UNDERSTANDING THE LINKS BETWEEN INTIMATE PARTNER VIOLENCE AND

ANIMAL ABUSE: PREVALENCE, NATURE, AND FUNCTION

by

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(Under the Direction of Steven R. H. Beach)

ABSTRACT

Acts of violence toward intimate partners (IPV) and toward animals are common, harmful, and interconnected phenomena. Study 1 compared rates of IPV and animal abuse across perpetrator gender, form (physical assault and psychological aggression), and severity. Minor violence was more prevalent than severe violence in all categories, and psychological aggression was more prevalent than physical assault. Among violence perpetrators, perpetration of both IPV and animal abuse was more common than perpetration of only one type of violence. There were no gender differences in violence perpetration with the exception of severe animal abuse, where males were more common perpetrators. Study 2 attempted to identify perpetrator subtypes based on pairs of variables hypothesized to influence violence toward both partners and animals: callousness and instrumental tendencies, and rejection sensitivity and expressive tendencies. Separate structural equation models were developed for physical assault and psychological aggression in males and females. Models were not directly comparable across gender. As predicted, strong associations emerged between callousness and instrumental tendencies and between rejection sensitivity and expressive tendencies, but these associations did not consistently predict violent behavior. An exception was instrumental tendencies, which mediated

the relationship between callousness and both physical and psychological animal abuse for females, but not for males. A second mediation pathway emerged during model revision, such that expressive tendencies mediated the relationship between rejection sensitivity and psychological IPV. Taken together, Studies 1 and 2 suggest that IPV and animal abuse are functionally interconnected, that violence perpetration differs across gender in nature and function but not in prevalence, and that identifying distinct pathways to violence may facilitate violence prediction and prevention.

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DEDICATION

This work is dedicated to the victims of violence, both human and animal, who may benefit from research on the understanding of violent behavior and from the ultimate applications of this line of research to violence prediction, prevention, and treatment.

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INTRODUCTION

Reducing rates of violence is a clearly articulated priority in the United States, both at

political and social levels. Although serious violent crime has declined over the past decade,

violent offenses remain the most common offense type among state prison populations and are

increasing in frequency relative to other offenses (United States Department of Justice, 2000a).

Violent crime statistics alone, however, underrepresent the total rate of violence, which includes

noncriminal acts of violence as well as misdemeanor offenses that are not routinely tracked by

law enforcement data systems. Additionally, a proportion of violent incidents, whether criminal

or not, go unreported.

Attention to reducing violence is understandable in light of its adverse effects at multiple

levels. Victims of violence are at risk for both physical injury and psychological sequelae such as

post-traumatic stress disorder and depression. At the economic level, the cost of providing health

care for victims and prosecuting and penalizing offenders is substantial. Violence also exacts a

toll on society when calculated in terms of long-range consequences of impaired academic,

employment, and parenting performance in individuals who are exposed to violence.

Research on violence prevention addresses risk factors for perpetration in an attempt to

facilitate understanding, prediction, and ultimately prevention of violence. The objective of the

current project is to continue in this direction by 1) examining the prevalence of two types of

violence in a "normative" college sample of both males and females and 2) developing a latent

variable model that predicts violence perpetration based on factors that are hypothesized to shape

the nature and function of violence: personality features and representations of aggression. This study focuses on the two interlocking domains of intimate partner violence and animal abuse. The following section provides a background of each type of violence, as well as the manner in which the two intersect.

<div align="center">Intimate Partner Violence</div>

Of the many forms of violence, one that has received a great deal of attention in recent decades is intimate partner violence (IPV). The potential for harmful effects of IPV has been repeatedly demonstrated (e.g. Arias, 1999; Resnick, Acierno, Holmes, Danmeyer, & Kilpatrick, 2000). Half of all female victims of IPV in 1998 sustained a physical injury (United States Department of Justice, 2000b), and approximately 2 million injuries and 1300 deaths in the US annually are attributable to IPV (Centers for Disease Control and Prevention, 2003). Coker, Davis, and Arias (2002) found that in addition to physical injury, both male and female victims of IPV demonstrated increased mental health problems, including depression, substance use, and chronic illness. Woods (2004) noted inflammatory immune responses in women who had developed post-traumatic stress disorder symptoms following exposure to IPV. The effects of IPV extend beyond the primary victims, as in the case of links between exposure to parental IPV and both physical and psychological problems in children (Parkinson, Adams, & Emerling, 2001; Kernic, Wolf, & Holt, 2003). At a broader level, IPV results in increased health care utilization (Hyman, Schillinger, & Lo, 2005) and lost worker productivity (CDC, 2003). The total economic costs of IPV have been estimated at $8.3 billion annually (Max, Rice, Finkelstein, Bardwell, & Leadbetter, 2004).

Findings from the National Violence Against Women Survey indicate that approximately 1.5 million women and just under 1 million men in the United States are raped and/or physically

assaulted by a partner each year. Eleven percent of U.S. homicides from in 1998 were committed by current or former partners (USDOJ, 2000b). However, actual rates of IPV are likely to exceed these figures for several reasons. First, incidents that result in no severe injury or do not involve a weapon are often not prosecuted or are charged as misdemeanors, thereby becoming difficult to track in criminal databases. Second, lower-level, noncriminal violent acts such as slapping and shoving appear to occur at even higher rates. Third, violence within close relationships is an area in which embarrassment, minimization, fear of reprisal, or the belief that seeking help is futile may be particularly likely to interfere with reporting to law enforcement or even anonymously to researchers (Tjaden & Thoennes, 2000). Nonetheless, surveys of college students routinely yield findings that one-third of students report having experienced some type of violence in intimate relationships (Foo & Margolin, 1995; Katz, Street, & Arias, 1997).

<div align="center">Animal Abuse</div>

A second form of violence that has recently come into sharper focus is animal abuse: "socially unacceptable behavior that intentionally causes unnecessary pain, suffering, or distress to and/or death of an animal" (Ascione, 1993, p. 51). Human society in general tends to place less emphasis on animal suffering than on human suffering. Nonetheless, the effects of animal abuse are sobering. Sixty-two percent of animal victims in data collected by the Humane Society of the United States (2004b) were killed or required euthanasia as a result of their injuries. It is impossible to estimate the outcomes for animals in cases that are never reported to authorities, although presumably a majority of these animals do not receive veterinary treatment for their injuries. Animals that survive abuse may display long-term fearfulness, aggression, depression, asocial behavior, or eating disorders (New York State Humane Association, nd). Abused animals who are turned over to authorities but cannot be successfully placed in new homes due to these

behavior patterns may be destroyed. As with IPV, the effects of animal abuse extend to secondary victims. Torture or destruction of another person's pet may constitute a deliberate form of emotional abuse toward that person (Wiche and Herring, 1991). In addition, children who witness animal abuse may be more likely to abuse animals themselves over time (Hensley & Tallichet, 2005). Again parallel to IPV, the impact of animal abuse is also felt at the economic level, where rescue and shelter care for abused animals requires substantial resources on the part of animal control agencies and nonprofit rescue groups. Costs of prosecution, as well as treatment for offenders in the 27 states where judges may mandate it, must be absorbed by taxes.

How prevalent is animal abuse? In contrast to IPV, animal abuse can occur across the lifespan. Flynn (1999) found that one in three male college students and one in ten females reported engaging in some form of childhood animal abuse. Flynn's study, as well as another by Miller and Knutson (1997), found that half of students reported either witnessing or perpetrating animal abuse as children. Using survey methods, Lockwood (1999) found that one-sixth of 1,008 adult respondents had witnessed animal cruelty within the past five years. However, accurately estimating the prevalence of animal abuse is even more difficult than estimating the prevalence of IPV because no national tracking system exists. Since 2000, the Humane Society of the United States has attempted to keep annual data on cruelty cases reported in the media and by local humane organizations: in 2003, there were 1373 such cases (HSUS, 2004b). However, these figures are obtained through informal data collection and chiefly represent high-profile, prosecuted cases. A substantial proportion of cruelty cases are never prosecuted due to lack of available information or lack of training of law officers in enforcing anticruelty laws: only .3% of cases investigated by the Massachusetts Society for the Prevention of Cruelty to Animals between 1976 and 2005 were prosecuted, and of these, over 26% were dismissed (Arluke &

Luke, 1997). Although 41 state codes currently contain a felony animal cruelty penalty, most animal cruelty cases are prosecuted as misdemeanors, which are not routinely tracked in law enforcement databases. Data are compiled primarily through local humane organizations that hold government authority to enforce anticruelty laws (Arluke & Lockwood, 1997); such efforts have not yet yielded composite estimates of animal cruelty rates nationwide. As with IPV, criminal data alone provide no information about the frequency of noncriminal acts of violence toward animals. Finally, for similar reasons to those involving IPV, many instances of animal abuse are not reported (Ravenscroft, 2002). In addition, animal abuse perpetrated by children may go unreported by parents who dismiss the acts as normative or who acknowledge the problem behavior but are unwilling to draw public attention to it. Even in the absence of comparative data, it may be reasonable to assume that animal abuse is subject to even greater underreporting than IPV, considering that victims of animal abuse cannot report the abuse themselves.

<div align="center">Links Between Intimate Partner Violence and Animal Abuse</div>

It has become increasingly apparent that animal abuse occupies a place within the spectrum of family violence. In a sample of homes in which physical child abuse had occurred, DeViney, Dickert, and Lockwood (1983) found that in 88% of those homes animal abuse had also occurred. Reciprocally, in a sample of homes in which animal abuse had occurred, Hutton (1981) found that in 83% of those homes child abuse or neglect had also occurred.

A growing body of research links animal abuse specifically to intimate partner violence. One branch of this research has examined the extent to which children exposed to IPV are likely to engage in animal abuse. In two surveys of women in family violence shelters, 57% of children in one survey and 32% in the other were reported to have engaged in animal abuse (Ascione,

1998; Quinlisk, 1999). Ascione noted that the rates of children's animal abuse in his sample were similar to those in mental health clinic samples. The lack of a comparison sample of children in non-partner-violent homes, as well as the difficulty of differentiating between situations in which children witness parental IPV and those in which children are direct victims of abuse, complicate the interpretation of these findings. However, they provide some indication that cruelty to animals is prevalent among children exposed to IPV.

Perpetration of animal abuse may also be associated with individuals' own perpetration of IPV later in life. Miller and Knutson (1997) found significant associations between inmates' childhood animal abuse and their reported use of both physical and sexual coercion with partners, suggesting that children who abuse animals may become partner-violent later in life. Flynn (1999) found that college undergraduates who reported perpetrating animal abuse in childhood expressed greater approval toward "a husband slapping his wife," as well as toward corporal punishment of children, than did undergraduates who did not report childhood animal abuse.

There is also growing evidence of co-occurrence of IPV with adult animal abuse. In Ascione's (1998) shelter survey, 71% of women from the pet-owning households (which comprised 74% of households) reported that their partners had threatened, harmed, or killed at least one pet; 57% reported actual harm or killing of a pet. 18% of these women also reported that they had delayed coming to the shelter because they knew they would not be allowed to bring pets to the shelter and were concerned that the batterer would harm the pets if they were left behind. A later study by Ascione (2000) found that 72% of women residing in violence shelters reported partner threat or harm to a pet, as compared to 14.5% of women in a non-shelter comparison sample. Flynn (2000) found that 46.5% of women entering a shelter reported harm

or threat of harm to a pet by a partner; similar to Ascione's (1998) findings, 20% of these women also reported delaying their entry to the shelter because of concern about leaving pets with the batterer. In a multi-shelter survey, 91% of adult shelter residents and 73% of children reported pet abuse by their batterers (Humane Society of the United States, 2004a).

Foundations for the Current Project

The preceding review illustrates that IPV and animal abuse are harmful, common, and interrelated phenomena that represent a genre of violence worthy of further study. Congress has apparently arrived at a similar conclusion, having issued two resolutions recognizing this link and recommending research attention to the topic (H. Con. Res. 286, 1998; H. Con. Res. 338, 2000).

In attempting to develop a better understanding of the relationship between IPV and animal abuse, two lines of inquiry are in order. First, what are the relative prevalences of each type of violence, as well as the rates of co-occurrence, in previously unstudied populations? Second, what variables may be related to the nature and function of these types of violence and thereby facilitate their prediction? The current project encompassed two studies, respectively addressing the questions of prevalence and prediction.

This project attempted to venture into several areas left largely untrodden by the existing literature. As identified by Arluke and Lockwood (1997), there is a relative absence of studies on the intersection of animal abuse and IPV in "normative" populations. Arluke and Lockwood note that although clinical and institutional populations are important areas for the study of these topics, they present methodological problems of their own, such as determining the validity of reports of violence in settings where portraying oneself as violent may be adaptive. In addition, understanding of animal abuse and animal abuse/IPV could be enhanced by the study of normal

populations in much the same way as the IPV field has been enhanced by the discovery that college students and unreferred community couples engage in acts of intimate violence at higher rates than previously thought.

Another observable gap in the literature is that all published studies of concurrent IPV and animal abuse to date have been based on reports by human victims or other parties. Accordingly, the current project questioned perpetrators directly about their behaviors. Despite the difficulties inherent in self-report methodology, particularly in studies concerning reporting of socially undesirable behavior, an attempt to elicit information from perpetrators is an essential component in obtaining a complete picture of the phenomenon. Further, self-report methodology has been successfully used in research in both IPV and animal abuse in isolation, providing a logical backdrop for its extension to the study of their overlap.

Finally, female perpetrators have been all but ignored in prior studies of the link between IPV and animal abuse. Given the apparently higher rates and severity of violence perpetrated by men, coupled with sociopolitical pressure against the study of women's violence, this deficit is perhaps unsurprising. However, neither of these reasons is sufficient grounds to avoid investigation of a potentially worthwhile topic. An important task for the current project was therefore to assess women's perpetration of animal abuse and IPV and to compare this information to data obtained from men.

Study 1: Examining the Prevalence of IPV and Animal Abuse

The first step in approaching questions about prevalence involves determining the relative rates of perpetration of each type of violence, as well as the rate of perpetration of both types together. However, with the possible exception of IPV, few guidelines from the literature are available to inform hypotheses regarding the outcomes of these analyses, particularly for a

noninstitutional sample. Further, IPV and animal abuse both show signs of variation by perpetrator gender, form, and severity, so comparing only overall rates of prevalence may obscure important information. Accordingly, it may be instructive to perform additional comparisons of prevalence by differentiating men's violence from women's violence, psychological from physical violence, and severe from less severe behavior.

Comparing Violence By Gender

Gender in IPV

The issue of perpetrator gender in IPV is highly controversial. In feminist theory and much of the research database, IPV has been treated as a male-perpetrated phenomenon. Yet several studies point to a trend toward convergence in male and female IPV, or even greater perpetration of IPV by women (e.g. Archer, 2000). Other investigators argue that comparing perpetration by gender based on frequencies alone ignores vital qualitative differences (Malloy, McCloskey, Grigsby, & Gardner, 2003). For example, women have been reported to be injured more often and more severely by IPV than men (Archer, 2000; Phelan et al., 2005; Tjaden & Thoennes, 1998). The Bureau of Justice Statistics reports that female murder victims are more likely than male murder victims to have been killed by a partner (USDOJ, 2000b). However, in a review of IPV studies, Dutton and Nicholls (2005) concluded that IPV injury statistics are more similar between male and female victims than previously thought, and that females engage in high rates of violence. Dutton and Nicholls cited underreporting by male victims of female violence as a primary reason why women's use of violence has not been more apparent; this may explain findings such as those by McFarlane, Willson, and Malecha (2000) in which a sample of victims filing assault charges showed no gender differences in injury rates and severity did not

differ between males and females. This pattern of mixed results illustrates that further work is needed to clarify patterns of IPV across gender.

One item of note regarding gender in IPV is that most work on IPV is based on heterosexual relationships. A developing research base on gay and lesbian relationships, however, suggests that IPV prevalence rates in these populations, as well as basic functional dynamics, are similar to those in heterosexual populations (Gunther & Jennings, 1999; Renzetti, 1992). Although investigators in the area of same-sex relationships advocate ongoing studies of IPV in gay and lesbian samples in order to avoid making unwarranted extrapolations from research on heterosexual samples, for the purposes of the present study it appeared appropriate to consider heterosexual and same-sex perpetrators jointly.

Gender in Animal Abuse

The animal abuse field has been less equivocal regarding the issue of gender. In general, males are more common perpetrators of animal abuse across the lifespan than females. Studies of known perpetrators have focused on males, although in the absence of perpetration data from comparison groups of females it is unclear to what degree this focus has been a product of researcher bias in sample selection. When comparative designs have been employed, however, gender differences have emerged. Both Flynn (1999) and Miller and Knutson (1997) found that among college students, males reported more childhood perpetration of animal abuse than did females. Among adults, intentional cruelty to animals was perpetrated by females in only 8% of reported cases in the most recent Humane Society of the United States report. Females appear more likely to engage in animal hoarding or neglect than in deliberate abuse (HSUS, 2004b). In Arluke and Luke's (1997) report of abuse in Massachussetts across 20 years, 96.6% of perpetrators were male.

This study constituted the first known effort to obtain information by self-report about women's adult perpetration of animal abuse. It is possible that the previously observed gender differences in studies of reported animal abuse cases at least partially reflect differential rates of reporting to law enforcement. Adult women's animal abuse may be less likely than men's to be taken seriously by others, and/or women may tend to abuse animals away from the presence of observers due to social constraints on women's display of aggression. While prevalence data provide no information as to the reasons for observed differences, it was important to obtain a first estimate of the rate of this form of violence among women.

Gender in the IPV—Animal Abuse Link

When animal abuse occurs in conjunction with family violence, males also appear to perpetrate more commonly than females. In the Humane Society of the United States' 2004 report, males were the perpetrator in 100% of animal abuse cases that also involved IPV, as opposed to 60% of animal abuse cases that also involved child abuse and 67% of cases that also involved elder abuse (HSUS, 2004b). In 2001, however, males perpetrated in only 89% of IPV cases and only 50% of elder abuse cases (Humane Society of the United States, 2002). Additionally, as previously discussed, Felthous and Yudowitz (1977) found that among female inmates, none of those with convictions for non-assault charges reported prior animal cruelty, whereas 36% of those with convictions for assault charges did.

Thus, the data regarding women's perpetration of animal abuse in the context of IPV appears to be more mixed than the data on women's perpetration of animal abuse alone. It may be that the prevalence among known violent populations of women differs from the prevalence among women as a whole. Alternatively, this type of violence may simply not have been studied extensively enough to yield accurate estimates of its occurrence among women.

Comparing Violence By Form

Form in IPV

  Physical assault. Physical assault is the form of IPV that most readily comes to mind upon casual mention. In a community sample study by Basile, Arias, Desai, and Thompson (2004), 93% of women who had been victims of IPV had experienced some type of physical assault. Acts of physical assault in IPV include throwing objects that could hurt a partner, twisting a partner's arm or pulling hair, pushing/shoving, grabbing, slapping, punching, hitting with an object, slamming a partner against a wall, choking, "beating up," kicking, burning or scalding, and using a weapon on a partner (Straus, Hamby, Boney-McCoy, & Sugarman, 1996).

  Psychological aggression. Acts of psychological aggression toward partners include insulting, yelling, spitefulness, destroying something belonging to the partner, and threats of physical violence (Straus et al., 1996). Coker et al. (2002) found that psychological IPV was responsible for physical and psychological health problems in victims. Pico-Alfonso (2005) found that psychological IPV was a stronger predictor of PTSD symptoms among victims than physical IPV. Basile et al. (2004) found that 52% of female IPV victims had experienced psychological violence in comparison to 93% who had experienced physical assault. However, in mixed samples of victims and nonvictims, such as samples of college women unselected for experience of IPV, higher rates of psychological than physical victimization by heterosexual partners appear to be the norm (Neufeld, McNamara, & Ertl, 1999). Further research is needed to determine the relative rates of physical vs. psychological IPV perpetrated by women.

Form in Animal Abuse

  Physical assault. According to *Animal Abuse Crime Database Statistics,* an online database of cruelty cases, shooting is the most common form of physical abuse of animals,

constituting 13.3% of cases. Other forms of deliberate physical abuse in decreasing order of frequency include beating, fighting, mutilation/torture, burning with fire or fireworks, throwing, stabbing, vehicular, poisoning, kicking/stomping, choking/strangulation/suffocation, bestiality, hanging, drowning, unlawful trade/hunting, and burning with caustic substances. Similarly, the four most common types of abuse as identified by the Humane Society of the United States in its most recent report were shooting, fighting, torturing, and beating (HSUS, 2004b).

      Psychological aggression. Acts of psychological aggression in animal abuse may include yelling, taunting, intentional intimidation, deliberately excessive confinement, or deprivation of food, water, or medical care. In this way, psychological aggression toward animals may be more similar to psychological aggression in child abuse than in IPV. No data exist on psychological abuse of animals because the only forms of nonphysical abuse of animals that are considered crimes are excessive confinement and deprivation of care. Although limited statistics on animal neglect cases are available, they do not distinguish between intentional and unintentional neglect. Further, there have been no studies of noncriminal acts of psychological animal abuse in adulthood or of the relative rates of physical and psychological animal abuse. The current project attempted to make a first step toward remedying this deficit.

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Comparing Violence By Severity

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Severity in IPV

      In an effort to make sense of conflicting findings from studies of IPV, Johnson (1995) identified two subtypes of IPV: "common couple violence" and "patriarchal terrorism" (since renamed "intimate terrorism"). According to Johnson, the "batterer" profile associated with a pattern of severe, unilateral violence against an intimate partner (intimate terrorism) differs from the mutual acts of minor slapping and shoving (common couple violence) in which a much

greater proportion of dyads engage. Instruments such as the Revised Conflict Tactics Scale (CTS2; Straus et al., 1996) attempt to capture severity of IPV by yielding information about the occurrence of minor vs. severe acts. Using the CTS2 in a normative college sample, the current study makes it possible to determine whether the prevalence of minor IPV is in fact higher than the prevalence of severe IPV, as Johnson's model would predict.

Severity in Animal Abuse

Similarly to IPV, animal abuse by adults may range from relatively minor acts, such as pushing or shoving, to severe assault such as burning/scalding, beating up, or harming with a weapon. Ascione (2001) notes that animal abuse among children also displays a range of severity. State codes that contain multiple levels of animal cruelty offenses typically use severity of the abuse to determine offense category. However, no data are available on minor vs. severe animal abuse, because acts of abuse considered criminal are all severe even though there may be variability in severity among them. Additionally, the legal system defines severity largely in terms of injury to the animal, but in a discussion of the measurement of IPV, Straus (1990) contends that it is essential to measure severity of the aggressive act itself separately from severity of injury. The current project attempted to measure severity of animal abuse in a similar manner to the way severity of IPV acts is measured. Using this method enabled comparison of the rates of minor and severe animal abuse in the sample.

Summary of Study 1

The objective of Study 1 was to understand the relative prevalence of IPV, animal abuse, and their co-occurrence in a college sample. The study compared these forms of violence under a closer lens by dissecting prevalence according to perpetrator gender, form, and severity.

Study 2: Examining the Nature and Function of IPV and Animal Abuse

In seeking to understand IPV, animal abuse, and the connection between them, the presence or absence of violent acts alone—while informative—is unlikely to present a complete picture. Violence is a complex phenomenon involving variability in such factors as its nature and function. Therefore, the second objective of the current project was to develop a latent variable model that would tap these constructs, focusing on personality features and representations of aggression in their potential links to patterns of violence perpetrated against both human and animal victims. The following discussion reviews existing literature on these factors and establishes the basis for their inclusion in this project.

The Role of Personality Features in Violence

Personality has played a key role in prior attempts to develop typologies of violence and of IPV perpetrators in particular (Dutton, 1995; Gondolf, 1988; Gottman, Jacobson, Rushe, & Shortt, 1995; Hamberger, Lohr, Bonge, & Tolin, 1997; Hotzworth-Munroe & Stuart, 1994). There appears to be empirical support for these efforts: for example, Hart, Button, and Newlove (1993) found that 80% of a battering sample displayed high elevations on subscales of the Millon Clinical Multiaxial Inventory. This tradition of theory and research suggests that personality remains an important consideration in understanding the heterogeneity of violence.

Before proceeding, however, it is important to note the distinction between "personality features" and "personality disorder." While individuals with particular personality disorders do appear to demonstrate elevated rates of violence, it would be committing the logical fallacy of affirming the consequent to proceed to the assumption that all samples of violent individuals demonstrate personality disorders. Although clinical (e.g. psychiatric or incarcerated) populations of violent individuals may indeed yield a substantial prevalence of personality

disorders, studies of violence in other populations—particularly community populations, in which overall rates of personality disorder are low—are unlikely to demonstrate significant rates of diagnosable disorder even among the most violent individuals in a sample. Accordingly, when studying community samples, it may be more informative to focus on subclinical personality features than on personality disorders. This distinction is longstanding in personality theory and research, where dimensional models of personality (e.g. Five-Factor; Interpersonal Circumplex; Millon dimensional polarities) have tended to predominate and models that tend toward categorical representations have still tended to incorporate dimensional elements (e.g. Gunderson, 1988; Kernberg, 1984; Hare, 2003). This subject is embedded in a broader debate about the relative merits of categorical vs. dimensional taxonomies of psychopathology. The debate has gained momentum in anticipation of the upcoming fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, which may mark a shift away from the *DSM*'s heretofore categorical system. In a recent special issue of the *Journal of Abnormal Psychology* devoted to the topic, Widiger and Samuel argue that the *DSM-V* should embrace dimensionality as a general view of psychopathology. In an exhaustive recent summary of the history of the categorical/dimensional issue within personality research, Trull and Durrett (2005) also advocate a dimensional view. While the emerging consensus about the superiority of the dimensional approach is by no means unanimous, and while active inquiry into this question continues (incorporating the use of increasingly advanced methodology such as latent class analysis and taxometrics), for present purposes it appears prudent to avoid confining the investigation of personality to categorically-based clinical personality disorders. Accordingly, the current project focused on personality features as opposed to personality disorders.

Features of two *DSM-IV* Cluster B personality disorders, Antisocial Personality Disorder and Borderline Personality Disorder, have stood out in research relating personality features to violence, particularly IPV. For example, significant relationships have been demonstrated between spouse-directed physical aggression and features of both Antisocial Personality Disorder and Borderline Personality Disorder (Edwards, Scott, Yarvis, Paizis, & Panizzon, 2003). Additionally, in their comparison of existing batterer typologies, Holtzworth-Munroe and Stuart (1994) identified a recurrent "generally violent/antisocial" group as well as a "dysphoric/borderline" group. Two personality features that appear to merit particular attention through their relationship to antisocial and borderline characteristics, respectively, are callousness and rejection sensitivity. The following discussion provides an overview of each.

Callousness

A general definition of callousness involves reduced or absent emotional reactivity in response to stimuli that evoke emotional distress or empathy in other individuals. Considering this definition, an association between callousness and violence makes intuitive sense: highly callous individuals, uninhibited by distress or empathy for their victims, should be able to engage in violence with relative ease. Callousness has been linked to violence through its role as a central feature in childhood Conduct Disorder and adult Antisocial Personality Disorder, both of which are characterized by aggressive and assaultive behavior. According to the fourth edition text revision of the *Diagnostic and Statistical Manual of Mental Disorders*, "Individuals with Conduct Disorder may have little empathy and little concern for the feelings, wishes, and well-being of others…They may be callous and lack appropriate feelings of guilt and remorse" (American Psychiatric Association, 2000, p. 95-96). Antisocial Personality Disorder, an adult diagnosis that requires that some symptoms of Conduct Disorder were present before age 18, is

described as a disorder in which individuals "frequently lack empathy and tend to be callous, cynical, and contemptuous of the feelings, rights, and sufferings of others" (p. 703). Callousness is also a central component of psychopathy, which is not a *DSM* diagnostic category but has gained acceptance among researchers and clinicians as a pattern of severe abnormality in interpersonal/affective functioning, coupled with longstanding patterns of aggressive and otherwise socially deviant behavior, that is both qualitatively and quantitatively distinct from Antisocial Personality Disorder (Hare, 1991).

Thus, callousness is linked indirectly to aggression through its association with psychological syndromes characterized by violence. However, callousness has also been linked directly to violence in a variety of age groups. Barry et al. (2000) identified a subgroup of conduct disordered children who exhibited particularly high levels of callous and unemotional traits. These children were more aggressive and demonstrated less remorse for their aggression than conduct disordered children who were less callous. Among adolescent offenders, Salekin, Ziegler, Larrea, Anthony, and Bennett (2003) found that callousness predicted violent recidivism. In college students, Kiewitz and Weaver (2001) found that those with higher trait aggressiveness displayed more callousness in their responses to a violent film.

Callousness in IPV. Callousness has been specifically implicated in partner violence. IPV researchers have postulated that callousness may be a characteristic feature of the "generally violent/antisocial" subtype of batterers (Holtzworth-Munroe & Stuart, 1994). Holtzworth-Munroe and Stuart suggest that this group of batterers is more likely to engage in severe violence and to be violent in additional domains outside intimate relationships. Mixture analysis of the Holtzworth-Munroe and Stuart typology confirmed that generally violent batterers displayed more frequent, general, and severe violence than other batterers (Waltz, Babcock, Jacobson, &

Gottman, 2000). On the other hand, no difference in personality features was found between this group and a "pathological" group that appeared to correspond to the "dysphoric/borderline" group identified by Holtzworth-Munroe. Tweed and Dutton (1998) also failed to find a distinction between these groups on antisocial personality features. Notably, however, both these studies used MCMI personality subscales in the mixture analysis. The MCMI has demonstrated inconsistent results in other studies of partner violence (e.g. Hart et al., 1993 vs. Gondolf, 1999). Gondolf, a principal figure in both MCMI research and IPV prediction, has acknowledged that the MCMI has shown little promise for identifying batterer subtypes. It is possible that those aspects of antisocial features most salient to IPV may not be optimally captured by the MCMI or perhaps by measures of antisocial features in general. Callousness measured specifically may prove a more useful predictor than the broader spectrum of antisocial features. Antisociality as operationalized by most measures of personality, including the MCMI, incorporates features such as impulsiveness and aggression that are known to overlap with other personality subtypes implicated in IPV, chiefly the borderline/dysphoric subtype. Accordingly, callousness may be not only a characteristic, but also a distinguishing, feature of a generally violent/antisocial subtype.

Studies of "normal" populations have demonstrated success in isolating callousness as an IPV predictor. Research on sexual violence in these populations, particularly among college students, has facilitated interest in callousness as it pertains to the development of callous sexual and gender attitudes that may prove risk factors for engaging in sexual assault. Parrott and Zeichner (2003) found an association between calloused sexual beliefs and perpetration of IPV in college males. Mullin and Linz (1995) found that in college students, repeated viewing of sexually violent films reduced emotional and physiological responses to the films as well as

ratings of how violent the films were. Additionally, after viewing the films, participants indicated less sympathy for domestic violence victims as well as lower ratings of the severity of their injuries. As an experimental manipulation of induced callousness, this study differs somewhat from studies of individuals with pre-existing callous traits. However, it does contribute evidence supporting an association between callousness and attitudes that may be linked to increased risk for IPV.

Callousness in animal abuse. Much of the preceding discussion of the connection between callousness and interpersonal violence can be applied to the connection between callousness and animal abuse. Callousness has been studied extensively in relation to childhood animal abuse, which in addition to forming one of the diagnostic criteria for Conduct Disorder (American Psychiatric Association, 1994), has been shown to be one of its earliest symptoms (Frick et al., 1993) and may be exhibited by as many as 25% of children with the disorder (Arluke, Levin, Luke, & Ascione, 1999). Gleyzer, Felthous, and Holzer (2002) found that rates of Antisocial Personality Disorder were significantly higher in a group of criminal defendants with animal abuse histories than in those with no animal abuse histories. However, there is little research on the role of callousness in animal abuse perpetrated by adults, perhaps due to the general paucity of research on animal abuse in adulthood.

Why might callousness drive animal abuse in childhood, adulthood, or both? In parallel to the way in which callousness may facilitate violence against human victims because the perpetrator's lack of distress or empathy for the victim provides no override of the aggressive impulse, callousness may also facilitate violence against an animal even when the animal displays fear, pain, or injury. It might be argued that certain of Kellert and Felthous' (1985) identified reasons for aggression toward animals, such as hurting an animal to shock others or to

retaliate against others (as in scenarios described by women entering violence shelters) are only possible if the perpetrator is inured to the suffering of both the animal and the human observers. Flynn (2001) has identified a common factor of habituation against empathy in conjunction with socialization toward violence. If perpetrating violence is relatively easy for callous individuals, it may become part of their general behavioral repertoires. Callousness may thus facilitate an overall acceptance of violence, so that callous individuals might be expected to be more "generally violent" across domains—including perpetration of violence against multiple types of victims, such as humans and animals.

Gender in the callousness—violence link. Callousness has been investigated predominantly in males, but several studies of children and adolescents have found similar callousness scores between males and females (Silverthorn, Hannahan, & Frick, 1995; Moffitt, Caspi, Dixon, Silva, & Stanton, 1996). In contrast, Grann (2000) found that higher scores on the callousness item of the Psychopathy Checklist-Revised differentiated adult males from adult females. However, Grann cautioned that rater bias toward scoring males as more callous than females may have contributed to this finding. Also, callousness was not examined in relationship to rates of violence in the sample. When females are included in studies of the relationship between callousness and violence, callousness does appear to emerge as a factor in their violence. For example, Frick, Cornell, Barry, Bodin, and Dane (2003) found few interactions by gender in their analyses of callousness as a longitudinal predictor of delinquency in adolescents. Further study is necessary in order to determine how gender may be related to the relationship between callousness and violence in adults.

Rejection Sensitivity

Rejection is an inherently unpleasant event to which human beings normally react with some degree of distress (Baumeister & Leary, 1995). Excessive concern about rejection, however, appears to be associated with a variety of problems. Sensitivity to interpersonal rejection is listed as a feature of atypical depression in the *DSM-IV* (American Psychiatric Association, 1994). One study found that rejection sensitive HIV-positive gay men who did not conceal their sexual orientation (thus presumably encountering greater rejection) experienced accelerated HIV progression in comparison to those who concealed their sexual orientation or those who were not rejection sensitive (Cole, Kemeny, & Taylor, 1997).

Rejection sensitivity is also linked to violent behavior. In parallel to the relationships among callousness, Antisocial Personality Disorder, and both general and partner-directed violence, rejection sensitivity is connected to violence through its association with Borderline Personality Disorder, in which "inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights)" is a diagnostic criterion (American Psychiatric Association, 2000, p. 710). *DSM-IV* states that in these individuals, perceived rejection may serve as a trigger: "The perception of impending separation or rejection, or the loss of external structure, can lead to profound changes in self-image, affect, cognition, and behavior" (p. 706).

Rejection sensitivity in IPV. As described above, Edwards et al. (2003) have documented correlations between spouse-directed physical aggression and measures of Borderline Personality Disorder features, and a "dysphoric/borderline" subtype is prominent among batterer typologies. Theory and research on IPV has identified sensitivity to rejection as a central feature of this type of perpetrator (Walker, 1979; Dutton, 1995; Dutton, van Ginkel, & Landolt, 1996). These

individuals' excessive concern about being abandoned by a partner leads to suspicion that abandonment or betrayal is in fact taking place, resulting in uncontrolled jealousy that fuels vengeful violence against the partner.

Rejection sensitivity has also been shown to be related to problems in the relationships of less severely disturbed dyads. The full-fledged jealous rage characteristic of severe dysphoric/borderline batterers might be expected to be less prevalent in these populations, but the basic pattern of concern, suspicion, and anger appears to hold: the research group primarily responsible for developing and testing the rejection sensitivity construct in normative samples has defined it as a pattern of anxiously expecting and readily perceiving rejection, and overreacting when it is perceived (Feldman & Downey, 1994). Downey and Feldman (1996) demonstrated that highly rejection sensitive college students have lower relationship satisfaction, as do their partners. Downey, Freitas, Michaelis, and Khouri (1998) found that highly rejection sensitive college students' anxious rejection-expectant behavior produces actual rejection from their partners, and that the dating relationships of these highly rejection sensitive individuals were more vulnerable to breakups. Via both self-report and information processing paradigms, Ayduk, Downey, and Testa (1999) demonstrated increased partner-directed hostility and relationship conflict in rejection sensitive college women following rejection by the partner.

Dissatisfaction, hostility, and conflict are logical precursors to violence, but it has also been directly demonstrated that rejection sensitivity is related to violence in intimate relationships in this population. Downey, Feldman, and Ayduk (2000) found that highly rejection sensitive men who were invested in their relationships, as opposed to those who withdrew from relationships in a presumed attempt to avoid rejection, engaged in higher rates of IPV. Purdie and Downey (2000) found that female adolescents who were more sensitive to rejection by their

peers and teachers were also more likely to be both physically and nonphysically aggressive in their dating relationships.

Rejection sensitivity in animal abuse. As described in the preceding discussion of callousness, Gleyzer et al. (2002) found that rates of Antisocial Personality Disorder were significantly higher in a group of criminal defendants with animal abuse histories. However, they also noted that when other personality disorders were included in the analysis, total rates of all personality disorders in the animal abuse group were significantly higher than in the abuse-free group. Although Gleyzer et al. stated that this difference was most likely driven by the high rates of Antisocial Personality Disorder, they noted the possibility that animal abuse may be related to other personality disorders. Hence, it is important to determine which other personality disorders (or in a community sample, features thereof) may be associated with animal abuse.

Although neither rejection sensitivity nor borderline features in general has been directly investigated in relation to animal abuse, this area presents a logical first choice as a line of inquiry. As IPV and animal abuse appear to be related forms of violence that share at least some common causal features, and the callous subtype identified among IPV perpetrators appears to exist in some form among animal abuse perpetrators as well, there is ample reason to suspect that the rejection sensitive subtype identified in IPV may also be visible in animal abuse. Additionally, the way that rejection sensitivity contributes to violence in interpersonal relationships may cause it to function even more powerfully as a catalyst for violence in human-animal interactions. Specifically, rejection sensitivity is by definition fueled by misinterpretation of the behavior of others, such that in situations where the intent of others' behavior is ambiguous, highly rejection sensitive individuals are likely to perceive deliberate rejection. In postulating a link between maladaptive attributional processes and animal abuse in children,

Ascione (1993) noted that cues from animals are often even more ambiguous than those from humans. Additionally, animals may also be more likely to genuinely reject opportunities for interaction with human companions, as when a pet refuses to come when called. Furthermore, rejection sensitive individuals' tendency to overreact to either real or imagined rejection appears to foster deterioration in their relationships. For example, Price & Dodge (1989) observed that aggressive boys who experienced difficulty in understanding social cues interpreted their peers' behavior as rejecting and hostile, reacted to this perception with hostility of their own, and were then met with genuine rejection due to their behavior. Animals generally respond to aggression with either fear or aggression of their own, both of which could be construed by a highly rejection sensitive individual as indicative of further rejection.

Aggression driven by rejection sensitivity can logically occur only when the aggressor attaches importance to the perceived rejection. The applicability of rejection sensitivity processes to animal abuse thus rests on whether perceived rejection by an animal is a sufficiently distressing experience to trigger aggression among rejection sensitive individuals. In answer to this question, it appears that relationships with companion animals are increasingly valued in the United States, where over 60% of homes have at least one pet (American Veterinary Medical Association, 2002) and in most of these households pets are considered to be members of the family (Siegel, 1993). Furthermore, according to the *DSM-IV*'s description of *Borderline Personality Disorder*, individuals who experience difficulty forming stable attachments to humans may be likely to acquire pets instead. Unfortunately, if rejection sensitivity functions similarly in human-animal interactions as in interpersonal interactions, the very bonds that tie animals to humans may predispose them to victimization by human aggression.

Gender in the rejection sensitivity—violence link. Research on rejection sensitivity in the severe dysphoric/borderline batterer subtype has focused on males. In college populations, however, a link between rejection sensitivity and IPV has been documented in both males (Downey et al., 2000) and females (Ayduk et al., 1999). It nonetheless remains unclear whether this link functions similarly across gender. Downey et al. (1998) found that the process by which highly rejection sensitive individuals' behavior fosters actual partner rejection and relationship dissolution occurred only in the female portion of their sample. Questions about the apparently greater role of women's maladaptive cognitive processes than men's in predicting negative dyadic interactions extend to the broader field of attribution research, where they remain unresolved (e.g. Bradbury, Beach, Fincham, & Nelson, 1996). Accordingly, it is important to continue to include both males and females in studies of rejection sensitivity with college samples, and to include gender as a comparison variable.

The Role of Representations of Aggression in Violence

Social representations of aggression involve individuals' views of their own aggressive behavior, such as origin of the behavior, cognition/emotion related to engaging in the behavior, and function of the behavior (Campbell, Muncer, & Coyle, 1992). Individuals can be broadly characterized by either "instrumental" or "expressive" views of their aggression. Instrumental style is characterized by aggression that has a specific purpose such as control of the victim or enjoyment, while expressive style is characterized by aggression resulting from loss of self-control due to distress. This classification appears to map onto the "proactive vs. reactive violence" terminology in developmental psychology (Crick & Dodge, 1994).

Representations of aggression in IPV. A number of theoretical and empirical writings have suggested a distinction in IPV perpetrators, such that some engage in control-oriented

violence and others engage in violence due to anger (e.g. Johnson, 1995; Tweed & Dutton, 1998). This distinction appears to align with the difference in instrumental and expressive aggression. Instrumental tendencies in particular appear to predict IPV risk and severity. High instrumentality is associated with both physical assault and psychological aggression toward partners (Archer & Graham-Kevan, 2003). Additionally, court-referred male batterers who valued control but perceived that they had little control were demonstrated to be at high risk for IPV (Prince & Arias, 1994). This finding may be explicable in terms of instrumental aggression, since these batterers might be expected to use IPV as a means of obtaining control over their partners.

By comparison, expressive aggression in IPV appears to occur in response to patterns of conflict between partners. Individuals who demonstrate high levels of expressive tendencies may be more likely to aggress against a partner following loss of self-control or in the absence of other emotional coping strategies. However, one study (Archer and Graham-Kevan, 2003) demonstrated little association between expressive tendencies and IPV in a mixed sample of students, batterers, and male inmates. Further research is needed to better understand expressive aggression and how it may relate to IPV.

Representations of aggression in animal abuse. There is no research directly addressing the question of how instrumental vs. expressive representations of aggression relate to animal abuse. However, existing work does yield suggestions that such a relationship exists. In making recommendations for future research on the link between IPV and animal abuse, Felthous and Kellert (1987, p. 716) state that "An interesting question for future investigation is whether motivation for recurrent animal cruelty correlates with motivation for recurrent personal aggression (e.g., revenge, sadistic pleasure)." This statement raises the possibility that different

types of intent in perpetrating aggression against people may correspond to different types of intent in aggression against animals.

Instrumental aggression could be expected to be related to animal abuse in which control or dominance over an animal is the primary purpose. Kellert and Felthous (1985) provided a list of reasons why children may abuse animals, several of which may extrapolate to adults' reasons for animal abuse. Among these reasons, controlling an animal, shocking others for amusement, and displaying one's aggressiveness by abusing a pet to make it aggressive all suggest instrumental tendencies. In DeViney et al.'s (1983) study of child abusing families, families in which animal abuse had also occurred were more likely to report that their pets were ill-behaved than families with no animal abuse. DeViney et al. made a plausible interpretation of this trend as suggesting that abusive families have pets that have, or develop, greater behavior problems. However, it is also possible that abusive individuals perceive their pets as more ill-behaved and engage in violence in an attempt to control them. One study to date (Carlisle-Frank, Frank, & Nielsen, 2004) specifically investigated attitudes of abusive vs. nonabusive individuals toward pets and found that abusers were more punitive of their pets, providing possible support for this hypothesis.

Animal abuse that occurs in the context of IPV is also likely to have an instrumental quality in many cases. Kellert and Felthous (1985) describe retaliation against another person as a reason for animal abuse; this description appears to capture the use of animal abuse for instrumental purposes. Partner-violent individuals' use of animal abuse "to demonstrate and confirm power and control over the family," "to isolate the victim and children," "to force the family to keep violence a secret," "to perpetuate the context of terror," "to prevent the victim from leaving or coerce her/him to return," "to punish the victim for leaving," and "to degrade the

victim through involvement in the abuse" has been described by the Humane Society of the United States (2004b, p. 3). These motives all illustrate deliberate, goal-directed use of violence.

In contrast to instrumental aggression, expressive aggression might be expected to be related to animal abuse in which individuals become violent toward an animal in response to emotional distress, either triggered by that animal or displaced from another source. Kellert and Felthous' (1985) reasons of retaliation against an animal and displacing hostility from a person to an animal may aptly illustrate this phenomenon. An individual who is prone to loss of self-control when angry, and who comes home to find a chewed shoe or an accident on the carpet, may become violent toward the pet in an expression of rage. Alternately, a similar individual may return home from a stressful day at work and unleash this aggression on a pet. Expressive aggression in animal abuse that co-occurs with IPV could be understood to occur when an abuser becomes angry with a partner and displaces this aggression onto an animal, either in lieu of or in addition to being violent toward the partner. Expressive animal abuse might differ from instrumental animal abuse in that perpetrators might be expected to display remorse for their actions once they became clear-headed, acknowledging that they had "gone overboard" while angry, whereas instrumental perpetrators would continue to justify their actions based on the intended goal of their violence. Findings by Carlisle-Frank et al. (2004) that may suggest the presence of an expressive subtype of animal abusers include animal abusers' increased likelihood of scapegoating their pets, more unrealistic expectations about pets, and greater sensitivity to stressful life events, particularly those they perceived as caused by a pet.

Gender in the representations of aggression—violence link. Gender differences have formed the basis for the instrumental-expressive distinction. Campbell et al.'s (1992) original hypothesis that men's violence is characterized by instrumental aggression while women's is

characterized by expressive aggression has been validated by a number of subsequent investigations (Archer & Haigh, 1997; Campbell, Muncer, McManus, & Woodhouse, 1999; Campbell, Saponchnik, & Muncer, 1997). In a study of individuals who had been court-referred for engaging in IPV, Hamberger et al. (1997) found that male perpetrators characterized their IPV as control-oriented; female perpetrators, by contrast, gave reasons of self-defense but also retaliation against partners, which could resemble expressive aggression. Downey et al. (1998, p. 558) concluded that the aggression of highly rejection sensitive women is likely to be "a behavioral expression of feelings of hurt, anger, despair, and hopelessness rather than having an explicit instrumental goal." One study (Archer & Graham-Kevan, 2003) found significant associations between women's instrumental beliefs and their perpetration of IPV, but this association was weaker than the association between men's instrumentality and IPV. Thus, it appears that the rate of instrumental aggression is comparatively low among women, even aggressive women.

On the other hand, the domain of expressive aggression may be more gender-symmetric. In fact, Archer-Graham and Kevan's (2003) study found a stronger relationship between expressive tendencies and IPV among men than among women. Men who are "generally violent" tend toward instrumental aggression (Tweed & Dutton, 1998), but those who represent a more "borderline/dysphoric" or "family-only" subgroup appear better characterized by expressive aggression. Driscoll, Campbell, and Muncer (2005) suggest that weaker gender differences on their measure of expressive aggression, as compared to their measure of instrumental aggression, may indicate that "the expressive scale may be picking up a more general experience of 'upset' feelings that are associated with the high arousal and negative tone of interpersonal conflict, and these shows (sic) greater overlap between men and women" (228). Consequently, the

applicability of models of instrumental and expressive aggression to both men and women was an important question for the current project.

<div align="center">*Relationships Between Personality Features and Representations of Aggression*</div>

Attitudes and behavior are linked via the mediating variable of intent (Ajzen & Fishbein, 1980). In other words, particular attitudes contribute to the development of particular motivations for behavior, which then facilitate the behavior itself. For this reason, examining personality features (callous attitudes and rejection sensitivity) in isolation as predictors of violence may be insufficient to understand violence fully, even though it may provide an adequate predictive model. Violence intent, as captured by aggressive style, may be a vital element in presenting a complete picture of how personality features are implicated in violence. The following discussion reviews prior evidence suggesting that aggressive style may indeed mediate relationships between personality features and violence perpetration.

Callousness and Instrumental Tendencies

Highly callous individuals, unaffected by the distress of those to whom they cause harm, may find it easy to engage in violence and may learn through doing so that violence is an effective means of obtaining advantageous results, thus developing a tendency toward instrumental aggression. Subsequently, their use of violence may also increase as they attempt to use this method more and more often to achieve desired outcomes. Highly callous individuals would not be expected to develop tendencies toward expressive aggression, however, because they lack the emotional reactivity that drives expressive violence.

Research on violent children and adolescents indicates an association between callousness and instrumental (proactive) tendencies. Studies of proactive vs. reactive aggression have identified extreme callousness among groups of proactively aggressive children (Crick &

Dodge, 1994). Likewise, Frick and colleagues have incorporated proactive aggression into their studies of child and adolescent callousness. O'Brien and Frick (1996) have linked callousness to reward-dominant response style. Pardini, Lochman, and Frick (2003) found that among both males and females in a sample of juvenile offenders, callous traits were associated with belief in the positive value of aggression. Frick et al. (2003) found that callous/unemotional traits interacted with conduct problems to predict boys' and girls' use of aggression, particularly proactive aggression, over time.

Among adult perpetrators, Tweed and Dutton (1998) directly associated antisocial characteristics with their "instrumental" subgroup of perpetrators. However, elsewhere in the adult literature, callousness is only mentioned as an associated feature of instrumental style. Nowhere has instrumental aggression been studied directly as a mediator of the relationship between callousness and IPV, underscoring the importance of addressing this issue in the current project.

In parallel to the way instrumental aggression may mediate the callousness-IPV link, individuals who are highly callous may be more likely to learn to use aggression instrumentally in their interactions with animals. An early observer of this correspondence, John Locke, stated that "they who delight in the suffering and destruction of inferiour creatures, will not be apt to be very compassionate, or benign to those of their own kind" (Axtell, 1968). This statement appears to suggest a link between callousness (lack of compassion) and deriving gain—in this case, pleasure—from violence (instrumental style). Field reports of perpetrators who harm pets as a means of threatening or emotionally abusing their partners suggest a similar link, wherein insensitivity to the distress of both the animal victims and the human observers facilitates the use of aggression to control or punish others. In order to move from anecdotal evidence to empirical

support for this idea, it is important to study instrumental representations of aggression directly

as a potential mediator of a relationship between callousness and animal abuse.

Rejection Sensitivity and Expressive Tendencies

If instrumental tendencies mediate the apparent relationship between callousness and

violence, it seems that expressive tendencies may similarly mediate the relationship between

rejection sensitivity and violence. Highly rejection sensitive individuals may develop tendencies

toward expressive aggression as a means of coping with the distress they frequently experience

due to anticipated and perceived rejection. These individuals' predisposition to overreact to

perceived rejection may facilitate their development of a disinhibited, emotionally expressive,

violent manner of conveying their distress. Highly rejection sensitive individuals would not be

expected to develop tendencies toward instrumental aggression, because engaging in aggression

for instrumental purposes requires premeditated, "clear-headed" reasoning that is inconsistent

with the way rejection sensitivity is presumed to function.

As previously discussed, the typology analysis performed by Tweed and Dutton (1998)

identified a second group of batterers, whom they labeled "impulsive." These batterers were

characterized by fearful attachment (typical of rejection sensitivity) and inappropriate, impulsive

anger (typical of expressive violence). This subtype has been equated to both the

"dysphoric/borderline" subtype from the literature on personality features in batterers and the

"expressive" subtype from the literature on instrumental vs. aggressive representations of

aggression. Thus, an apparent link between rejection sensitivity and tendencies toward

expressive violence already exists in the literature on severe battering. Downey et al. (1998) have

suggested that this link functions similarly among college women. The current study permitted

direct investigation of the potential mediational role of expressive tendencies in the relationship

between rejection sensitivity and IPV in this population. It also permitted examination of whether expressive tendencies mediate the relationship between rejection sensitivity and animal abuse, a question as yet unasked by those who have studied animal abuse.

Summary of Study 2

The objective of this second study in the current project was to develop a structural equation model to examine potential links among the personality constructs of callousness and rejection sensitivity, representations of aggression, and patterns of violence perpetrated against both human and animal victims. The key relationships of interest in this model were potential mediated paths among callousness, instrumental tendencies, and IPV; callousness, instrumental tendencies, and animal abuse; rejection sensitivity, expressive tendencies, and IPV; and rejection sensitivity, expressive tendencies, and animal abuse. A second area of interest was the ability of the model to predict these relationships for males vs. females. Finally, separate models for predicting physical assault and psychological aggression, while not directly comparable for statistical reasons, were developed in an effort to provide insight into these equally important yet distinct forms of violence.

Taken together, Studies 1 and 2 constituted an attempt to gain information about the relative rates of these types of violence and about the factors that contribute to them. It was hoped that in so doing, this project might contribute to a better understanding the intersection of IPV and animal abuse, thus taking a step toward improved prediction and ultimately prevention of these types of violence.

Additional Considerations for the Current Project

Perpetrators: Age

Approximately one-third of college students have been involved in some type of IPV (Foo & Margolin, 1995; Katz et al., 1997). Additionally, women ages 16-24 report the highest per capita rates of IPV victimization (USDOJ, 2000b). Accordingly, it appears that college-age individuals are an important population for studies of IPV.

Animal abuse has historically been studied as a juvenile phenomenon. However, the current project investigates concurrent animal abuse and IPV, so the time frame of interest is adolescence (when most individuals begin entering dating relationships) and beyond. Flynn (2001) states that late adolescence and early adulthood is a particular risk period for animal abuse. In a study of animal abuse in Massachussetts over a 20-year period, perpetrators were under the age of 30 in 56% of cases, with 29% between the ages of 18 and 30 (Arluke & Luke, 1997).

In sum, these data suggest that individuals at the juncture of adolescence and adulthood may be a population of particular interest for investigations of both IPV and animal abuse. As a result, the current project utilized a college sample.

Animal Victims: Species

Over the four years of data collected by the Humane Society of the United States, companion animals have consistently been the most common victims in reported cases of animal abuse. In the most recent report, companion animals were the victims in 71% of cases overall, and in 74% of cases perpetrated by adults. Dogs have also been more common victims than cats across all four years, representing 70% of adult-perpetrated cases in the most recent report (HSUS, 2004b). It made sense, therefore, to focus the current project on companion animals,

particularly dogs. However, according to HSUS data, farm animals are consistently the second most common victims in abuse cases, followed by wild animals. Hence, while it is vital to ask about acts perpetrated against companion animals, other categories of animals should not be excluded as victims. These considerations were used to inform the development of measures of animal abuse for the current project.

CHAPTER 2

HYPOTHESES

Hypotheses for Study 1

Prevalence of Violence By Type

1) Consistent with expectations that the sample would consist of fairly high-functioning

individuals and that social desirability constrains reporting of violent acts, it was predicted that

nonperpetrators of both IPV and animal abuse would outnumber perpetrators.

2) Consistent with evidence that IPV and animal abuse are linked, it was predicted that among

those who did perpetrate violence, perpetration of both types of violence would be more frequent

than perpetration of only one type of violence.

Prevalence of Violence By Gender

3) Consistent with the relatively greater weight of evidence that males are more common

perpetrators of violence than females, it was predicted that prevalence rates for IPV, animal

abuse, and their co-occurrence by males would be higher than the corresponding rates for

females.

4) However, it was predicted that among females who did perpetrate at least one type of

violence, prevalence rates for the other type of violence and for their co-occurrence would be

comparable to those of males.

Prevalence of Violence By Form

5) Consistent with previous research on college samples unselected for violence, it was predicted that psychological IPV would be more prevalent than physical IPV. There was insufficient basis for predictions about the relative prevalence of physical and psychological animal abuse.

Prevalence of Violence By Severity

6) Consistent with expectations that the sample would consist of fairly high-functioning individuals and that social desirability constrains reporting of violent acts, severe violence was expected to be less common than minor violence across both IPV and animal abuse.

Hypotheses for Study 2

(See Appendix B, Figures 1 – 2, for proposed models. Although separate models are illustrated for physical assault and psychological aggression, predictions did not differ by model.)

Measurement Model

Representation of Latent Constructs by Cross-Species Indicators

7) The following set of hypotheses addressed the presumed ability of the manifest indicators for humans and animals to represent, in combination, latent constructs applicable across species. It was predicted that:

    a) Separate item sets pertaining to callousness toward humans and callousness toward animals would in combination serve as indicators of a cross-species latent variable of "callousness."

    b) Separate item sets pertaining to rejection sensitivity toward humans and rejection sensitivity toward animals would in combination serve as indicators of a cross-species latent variable of "rejection sensitivity."

c) Separate item sets pertaining to instrumental aggressive style toward humans and instrumental aggressive style toward animals would in combination serve as indicators of a cross-species latent variable of "instrumental style."

d) Separate item sets pertaining to expressive aggressive style toward humans and expressive aggressive style toward animals would in combination serve as indicators of a cross-species latent variable of "expressive style."

Factor Invariance Across Gender

8) It was predicted that the measurement models would not differ by gender.

<center>*Structural Model*</center>

Relationships Among Personality Features, Representations of Aggression, and Violence

9) Consistent with the expectation that callousness and rejection sensitivity are associated with different representations of aggression, it was predicted that:

a) there would be a significant path from callousness to instrumental tendencies (b1) but no significant path from callousness to expressive tendencies;

b) there would be a significant path from rejection sensitivity to expressive tendencies (b4) but no significant path from rejection sensitivity to instrumental tendencies.

10) Consistent with the expectation that instrumental tendencies are associated with violence, it was predicted that there would be significant paths from instrumental tendencies to both IPV (b2) and animal abuse (b3).

11) Consistent with the expectation that expressive tendencies are associated with violence, it was predicted that there would be significant paths from expressive tendencies to both IPV (b5) and animal abuse (b6).

12) Consistent with the expectation that instrumental tendencies mediate the relationship between callousness and violence, it was predicted that there would be a significant indirect effect of callousness on both IPV and animal abuse through instrumental tendencies.

13) Consistent with the expectation that expressive tendencies mediate the relationship between rejection sensitivity and violence, it was predicted that there would be a significant indirect effect of rejection sensitivity on both IPV and animal abuse through expressive tendencies.

Model Comparison by Gender

Although inconsistent findings from previous research and the lack of comparative gender data on several of the proposed relationships in the model precluded establishing well-informed hypotheses about the way the model would function for males vs. females, it was determined that paths in the model would be compared for males and females pending confirmation of the hypothesis that the measurement model was invariant across gender (see above).

CHAPTER 3

METHOD

Participants

The data for this project were collected as part of a broader series of studies on IPV. Participants were 228 male and 199 female undergraduates self-selected from the Research Participation pool at the University of Georgia. The mean age of participants was 19.74 years ($SD = 2.08$). The mean age of male participants ($M = 19.95$, $SD = 2.27$) was marginally higher than the mean age of female participants ($M = 19.52$, $SD = 1.83$), $t(417) = -2.123$, $p = .034$. 93.2% of participants self-identified as Caucasian, 2.6% as African-American, 2.1% as Asian or Pacific Islander, 1.6% as Latino, and .5% as Other. There was no significant difference between males and females in racial demographics, $\chi^2(4, N = 425) = 5.280$, $p = .260$.

To avoid potential response problems associated with participants who had little or no experience with animals, this study was restricted to dog owners.[1] However, in recognition that animals are not permitted in student housing, in which a reasonable proportion of lower-level undergraduates might be expected to reside, it was specified that "Your dog does not have to live here at school with you."

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[1] Dogs were chosen as the criterion species due to the literature indicating that they are the most frequently abused type of animal.

Measures

Callousness

Emotional Toughness Scale (ETS)

The ETS (Beach, 2001) is a 9-item self-report questionnaire developed to assess the personality construct of callousness. Participants are asked to indicate their level of agreement or disagreement on a Likert-type scale with statements describing characterological insensitivity to the distress of others. Items consist of statements such as, "Seeing someone in pain doesn't bother me too much." Available responses range from 1 = strongly disagree to 7 = strongly agree. The questionnaire is scored by summing the item scores, such that higher overall scale scores indicate greater insensitivity. Previous work involving the ETS (Gupta, 2003) has demonstrated it to have fairly robust internal reliability (Cronbach's α = .65) and a clear single-factor structure. In the current study, internal reliability analysis yielded α = .68.

Emotional Toughness toward Animals Scale (ETAS)

The ETAS (Gupta & Beach, 2002) is a 10-item self-report questionnaire developed to assess the personality feature of callousness as it pertains to animals. In parallel to the human version of the scale (ETS), participants are asked to indicate their level of agreement or disagreement on a Likert-type scale with statements describing characterological insensitivity to the distress of others. Items consist of statements such as, "If I saw an animal in pain, I wouldn't be too upset." Available responses range from 1 = strongly disagree to 7 = strongly agree. The questionnaire is scored by summing the item scores, such that higher overall scale scores indicate greater insensitivity. Internal reliability analysis in the current sample yielded Cronbach's α = .77.

Rejection Sensitivity

Rejection Sensitivity Questionnaire (RSQ)

The RSQ (Downey & Feldman, 1996) is a 36-item measure of anxious expectations of interpersonal rejection. The scale consists of 18 hypothetical situations describing interpersonal interactions in which the respondent makes a request of another person, e.g., "You ask your boyfriend/girlfriend to move in with you." Each situation is followed by two questions. In the first item pertaining to each situation, respondents are asked to indicate how concerned or anxious they would be about the other person's response, e.g., "How concerned or anxious would you be over whether or not he/she also would want to move in with you?". Response choices range from 1 ("very unconcerned") to 6 ("very concerned"). In the second item, respondents are asked to indicate how much they expect acceptance rather than rejection to occur, e.g., "I would expect that he/she would want to move in with me." Response choices range from 1 ("very unlikely") to 6 ("very likely"). Responses to the second item are reverse-coded so that higher scores indicate greater expectations of rejection. For each situation, scores on the first and second item are multiplied to obtain a situation score. The scale score is calculated by taking the mean of the 18 situation scores.

The RSQ has been demonstrated by Downey and Feldman (1996) to have fairly robust psychometric properties, to include internal reliability ($\alpha = .81$) and test-retest reliability (.83). In the current sample, internal reliability analysis yielded $\alpha = .82$. Downey and Feldman also demonstrated that the scale shows similar factor structure for males and females. Comparison of the factor structure for males and females in the current sample yielded similar results**.**

Rejection Sensitivity toward Animals Questionnaire (RSAQ)

The RSAQ (Gupta & Beach, 2002) is a 32-item measure of anxious expectations of rejection by companion animals. The scale was developed in an effort to provide an animal analog to the RSQ while paralleling the structure of the RSQ to the greatest extent possible. The RSAQ consists of 16 hypothetical situations describing human interactions with companion animals, such as, "You come home and open the door, expecting your dog to greet you." Each situation is followed by two questions. In the first item pertaining to each situation, respondents are asked to indicate how concerned or upset they would be if their animal behaved in a way that could be interpreted as rejecting, e.g., "How concerned or upset would you be if your dog seemed unenthusiastic at your arrival?". Response choices range from 1 ("very unconcerned") to 6 ("very concerned"). In the second item, respondents are asked to indicate how much they expect acceptance rather than rejection to occur, e.g., "I would expect that my dog would be happy to see me." Response choices range from 1 ("very unlikely") to 6 ("very likely"). Responses to the second item are reverse-coded so that higher scores indicate greater expectations of rejection. For each situation, scores on the first and second item are multiplied to obtain a situation score. The scale score is calculated by taking the mean of the 16 situation scores.

In the current sample, internal reliability analysis yielded Cronbach's $\alpha = .85$. Factor analysis on the whole sample yielded a clear single factor that accounted for 32.60% of the variance. This factor structure was similar for males and females when analyzed separately.

Representations of Aggression

Revised Short Expagg

The Expagg (Campbell et al., 1992) was designed to measure respondents' social representations of aggression. The Revised Short version of the scale (Campbell et al., 1999) consists of 16 items, 8 of which describe instrumental representations of aggression ("After I lash out physically at another person I would like to make sure they never annoy me again") and 8 of which describe expressive representations ("After I lash out physically at another person, I would like them to acknowledge how upset they made me and how unhappy I was"). Expagg items have previously been rated on a five-choice Likert scale. In the current project, this was expanded to seven choices (from "Disagree Strongly" to "Agree Strongly").

The Expagg has been scored in several ways. Upon initial development of the scale, instrumental and aggressive representations of aggression were conceptualized as opposite ends of a single dimension. Scoring consisted of subtracting the score on the instrumental items from the score on the expressive items, thus obtaining a measure of "relative preference" for instrumental aggression. In development of the revised scale, Campbell and colleagues determined that it was preferable to treat instrumental and aggressive items as separate scales and score them independently, although the original scoring method may still be employed when desired. The present project employed the revised scoring method.

Upon development by Campbell et al. (1999), the Revised Short Expagg produced an internal reliability of .80 for instrumental items and .62 for expressive items. In the current sample, internal reliability analysis yielded Cronbach's α = .87 for the full scale, .85 for instrumental items, and .80 for expressive items.

Animal Expagg

The Animal Expagg (Gupta & Beach, 2002) is a 16-item measure of instrumental and expressive representations of aggression toward companion animals. The scale was developed in an effort to provide an animal analog to the Expagg while paralleling the structure of the Expagg to the greatest extent possible. In order to avoid potential confounds due to animal type, including problematic nonrandom covariance between animal type and item type, all items were designed to pertain to aggression toward dogs. Dogs were chosen because they are the most commonly abused animal species (HSUS, 2004b).

In parallel to the original Expagg, 8 Animal Expagg items describe instrumental representations of aggression ("When I lash out physically at my dog, I want to be harsh enough to make sure it won't misbehave in that way again") and 8 items describe expressive representations ("I believe that my aggression toward my dog comes from losing my self-control"). Items are rated on a seven-choice scale (from "Disagree Strongly" to "Agree Strongly"). Scoring is identical to that of the original Expagg.

Internal reliability analysis in the current sample yielded Cronbach's α = .86 for the full scale, .82 for instrumental items, and .75 for expressive items. Factor analysis on the set of instrumental items yielded a primary factor accounting for 44.25% of the variance, and a secondary factor accounting for 15.22% of the variance. However, this secondary factor had a small eigenvalue (1.22) and appeared to be of little utility in describing the structure of the scale.

IPV: Revised Conflict Tactics Scale (CTS2)-Perpetration

The CTS2 (Straus et al., 1996) is a 78-item measure of behavior during conflict situations with an intimate partner. The CTS2 comprises items pertaining to Negotiation, Sexual Coercion, Injury, Psychological Aggression, and Physical Assault. In the current project, Physical Assault

and Psychological Aggression items, which may be flagged as either minor or severe, were of primary interest.

The CTS2 is further divided into Victimization and Perpetration items. 39 items ask participants to report frequency of various types of behaviors toward a partner (Perpetration), while the remaining 39 items ask participants to report how often their partners have perpetrated the same behaviors toward them (Victimization). In the current project, only the Perpetration items were administered because acts perpetrated by the participants themselves were the subject of focus.

The current project employs two minor changes to the CTS2. First, only 31 of the 39 items could be administered due to Institutional Review Board concern about asking participants to report perpetration of rape and other illegal acts of violence. This revision required the omission of three items from the Physical Assault subscale. Therefore, summed scale scores are not directly comparable to summed scale scores reported in studies using the entire subscale. A second modification for the current project was that the instructions for completing the CTS2 were amended so that they directed participants to report frequencies across their entire dating histories since age 16 rather than the standard past-year time frame. The reason for this change was that lower-level college students might not have been involved in consistent relationships and hence data based on only the past year may have provided a poor estimate of intimate partner violence. Straus et al. (1996) state that such changes to the time frame of the CTS are permissible when justified by methodological or conceptual reasons.

Each item on the CTS2 has eight response choices. The first seven choices range from 0 ("never did this") to 6 ("more than 20 times"). (The eighth response choice, "Not in the past year, but it did happen," was not used in the current project because the time frame for responses had

already been expanded to "since age 16" and acts outside this time frame were not relevant to the

hypotheses. Four additional scores may be created for each item and subscale on the CTS2:

prevalence, ever-prevalence, frequency, and chronicity.

Prevalence refers to whether an act was perpetrated during the time frame specified by

the questionnaire, as indicated by a nonzero response to that item. An item prevalence score is

created for each item by scoring 0-1 to indicate presence or absence of perpetration, and a

prevalence score can also be created for each subscale by scoring 1 if any item on the subscale

received a prevalence score of 1. Subscale prevalence scores were of primary interest for Study 1

of the current project.

By contrast, *ever-prevalence* refers to whether an act was ever perpetrated, even outside

the time frame of the study. As the current project does not include hypotheses related to broader

time frames, ever-prevalence scores were not be utilized in the analyses.

Frequency refers to how many times an act was perpetrated within the specified time

frame. Frequency scores are obtained by transforming item responses into the midpoint of the

frequency range they represent. For example, responses of 0 ("never"), 1 ("once"), or 2 ("twice")

would be retained without transformation because they reflect the actual frequency reported,

while a response of 3 ("3 to 5 times") would be recoded as 4 because 4 is the midpoint of the

3-to-5 range. For responses of "more than 20 times," Straus et al. recommend transforming the

response into a frequency of 25. Subscale frequency scores can be created by summing

transformed responses across the subscale items. For Study 2 of the current project, item

frequency scores were of primary interest, as they were used to represent physical assaultiveness

and psychological aggressiveness in the structural equation model.

Chronicity refers to how many times an act was perpetrated by those respondents who perpetrated any act at all from that subscale. Hence, chronicity scores are available only for respondents who scored at least "1" on at least one item in a subscale. In similar fashion to frequency scores, chronicity scores are obtained by transforming item responses into the midpoint of the response range they represent. Subscale chronicity scores are created by summing transformed responses across the subscale items. The current project did not use chronicity scores due to sample size limitations that would have been created by restricting analyses to perpetrators only.

Past psychometric testing of the CTS2 has revealed it to have excellent psychometric properties, with Cronbach's α = .86 for Physical Assault items (Straus et al., 1996). In the current study, internal reliability analysis yielded α = .81 for all Physical Assault items, .74 for Minor Physical Assault items, and .66 for Severe Physical Assault items. Internal reliability analysis for Psychological Aggression items yielded α = .75 for all Psychological Aggression items, .81 for Minor Psychological Aggression items, and .63 for Severe Psychological Aggression items.

Animal Abuse: Aggression Toward Animals Scale (ATAS)

The ATAS (Gupta & Beach, 2001) is a 23-item scale designed to measure frequency of aggressive acts toward animals in adulthood. Though this time frame may also be modified according to the goals of a specific study, the adult time frame (since age 16) was used in data collection for the current project in order to match the time frame used in the CTS2. Each item on the ATAS has seven response choices that parallel those in the CTS2, ranging from 0 ("never did this") to 6 ("more than 20 times"). Items were generated via review of the literature on animal abuse, such as the types of animal abuse described by Kellert and Felthous (1985) and by Vermeulen and Odendaal (1993). The ATAS does not restrict responses to acts committed

against particular types of animals; however, it does exclude acts that are sanctioned by some areas of society, such as hunting and routine livestock handling practices (branding, gelding, slaughter, etc.). Four types of items (Negotiation, Injury, Physical Assault, and Psychological Aggression) are represented. The current study focused on Physical Assault and Psychological Aggression items, which may be flagged as either Minor or Severe.

Scoring of the ATAS employs the same method as the CTS2, such that prevalence, ever-prevalence, frequency, and chronicity scores may be obtained for each item and subscale. As this method was described in detail in the section pertaining to the CTS2, it will not be repeated here. In the current study, prevalence and frequency were the two scores of interest.

In previous research by this author (Gupta, 2003), the ATAS demonstrated robust internal reliability (Cronbach's α = .86 for all items excluding positively-valenced Negotiation items). In the current study, internal reliability analysis yielded α = .84 for all items excluding Negotiation, .80 for Physical Assault items, and .66 for Psychological Aggression items. Factor analysis on the combined set of Physical Assault and Psychological Aggression items yielded two clear factors that together accounted for 47.17% of variance.

Procedure

Participants were asked to complete all questionnaires during a single session, conducted in a large group testing format. The order of administration of the questionnaires was counterbalanced to control for possible effects of presentation order. The packet of questionnaires, which included several not used in this study, required approximately two hours to finish. Upon completion of the questionnaires, participants were asked to complete a demographic form and were then debriefed as to the nature and purpose of the study.

Data Analysis Strategy

Study 1: Examining the Prevalence of IPV and Animal Abuse

Hypotheses 1-6 pertained to the relative prevalence of perpetration across types of

violence (IPV and animal abuse) and across gender, form, and severity of violence. Testing these

hypotheses involved a combination of t-tests and crosstabulation analyses, which were

performed using the SPSS 14.0 statistical software package for Windows. The GPOWER

program (Faul & Erdfelder, 1992) estimated that to reach a power level of .80 for a t-test,

assuming Cohen's (1977) medium effect size of .50 with $\alpha = .05$, a sample size of 128 would be

needed. To reach power of .80 for a chi-square test on a 4 (abuse type: physical, psychological,

both, or neither) x 4 (victim type: human, animal, both, or neither) crosstabulation, assuming

Cohen's medium effect size of .30 with $\alpha = .05$, a sample size of 174 would be needed. Thus, it

appeared that the obtained sample size of 427 would provide sufficient power, even for analyses

involving only a subset of the sample (e.g., IPV perpetrators).

Study 2: Examining the Nature and Function of IPV and Animal Abuse

Structural equation modeling was chosen as the optimal data analysis strategy for testing

the hypotheses pertaining to relationships among personality features, aggressive style, and

violence toward partners and animals (Hypotheses 7-13). Key advantages of structural equation

modeling in relation to the current project include the ability to model latent variables, the ability

to test several hypotheses simultaneously rather than establishing separate regression equations

for testing individual coefficients, and the ability to compare models directly across groups (male

and female in the current project). Structural equation modeling is also useful for psychological

research of this nature due to fairly flexible assumptions regarding data properties, particularly

multicollinearity. Additionally, structural equation modeling facilitates better estimates of model

parameters due to the ability to include measurement error directly in the model. The model series for the current project were developed using the Maximum Likelihood Estimation method in LISREL 8.7 (Jöreskog & Sörbom, 2004). Two models were required: one for physical assault, and one for psychological aggression.

Model fit was assessed using a combination of the chi-square test statistic and fit indices. Because sample size tends to bias the chi-square statistic such that large sample size (usually considered as $N = 200$ and higher) may itself result in a significant chi-square test based on trivial differences between the observed and hypothesized models, fit indices may be more useful as a primary indicator of model specification since they are less vulnerable to sample size (Marsh, Balla, & McDonald, 1988). Some variability remains among fit indices in degree of invulnerability, however. For this reason, three indices were selected for model assessment based on having been identified by Hu and Bentler (1998) as relatively independent of sample size: Root Mean Square Error of Approximation (RMSEA), Non-Normed Fit Index (NNFI), and Comparative Fit Index (CFI). These indices were also chosen to represent diverse methods of calculating fit: RMSEA is an index of absolute fit, whereas NNFI and CFI are indices of incremental fit (the hypothesized model's improvement in fit over the null model). Following Hu and Bentler, cutoff values were set at $\leq .06$ for the RMSEA and $\geq .95$ for the NNFI. A cutoff of $\geq .95$ for the CFI was established following the recommendation of Bentler (1990).

The primary aim of the structural equation modeling component of this study was to determine a) whether the hypothesized latent variables could be accurately estimated by the manifest indicators, and b) whether hypothesized relationships among the latent variables were substantiated by the sample data. However, the broader context in which this study was situated was the goal of improving predictions of violent behavior, not only in this sample but with

aspirations toward ultimate extension to other samples. In such a situation, the research focus shifts from model confirmation to model generation. Post hoc model modification is a tool for improving model fit in cases where a priori theory-based model development has led to misspecification (Jöreskog & Sörbom, 1996). Using modification indices produced by modeling software, the researcher may identify parameters that were fixed in the original model but that would improve model fit if freed. The improved model can then be tested with a new sample to determine replicability. A number of critics (e.g. Steiger, 1990) caution against the fallibility of post hoc model modification. In addition to objections on conceptual grounds to the data-driven as opposed to theory-driven nature of the procedure, arguments against post hoc modification include that it contains insufficient protection against inflation of Type I error due to post hoc analysis; that it incorrectly assumes that models have been misspecified in one particular way (fixing parameters that should have been free); and that its primary aim of generating improved models for successful replication in other samples is seldom achieved because the modification process tends to lead toward models with better sample fit but poorer validity. Keeping these considerations in mind, a cautious examination of modification indices was undertaken in an effort to identify areas where model fit could be improved for application to future samples. A modification index cutoff of ≥ 3.84, which corresponds to $p < .05$ for the one degree-of-freedom chi-square test associated with freeing a fixed parameter, was chosen as the criterion for identifying erroneously constrained parameters.

CHAPTER 4

RESULTS

Study 1: Examining the Prevalence of IPV and Animal Abuse

Prevalence of Violence By Type

Correlations, means, and standard deviations for prevalence variables in the full sample are presented in Table 1 (Appendix A). For physical assault toward partners, nonperpetrators (53.1%) outnumbered perpetrators (46.9%). However, contrary to Hypothesis 1, this difference was not significant, $\chi^2(1, N = 426) = 1.587, p = .208$. For psychological aggression toward partners, contrary to Hypothesis 1, perpetrators (85.9%) significantly outnumbered nonperpetrators (14.1%); $\chi^2(1, N = 426) = 219.80, p < .001$. For physical assault toward animals, contrary to Hypothesis 1, perpetrators (63.9%) significantly outnumbered nonperpetrators (36.1%); $\chi^2(1, N = 427) = 33.16, p < .001$. For psychological aggression toward animals, perpetrators (93.7%) also significantly outnumbered nonperpetrators (6.3%); $\chi^2(1, N = 427) = 325.83, p < .001$.

As predicted in Hypothesis 2, among those who did perpetrate violence, perpetration of both partner-directed and animal-directed violence (83.6%) was significantly more frequent than perpetration of only one type of violence (16.4%); $\chi^2(1, N = 422) = 191.13, p < .001$.

Prevalence of Violence By Gender

Within-gender correlations, means, and standard deviations for prevalence variables are presented in Tables 2 and 3 (Appendix A). Contrary to Hypothesis 3, there was no significant difference in the prevalence of partner-directed aggression among males (85.1%) and females

(88.9%), $\chi^2(1, N = 426) = 1.14$, $p = .285$. There was also no significant gender difference in the prevalence rate of animal-directed aggression (93.9% of males and 95.5% of females), $\chi^2(1, N = 427) = .55$, $p = .460$. Finally, there was no significant gender difference in the prevalence of perpetration of both types of violence as opposed to perpetration of one or neither type, $\chi^2(2, N = 427) = 1.98$, $p = .372$.

In recognition that these high prevalence rates might be a result of combining minor and severe acts as well as physical assault and psychological aggression when calculating prevalence, yielding little meaningful information other than that most participants (whether male or female) had engaged in some type of aggressive behavior toward a partner or animal at some point since age 16, contingency tables were regenerated after splitting violence by severity and form. This analysis did yield a gender difference for severe animal abuse, with males (66.7%) significantly more likely to perpetrate than females (44.2%), $\chi^2(1, N = 427) = 21.75$, $p < .001$. However, no significant gender difference emerged for minor animal abuse (49.9% of males vs. 44.3% of females), $\chi^2(1, N = 427) = .465$, $p = .495$. No significant gender difference was present for severe IPV (16.0% of males vs. 15.3% of females), $\chi^2(1, N = 426) = .362$, $p = .547$ or for minor IPV (45.1% of males vs. 41.5% of females), $\chi^2(1, N = 426) = 1.742$, $p = .187$. When prevalence rates for each form of violence (physical assault and psychological aggression) were compared across gender, a gender difference emerged for physical assault, with males (45.2%) significantly more likely to perpetrate than females (33.7%), $\chi^2(1, N = 427) = 9.644$, $p < .05$. However, no significant gender difference was present for psychological aggression (52.0% of males vs. 46.1% of females), $\chi^2(1, N = 427) = 1.529$, $p = .216$.

Hypothesis 4 concerned analyses of gender differences within the subset of participants who perpetrated at least one type of violence. As predicted, among the 177 females and 194

males who perpetrated intimate partner violence, the prevalence rate for animal abuse did not differ significantly by gender: 94.3% of males and 96.0% of females, $\chi^2(1, N = 371) = .59$, $p = .442$. Also as predicted, among the 190 females and 213 males who perpetrated animal abuse, the prevalence rate for intimate partner violence did not differ significantly by gender (45.4% of males vs. 42.2% of females) $\chi^2(1, N = 403) = 1.17$, $p = .279$.

Similar to the results obtained in the full sample, considering minor and severe acts separately did yield a gender difference for severe animal abuse, where male IPV perpetrators were significantly more likely to perpetrate severe animal abuse (35.0%) than were female IPV perpetrators (21.8%), $\chi^2(1, N = 371) = 17.04$, $p < .001$. However, no other gender differences emerged.

<div align="center">Prevalence of Violence By Form</div>

As predicted in Hypothesis 5, the prevalence of psychological aggression toward partners (85.9%) was significantly higher than the prevalence of physical assault toward partners (46.9%), McNemar $\chi^2(1, N = 426) = 154.69$, $p < .001$. The prevalence of psychological aggression toward animals (93.7%) was significantly higher than the prevalence of physical assault toward animals (63.9%), McNemar $\chi^2(1, N = 427) = 117.60$, $p < .001$.

<div align="center">Prevalence of Violence By Severity</div>

As predicted in Hypothesis 6, severe violence was less common than minor violence across violence categories: physical assault toward partners (McNemar $\chi^2(1, N = 426) = 132.54$, $p < .001$), physical assault toward animals (McNemar $\chi^2(1, N = 427) = 32.25$, $p < .001$), psychological aggression toward partners (McNemar $\chi^2(1, N = 426) = 240.04$, $p < .001$), and psychological aggression toward animals (McNemar $\chi^2(1, N = 427) = 232.00$, $p < .001$).

Study 2: Examining the Nature and Function of IPV and Animal Abuse

Measurement Models

Model Estimation

The measurement models were estimated using questionnaire items as manifest indicators of latent variables. Hypothesis 7 concerned the ability of human and animal items to combine as indicators of the latent constructs of callousness, rejection sensitivity, instrumental tendencies, and expressive tendencies. To provide a test of this hypothesis, the measurement models were constructed so that the items from the ETS (callousness toward humans) plus the items from the ETAS (callousness toward animals) were combined as indicators of the latent construct of callousness; the situation scores from the RSQ (rejection sensitivity toward humans) plus the situation scores from the RSAQ (rejection sensitivity toward animals) were were combined as indicators of the latent construct of "rejection sensitivity;" the items from the instrumental scale of the Expagg (instrumental tendencies toward humans) plus the items from the instrumental scale of the Animal Expagg (instrumental tendencies toward animals) were were combined as indicators of the latent construct of "instrumental style;" and the items from the expressive scale of the Expagg plus the items from the expressive scale of the Animal Expagg were were combined as indicators of the latent construct of "expressive style." The two outcome variables in each model (human-directed and animal-directed violence) were represented by item frequency scores from the CTS and ATAS, respectively.

Items were parceled in order to avoid model underidentification problems that would likely have resulted from attempting to use all items as indicators. Parcels were constructed by combining items with the highest and lowest item-total correlations for each variable. Thus, the 19 callousness items were reduced to five parcels, the 34 rejection sensitivity items were reduced

to five parcels, the 16 instrumental items and 16 expressive items were each reduced to four

parcels, the 9 physical IPV items were reduced to three parcels, the 13 physical animal abuse

items were reduced to three parcels, the 8 psychological IPV items were reduced to three parcels,

and the 5 psychological animal abuse items were reduced to two parcels. Correlations, means,

and standard deviations for parceled indicators are presented in Tables 4 – 9 (Appendix A).

In latent variable modeling it is necessary to set the metric of each latent variable to be

estimated. The default method in LISREL 8.7 involves setting the variance of each latent

variable to 1.0. However, as noted by Garson (2006), this method is inappropriate for multi-

group analysis. An alternative method for setting latent variable metrics involves constraining

the factor loading of one indicator for each latent variable to 1.0. This "referent item" is chosen

on the basis of having the highest loading on the hypothesized latent variable in a factor analysis.

In the current project, multi-group analysis was required for the test of Hypothesis 8; thus,

referent item constraints were chosen as the method of setting the metrics of the latent variables.

Table 10 (Appendix A) presents fit statistics for the measurement model for physical

assault in males. Fit indices suggested acceptable overall fit despite a nonsignificant chi-square.

Individual factor loadings were examined to determine whether any item parcels were behaving

poorly as indicators, but t-values for all loadings were significant at $p < .001$.

Table 11 (Appendix A) presents fit statistics for the measurement model for physical

assault in females. Fit indices suggested acceptable overall fit despite a nonsignificant chi-

square. Individual factor loadings were examined to determine whether any item parcels were

behaving poorly as indicators, but t-values for all loadings were significant at $p < .001$.

Table 13 (Appendix A) presents fit statistics for the measurement model for

psychological aggression in males. Fit indices suggested acceptable overall fit despite a

nonsignificant chi-square. Individual factor loadings were examined to determine whether any item parcels were behaving poorly as indicators, but *t*-values for all loadings were significant at *p* < .001.

Table 14 (Appendix A) presents fit statistics for the measurement model for psychological aggression in females. Fit indices suggested acceptable overall fit despite a nonsignificant chi-square. Individual factor loadings were examined to determine whether any item parcels were behaving poorly as indicators; *t*-values for all but one loading were significant at *p* < .001. The loading of psychological animal abuse parcel 2 on the latent variable of Psychological Aggressiveness, the lowest loading in the model (.356, *t* = 2.598), was significant at *p* < .01 but not at *p* < .001.

Based on the examination of model fit indices and factor loadings, it did not appear warranted to attempt to modify any of the four measurement models prior to proceeding to the structural models.

Test of Representation of Latent Constructs by Cross-Species Indicators

Hypotheses 7a-7d were evaluated by examining the factor loadings on the latent variable indicators constructed from combined human and animal items. In support of Hypothesis 7a, all of the combined human-animal indicators of callousness loaded strongly in both of the measurement models for males (*t* > 7.000; *p* < .001) and both of the measurement models for females (*t* > 5.000; *p* < .001). In support of Hypothesis 7b, all of the combined human-animal indicators of rejection sensitivity loaded strongly in both of the measurement models for males (*t* > 11.000; *p* < .001) and both of the measurement models for females (*t* > 9.000; *p* < .001). In support of Hypothesis 7c, all of the combined human-animal indicators of instrumental tendencies loaded strongly in both of the measurement models for males (*t* > 14.000; *p* < .001)

and both of the measurement models for females ($t > 10.000$; $p < .001$). In support of Hypothesis 7d, all of the combined human-animal indicators of expressive tendencies loaded strongly in both of the measurement models for males ($t > 10.000$; $p < .001$) and both of the measurement models for females ($t > 13.000$; $p < .001$).

Test of Factor Invariance Across Gender

To determine whether the measurement models were comparable for males and females (Hypothesis 8), it was necessary to conduct a test of factorial invariance using a multiple group analysis with gender as the grouping variable. This analysis was performed by running two separate two-group model analyses, first without imposing cross-group constraints and then constraining the loadings of the indicator variables on the latent variables to be equal across groups.

Results of the test of factorial invariance for the physical assault measurement models are presented in Table 12 (Appendix A). Constraining factor loadings to be equal across gender produced a significant decline in model fit, $\Delta\chi^2(18) = 35.100$, $p < .01$. Thus, contrary to Hypothesis 8, the physical assault models varied across gender and were not suitable for direct comparison.

Results of the test of factorial invariance for the psychological aggression measurement models are presented in Table 15 (Appendix A). Constraining factor loadings to be equal across gender produced a significant decline in model fit, $\Delta\chi^2(17) = 32.949$, $p < .05$. Thus, contrary to Hypothesis 8, the psychological aggression models varied across gender and were not suitable for direct comparison.

Structural Models

Model Estimation

Please refer to Figures 1-2 (Appendix B) for path diagrams of the hypothesized structural models. The models were specified by allowing hypothesized parameters (indicated by arrows connecting latent variables in the model diagrams) to vary freely and fixing parameters hypothesized to be nonsignificant (indicated by lack of arrows connecting those latent variables in the model diagrams) to zero. In keeping with standard practice, the exogenous variables (callousness and rejection sensitivity) were allowed to correlate. Due to the expected covariance between instrumental style and expressive style, and between violence toward partners and violence toward animals, the structural error terms of these pairs of variables were allowed to covary.

Relationships Among Personality Features, Representations of Aggression, and Violence

Model 1: Physical assault model for males. Fit statistics for the base model are reported in Table 16 (Appendix A). Chi-square was significant but the model demonstrated acceptable overall fit according to fit indices. In support of Hypothesis 9a, the path from callousness to instrumental tendencies (b1) was significant, $b = .736$, $p < .001$. Also, as predicted, modification indices did not suggest that the constrained zero path from callousness to expressive tendencies should be freed.

In support of Hypothesis 9b, the path from rejection sensitivity to expressive tendencies (b4) was significant, $b = .075$, $p < .001$. Also, as predicted, modification indices did not suggest that the constrained zero path from rejection sensitivity to instrumental tendencies should be freed.

In partial support of Hypothesis 10, there was a significant path from instrumental tendencies to animal abuse (b3), $b = 1.542$, $p < .001$, but no significant path from instrumental tendencies to IPV (b2), $b = .255$, *ns*.

In partial support of Hypothesis 11, there was a significant path from expressive tendencies to animal abuse (b6), $b = -1.505$, $p < .001$, but the negative path coefficient was of the opposite sign from what was predicted. Contrary to Hypothesis 11, there was no significant path from expressive tendencies to IPV (b5), $b = -.305$, *ns*.

Hypotheses 12 and 13 concerned the potential role of instrumental and expressive style as mediators of the paths from personality features to IPV and animal abuse. The model contained four hypothesized mediated relationships: instrumental style as a mediator of the relationship between callousness and IPV, instrumental style as a mediator of the relationship between callousness and animal abuse, expressive style as a mediator of the relationship between rejection sensitivity and IPV, and expressive style as a mediator of the relationship between rejection sensitivity and animal abuse. Applying the now-standard Baron and Kenny (1986) procedure for demonstrating mediation to a structural equation modeling framework involves the following steps: 1) specifying a model with a direct path from the exogenous variable to the outcome variable, but without paths from the exogenous variable to the mediator or from the mediator to the outcome variable; 2) verifying that the direct path from the exogenous variable to the outcome variable is significant; 3) specifying a model that includes the two paths omitted in step 1; 4) verifying that the path in this model from the exogenous variable to the mediator is significant; 5) verifying that the path in this model from the mediator to the outcome variable is significant. However, this method becomes burdensome when multiple hypothesized mediation paths exist in a model, since it requires a separate nested model series to analyze each path. It has

also been demonstrated to have very low statistical power (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). As an alternative, it is possible to use LISREL output to determine the indirect effect of the exogenous variable on the outcome variable (i.e., the product of the two coefficients for the mediation path). LISREL provides a significance test of the indirect effect using Sobel's (1982) formula for dividing the estimate of the effect by its standard error and comparing this value to the normal distribution. This method, one of a family of related techniques for testing mediation using products of path coefficients, has been determined by MacKinnon et al. to have higher power than the Baron and Kenny method.

To establish tests of the mediation hypotheses in the current model, it was necessary to specify a nested alternative model (Model 1A) in which the direct paths from the exogenous variables (callousness and rejection sensitivity) to the outcome variables (IPV and animal abuse) were freed. The alternative model demonstrated substantial improvement in fit over the base model, $\Delta\chi^2(4) = -28.063$, $p < .001$. In this alternative model, none of the indirect effects were significant. However, the direct effects of callousness on both IPV ($b = .671$, $p < .01$) and animal abuse ($b = 1.465$, $p < .001$) were significant. Neither the direct effect of rejection sensitivity on IPV ($b = .045$, ns) nor on animal abuse ($b = -.072$, ns) was significant. Thus, neither full nor partial mediation could be supported for any of the hypothesized paths in the base model. The alternative model's improvement in fit over the base model suggested that modeling direct effects of callousness on IPV and animal abuse produced a more accurate fit to the data.

Given the presence of several weak paths and several paths that were apparently erroneously excluded in the base model, a nested series of model revisions was warranted. Table 16 provides a summary of the nested model series. As suggested by the modification indices in the base model, as well as by Model 1A, the direct effects of callousness on IPV and callousness

on animal abuse were added to the model as the first revision (Model 1B). This revision produced substantial improvement in fit over the base model. Next, as suggested by the weak parameter estimate in the base model, the path from instrumental tendencies to IPV (b2) was constrained to zero in an effort to improve model parsimony without compromising fit (Model 1C). This revision produced significant deterioration in model fit from Model 1B, however; thus, it did not appear warranted to remove path b2. Finally, based on the weak parameter estimate in the base model, the path from expressive tendencies to IPV (b5) was constrained to zero (Model 1D). This revision again produced significant deterioration in fit from Model 1B, indicating that removal of this path was not warranted. Therefore, Model 1B was chosen as the final structural model for physical assault in males. This model is diagrammed in Figure 3 (Appendix B).

Model 2: Physical assault model for females. Fit statistics for the base model are reported in Table 17 (Appendix A). Chi-square was significant but the model demonstrated acceptable overall fit according to fit indices. In support of Hypothesis 9a, the path from callousness to instrumental tendencies (b1) was significant, $b = .965$, $p < .001$. Also, as predicted, modification indices did not suggest that the constrained zero path from callousness to expressive tendencies should be freed.

In support of Hypothesis 9b, the path from rejection sensitivity to expressive tendencies (b4) was significant, $b = .096$, $p < .05$. Also, as predicted, modification indices did not suggest that the constrained zero path from callousness to instrumental tendencies should be freed.

In partial support of Hypothesis 10, there was a significant path from instrumental tendencies to animal abuse (b3), $b = .282$, $p < .05$, but no significant path from instrumental tendencies to IPV (b2), $b = .145$, *ns*.

Contrary to Hypothesis 11, there was no significant path from expressive tendencies to either animal abuse (b6), $b = -.060$, *ns*, or IPV (b5), $b = .048$, *ns*.

Hypotheses 12 and 13 concerned the potential role of instrumental and expressive style as mediators of the paths from personality features to IPV and animal abuse. As in the model for males, the model contained four hypothesized mediation paths: instrumental style as a mediator of the relationship between callousness and IPV, instrumental style as a mediator of the relationship between callousness and animal abuse, expressive style as a mediator of the relationship between rejection sensitivity and IPV, and expressive style as a mediator of the relationship between rejection sensitivity and animal abuse. To establish tests of the mediation hypotheses in the current model, a nested alternative model was specified (Model 2A) in which the direct paths from the exogenous variables (callousness and rejection sensitivity) to the outcome variables (IPV and animal abuse) were freed. The alternative model demonstrated substantial improvement in fit over the base model, $\Delta\chi^2(4) = -20.354$, $p < .001$. In this alternative model, only one of the indirect effects was significant: the indirect effect of callousness on animal abuse via instrumental tendencies, $b1*b3 = .687$, $p < .01$. However, the direct effect of callousness on animal abuse was also significant, $b = -.837$, $p < .05$, supporting partial rather than full mediation. Although the indirect effect was in the expected direction, the negative sign of the direct effect was counterintuitive: a direct effect was not predicted in the original hypothesis because full rather than partial mediation was expected, but it would have been expected that a direct effect that did occur would have been of positive sign, in keeping with the prediction that callousness is positively related to animal abuse. Thus, Hypothesis 12 was only partially supported.

The failure to find significant indirect effects related to either of the hypothesized rejection sensitivity – expressive tendencies – violence pathways led to the conclusion that neither full nor partial mediation could be supported for Hypothesis 13. However, the direct effect of rejection sensitivity on IPV was significant ($b = .143$, $p < .05$), which was consistent with the modification indices from the base model in suggesting that freeing this path provided a better fit to the data.

Given the presence of several weak paths and several paths that were apparently erroneously excluded in the base model, a nested series of model revisions was warranted. Table 17 provides a summary of the nested model series. As suggested by the modification indices in the base model, as well as by Model 2A, the direct effect of callousness on animal abuse was added to the model as the first revision (Model 2B). This revision produced substantial improvement in fit over the base model. Next, as suggested by the modification indices in the base model, as well as by Model 2A, the direct effect of rejection sensitivity on IPV was added to the model (Model 2C). This revision produced substantial improvement in fit over Model 2B. Next, as suggested by the weak parameter estimate in the base model, the path from instrumental tendencies to IPV (b2) was constrained to zero in an effort to improve model parsimony without compromising fit (Model 2D). This revision produced no significant deterioration in model fit, suggesting that this path could be removed without affecting the model. Next, based on the weak parameter estimate in the base model, the path from expressive tendencies to IPV (b5) was constrained to zero (Model 2E). This revision produced no significant deterioration in model fit, suggesting that this path could be removed without affecting the model. Finally, based on the weak parameter estimate in the base model, the path from expressive tendencies to animal abuse (b6) was constrained to zero (Model 2F). This revision produced a significant deterioration in

model fit, indicating that removal of this path from the model was not warranted. As a result, Model 2E was chosen as the final structural model for physical assault in females. This model is diagrammed in Figure 4 (Appendix B).

Model 3: Psychological aggression model for males. Fit statistics for the base model are reported in Table 18 (Appendix A). Chi-square was significant but the model demonstrated acceptable overall fit according to fit indices. In support of Hypothesis 9a, the path from callousness to instrumental tendencies (b1) was significant, $b = .713$, $p < .001$. Also, as predicted, modification indices did not suggest that the constrained zero path from callousness to expressive tendencies should be freed.

In support of Hypothesis 9b, the path from rejection sensitivity to expressive tendencies (b4) was significant, $b = .083$, $p < .001$. Also, as predicted, modification indices did not suggest that the constrained zero path from rejection sensitivity to instrumental tendencies should be freed.

In partial support of Hypothesis 10, there was a significant path from instrumental tendencies to psychological animal abuse (b3), $b = 2.611$, $p < .001$.

Contrary to Hypothesis 11, there was no significant path from expressive tendencies to psychological IPV (b5), $b = -.014$, *ns*. As predicted by Hypothesis 11, there was a significant path from expressive tendencies to psychological animal abuse (b6), $b = -2.212$, $p < .001$. However, the negative path coefficient was of the opposite sign from what was predicted.

Hypotheses 12 and 13 concerned the potential role of instrumental and expressive style as mediators of the paths from personality features to psychological IPV and psychological animal abuse. As in the models for physical assault, the model contained four hypothesized mediation paths: instrumental style as a mediator of the relationship between callousness and IPV,

instrumental style as a mediator of the relationship between callousness and animal abuse, expressive style as a mediator of the relationship between rejection sensitivity and IPV, and expressive style as a mediator of the relationship between rejection sensitivity and animal abuse. To establish tests of the mediation hypotheses in the current model, a nested alternative model was specified (Model 3A) in which the direct paths from the exogenous variables (callousness and rejection sensitivity) to the outcome variables (IPV and animal abuse) were freed. The alternative model demonstrated no significant improvement in fit over the base model, $\Delta\chi^2(4) =$ -4.814, *ns*, while losing parsimony. In this alternative model, none of the indirect effects were significant. Thus, contrary to Hypotheses 12 and 13, neither full nor partial mediation could be supported for any of the hypothesized paths in the base model.

However, there were also no significant parameter estimates associated with any of the direct effects added in the alternative model, indicating that callousness and rejection sensitivity did not influence psychological IPV or psychological animal abuse either indirectly or directly. This conclusion is consistent with the alternative model's lack of improvement in fit over the base model, as well as with the modification indices for the base model (which suggested that no substantial improvement in fit would be obtained by adding the direct effects to the model).

None of the modification indices in the base model suggested significant improvement in fit would be achieved by freeing any of the constrained paths in the gamma or beta matrices. However, given the presence of several weak parameter estimates for unconstrained paths in the model, a nested series of model revisions was undertaken in an effort to improve parsimony. Table 18 provides a summary of the nested model series. First, as suggested by the weak parameter estimate in the base model, the path from instrumental tendencies to psychological IPV (b2) was constrained to zero (Model 3B). This revision produced no significant decline in

model fit, suggesting that Model 3B should be preferred over the base model. Next, based on the

weak parameter estimate in the base model, the path from expressive tendencies to psychological

IPV (b5) was constrained to zero (Model 3C). This revised model failed to converge, indicating

that the removal of path b5 was inadvisable. Thus, Model 3B was chosen as the final model for

psychological aggression in males. Notably, path b5 was significant, albeit marginally, in the

final model. The model is diagrammed in Figure 5 (Appendix B).

Model 4: Psychological aggression model for females. Fit statistics for the base model

are reported in Table 19 (Appendix A). Chi-square was significant but the model demonstrated

acceptable overall fit according to fit indices. In support of Hypothesis 9a, the path from

callousness to instrumental tendencies (b1) was significant, $b = .978$, $p < .001$. Also, as

predicted, modification indices did not suggest that the constrained zero path from callousness to

expressive tendencies should be freed.

In support of Hypothesis 9b, the path from rejection sensitivity to expressive tendencies

(b4) was significant, $b = .097$, $p < .01$. Also, as predicted, modification indices did not suggest

that the constrained zero path from rejection sensitivity to instrumental tendencies should be

freed.

Contrary to Hypothesis 10, there were no significant paths from instrumental tendencies

to psychological animal abuse (b3), $b = .692$, *ns*, or from instrumental tendencies to IPV (b2),

$b = -.103$, *ns*.

In support of Hypothesis 11, there was a significant path from expressive tendencies to

psychological IPV (b5), $b = 1.111$, $p < .001$. Contrary to Hypothesis 11, there was no significant

path from expressive tendencies to psychological animal abuse (b6), $b = .252$, *ns*.

Hypotheses 12 and 13 concerned the potential role of instrumental and expressive style as mediators of the paths from personality features to psychological IPV and psychological animal abuse. As in the model for males, the model contained four hypothesized mediation paths: instrumental style as a mediator of the relationship between callousness and IPV, instrumental style as a mediator of the relationship between callousness and animal abuse, expressive style as a mediator of the relationship between rejection sensitivity and IPV, and expressive style as a mediator of the relationship between rejection sensitivity and animal abuse. To establish tests of the mediation hypotheses in the current model, a nested alternative model was specified (Model 4A) in which the direct paths from the exogenous variables (callousness and rejection sensitivity) to the outcome variables (psychological IPV and psychological animal abuse) were freed. The alternative model demonstrated no significant improvement in fit over the base model, $\Delta\chi^2(4) =$ -5.597, *ns*, while losing parsimony. In this alternative model, only one of the indirect effects was significant: the indirect effect of callousness on animal abuse via instrumental tendencies, $b1*b3$ = 1.704, $p < .05$. The direct effect of callousness on animal abuse was nonsignificant, $b = -2.036$, *ns*, supporting the prediction of full mediation as outlined by Hypothesis 12.

The failure to find significant indirect effects related to either of the hypothesized rejection sensitivity – expressive tendencies – violence pathways led to the conclusion that neither full nor partial mediation could be supported for Hypothesis 13. However, there were also no significant parameter estimates associated with the direct effects of rejection sensitivity on violence, indicating that rejection sensitivity did not influence psychological IPV or psychological animal abuse either indirectly or directly. This conclusion is consistent with the modification indices for the base model, which suggested that no substantial improvement in fit would be obtained by adding the direct effects of rejection sensitivity to the model.

None of the modification indices in the base model suggested significant improvement in fit would be achieved by freeing any of the constrained paths in the gamma or beta matrices. However, given the presence of several weak parameter estimates for the unconstrained paths in the base model, a nested series of model revisions was undertaken in an effort to improve parsimony. Table 19 provides a summary of the nested model series. The first weak parameter estimate in the base model, the path from instrumental tendencies to psychological animal abuse (b3), was considered for deletion via constraint to zero. However, this step would have been contrary to the finding of mediation of the callousness→animal abuse relationship by instrumental tendencies, so the path was retained on conceptual grounds. Next, based on the weak parameter estimate in the base model, the path from instrumental tendencies to IPV (b2) was constrained to zero (Model 4B). This revision resulted in no significant decline in fit over the base model, suggesting that this path could be removed and that Model 4B should be preferred. Finally, based on the weak parameter estimate in the base model, the path from expressive tendencies to psychological animal abuse (b6) was constrained to zero (Model 4C). This revision resulted in no significant decline in model fit, suggesting that path b6 could be removed from the model and that Model 4C was preferred to Model 4B. Thus, Model 4C was chosen as the final model for psychological aggression in females. This model is diagrammed in Figure 6 (Appendix B).

Model Comparison by Gender

As discussed in the results of the tests of factorial invariance across gender for the measurement models, the significant differences between the male and female measurement models for both physical assault and psychological aggression precluded direct comparison of the structural models by gender. However, it was notable that the fit of the two base structural

models for physical assault was similar, as was the fit of the two base models for psychological aggression. Although models were subsequently modified to seek an optimal balance of fit and parsimony, resulting in different constraints within the final models chosen for males and females, the similarity in fit of the base models suggested that the differences between the variance-covariance matrices for males and females may have been primarily of statistical rather than theoretical significance.

CHAPTER 5

DISCUSSION

Study 1. Examining the Prevalence of IPV and Animal Abuse

The overall pattern of results in Study 1 indicated that violence among college students was more common than predicted. Perpetration of physical IPV was as common as nonperpetration, and perpetration of physical animal abuse, psychological IPV, and psychological animal abuse were all more common than nonperpetration. Violence was also more gender-symmetric than predicted: rates for both IPV and animal abuse were comparable across gender. The only gender differences that emerged were in the prevalence of physical IPV and severe animal abuse, where males (as expected) were more common perpetrators than females. These results suggest that ongoing attention to violence in college populations is warranted. Further, despite the historical unpopularity of studying women's perpetration of violence and the debates surrounding qualitative versus quantitative gender differences in violence, the current results indicate that female undergraduates do engage in both IPV and animal abuse, and moreover that within certain categories the percentage of those who engage in these acts may be comparable to that of males. With regard to IPV, these results are consistent with several previous studies of community samples (e.g., Archer, 2000; Johnson, 1995).

This study's use of self-report methodology may partially explain the findings of gender similarity in violence perpetration. If, as Dutton and Nicholls (2005) observe, men underreport violence perpetrated against them by women, then asking women to self-report violence perpetration should arrive at more accurate prevalence estimates provided that women do not

substantially underreport their own violence perpetration (or at least do not underreport differently from men). Use of confidential paper-and-pencil questionnaires as opposed to in-person or telephone interviews may have helped to minimize underreporting associated with social desirability.

It is important to note that prevalence data do not provide information about frequency, so that comparable prevalence rates across gender may mask potential differences in repeat offenders versus infrequent or one-time perpetrators of violence. Additionally, although prevalence rates for severe IPV perpetration were similar for males and females, the most commonly reported acts of violence within the current sample were acts of minor aggression such as pushing or slapping, so extreme caution must be exercised in generalizing from the current findings to severe "intimate terrorism." At any rate, in order to move toward more complete answers regarding women's violence, it is important for researchers to continue to ask questions about it. This study adds to a growing database of findings addressing gender in IPV and constitutes one of the first known inquiries into animal abuse perpetrated by adult females.

A key prediction in the model concerned the degree of overlap between human-directed and animal-directed violence. As predicted, multiple-target violence (human and animal) was more common than single-target violence in both males and females. One considerable limitation of the study in this regard was that due to the time frame specified in the self-report measures of violence (acts perpetrated since age 16), it was impossible to determine whether acts of animal abuse and IPV were truly contemporaneous. For example, it is possible that a participant who engaged solely in animal abuse earlier in the specified time frame subsequently moved on to engage solely in IPV, or vice versa. Participants who had followed either of these sequential pathways and reported both their IPV and their animal abuse could obtain the same prevalence

scores as participants who engaged in both IPV and animal abuse in an ongoing fashion, despite the likelihood that these different patterns reflected different topographies of violence. Restricting the time frame of the questionnaires to age 16 and older was an attempt to exclude acts perpetrated during childhood, when individuals are less likely to have had significant numbers of dating relationships and when the nature of animal abuse may be fundamentally different (e.g., harming an animal out of curiosity about the animal's anatomy or reactions). However, restricting the time frame even more closely, such as to the past year, may have made it more likely that violent acts reported occurred in enough proximity to be treated as concurrent. The decision not to restrict the time frame was based on the consideration that doing so might have resulted in loss of information in other ways: 1) lower-level college students might not have been involved in consistent relationships, so that data based on only the past year may have provided a poor estimate of intimate partner violence, and 2) lower-level college students might have been likely to have spent the last year living in university housing or other accommodations where pets were not allowed, thereby limiting their access to interactions with animals. Unless methodology is specifically designed to make it possible to determine the exact dates of violent acts and the contexts surrounding them, the question of time frame remains problematic in studies of violence perpetration.

Study 2: Examining the Nature and Function of IPV and Animal Abuse

The overall pattern of results across the four models provided mixed results for the hypotheses. With regard to the measurement models, predictions regarding the ability of human and animal items to combine to form cross-species indicators of the latent constructs of interest were largely supported. These results suggest that callousness, rejection sensitivity, and instrumental and expressive tendencies in aggression, each of which had previously been studied

primarily in relation to how humans perceive and interact with other humans, also apply to how people perceive and interact with animals. Further, the results suggest that these constructs may not be species-specific, meaning that callousness toward humans may tend to be associated with callousness toward animals, and so on. If this holds true, it may lend support to more generalized (and perhaps trait-based) theories of subclinical personality features and representations of aggression, as opposed to situation-specific theories. In order to pursue this potentially very informative conclusion more fully, it would be necessary to test the fit of the cross-species model against alternative models that separate human and animal constructs to demonstrate that such models do not fit the data better than the cross-species model. However, the current model provides an interesting first foray into extending the constructs of callousness, rejection sensitivity, and instrumental and expressive tendencies into domains other than interpersonal relationships.

Unfortunately, the gender comparisons of violence performed on the prevalence data in Study 1 could not be extended to the frequency data in Study 2 due to the failure of the measurement models to demonstrate factorial invariance across gender. Although the chi-square difference tests of the measurement models were significant, it has been noted that large sample sizes (particularly the pooled sample size of 427 used in the tests of gender invariance) are overly sensitive to small differences in the variance-covariance matrix. For this reason, significant chi-square tests may represent trivial differences between models, so that the models for males and females in the current study may in fact have been theoretically even if not statistically comparable. Alternatively, the significant chi-squares in these tests may have indicated meaningful differences in factor loadings that would have rendered direct comparison of structural paths among latent variables fruitless. Without a means to decide between these two

alternatives, it appeared safer to adopt the more conservative approach of avoiding direct comparison of structural models by gender.

Within the physical assault model series for males, several of the findings provided support for initial predictions. Most notably, there were strong positive relationships between callousness and instrumental tendencies, and between rejection sensitivity and expressive tendencies. Conversely, there were no significant relationships between callousness and expressive tendencies or between rejection sensitivity and instrumental tendencies. These results indicated that the theoretical model identifying callous personality features as predisposing instrumental but not expressive representations of aggression, as when an individual learns to use violence as a means to an end and is able to do so relatively easily because engaging in violence causes the individual little distress, may be supported by the data. Similarly, the theoretical model identifying rejection-sensitive personality features as predisposing expressive but not instrumental tendencies, as when an individual engages in violence as a means of expressing excessive negative emotion triggered by hypersensitivity to perceived rejection, may also be supported.

The hypothesized strength of these two pathways in predicting actual violence perpetration, however, was not illustrated by the data. The paths from instrumental and expressive tendencies to physical assault did not behave as expected: three of the four path coefficients were nonsignificant, and two of the path coefficients (including the one significant coefficient, from instrumental tendencies to partner-directed physical assault) had negative magnitudes. Further, none of the hypothesized mediation pathways were supported by the model. Instead, it appeared that the best predictor of men's physical violence toward both partners and animals might be callousness, treated as a direct effect. Contrary to previous findings by Ayduk

et al. (1999) and by Purdie and Downey (2000), rejection sensitivity did not appear to predict violence via either direct or mediated pathways.

There are several possible explanations for this pattern of findings. First, there may have been a suppressor effect acting within the hypothesized mediation pathways, such that tests of mediation were rendered nonsignificant even though mediation was occurring. Kenny (2006) notes that a suppressor effect may particularly be suspected when the direct path from the predictor to the outcome variable is opposite in sign to the indirect effect, as was the case in the callousness→instrumental tendencies→partner physical assault pathway. Second, callousness may simply be a much stronger predictor of physical IPV among males than rejection sensitivity, such that when both variables are included in a single model, there is insufficient power to detect effects due to rejection sensitivity. This conclusion echoes the body of previous research treating callousness as a characteristically male phenomenon, as well as the previous research of Downey et al. (1998) in which rejection sensitivity predicted relationship conflict only for females. Alternately, or perhaps in addition, the combination of personality style and representations of aggression may be a strong predictor of a predisposition to engage in physical IPV in a certain way, but may not predict actual engagement in violence. This conclusion appears congruent with findings by Downey et al. (2000), in which a subset of rejection-sensitive men demonstrated a pattern of withdrawal from relationships and so engaged in less IPV. Although measures of instrumental and expressive representations of aggession were developed to capture respondents' views of their own aggression, presumably indicating awareness of their own violent tendencies, there may be some other unmeasured variable that better encapsulates actual propensity for men to engage in physical violence. Such a statement from within the field of violence prediction may amount to a tautology, but further research may be needed to identify additional or at least more

proximal correlates of physically violent behavior in men and to find ways to incorporate these into prediction models. This task does not obviate other variables such as representations of aggression in violence prediction; it simply illustrates that prediction of IPV in men (and violence more generally) is a complex algorithm that may not be fully reducible to simple few-variable models.

Within the physical assault model series for females, a somewhat different pattern of results emerged. Similar to the model for males, callousness was strongly associated with instrumental tendencies but not expressive tendencies, and rejection sensitivity was associated with expressive but not instrumental tendencies. In contrast to the model for males, instrumental tendencies predicted animal abuse though not IPV. Also, the hypothesized callousness→instrumental tendencies→animal abuse mediation pathway was significant for females, though partial rather than full mediation was demonstrated. Again, the sign of the direct effect was opposite to the sign of the indirect effect, suggesting a possible suppressor function. Similarly, although no direct or indirect mediation effect was significant for rejection sensitivity, the sign of the (nonsignificant) direct path from rejection sensitivity to animal abuse was opposite to the sign of the indirect effect via expressive tendencies. More interestingly, there was a significant direct effect of rejection sensitivity in predicting physical IPV, and this was the only variable in the model that significantly predicted IPV. As previously discussed, rejection sensitivity may be more strongly related to IPV, and relationship conflict more generally, for women than men. Still, this explanation does not account for why rejection sensitivity predicted IPV but not animal abuse, and why callousness strongly predicted animal abuse but not IPV. Further research to clarify whether IPV and animal abuse are functionally different phenomena for females would be informative in this regard.

Within the psychological aggression model series for males, callousness and rejection sensitivity were again differentially related to instrumental and expressive tendencies. Similar to the physical assault model for females, instrumental tendencies predicted animal abuse. Expressive tendencies predicted both psychological IPV and psychological animal abuse as hypothesized, though the latter path had an unexpected negative magnitude. Other differences from the hypothesized model included the failure of the hypothesized mediation pathways to attain significance and the failure of instrumental tendencies to predict psychological IPV. However, both in overall fit and in resemblance of final revised model to original proposed model, psychological aggression in males was more easily modeled than physical assault in either males or females.

Within the psychological aggression model series for females, callousness and rejection sensitivity were again differentially related to instrumental and expressive tendencies; thus, these relationships remained consistent across all four model series. Similar to the physical assault model for females, and the psychological aggression model for males, instrumental tendencies predicted animal abuse. Hypothesis 12 was fully supported for the callousness→instrumental tendencies→psychological animal abuse mediation pathway. Thus, for females, instrumental tendencies mediated the relationships between callousness and both physical and psychological animal abuse. As in the psychological model for males, instrumental tendencies failed to predict psychological IPV through either a direct or mediated relationship. It may be the case that animal abuse perpetrated by women differs from IPV perpetrated by women in such a way as to capture a callous/instrumental pathway to aggression where IPV does not. Making a very tentative link to Study 1 of this project, which found that severe animal abuse was more common among males than females, as well as to previous literature documenting higher rates of animal abuse among

males, severe animal abuse may be uncommon enough among females that it is the chief domain of uniquely callous and instrumentally aggressive individuals. Unfortunately, Study 2 did not permit separate prediction of minor and severe violence due to the small number of severe violence datapoints that would have been available for analysis. Future work with large-scale samples, from which a larger N of severe violence perpetrators can be gleaned, might compare structural equation models for minor and severe violence (or restrict models to perpetrators of severe violence) in order to determine whether severity plays a role in how personality features and representations of aggression predict violence.

Finally, within the psychological aggression model series for females, expressive tendencies predicted psychological IPV as hypothesized and in the expected direction, but not psychological animal abuse. Although the predicted mediation pathways from rejection sensitivity did not attain significance in the base model, the indirect effect of rejection sensitivity on IPV attained significance in the final revised model ($t = 2.152$, $p < .05$). It appeared that removal of the weak paths from instrumental tendencies to psychological IPV and from expressive tendencies to psychological animal abuse may have desuppressed this mediation pathway.

Once again, both in overall fit and in resemblance of final revised model to original proposed model, psychological aggression was more easily modeled than physical assault in either males or females. It may be that higher frequencies of psychological than physical violence in this sample simply yielded more variability in the psychological endogenous variables, allowing predictive models for these variables to fit better. Again, large samples, where numbers of perpetrators will be substantial despite low base rates, are essential to disentangling the reasons for this pattern of results.

Overall, then, the model series yielded some expected and potentially useful predictive relationships for violence, some unexpected and potentially useful predictive relationships, and some unexpected relationships of questionable utility and/or interpretability. It should be strongly reiterated that the use of modification indices and model revision series to improve fit requires that the revised models be validated with new data sets to establish whether the improved fit constituted an approximation to reality (the population) or merely this specific sample. Until this task is accomplished, it will not be possible to make more than tentative generalizations about relationships among these latent variables in the population.

A secondary caveat to the results presented here is that the models as constructed did not make it possible to assess the orthogonality of personality constructs and instrumental/expressive tendencies. If a proposed typology of violence specifies that callous/instrumental perpetrators are different from rejection-sensitive/expressive perpetrators, it is necessary to determine whether these subtypes can in fact be isolated or whether individual perpetrators may combine features of the subtypes. This question is premature for the current project, however, since separate mediation pathways for callous→instrumental and rejection sensitive→expressive perpetrators were not reliably identified across models. Replications of the current models would be useful in establishing whether this variation was a product of model (i.e., subtypes differ in physical and psychological violence or for males and females) or simply a product of either random or nonrandom unmodeled variance in the data.

General Limitations and Future Directions

As in all studies of this type, the use of self-report methodology constituted a limitation to the project. Despite this limitation, there were several strong conceptual reasons for the choice of self-report, including previous findings that IPV and animal abuse can be measured more

accurately than expected by self-report, as well as the fact that this study represented the first known attempt to obtain certain types of information by self-report (such as women's self-report of animal abuse in adulthood). The next logical step in this research would be to cross-validate self-report with some other measure of violence, such as behavioral observation. A second task for ongoing research would be to devise a method of determining whether acts of IPV and animal abuse have been defined with sufficient clarity so that participants endorsing an item generally are interpreting the item similarly. As this methodological challenge continues to trouble the broader field of IPV research, it is to be expected that it presents a similar challenge for work on animal abuse.

The current findings for both prevalence and violence prediction could be strengthened by demonstration of their successful extension to other populations, especially non-heterosexual populations and community populations from different age groups. Lastly, the search must continue for other, as yet unidentified variables that contribute to violence prediction or that distinguish violence prevalence.

Clinical Implications

Due to the tentative nature of the findings from this project, clinical implications must be advanced with relative caution. Within this guideline, it appears that increased clinical and clinical-research attention should be devoted to violence among undergraduates, to women's role as perpetrators of violence, and to animal abuse as a form of violence that may overlap with IPV in prevalence, nature, and function. Animal abuse appears to demonstrate particularly strong links to callousness and/or instrumental tendencies among adults, possibly stronger than links between IPV and callousness/instrumentality. This suggests that it may need to be taken seriously as an indicator or as a problem in its own right, much in the same way it has gained

clinical attention when present in children. Further, while physical violence naturally holds the spotlight due to its overtly more graphic nature and apparently greater risk to life and safety, the current findings suggest that clinicians may need to join researchers in attending to psychological violence due to its strikingly high prevalence. It is also possible that current methodologies may predict psychological violence better than physical violence, providing professionals involved in violence prediction with a firmer footing from which to develop prediction tools. Given that violence prevention is reliant on prediction, these implications may ultimately facilitate early detection or intervention measures that could reduce rates of both IPV and animal abuse, or perhaps even violence in general.

Conclusion

Taken together, Studies 1 and 2 constitute a sequential investigation into the prevalence, nature, and function of the interconnected (but as yet not fully elucidated) phenomena of intimate partner violence and animal abuse. These studies examined both IPV and animal abuse from multiple angles (prevalence vs. frequency; gender, severity, and form) in an attempt to clarify these types of violence, the relationships between them, and the variables that may predict them jointly or in isolation. Further studies to ameliorate methodological deficiencies, replicate revised models, extend findings to other populations, and continue to investigate other predictive variables are important ongoing steps in the process of improving violence prediction and ultimately prevention.

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APPENDIX A

TABLES

Table 1

Study 1 – Correlations, Means, and Standard Deviations for Prevalence Variables Across Gender

Variables	1	2	3	4	5	6	7	8	9
1. Physical IPV – total	–								
2. Psychological IPV – total	.313**	–							
3. Physical IPV – minor	.981**	.320**	–						
4. Physical IPV – severe	.405**	.134**	.356**	–					
5. Psychological IPV – minor	.317**	.990**	.324**	.136**	–				
6. Psychological IPV – severe	.461**	.255**	.453**	.417**	.243**	–			
7. Physical animal abuse – total	.081	.032	.106*	.052	.027	.106*	–		
8. Psychological animal abuse – total	.032	.116*	.066	.012	.114*	.057	.266**	–	
9. Physical animal abuse – minor	.084	.013	.106*	.063	.007	.100*	.859**	.258**	–
10. Physical animal abuse – severe	.123*	.054	.139**	.123*	.045	.124*	.632**	.160**	.438**
11. Psychological animal abuse – minor	.032	.116*	.066	.012	.114*	.057	.266**	1.00**	.258**
12. Psychological animal abuse – severe	.092	.059	.107*	.074	.050	.172**	.379**	.207**	.397**

Note. *p < .05. **p < .01.

Table 1

Continued

Variables	1	2	3	4	5	6	7	8	9
M	.470	.860	.460	.130	.860	.280	.639	.937	.567
SD	.500	.348	.499	.333	.351	.451	.481	.244	.496

Note. All variables: 0 = *absent*, 1 = *present*.

Table 1

Continued

Variables	10	11	12
10. Physical animal abuse – severe	–		
11. Psychological animal abuse – minor	.160**	–	
12. Psychological animal abuse – severe	.333**	.207**	–
M	.415	.937	.389
SD	.493	.244	.488

Note. All variables: 0 = *absent*, 1 = *present*.

*p < .05. **p < .01.

Table 2

Study 1 – Correlations, Means, and Standard Deviations for Prevalence Variables Within Gender: Males

Variables	1	2	3	4	5	6	7	8	9
1. Physical IPV – total	–								
2. Psychological IPV – total	.281**	–							
3. Physical IPV – minor	.982**	.298**	–						
4. Physical IPV – severe	.373**	.100	.318**	–					
5. Psychological IPV – minor	.288**	.984**	.305**	.102	–				
6. Psychological IPV – severe	.435**	.277**	.427**	.374**	.255**	–			
7. Physical animal abuse – total	.068	.057	.100	.074	.049	.103	–		
8. Psychological animal abuse – total	-.061	.146*	.001	-.082	.141*	.029	.386**	–	
9. Physical animal abuse – minor	.092	.046	.122	.096	.038	.126	.912**	.385**	–
10. Physical animal abuse – severe	.162*	.101	.181**	.216**	.089	.132*	.584**	.227**	.483**
11. Psychological animal abuse – minor	-.061	.146*	.001	-.082	.141*	.029	.386**	1.00**	.385**
12. Psychological animal abuse – severe	.118	.054	.136*	.171**	.041	.165*	.395**	.281**	.397**

Note. *p* < .05. **p* < .01.

Table 2

Continued

Variables	1	2	3	4	5	6	7	8	9
M	.420	.840	.410	.090	.830	.280	.759	.925	.724
SD	.495	.370	.494	.290	.374	.451	.429	.263	.448

Note. All variables: 0 = *absent*, 1 = *present*.

Table 2

Continued

Variables	10	11	12
10. Physical animal abuse – severe	–		
11. Psychological animal abuse – minor	.227**	–	
12. Psychological animal abuse – severe	.360**	.281**	–
M	.518	.925	.496
SD	.501	.263	.501

Note. All variables: 0 = *absent*, 1 = *present*.

p < .05. **p* < .01.

Table 3

Study 1 – Correlations, Means, and Standard Deviations for Prevalence Variables Within Gender: Females

Variables	1	2	3	4	5	6	7	8	9
1. Physical IPV – total	–								
2. Psychological IPV – total	.347**	–							
3. Physical IPV – minor	.980**	.339**	–						
4. Physical IPV – severe	.426**	.161*	.381**	–					
5. Psychological IPV – minor	.347**	1.00**	.339**	.161*	–				
6. Psychological IPV – severe	.494**	.229**	.484**	.465**	.229**	–			
7. Physical animal abuse – total	.156*	.049	.176*	.092	.049	.119	–		
8. Psychological animal abuse – total	.149*	.061	.144*	.103	.061	.095	.185**	–	
9. Physical animal abuse – minor	.160*	.029	.176*	.117	.029	.090	.790**	.183**	–
10. Physical animal abuse – severe	.136	.028	.149*	.095	.028	.124	.646**	.099	.298**
11. Psychological animal abuse – minor	.149*	.061	.144*	.103	.061	.095	.185**	1.00**	.183**
12. Psychological animal abuse – severe	.121	.111	.133	.037	.111	.197**	.281**	.139	.292**

Note. *p < .05. **p < .01.

Table 3

Continued

Variables	1	2	3	4	5	6	7	8	9
M	.520	.880	.510	.170	.880	.290	.503	.950	.387
SD	.501	.321	.501	.373	.321	.453	.501	.219	.488

Note. All variables: 0 = *absent*, 1 = *present*.

Table 3

Continued

Variables	10	11	12
10. Physical animal abuse – severe	–		
11. Psychological animal abuse – minor	.099	–	
12. Psychological animal abuse – severe	.206**	.139	–
M	.297	.950	.266
SD	.458	.219	.443

Note. All variables: 0 = *absent*, 1 = *present*.

p < .05. **p* < .01.

Table 4

Study 2 – Correlations of Latent Variable Indicators for Physical Assault Model for Males

Variables	1	2	3	4	5	6	7	8	9
1. Callousness, parcel 1	–								
2. Callousness, parcel 2	.401**	–							
3. Callousness, parcel 3	.298**	.441**	–						
4. Callousness, parcel 4	.429**	.347**	.491**	–					
5. Callousness, parcel 5	.364**	.545**	.382**	.327**	–				
6. Rejection sensitivity, parcel 1	.131*	.065	.088	.180**	.093	–			
7. Rejection sensitivity, parcel 2	.176**	.020	-.029	.158*	.022	.584**	–		
8. Rejection sensitivity, parcel 3	.169*	.081	.021	.165*	.053	.579**	.666**	–	
9. Rejection sensitivity, parcel 4	.168*	.028	.063	.128	.063	.543**	.649**	.541**	–
10. Rejection sensitivity, parcel 5	.178**	.062	-.011	.142*	.019	.531**	.641**	.579**	.562**
11. Instrumental, parcel 1	.168*	.256**	.325**	.174**	.165*	.185**	.105	.171**	.143*
12. Instrumental, parcel 2	.106	.314**	.289**	.135*	.183**	.058	.033	.068	.071

Table 4

Continued

Variables	1	2	3	4	5	6	7	8	9
13. Intrumental, parcel 3	.119	.214**	.321**	.200**	.165*	.019	.064	.056	.083
14. Instrumental, parcel 4	.169*	.301**	.353**	.277**	.205**	.050	.085	.081	.059
15. Expressive, parcel 1	-.079	.082	.115	-.031	.060	.168*	.176**	.147*	.220**
16. Expressive, parcel 2	-.025	.078	.010	-.079	.036	.157*	.155*	.076	.209**
17. Expressive, parcel 3	-.037	.016	.017	-.048	-.028	.113	.066	.065	.084
18. Expressive, parcel 4	.019	.049	.052	.013	.009	.181**	.140*	.176**	.207**
19. Physical IPV, parcel 1	.261**	.182**	.131*	.192**	.092	.131*	.073	.210**	.163*
20. Physical IPV, parcel 2	.146*	.102	.070	.073	.133*	.038	-.047	.068	.077
21. Physical IPV, parcel 3	.376**	.069	.088	.311**	.117	.190**	.105	.268**	.155*
22. Physical animal abuse, parcel 1	.196**	.285**	.238**	.223**	.236**	-.011	-.014	.090	-.025
23. Physical animal abuse, parcel 2	.197**	.241**	.262**	.201**	.184**	.023	.003	.028	-.011
24. Physical animal abuse, parcel 3	.236**	.356**	.232**	.330**	.292**	-.043	.035	.066	-.049

Note. $*p < .05$. $**p < .01$.

Table 4

Continued

Variables	10	11	12	13	14	15	16	17	18
10. Rejection sensitivity, parcel 5	–								
11. Instrumental, parcel 1	.181**	–							
12. Instrumental, parcel 2	.069	.667**	–						
13. Instrumental, parcel 3	.055	.646**	.672**	–					
14. Instrumental, parcel 4	.076	.562**	.696**	.650**	–				
15. Expressive, parcel 1	.215**	.535**	.497**	.443**	.372**	–			
16. Expressive, parcel 2	.175**	.401**	.443**	.360**	.343**	.560**	–		
17. Expressive, parcel 3	.104	.479**	.549**	.274**	.397**	.542**	.559**	–	
18. Expressive, parcel 4	.153*	.615**	.625**	.479**	.513**	.626**	.549**	.544**	–
19. Physical IPV, parcel 1	.102	.071	-.072	.051	.005	-.024	.033	-.131*	-.006
20. Physical IPV, parcel 2	.054	.071	.047	.038	.094	.049	.029	.008	.060
21. Physical IPV, parcel 3	.095	.165*	-.061	.044	.046	.026	-.087	-.034	.037
22. Physical animal abuse, parcel 1	-.045	.192**	.169*	.196**	.205**	.071	-.036	.061	.048

Note. *p < .05. **p < .01.

Table 4

Continued

Variables	10	11	12	13	14	15	16	17	18
23. Physical animal abuse, parcel 2	-.047	.157	.127	.155*	.159*	.053	-.043	.035	.015
24. Physical animal abuse, parcel 3	.006	.147*	.092	.218**	.205**	.064	-.037	-.001	-.016

Note. *$p < .05$. **$p < .01$.

Table 4

Continued

Variables	19	20	21	22	23	24
19. Physical IPV, parcel 1	–					
20. Physical IPV, parcel 2	.510**	–				
21. Physical IPV, parcel 3	.351**	.277**	–			
22. Physical animal abuse, parcel 1	.315**	.230**	.167*	–		
23. Physical animal abuse, parcel 2	.176**	.097	.080	.600**	–	
24. Physical animal abuse, parcel 3	.346**	.179**	.150*	.639**	.549**	–

Note. $*p < .05.$ $**p < .01.$

Table 5

Study 2 – Means and Standard Deviations of Latent Variable Indicators for Physical Assault Model for Males

Variable	*M*	*SD*
1. Callousness, parcel 1	2.016	.997
2. Callousness, parcel 2	2.272	.947
3. Callousness, parcel 3	3.531	1.134
4. Callousness, parcel 4	2.726	1.038
5. Callousness, parcel 5	2.142	.997
6. Rejection sensitivity, parcel 1	8.522	2.863
7. Rejection sensitivity, parcel 2	7.418	2.666
8. Rejection sensitivity, parcel 3	7.770	3.020
9. Rejection sensitivity, parcel 4	8.463	2.771
10. Rejection sensitivity, parcel 5	8.448	3.182
11. Instrumental, parcel 1	2.679	1.077
12. Instrumental, parcel 2	3.547	1.211
13. Instrumental, parcel 3	3.149	1.202
14. Instrumental, parcel 4	3.398	1.240

Table 5

Continued

Variable	M	SD
15. Expressive, parcel 1	3.167	1.144
16. Expressive, parcel 2	3.750	1.149
17. Expressive, parcel 3	3.321	1.181
18. Expressive, parcel 4	3.307	1.226
19. Physical IPV, parcel 1	.332	1.155
20. Physical IPV, parcel 2	.518	1.478
21. Physical IPV, parcel 3	.339	1.347
22. Physical animal abuse, parcel 1	1.480	2.384
23. Physical animal abuse, parcel 2	1.299	2.468
24. Physical animal abuse, parcel 3	.712	1.926

Table 6

Study 2 – Correlations of Latent Variable Indicators for Physical Assault Model for Females

Variables	1	2	3	4	5	6	7	8	9
1. Callousness, parcel 1	–								
2. Callousness, parcel 2	.313**	–							
3. Callousness, parcel 3	.231**	.342**	–						
4. Callousness, parcel 4	.253**	.332**	.338**	–					
5. Callousness, parcel 5	.342**	.424**	.183**	.265**	–				
6. Rejection sensitivity, parcel 1	.195**	.059	.103	.179*	.121	–			
7. Rejection sensitivity, parcel 2	.160*	.102	.055	.213**	.170*	.466**	–		
8. Rejection sensitivity, parcel 3	.225**	.122	.053	.176*	.175*	.611**	.556**	–	
9. Rejection sensitivity, parcel 4	.188**	.070	.019	.110	.080	.643**	.620**	.623**	–
10. Rejection sensitivity, parcel 5	.142*	.112	.106	.121	.099	.573**	.591**	.518**	.657**
11. Instrumental, parcel 1	.174*	.220**	.286**	.195**	.247**	.261**	.202**	.147*	.201**
12. Instrumental, parcel 2	.094	.336**	.299**	.121	.289**	.120	.179*	.136	.081

Table 6

Continued

Variables	1	2	3	4	5	6	7	8	9
13. Intrumental, parcel 3	.219**	.279**	.244**	.159*	.249**	.142*	.163*	.082	.129
14. Instrumental, parcel 4	.176*	.334**	.426**	.278**	.271**	.113	.062	.097	.094
15. Expressive, parcel 1	.117	.180*	.102	.028	.151*	.144*	.256**	.115	.167*
16. Expressive, parcel 2	.030	.046	.107	-.043	.105	.132	.112	.077	.154*
17. Expressive, parcel 3	.058	.084	.116	.016	.110	.123	.205**	.143*	.158*
18. Expressive, parcel 4	.154*	.153*	.075	-.002	.187**	.122	.243**	.089	.186**
19. Physical IPV, parcel 1	.093	.083	.080	.108	.089	.180*	.026	.200**	.143*
20. Physical IPV, parcel 2	.040	.030	-.013	.180*	.158*	.250**	.110	.204**	.246**
21. Physical IPV, parcel 3	.109	-.051	.102	.277**	.027	.160*	.200**	.099	.184**
22. Physical animal abuse, parcel 1	-.070	-.060	.084	-.066	-.022	-.022	.008	-.008	.071
23. Physical animal abuse, parcel 2	-.055	-.089	.088	-.102	-.022	.002	-.069	-.062	.002
24. Physical animal abuse, parcel 3	.051	-.025	.081	.015	.041	.014	.129	-.007	.042

Note. *p* < .05. **p* < .01.

Table 6

Continued

Variables	10	11	12	13	14	15	16	17	18
10. Rejection sensitivity, parcel 5	–								
11. Instrumental, parcel 1	.192**	–							
12. Instrumental, parcel 2	.142*	.580**	–						
13. Instrumental, parcel 3	.139	.646**	.625**	–					
14. Instrumental, parcel 4	.071	.466**	.625**	.564**	–				
15. Expressive, parcel 1	.126	.452**	.537**	.490**	.340**	–			
16. Expressive, parcel 2	.093	.434**	.447**	.460**	.354**	.704**	–		
17. Expressive, parcel 3	.106	.423**	.484**	.400**	.333**	.672**	.698**	–	
18. Expressive, parcel 4	.101	.518**	.544**	.443**	.334**	.697**	.617**	.669**	–
19. Physical IPV, parcel 1	.061	.109	.022	.019	.122	.043	-.009	.121	.081
20. Physical IPV, parcel 2	.084	.197**	.033	.142*	.099	.098	.063	.132	.135
21. Physical IPV, parcel 3	.121	.151*	.018	.182*	-.013	.026	.005	.013	-.021
22. Physical animal abuse, parcel 1	.035	.186**	.128	.182**	.185**	.032	.070	.066	.202**

Note. $*p < .05.$ $**p < .01.$

Table 6

Continued

Variables	10	11	12	13	14	15	16	17	18
23. Physical animal abuse, parcel 2	-.013	.088	.112	.142*	.188**	.052	.053	.015	.015
24. Physical animal abuse, parcel 3	.055	.173*	.121	.227**	.126	.113	-.032	.040	.096

Note. *p < .05. **p < .01.

Table 6

Continued

Variables	19	20	21	22	23	24
19. Physical IPV, parcel 1	–					
20. Physical IPV, parcel 2	.592**	–				
21. Physical IPV, parcel 3	.209**	.260**	–			
22. Physical animal abuse, parcel 1	.014	.125	.012	–		
23. Physical animal abuse, parcel 2	.045	.127	.065	.482**	–	
24. Physical animal abuse, parcel 3	.027	.159*	.310**	.554**	.275**	–

Note. $*p < .05$. $**p < .01$.

Table 7

Study 2 – Means and Standard Deviations of Latent Variable Indicators for Physical Assault Model for Females

Variable	*M*	*SD*
1. Callousness, parcel 1	1.515	.759
2. Callousness, parcel 2	1.698	.673
3. Callousness, parcel 3	2.675	.955
4. Callousness, parcel 4	1.880	.835
5. Callousness, parcel 5	1.564	.751
6. Rejection sensitivity, parcel 1	8.002	2.725
7. Rejection sensitivity, parcel 2	7.089	2.381
8. Rejection sensitivity, parcel 3	7.248	2.384
9. Rejection sensitivity, parcel 4	8.600	2.898
10. Rejection sensitivity, parcel 5	8.467	2.960
11. Instrumental, parcel 1	1.989	.902
12. Instrumental, parcel 2	2.775	1.093
13. Instrumental, parcel 3	2.296	.975
14. Instrumental, parcel 4	2.329	.993

Table 7

Continued

Variable	M	SD
15. Expressive, parcel 1	2.969	1.155
16. Expressive, parcel 2	3.663	1.249
17. Expressive, parcel 3	3.210	1.269
18. Expressive, parcel 4	3.078	1.210
19. Physical IPV, parcel 1	.704	1.587
20. Physical IPV, parcel 2	.580	1.494
21. Physical IPV, parcel 3	.536	2.099
22. Physical animal abuse, parcel 1	.357	1.017
23. Physical animal abuse, parcel 2	.721	1.642
24. Physical animal abuse, parcel 3	.203	.895

Table 8

Study 2 – Correlations, Means, and Standard Deviations of Latent Variable Indicators for Psychological Aggression Model for Males

Variables	1	2	3	4	5	6	7	8	9
19. Psychological IPV, parcel 1	.078	.102	.056	.186**	.148*	.060	.002	.059	-.023
20. Psychological IPV, parcel 2	.110	.057	.052	.141*	.080	.048	-.007	.059	-.045
21. Psychological IPV, parcel 3	.142*	.266**	.141*	.144*	.162*	.051	.082	.151*	.018
22. Psychological animal abuse, parcel 1	.120	.191**	.312**	.117	.147*	.002	-.074	-.034	-.060
23. Psychological animal abuse, parcel 2	.128	.244**	.194**	.208**	.189**	-.039	-.040	.007	-.015

Note. *p* < .05. **p* < .01.

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Males and are not reproduced here.

Table 8

Continued

Variables	10	11	12	13	14	15	16	17	18
19. Psychological IPV, parcel 1	.039	.123	.122	.123	.147*	.130	.059	.088	.133*
20. Psychological IPV, parcel 2	.031	.130	.104	.123	.167*	.171**	.068	.079	.130
21. Psychological IPV, parcel 3	.021	.139*	.159*	.074	.199*	.143*	.111	.123	.074
22. Psychological animal abuse, parcel 1	-.079	.189**	.216**	.241**	.279**	.043	.071	.087	.104
23. Psychological animal abuse, parcel 2	-.057	.131*	.159*	.234**	.235**	.087	-.049	.029	.016

Note. $*p < .05.$ $**p < .01.$

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Males and are not reproduced here.

Table 8

Continued

Variables	19	20	21	22	23
19. Psychological IPV, parcel 1	–				
20. Psychological IPV, parcel 2	.846**	–			
21. Psychological IPV, parcel 3	.382**	.385**	–		
22. Psychological animal abuse, parcel 1	.124	.192**	.321**	–	
23. Psychological animal abuse, parcel 2	.179**	.178**	.135*	.465**	–
M	2.256	1.848	1.095	5.555	1.625
SD	3.375	2.659	2.173	4.560	3.309

Note. *p < .05. **p < .01.

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Males and are not reproduced here.

Table 9

Study 2 – Correlations, Means, and Standard Deviations of Latent Variable Indicators for Psychological Aggression Model for

Females

Variables	1	2	3	4	5	6	7	8	9
19. Psychological IPV, parcel 1	.137	.024	.059	-.044	.043	.106	.098	.123	.189**
20. Psychological IPV, parcel 2	.070	-.008	.059	-.062	.051	.058	.101	.051	.134
21. Psychological IPV, parcel 3	.007	.026	.034	-.026	.052	.137	.170*	.117	.120
22. Psychological animal abuse, parcel 1	.007	-.064	.164*	-.015	-.030	-.004	.003	-.091	.042
23. Psychological animal abuse, parcel 2	-.083	-.066	.089	-.073	-.070	-.035	.019	-.107	-.056

*Note. *p < .05. **p < .01.*

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Females and are not reproduced here.

Table 9

Continued

Variables	10	11	12	13	14	15	16	17	18
19. Psychological IPV, parcel 1	.034	.137	.090	.137	.130	.178*	.233**	.176*	.147*
20. Psychological IPV, parcel 2	.028	.148*	.139*	.143*	.125	.221**	.265**	.217**	.183**
21. Psychological IPV, parcel 3	.054	.175*	.009	.132	-.006	.052	.093	.050	.062
22. Psychological animal abuse, parcel 1	.013	.212**	.185**	.129	.205**	.167*	.169*	.171*	.124
23. Psychological animal abuse, parcel 2	-.042	.118	.066	.103	.111	.056	-.020	.014	.026

Note. *p < .05. **p < .01.

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Females and are not reproduced here.

Table 9

Continued

Variables	19	20	21	22	23
19. Psychological IPV, parcel 1	–				
20. Psychological IPV, parcel 2	.872**	–			
21. Psychological IPV, parcel 3	.392**	.464**	–		
22. Psychological animal abuse, parcel 1	.184**	.197**	.074	–	
23. Psychological animal abuse, parcel 2	.125	.096	.080	.272**	–
M	4.068	3.206	.998	4.260	.638
SD	4.611	3.751	1.602	3.596	1.898

Note. $*p < .05$. $**p < .01$.

Variables 1 – 18 and their correlations are identical to Physical Assault Model for Females and are not reproduced here.

Table 10

Study 2 – Measurement Model for Physical Assault in Males

Model	χ^2	*df*	RMSEA	NNFI	CFI
Base	383.659**	237	.052	.953	.960

Note. **$p < .01$.

Table 11

Study 2 – Measurement Model for Physical Assault in Females

Model	χ^2	*df*	RMSEA	NNFI	CFI
Base	363.190**	237	.052	.947	.955

Note. **$p < .01$.

Table 12

Study 2 – Test of Factorial Invariance of Measurement Model for Physical Assault Across Gender

Model	χ^2	*df*	RMSEA	NNFI	CFI
Unconstrained	746.849**	474	.052	.950	.957
Constrained	781.949**	492	.053	.950	.956
Difference	+35.100**	18			

Note. **$p < .01$.

Table 13

Study 2 – Measurement Model for Psychological Aggression in Males

Model	χ^2	*df*	RMSEA	NNFI	CFI
Base	318.736**	215	.046	.959	.965

Note. **$p < .01$.

Table 14

Study 2 – Measurement Model for Psychological Aggression in Females

Model	χ^2	df	RMSEA	NNFI	CFI
Base	261.880*	215	.033	.977	.981

Note. *p < .05. **p < .01.

Table 15

Study 2 – Test of Factorial Invariance of Measurement Model for Psychological Aggression Across Gender

Model	χ^2	df	RMSEA	NNFI	CFI
Unconstrained	580.616**	430	.041	.968	.972
Constrained	613.565**	447	.042	.966	.970
Difference	+32.949*	17			

Note. **$p < .01$. *$p < .05$.

Table 16

Study 2 – Structural Model Series for Physical Assault in Males

Model	χ^2	*df*	RMSEA	NNFI	CFI	$\Delta\chi^2$	Δdf
1 (Base)	410.626***	243	.055	.949	.955		
1A (All direct effects freed)	382.563***	239	.051	.954	.960	-28.063*** from 1	4
1B (Direct effects of callousness freed)	385.900***	241	.052	.954	.960	-24.726*** from 1	2
1C (b2 = 0)	393.399***	242	.053	.953	.959	+7.499** from 1B	1
1D (b5 = 0)	390.969***	242	.052	.953	.959	-5.069* from 1B	1

Note. *p < .05. **p < .01. ***p < .001.

Table 17

Study 2 – Structural Model Series for Physical Assault in Females

Model	χ^2	*df*	RMSEA	NNFI	CFI	$\Delta\chi^2$	Δdf
2 (Base)	385.453***	243	.054	.943	.950		
2A (All direct effects freed)	365.099***	239	.052	.947	.954	-20.354*** from 2	4
2B (Direct effect of callousness on animal abuse freed)	376.107***	242	.053	.945	.952	-9.346** from 2	1
2C (Direct effect of rejection sensitivity on IPV freed)	366.403***	241	.051	.948	.954	-9.704** from 2B	1
2D (b2 = 0)	367.084***	242	.051	.948	.954	+.681 from 2C	1
2E (b5 = 0)	367.435***	243	.051	.948	.954	+.351 from 2D	1
2F (b6 = 0)	372.680***	244	.052	.947	.953	+5.245* from 2E	1

Note. *p < .05. **p < .01. ***p < .001.

Table 18

Study 2 – Structural Model Series for Psychological Aggression in Males

Model	χ^2	*df*	RMSEA	NNFI	CFI	$\Delta\chi^2$	Δdf
3 (Base)	322.828***	221	.045	.961	.966		
3A (All direct effects freed)	318.014***	217	.045	.960	.966	-4.814 from 3	4
3B (b2 = 0)	324.950***	222	.045	.960	.965	+2.122 from 3	1
3C (b5 = 0)	Failure to converge	---	---	---	---	---	-

Note. *p < .05. **p < .01. ***p < .001.

Table 19

Study 2 – Structural Model Series for Psychological Aggression in Females

Model	χ^2	*df*	RMSEA	NNFI	CFI	$\Delta\chi^2$	Δdf
4 (Base)	269.664*	221	.033	.977	.980		
4A (All direct effects freed)	264.067*	217	.033	.977	.980	-5.597 from 4	4
4B (b2 = 0)	269.824*	222	.033	.977	.980	+.160 from 4	1
4C (b6 = 0)	269.922**	223	.033	.977	.980	+.098 from 4B	1

Note. *p < .05. **p < .01. ***p < .001.

APPENDIX B

FIGURES
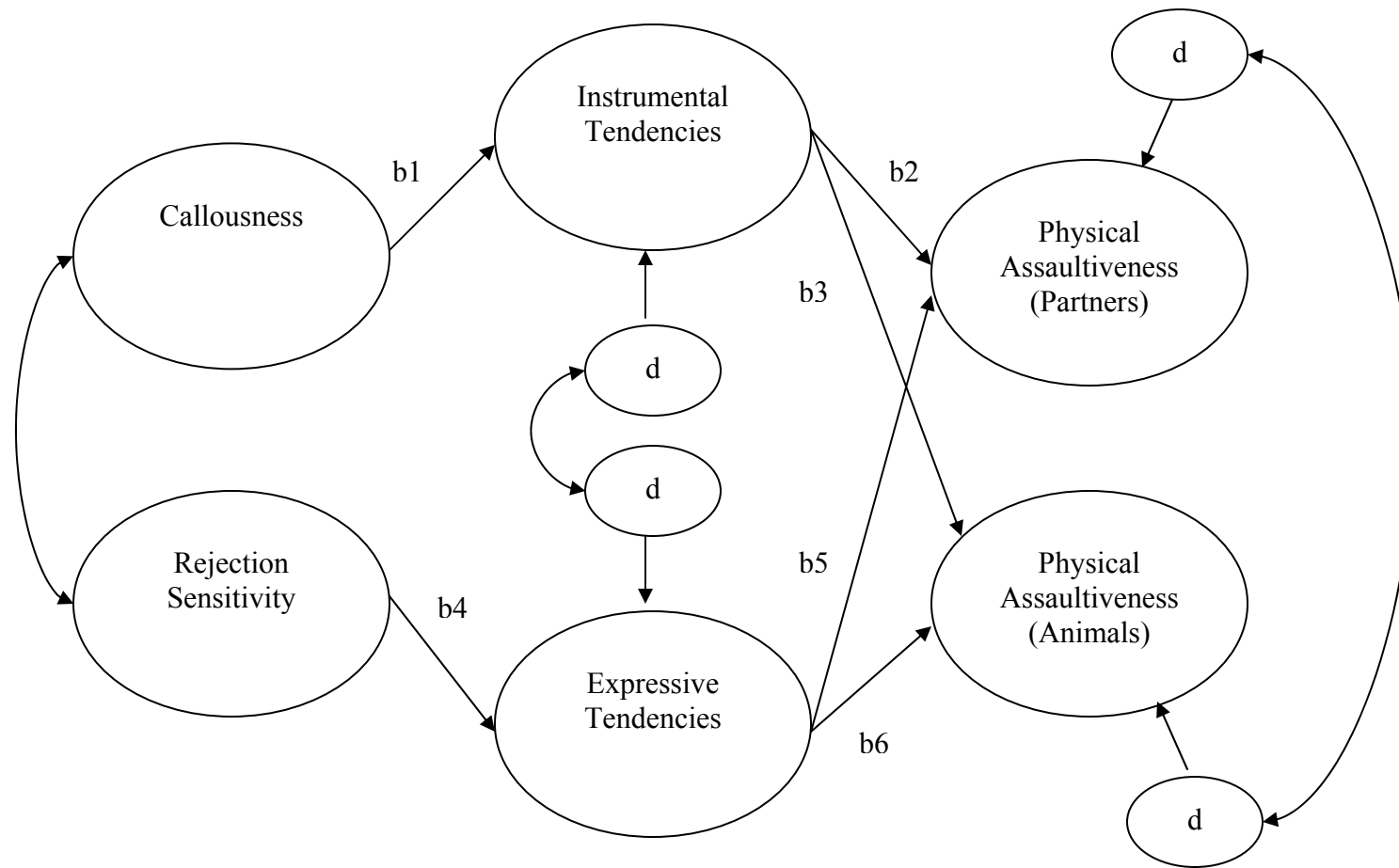
Figure 1. Conceptual Model for Physical Assault
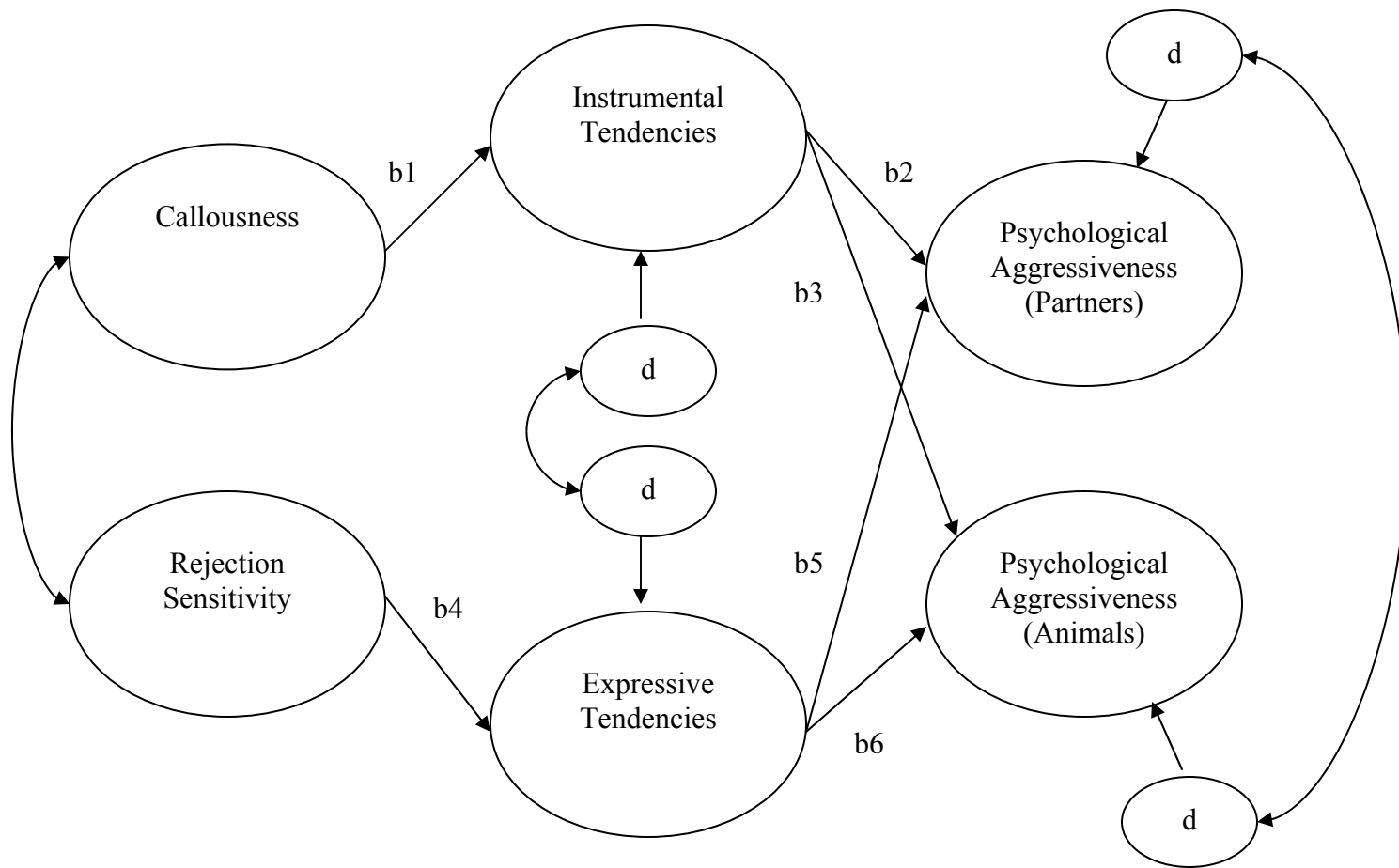
Figure 2. Conceptual Model for Psychological Aggression
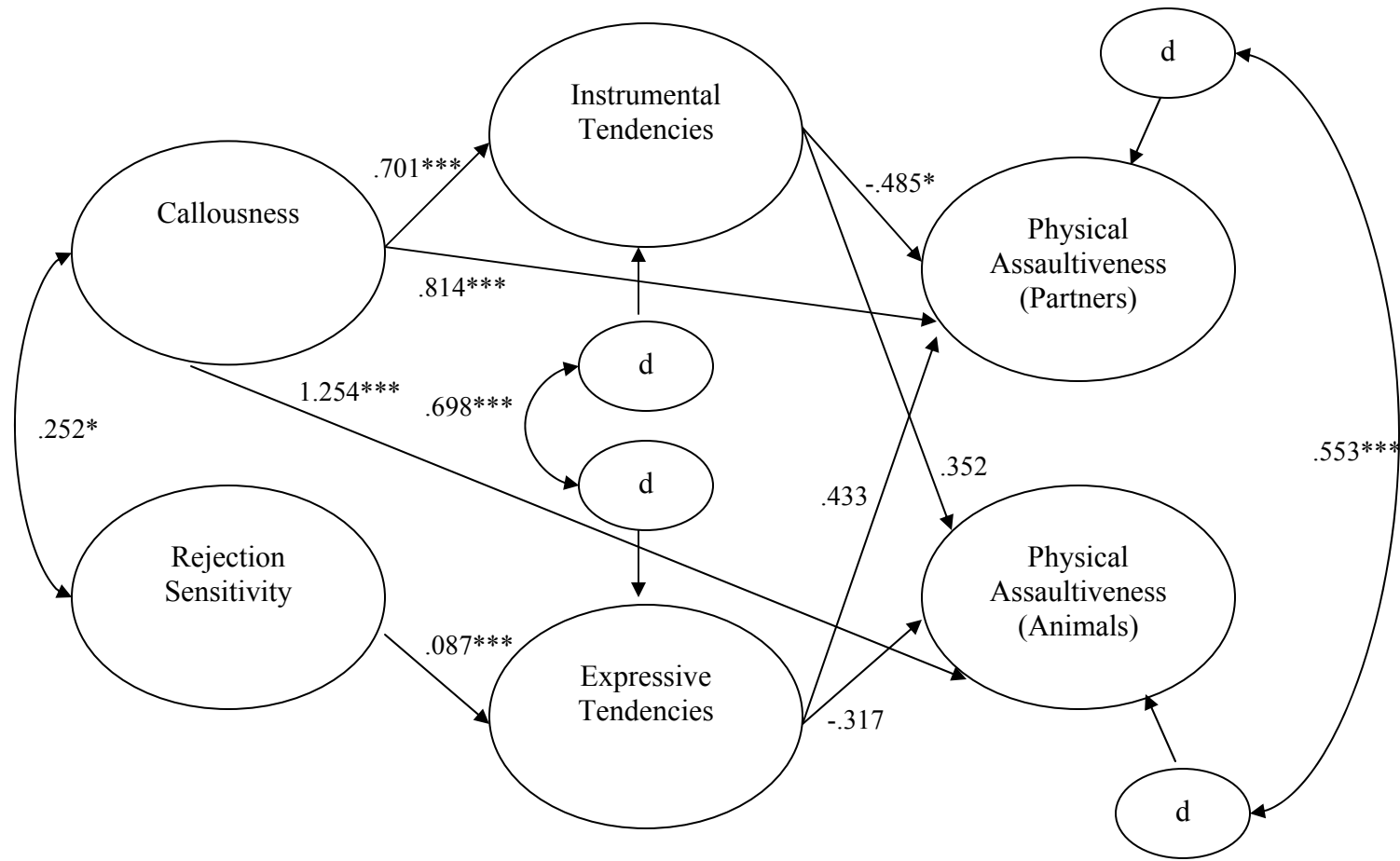
Figure 3. Final Structural Model for Physical Assault in Males (Model 1B)

Note. *p* < .05. **p* < .01. ***p* < .001.
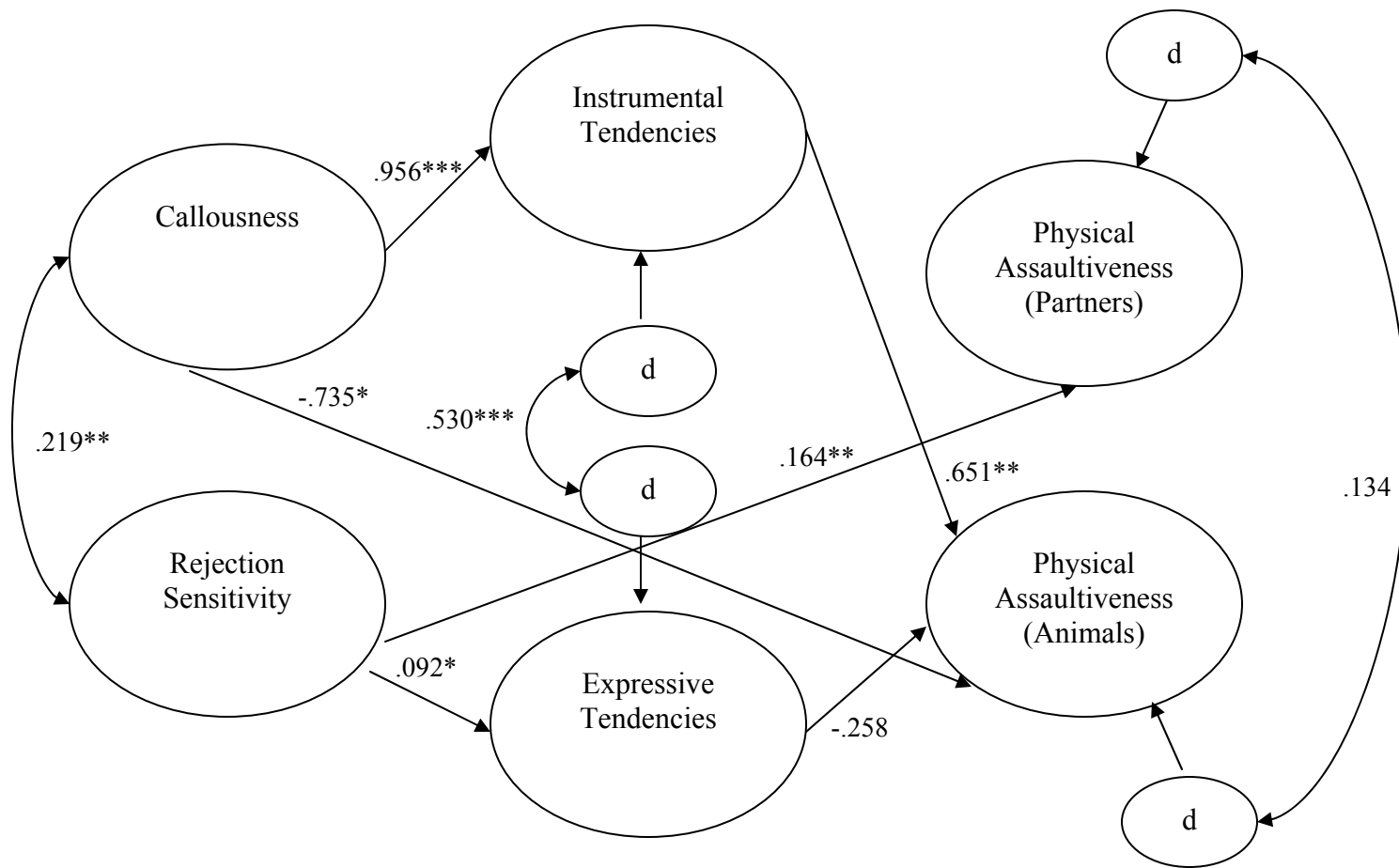
Figure 4. Final Structural Model for Physical Assault in Females (Model 2E)

Note. *p < .05. **p < .01. ***p < .001.
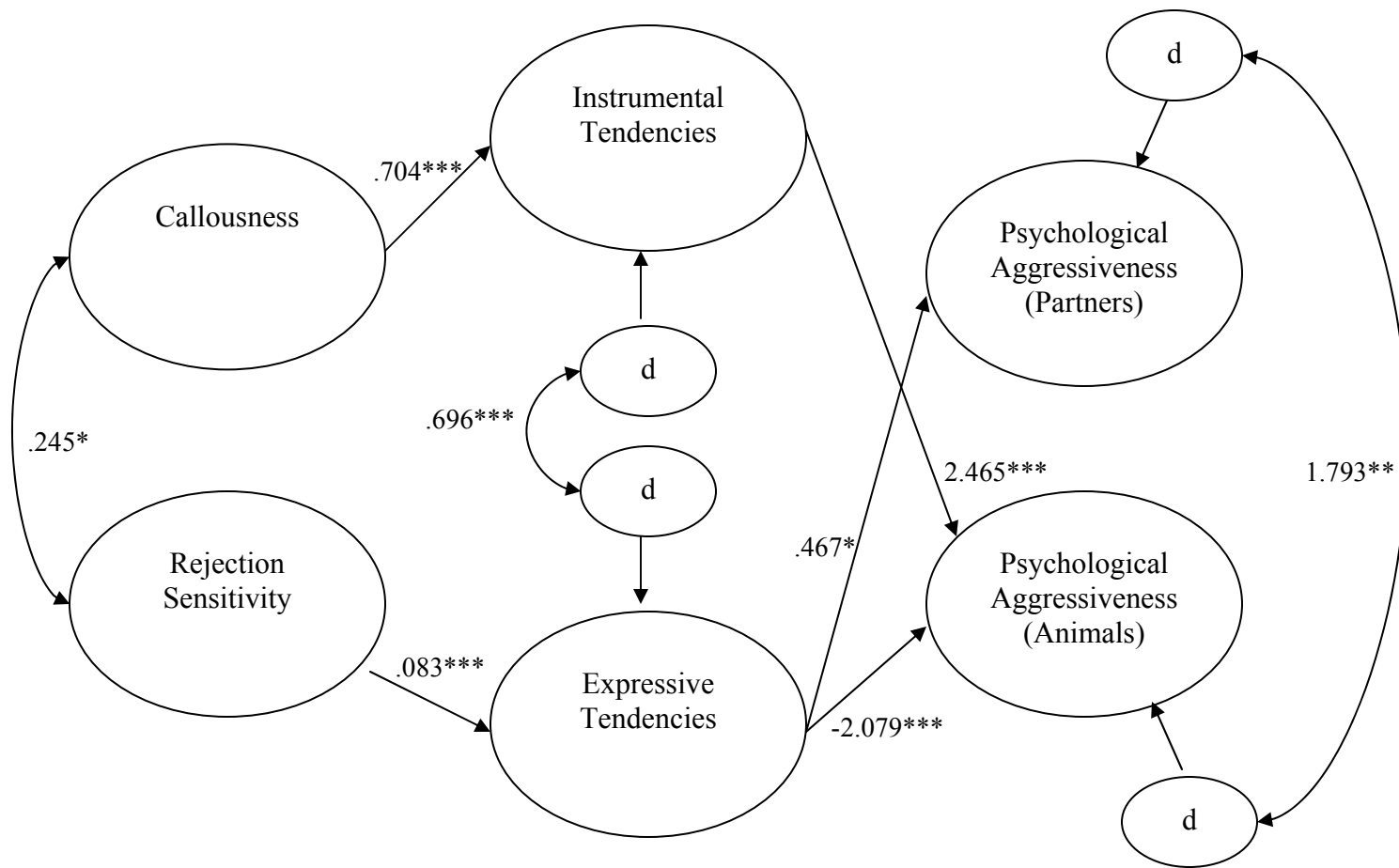
Figure 5. Final Structural Model for Psychological Aggression in Males (Model 3B)

Note. *p < .05. **p < .01. ***p < .001.
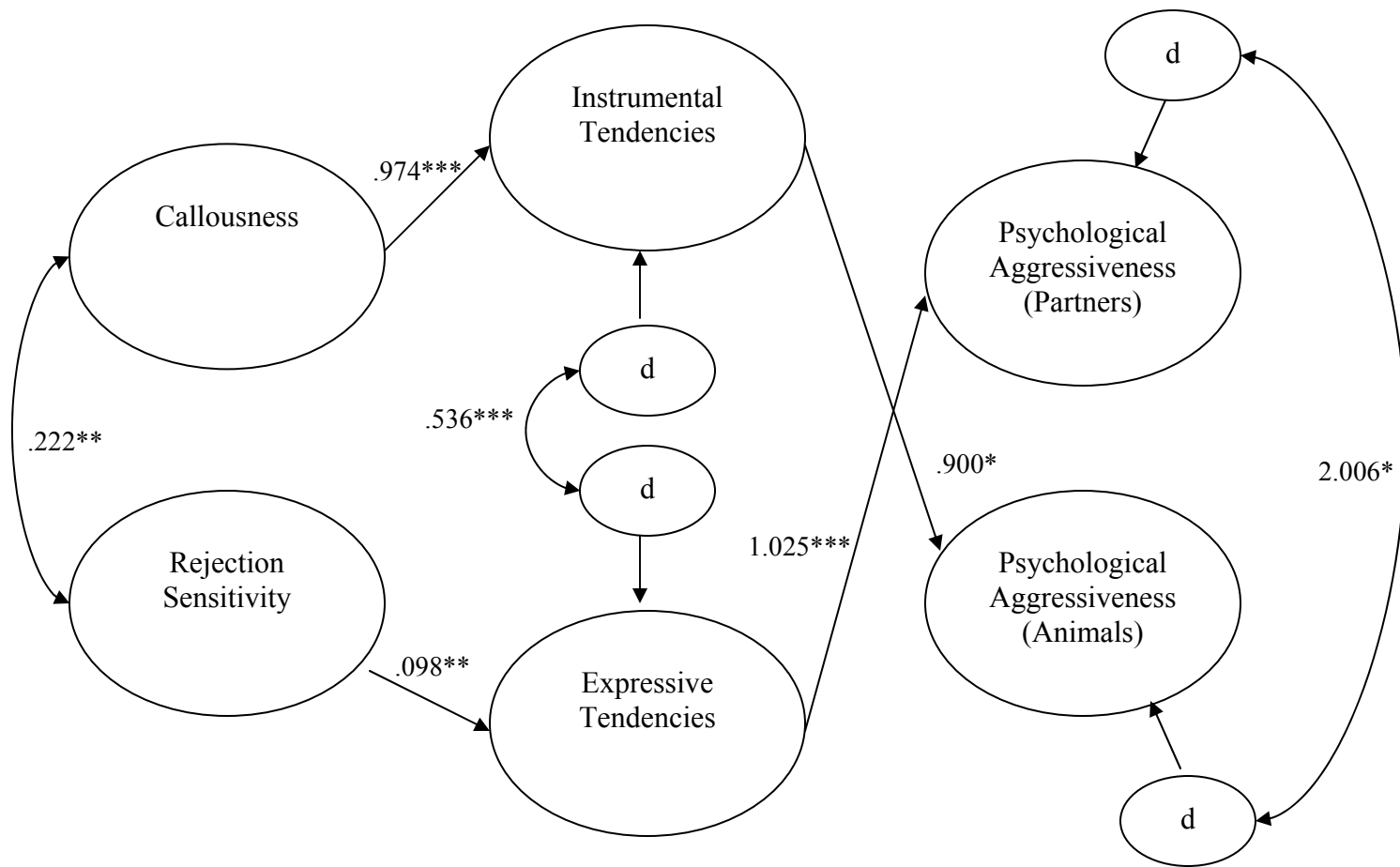
Figure 6. Final Structural Model for Psychological Aggression in Females (Model 4C)

Note. *p* < .05. **p* < .01. ***p* < .001.

APPENDIX C

MEASURES

Emotional Toughness Scale (ETS)

We know that different people have different opinions about pain. The following questions are designed to help us understand how YOU generally think about pain. Please fill in the choice on your answer sheet that indicates how much you agree or disagree with each opinion.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

1. Seeing someone in pain doesn't bother me too much.

2. If someone I know dies, it doesn't really matter to me.

3. If someone is crying I can't help but feel bad too.

4. It's O.K. to treat another person however you want.

5. I find the idea of violence disturbing.

6. I would never use force with someone to let them know I am in control.

7. Seeing a friend of mine hit their partner wouldn't bother me.

8. If I caused someone else physical pain I would feel pretty bad about it.

9. If I hit a partner in anger I would feel very guilty about it.

Emotional Toughness toward Animals Scale (ETAS)

We know that different people have different opinions about animals. The following questions are designed to help us understand how YOU generally feel about animals. Please fill in the choice on your answer sheet that indicates how much you agree or disagree with each opinion.

USE THIS ANSWER KEY:

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

1. If I saw an animal in pain, I wouldn't be too upset.

2. If an animal dies, it doesn't really matter.

3. It makes me feel bad to see anyone's pet whine or cry.

4. It's OK to treat an animal however you want.

5. Animals have no value other than market value.

6. Cruelty to animals should be stopped.

7. I would never use force with an animal to let it know I am in control.

8. Seeing someone disciplining a pet harshly wouldn't bother me.

9. People today worry too much about animal suffering.

10. If I hurt an animal, I don't feel guilty afterward.

Rejection Sensitivity Questionnaire (RSQ)

Each of the items below describes things college students sometimes ask of other people. Please imagine that you are in each situation. You will be asked to answer the following questions for each situation:

*How concerned or anxious would you be about how the other
person would respond?

*How do you think the other person would be likely to respond?

_____

You ask someone in class if you can borrow his/her notes.

 1) How concerned or upset would you be over whether or not the person would want to lend you his/her notes?

          very unconcerned   very concerned

                          1   2   3   4   5   6

2) I would expect that the person would willingly give me his/her notes.

          very unlikely   very likely

                          1   2   3   4   5   6

You ask your boyfriend/girlfriend to move in with you.

 3) How concerned or anxious would you be over whether or not he/she also would want to move in with you?

          very unconcerned   very concerned

                          1   2   3   4   5   6

4) I would expect that he/she would want to move in with me.

          very unlikely   very likely

                          1   2   3   4   5   6

You ask your parents for help in deciding what programs to apply to.

 5) How concerned or anxious would you be over whether or not your parents would want to help you?

          very unconcerned   very concerned

                          1   2   3   4   5   6

6) I would expect that they would want to help me.

          very unlikely   very likely

                          1   2   3   4   5   6

You ask someone you don't know well out on a date.

7) How concerned or anxious would you be over whether or not the person would want to go out with you?

          very unconcerned   very concerned
                       1   2   3   4   5   6

8) I would expect that the person would want to go out on a date with me.

          very unlikely   very likely
                       1   2   3   4   5   6

Your boyfriend/girlfriend has plans to go out with friends tonight,
but you really want to spend the evening with him/her, and you tell him/her so.

9) How concerned or anxious would you be over whether or not your boyfriend/girlfriend would decide to stay in?

          very unconcerned   very concerned
                       1   2   3   4   5   6

10) I would expect that he/she would willingly choose to stay in with me.

       very unlikely   very likely
                       1   2   3   4   5   6

You ask your parents for extra money to cover living expenses.

11) How concerned or anxious would you be over whether or not your parents would help you out?

          very unconcerned   very concerned
                       1   2   3   4   5   6

12) I would expect that my parents would not mind helping me out.

       very unlikely   very likely
                       1   2   3   4   5   6

After class, you tell your professor that you have been having
some trouble with a section of the course and ask if he/she can give you some extra help.

13) How concerned or anxious would you be over whether or not your professor would want to help you out?

          very unconcerned   very concerned
                       1   2   3   4   5   6

14) I would expect that the professor would want to help me.

       very unlikely   very likely
                       1   2   3   4   5   6

You approach a close friend to talk after doing or saying something that seriously upset him/her.

15) How concerned or anxious would you be over whether or not your friend would want to talk with you?

                     very unconcerned   very concerned

                              1   2   3   4   5   6

16) I would expect that he/she would want to talk with me to try to work things out.

       very unlikely   very likely

                    1   2   3   4   5   6

You ask someone in one of your classes to coffee.

17) How concerned or anxious would you be over whether or not the person would want to go?

               very unconcerned   very concerned

                    1   2   3   4   5   6

18) I would expect that he/she would want to go with me.

       very unlikely   very likely

                    1   2   3   4   5   6

After graduation you can't find a job and you ask your parents if you can live at home for a while.

19) How concerned or anxious would you be over whether or not your parents would want you to come home?

               very unconcerned   very concerned

                    1   2   3   4   5   6

20) I would expect that I would be welcome at home.

       very unlikely   very likely

                    1   2   3   4   5   6

You ask your friend to go on vacation with you over Spring Break.

21) How concerned or anxious would you be over whether or not your friend would want to go with you?

               very unconcerned   very concerned

                    1   2   3   4   5   6

22) I would expect that he/she would want to go with me.

       very unlikely   very likely

                    1   2   3   4   5   6

You call your boyfriend/girlfriend after a bitter argument and tell him/her you want to see him/her.

23) How concerned or anxious would you be over whether or not your boyfriend/girlfriend would want to see you?

	very unconcerned					very concerned
	1	2	3	4	5	6

24) I would expect that he/she would want to see me.

	very unlikely					very likely
	1	2	3	4	5	6

You ask a friend if you can borrow something of his/hers.

25) How concerned or anxious would you be over whether or not your friend would want to loan it to you?

	very unconcerned					very concerned
	1	2	3	4	5	6

26) I would expect that he/she would willingly loan me it.

	very unlikely					very likely
	1	2	3	4	5	6

You ask your parents to come to an occasion important to you.

27) How concerned or anxious would you be over whether or not your parents would want to come?

	very unconcerned					very concerned
	1	2	3	4	5	6

28) I would expect that they would want to come.

	very unlikely					very likely
	1	2	3	4	5	6

You ask a friend to do you a big favor.

29) How concerned or anxious would you be over whether or not your friend would want to help you out?

	very unconcerned					very concerned
	1	2	3	4	5	6

30) I would expect that he/she would willingly agree to to help me out.

	very unlikely					very likely
	1	2	3	4	5	6

You ask your boyfriend/girlfriend if he/she really loves you.

31) How concerned or anxious would you be over whether or not your boyfriend/girlfriend would say yes?

                   very unconcerned   very concerned

                      1   2   3   4   5   6

32) I would expect that he/she would answer yes sincerely.

      very unlikely   very likely

                 1   2   3   4   5   6

You go to a party and notice someone on the other side of the room, and then you ask him/her to dance.

33) How concerned would you be over whether or not the person would want to dance with you?

                 very unconcerned   very concerned

                     1   2   3   4   5   6

34) I would expect that he/she would want to dance with me.

      very unlikely   very likely

                 1   2   3   4   5   6

You ask your boyfriend/girlfriend to come home to meet your parents.

35) How concerned would you be about whether or not your boyfriend/girlfriend would want to meet your parents?

                 very unconcerned   very concerned

                     1   2   3   4   5   6

36) I would expect that he/she would want to meet my parents.

      very unlikely   very likely

                 1   2   3   4   5   6

Rejection Sensitivity toward Animals Questionnaire (RSAQ)

Each of the items below describes interactions dog owners sometimes
have with their dogs. Please imagine that you are in each situation. You will be asked to answer
the following questions for each situation:

*How concerned or upset would you be about how your dog would respond?

*How do you think the dog would be likely to respond?

You teach your dog something and try to get it to perform in front of people.

1) How concerned or upset would you be if your dog did not perform when in front of people?
             very unconcerned   very concerned
                    1   2   3   4   5   6

2) I would expect that my dog would willingly perform.
             very unlikely   very likely
                    1   2   3   4   5   6

You hold your dog on your lap or close to you.

3) How concerned or upset would you be if your dog squirmed and tried to get away?
             very unconcerned   very concerned
                    1   2   3   4   5   6

4) I would expect that my dog would willingly stay near me.
             very unlikely   very likely
                    1   2   3   4   5   6

You want to play with your dog.

5) How concerned or upset would you be if your dog did not want to play?
             very unconcerned   very concerned
                    1   2   3   4   5   6

6) I would expect that my dog would want to play with me.
             very unlikely   very likely
                    1   2   3   4   5   6

You buy your dog a special new food.

7) How concerned or upset would you be if your dog turned up its nose at the food?

very unconcerned   very concerned

1   2   3   4   5   6

8) I would expect that my dog would willingly eat the food.

very unlikely   very likely

1   2   3   4   5   6

You invite visitors over and they meet your dog.

9) How concerned or upset would you be if your dog was friendlier to the visitors than to you?

very unconcerned   very concerned

1   2   3   4   5   6

10) I would expect that my dog would be friendliest toward me.

very unlikely   very likely

1   2   3   4   5   6

You need to give your dog a bath.

11) How concerned or upset would you be if your dog seemed to hold it against you?

very unconcerned   very concerned

1   2   3   4   5   6

12) I would expect that my dog would quickly forgive me for the bath.

very unlikely   very likely

1   2   3   4   5   6

You want to watch TV with your dog.

13) How concerned or upset would you be if your dog just wandered away?

very unconcerned   very concerned

1   2   3   4   5   6

14) I would expect that my dog would willingly stay and watch TV with me.

very unlikely   very likely

1   2   3   4   5   6

You approach your dog to make up with him/her after yelling at him/her.

15) How concerned or upset would you be if your dog ran away from you or ignored you?

very unconcerned   very concerned

1   2   3   4   5   6

16) I would expect that my dog would want to make up with me.
         very unlikely   very likely
              1   2   3   4   5   6

You come home and open the door, expecting your dog to greet you.

17) How concerned or upset would you be if your dog seemed unenthusiastic at your arrival?
         very unconcerned   very concerned
              1   2   3   4   5   6

18) I would expect that my dog would be happy to see me.
         very unlikely   very likely
              1   2   3   4   5   6

You try to pet your dog when he/she is tense.

19) How concerned or upset would you be if your dog snarled at you?
         very unconcerned   very concerned
              1   2   3   4   5   6

20) I would expect that my dog would welcome my touch in this situation.
         very unlikely   very likely
              1   2   3   4   5   6

You move to a new town with your dog.

21) How concerned or upset would you be if your dog tried to run away back to your former home?
         very unconcerned   very concerned
              1   2   3   4   5   6

22) I would expect that my dog would want to stay in the new house with me.
         very unlikely   very likely
              1   2   3   4   5   6

You are leaving the house for a trip, and are leaving your dog behind.

23) How concerned or upset would you be if your dog seemed unconcerned by your departure?
         very unconcerned   very concerned
              1   2   3   4   5   6

24) I would expect that my dog would show s/he is going to miss me.
         very unlikely   very likely
              1   2   3   4   5   6

You try to get your dog to sleep on the bed with you.

25) How concerned or upset would you be if your dog chose a different sleeping spot rather than your bed?

very unconcerned   very concerned

1   2   3   4   5   6

26) I would expect that he/she would willingly sleep on the bed with me.

very unlikely   very likely

1   2   3   4   5   6

You buy your pet a present.

27) How concerned or upset would you be if your dog showed no interest in the present?

very unconcerned   very concerned

1   2   3   4   5   6

28) I would expect that my dog would be interested in the present.

very unlikely   very likely

1   2   3   4   5   6

You call your dog.

29) How concerned or upset would you be if your dog barely twitched an ear?

very unconcerned   very concerned

1   2   3   4   5   6

30) I would expect that my dog would pay attention to my call.

very unlikely   very likely

1   2   3   4   5   6

You and your dog are posing for a picture.

31) How concerned or upset would you be if your dog refused to look at the camera or stay still for the picture?

very unconcerned   very concerned

1   2   3   4   5   6

32) I would expect that my dog would willingly pose for the picture.

very unlikely   very likely

1   2   3   4   5   6

Revised Short Expagg

Following are some statements about aggression. Please fill in one of the following on your answer sheet for each question:

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Somewhat		Agree Somewhat	Agree	Agree Strongly

1. I believe that physical aggression is necessary to get through to some people.
2. During a physical fight, I feel out of control.
3. If I hit someone and hurt them, I feel as if they were asking for it.
4. I am most likely to get physically aggressive when I've been under a lot of stress and some little thing pushes me over the edge.
5. I am most likely to get physically aggressive when I feel another person is trying to make me look like a jerk.
6. After a physical fight I feel drained and guilty.
7. In an argument I would feel more annoyed with myself if I cried than if I hit the other person.
8. After I lash out physically at another person, I would like them to acknowledge how upset they made me and how unhappy I was.
9. The best thing about physical aggression is that it makes others get in line.
10. I believe that my aggression comes from losing my self-control.
11. If someone challenged me to a fight in public, I'd feel cowardly if I backed away.
12. I am more likely to hit out physically when I am alone with whoever is annoying me.
13. After I lash out physically at someone, I would like them to make sure they never annoy me again.
14. When I get to the point of physical aggression, the thing I am most aware of is how upset and shaky I feel.
15. I am more likely to hit out physically when another person shows me up in public.
16. In a heated argument I am most afraid of saying something terrible that I can never take back.

Animal Expagg

Following are some statements about aggression. Please fill in one of the following on your answer sheet for each question:

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Somewhat		Agree Somewhat	Agree	Agree Strongly

1. I believe that some physical aggression is necessary in dealing with my dog.
2. When I get angry at my dog, I feel out of control.
3. I would hit my dog if my dog was really asking for it.
4. I am most likely to get physically aggressive with my dog when I've been under a lot of stress and some little thing pushes me over the edge.
5. I am most likely to get physically aggressive with my dog when I feel my dog is making me look stupid.
6. After hitting my dog I feel drained and guilty.
7. If my dog destroyed something of mine, I would feel more annoyed with myself if I cried than if I hit the animal.
8. After I punish my dog, I am not satisfied unless it looks sorry for what it did wrong.
9. The only good reason to hit my dog is that it makes my dog obey.
10. I believe that my aggression toward my dog comes from losing my self-control.
11. If a dog or other animal threatened me in public, I'd feel cowardly if I backed away.
12. I am more likely to hit out physically at my dog when I am alone with it.
13. When I lash out physically at my dog, I want to be harsh enough to make sure it won't misbehave in that way again.
14. When I get to the point of punishing my dog, the thing I am most aware of is how upset and shaky I feel.
15. I am more likely to hit my dog if my dog makes me look stupid or out of control in public.
16. When I get really angry at my dog I am afraid I may go overboard in my punishment.

Revised Conflict Tactics Scale (CTS2)—Perpetration

Below is a list of some things partners who are dating or in relationships do while they are arguing. Please indicate how often each has happened since you were 16 (that is, with all partners you've had since then).

USE THIS ANSWER KEY:
0 = never
1 = once
2 = twice
3 = 3-5 times
4 = 6-10 times
5 = 11-20 times
6 = more than 20 times

How many times since you were 16:

1. Have you showed a partner you cared, even though you disagreed?
2. Have you explained your side of a disagreement to a partner?
3. Have you thrown something at a partner that could hurt?
4. Have you insulted or sworn at a partner?
5. Have you twisted a partner's arm or hair?
6. Has a partner had a sprain, bruise, or small cut because of a fight with you?
7. Have you shown respect for a partner's feelings about an issue?
8. Have you made a partner have sex without a condom?
9. Have you pushed or shoved a partner?
10. Have you called a partner fat or ugly?
11. Have you punched or hit a partner with something that could hurt?
12. Have you destroyed something belonging to a partner?
13. Has a partner gone to a doctor because of a fight with you?
14. Have you choked a partner?
15. Have you shouted or yelled at a partner?
16. Have you slammed a partner against a wall?
17. Have you said you were sure that you and a partner could work out a problem?
18. Has a partner needed to see a doctor because of a fight with you, but didn't?
19. Have you grabbed a partner?
20. Have you stomped out of the room or house or yard during a disagreement?
21. Have you insisted on sex when a partner did not want to (but did not use physical force)?
22. Have you slapped a partner?
23. Has a partner had a broken bone from a fight with you?
24. Have you suggested a compromise to a disagreement?
25. Have you insisted on oral or anal sex when a partner did not want to (but did not use physical force)?
26. Have you accused a partner of being a lousy lover?
27. Have you done something to spite a partner?

28. Have you threatened to hit or throw something at a partner?
29. Has a partner a felt physical pain that still hurt the next day because of a fight with you?
30. Have you kicked a partner?
31. Have you agreed to try a solution to a disagreement that a partner suggested?

Aggression Toward Animals Scale (ATAS)

For each question, please fill in the choice that best describes how often since age 16 you have used each of the following behaviors when dealing with an animal.

USE THIS ANSWER KEY:
0 = never since age 16
2 = once since age 16
3 = twice since age 16
4 = 3-5 times since age 16
5 = 6-10 times since age 16
6 = 11-20 times since age 16
7 = more than 20 times since age 16

How often as an adult have you:

1. Talked to an animal?
2. Petted an animal?
3. Yelled at an animal?
4. Locked an animal in a closet or other small space as punishment?
5. Thrown something at an animal that could hurt it?
6. Pulled an animal's tail?
7. Whipped an animal?
8. Given an animal a visible injury (other than hunting, routine branding or gelding livestock,etc.)?
9. Pushed, grabbed, or shoved an animal?
10. Picked up and thrown an animal?
11. Dropped an animal from a height?
12. Hit an animal with a fist?
13. Hit an animal with an object that could hurt?
14. Rubbed an animal's nose in a mess it made?
15. Deprived an animal of food, water, or medical care?
16. Kicked an animal?
17. Intentionally intimidated an animal?
18. Burned or scalded an animal?
19. Beat up an animal?
20. Used a weapon on an animal (other than hunting)?
21. Killed an animal (other than hunting or slaughtering livestock)?
22. Enjoyed watching an animal suffer (but didn't cause the suffering yourself)?
23. Enjoyed *making* an animal suffer?