and adolescent outcomes. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*, 905-912.
- Brown, L. (1988). *Cruelty to animals: The moral debt*. London: Macmillan.
- Burt, S.A., McGue, M., Krueger, R.F., & Iacono, W.G. (2005). How are parent-child conflict and childhood externalizing symptoms related over time? Results from a genetically cross-lagged study. *Development and Psychopathology, 17*, 145-165.
- Coston, C., & Protz, C.M. (1998). Kill your dog, beat your wife, screw your neighbour's kids, rob a bank? A cursory look at an individuals' vat of social chaos resulting from deviance. *Free Inquiry in Creative Sociology, 26*, 153-158.
- Crick, N.R., & Dodge, K.A. (1994). A review and reformulation of social information processing mechanisms in children's adjustment. *Psychological Bulletin, 115*, 74-101.
- Cummings, E.M. (1987). Coping with background anger in early childhood. *Child Development, 58*, 976-984.
- Currie, C. L. (2006). Animal cruelty by children exposed to domestic violence. *Child Abuse & Neglect, 30*, 425-435.
- Dadds, M.R. (2008). Conduct problems and cruelty to animals in children: What is the link? In F.R. Ascione (ed). *The International Handbook of Animal Abuse and Cruelty: Theory, Research, and Application (pp. 111-131)*. West Lafayette, Indiana: Purdue University Press.
- Dadds, M. R., Turner, C. M., & McAloon, J. (2002). Developmental links between cruelty to animals and human violence. *Australian & New Zealand Journal of Counselling, 35*, 363-382.
- Davies, P.T., Myers, R.L., Cummings, E.M., & Heindel, S. (1999). Adult conflict history and children's subsequent responses to conflict: An experimental test. *Journal of Family Psychology, 13*, 610-628.

- DeGue, S., & DiLillo, D. (2009). Is animal cruelty a "red flag" for family violence?: Investigating co-occurring violence toward children, partners, and pets. *Journal of Interpersonal Violence, 24*, 1036-1056.
- Deviney, E., Dickert, J., & Lockwood, R. (1983). The care of pets within child abusing families. *International Journal for the Study of Animal Problems, 4*, 321-329.
- Dishion, T. J., French, D. C., & Patterson, G. R. (1995). The development and ecology of antisocial behavior. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology, Vol 2: Risk, disorder, and adaptation* (pp. 421-471). Oxford, England: John Wiley & Sons.
- Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg, W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology* (6th ed., Vol. 3, Social, emotional, and personality development, pp. 719-788). Hoboken, NJ: John Wiley & Sons Inc.
- Dodge, K.A., & Tomlin, A. (1987). Utilization of self-schemas as a mechanism of attributional bias in aggressive children. *Social Cognition, 5*, 280-300.
- Duncan, A., Thomas, J. C., & Miller, C. (2005). Significance of family risk factors in development of childhood animal cruelty in adolescent boys with conduct problems. *Journal of Family Violence, 20*, 235-239.
- Eisenberg, N., Champion, C., & Ma, Y. (2004). Emotion-related regulation: An emerging construct. *Merrill-Palmer Quarterly, 50*, 236-259.
- Farrington, D.P. (1991). Childhood aggression and adult violence: Early precursors and later life outcomes. In D.J. Peplar & H.K. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 5-29). Hillsdale, N.J.: Erlbaum.
- Felthous, A. R. (1980). Aggression against cats, dogs and people. *Child Psychiatry & Human Development, 10*(3), 169-177.
- Felthous, A. R., & Kellert, S. R. (1986). Violence against animals and people: Is aggression against living creatures generalized? *Bulletin of the American Academy of Psychiatry & the Law, 14*, 55-69.
- Flynn, C. P. (1999a). Animal abuse in childhood and later support for interpersonal violence in families. *Society and Animals, 7*, 161-172.
- Flynn, C.P. (1999b). Exploring the link between corporal punishment and children's cruelty to animals. *Journal of Marriage & the Family, 61*, 971-981.

- Flynn, C. P. (2000). Why family professionals can no longer ignore violence toward animals. *Family Relations: Interdisciplinary Journal of Applied Family Studies*, 49, 87-95.
- Flynn, C.P. (2011). Examining the links between animal abuse and human violence. *Crime, Law and Social Change*, 55, 453-468.
- Frick, P.J., & Dickens, C. (2006). Current perspectives on conduct disorder. *Current Psychiatry Reports*, 8, 59-72.
- Frick, P. J., Lahey, B. B., Loeber, R., Tannenbaum, L., & et al. (1993). Oppositional defiant disorder and conduct disorder: A meta-analytic review of factor analyses and cross-validation in a clinic sample. *Clinical Psychology Review*, 13, 319-340.
- Frick, P. J., & White, S. F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry*, 49, 359-375.
- Gouze, K.R. (1987). Attention and social problem solving as correlates of aggression in preschool males. *Journal of Abnormal Child Psychology*, 15, 181-197.
- Greeson, L.E., & Williams, R.A. (1986). Social implications of music videos for youth: An analysis of the content and effects of MTV. *Youth and Society*, 18, 177-189.
- Guerra, N. G., Huesmann, L. R., & Spindler, A. (2003). Community violence exposure, social cognition, and aggression among urban elementary school children. *Child Development*, 74, 1561-1576.
- Gullone, E. (2012). *Animal cruelty, Antisocial Behaviour and Aggression: More than a link*. Palgrave Macmillan Ltd., Hampshire.
- Gullone, E., & Clarke, J. (2008). Human-Animal Interactions: The Australian Perspective. In F. Ascione (Ed.), *The International Handbook of Theory and Research on Animal Abuse and Cruelty* (pp. 305-335). West Lafayette, Indiana: Purdue University Press.
- Gullone, E., & Robertson, N. (2008). The relationship between bullying and animal abuse in adolescents: The importance of witnessing animal abuse. *Journal of Applied Developmental Psychology*, 29, 371-379.
- Hansen, C.H., & Hansen, R.D. (1990). Rock music videos and antisocial behavior. *Basic and Applied Social Psychology*, 11, 357-369.

- Hartup, W.W. (2005). The development of aggression. In R.E. Tremblay, W.W. Hartup, & J. Archer (Eds.), *Developmental Origins of Aggression* (pp. 3-22). Guilford Press: New York.
- Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The development of concern for others in children with behavior problems. *Developmental Psychology, 36*, 531-546.
- Henry, B. C. (2004a). Exposure to animal abuse and group context: Two factors affecting participation in animal abuse. *Anthrozoos, 17*, 290-305.
- Henry, B. C. (2004b). The relationship between animal cruelty, delinquency, and attitudes toward the treatment of animals. *Society & Animals, 12*, 185-207.
- Hensley, C., & Tallichet, S. E. (2005). Animal cruelty motivations: Assessing demographic and situational influences. *Journal of Interpersonal Violence, 20*, 1429-1443.
- Huesmann, L. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. *Journal of Social Issues, 42*, 125-139.
- Huesmann, L. (1988). An information processing model for the development of aggression. *Aggressive Behavior, 14*, 13-24.
- Huesmann, L.R., Eton, L.D., Lefkowitz, M.M., & Walder, L.O. (1984). Stability of aggression across time and generations. *Developmental Psychology, 20*, 1120-1134.
- Huesmann, L.R., & Guerra, N.G. (1997). Children's normative beliefs about aggression and aggressive behaviour. *Journal of Personality and Social Psychology, 72*, 408-419.
- Keenan, K., & Shaw, D. (1997). Developmental and social influences on young girls' early problem behavior. *Psychological Bulletin, 121*, 95-113.
- Kellert, S. R., & Felthous, A. R. (1985). Childhood cruelty toward animals among criminals and noncriminals. *Human Relations, 38*(12), 1113-1129.
- Larsson, H., Viding, E., Rijdsdijk, F. V., & Plomin, R. (2008). Relationships between parental negativity and childhood antisocial behavior over time: A bidirectional effects model in a longitudinal genetically informative design. *Journal of Abnormal Child Psychology, 36*, 633-645.



- Luk, E. S., Staiger, P. K., Wong, L., & Mathai, J. (1999). Children who are cruel to animals: A revisit. *Australian and New Zealand Journal of Psychiatry*, *33*, 29-36.
- Loeber, R., & Dishion, T. (1983). Early predictors of male delinquency: A review. *Psychological Bulletin*, *93*, 68-99.
- Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology*, *48*, 371-410.
- Marcus-Newhall, A., Pederson, W.C., Carlson, M., & Miller, N. (2000). Displaced aggression is alive and well: A meta-analytic review. *Journal of Personality and Social Psychology*, *78*, 670-689.
- Margolin, G., & Gordis, E. B. (2000). The effects of family and community violence on children. *Annual Review of Psychology*, *51*, 445-479.
- Maughan, A., & Cicchetti, D. (2002). Impact of child maltreatment and interadult violence on children's emotion regulation abilities and socioemotional adjustment. *Child Development*, *73*, 1525-1542.
- McPhedran, S. (2009). A review of the evidence for associations between empathy, violence, and animal cruelty. *Aggression and Violent Behavior*, *14*, 1-4.
- Miller, C. (2001). Childhood animal cruelty and interpersonal violence. *Clinical Psychology Review*, *21*(5), 735-749.
- Miller, K.S., & Knutson, J.F. (1997). Reports of severe physical punishment and exposure to animal cruelty by inmates convicted of felonies and by university students. *Child Abuse and Neglect*, *21*, 59-82.
- O'Connor, T.G. (2002). Annotation: The "effects" of parenting reconsidered: Findings, challenges, and applications. *Journal of Child Psychology and Psychiatry*, *43*, 555-572.
- Pederson, W.C., Gonzales, C., & Miller, N. (2000). The moderating effect of trivial triggering provocation on displaced aggression. *Journal of Personality and Social Psychology*, *78*, 913-927.
- Pollak, S.D., & Tolley-Schell, S.A. (2003). Selective Attention to Facial Emotion in Physically Abused Children. *Journal of Abnormal Psychology*, *112*, 323-338.

- Poresky, R. H. (1990). The Young Children's Empathy Measure: Reliability, validity and effects of companion animal bonding. *Psychological Reports, 66*, 931-936.
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin, 128*, 330-366.
- Ressler, R.K., Burgess, A.W., & Douglas, J.E. (1988). *Sexual homicide: Patterns and motives*. Lexington, Mass: Lexington Books.
- Ressler, R. K., Burgess, A. W., Hartman, C. R., Douglas, J. E., & McCormack, A. (1986). Murderers who rape and mutilate. *Journal of Interpersonal Violence, 1*, 273-287.
- Rigdon, J. D., & Tapia, F. (1977). Children who are cruel to animals: A follow-up study. *Journal of Operational Psychiatry, 8*, 27-36.
- Schneider, W., & Shiffrin, R.M. (1977). Controlled and automatic human information processing: I. Detection, search and attention. *Psychological Review, 84*, 1-66.
- Schultz, D., Izard, C. E., & Bear, G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology, 16* 371-387.
- Schwartz, C.E., Wright, C.I., Shin, L.M., Kagan, J., & Rauch, S.L. (2003). Inhibited and uninhibited infants "Grown Up": Adult amygdalar response to novelty. *Science, 300*, no. 5627, 1952-1953.
- Selman, R. L. (1980). *The growth of interpersonal understanding: Developmental and clinical analyses*. New York: Academic Press.
- Stromquist, V.J., & Strauman, T.J. (1991). Children's social constructs: Nature, assessment, and association with adaptive versus maladaptive behavior. *Social Cognition, 9*, 330-358.
- Tapia, F. (1971). Children who are cruel to animals. *Child Psychiatry & Human Development, 2*, 70-77.
- Thompson, K.L., & Gullone, E. (2006). An investigation into the association between the witnessing of animal abuse and adolescents' behavior toward animals. *Society and Animals, 14*, 223-243.

- Todorov, A., & Bargh, J.A. (2002). Automatic sources of aggression. *Aggression and Violent Behavior, 7*, 53-68.
- Vidovic, V. V., Stetic, V. V. and Bratko, D. (1999). Pet ownership, type of pet and socio-emotional development of school children. *Anthrozoos, 12*, 211-217.
- Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children's prosocial initiations toward victims of distress. *Child Development, 50*(2), 319-330.

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