Functional Links Between Intimate Partner Violence and Animal Abuse: Personality Features and Representations of Aggression

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Abstract
Acts of intimate partner violence (IPV) and abuse of nonhuman animals are common, harmful, and co-occurring phenomena. The aim of the present study was to identify perpetrator subtypes based on variable paths hypothesized to influence physical violence toward both partners and nonhuman animals: (a) callousness and instrumental representations of aggression and (b) rejection-sensitivity and expressive representations of aggression. Strong associations emerged between callousness and instrumental representations and between rejection-sensitivity and expressive representations. For males, callousness directly predicted both IPV and animal abuse. For females, rejection-sensitivity predicted IPV. Instrumental representations mediated the relationship between callousness and animal abuse for females but not for males. Results suggest that IPV and animal abuse functionally interconnect, that perpetration of animal abuse may differ in function across gender, and that identifying distinct pathways to violence may facilitate violence prediction and prevention.

Keywords
animal abuse, cruelty, intimate partner violence, assault, callous, rejection-sensitivity, representations of aggression, instrumental, expressive, personality, typology

Introduction
Amid intensifying societal pressures on reducing violence, it has become increasingly apparent that abuse of nonhuman animals occupies a place within the spectrum of intimate partner violence (IPV) (Ascione, 1998; Ascione et al., 2007; Flynn, 2000) as well as within the broader context of family violence (DeViney, Dickert, & Lockwood, 1983). Anecdotal clinical evidence (M. A. Dutton, 1992) suggests that harming—or threatening to harm—an animal may be a form of intimidation, control, and/or vindication directed toward both human and
nonhuman animal victims. To date, however, little empirical inquiry has addressed the challenge of identifying typologies of animal abuse or of attempting to connect hypotheses of animal-abuse perpetration to those of IPV perpetration. In the absence of reliable models of violence risk factors, particularly models that cut across apparently interconnected forms of violence such as animal abuse and IPV, it is unsurprising that the field of violence prevention continues to struggle with accuracy in predicting violence. This study developed a latent variable model of risk factors for both animal abuse and IPV, focusing on two pathways hypothesized to influence physical violence toward both partners and animals: (a) callous personality features and instrumental representations of aggression and (b) rejection-sensitive personality features and expressive representations of aggression.

**Callousness and Instrumental Representations of Aggression**

**Callousness**

Callousness has featured prominently in prior attempts to develop typologies of violence and of IPV perpetrators in particular (Gondolf, 1988; Hamberger, Lohr, Bonge, & Tolin, 1997; Holtzworth-Munroe & Stuart, 1994). 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. IPV research suggests that callousness may be a characteristic feature of a “generally violent/antisocial” subtype of batterers (Holtzworth-Munroe & Stuart), and studies of college populations have also demonstrated success in isolating callousness as an IPV predictor (Parrott & Zeichner, 2003).

Callousness has been studied extensively in relation to aggression among children (Frick, Cornell, Barry, Bodin, & Dane, 2003; Salekin, Ziegler, Larrea, Anthony, & Bennett, 2003). Callousness is an associated descriptive feature of Conduct Disorder, “a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated” (American Psychiatric Association, 2000, p. 85). There is some indication that subgroups of children with Conduct Disorder who demonstrate high levels of callous-unemotional traits may be more aggressive and may demonstrate less remorse for their aggression than children with Conduct Disorder who do not demonstrate high levels of callousness (Barry et al., 2000).

Animal abuse is a diagnostic criterion for Conduct Disorder and appears to be one of the earliest-onset indicators of the disorder (Frick et al., 1993). Further, recent research by Dadds, Whiting, and Hawes (2006) demonstrates...
strong associations directly between callous-unemotional traits and juvenile animal abuse in both boys and girls. Childhood animal abuse has also been linked to callousness in adults: Rates of adult Antisocial Personality Disorder, which is also marked by the associated feature of callousness, were higher in a group of criminal defendants with animal abuse histories than in those without animal abuse histories (Gleyzer, Felthous, & Holzer, 2002). Little research exists on the role of callousness in animal abuse perpetrated by adults, perhaps due to the general paucity of research on animal abuse in adulthood. However, it seems that models of callousness in IPV and in childhood animal abuse could be extended to adult animal abuse without conceptual difficulty.

Instrumental Representations of Aggression

Social representations of aggression involve individuals’ views of their own aggressive behavior: the origin and function of their aggression and their cognitions/emotions related to engaging in aggression (Campbell, Muncer, & Coyle, 1992). The Campbell et al. typology broadly categorizes individuals as holding either “instrumental” or “expressive” representations of their aggression. Instrumentality is characterized by the purposeful use of aggression to accomplish an objective, such as control of the victim or attainment of some tangible reward—goal-driven rather than emotion-driven. In contrast, expressiveness is characterized by aggression that results from loss of self-control due to emotional distress, though this form of aggression could still be seen as accomplishing an objective if the objective is expression of the emotion. (In both of these types of aggression, harm to the victim may be a byproduct rather than an end in itself.)

Several studies suggest an instrumental-expressive distinction in IPV perpetrators (Johnson, 1995; Tweed & Dutton, 1998) and have used instrumentality as an IPV predictor (Archer & Graham-Kevan, 2003). There is no research directly addressing the question of how instrumental representations of aggression relate to animal abuse. However, the Humane Society of the United States (2004) describes partner-violent individuals who engage in animal abuse as those who

1. demonstrate and confirm power and control over the family;
2. isolate the victim and children;
3. force the family to keep violence a secret;
4. perpetuate the context of terror;
5. prevent the victim from leaving or coerce the victim to return;
6. punish the victim for leaving; and
7. degrade the victim through involvement in the abuse. (p. 3)

These motives all illustrate deliberate, goal-directed use of violence.
Callousness and Instrumental Representations of Aggression

Instrumental representations encourage the use of violence to achieve desired outcomes, and callousness facilitates the perpetration of violence without repercussions of distress or remorse. For this reason, callousness and instrumental representations could be expected to co-occur in a certain group of violent individuals. Insofar as callous individuals find engaging in violence relatively easy, they may be more likely to develop instrumental representations of aggression, which then motivate additional violence. Therefore, a test of mediation is an important component of a model incorporating callousness and instrumental representations in the prediction of violence.

Rejection Sensitivity and Expressive Representations of Aggression

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 mental health problems, such as atypical depression (American Psychiatric Association, 2000). Rejection sensitivity is also linked to violent behavior. Rejection sensitivity—defined by Feldman and Downey (1994) as a pattern of anxiously expecting and readily perceiving rejection, and overreacting when rejection is perceived—is a strong diagnostic feature of Borderline Personality Disorder. A diagnostic criterion for this disorder is “inappropriate, intense anger or difficulty controlling anger (frequent displays of temper, constant anger, recurrent physical fights)” (American Psychiatric Association, pp. 706-710). A “dysphoric/borderline” subtype is prominent among IPV typologies (Holtzworth-Munroe, & Stuart, 1994); IPV theory and research have identified sensitivity to rejection as a central feature of this type of perpetrator (Dutton, van Ginkel, & Landolt, 1996). These individuals’ excessive concern about being abandoned by a partner leads to suspicion that abandonment or betrayal are in fact taking place, resulting in uncontrolled jealousy that fuels vengeful violence.

Although rejection sensitivity has not been directly investigated in relation to animal abuse, 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 fueled by misinterpretation of the behavior of others; when the intent of others’ behavior is ambiguous, highly rejection-sensitive individuals are likely to perceive deliberate rejection. In postulating a link between maladaptive attribution processes and animal abuse in children, Ascione (1993)
noted that cues from animals often are even more ambiguous than those from humans. In addition, animals may also be more likely to genuinely reject opportunities for interaction with human companions, as when an animal refuses to come when called. Furthermore, 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.

Expressive Representations of Aggression

In contrast to holders of instrumental representations of aggression, individuals who demonstrate strong expressive representations may be more likely to engage in IPV following loss of self-control or in the absence of other emotional coping strategies (Tweed & Dutton, 1998). Similarly, an individual who is prone to loss of self-control when distressed, and who comes home to find a chewed shoe or an accident on the carpet, may become violent out of rage and an impulse to “strike back” rather than out of a deliberate (instrumental) attempt at behavior management.

Rejection Sensitivity and Expressive Representations of Aggression

If instrumental representations mediate the apparent relationship between callousness and violence, it seems that expressive representations may similarly mediate the relationship between rejection sensitivity and violence. Highly rejection-sensitive individuals’ predisposition to overreact to perceived rejection may facilitate their development of a disinhibited, emotionally expressive, and possibly violent manner of conveying their distress (Downey, Freitas, Michaelis, & Khouri, 1998). The current study permitted direct investigation of the potential mediational role of expressive representations in the relationship between rejection sensitivity and both IPV and animal abuse.

Additional Considerations for the Model

Gender

Callousness has been investigated predominantly in males, but several studies of children and adolescents have found similar callousness scores between males and females (Moffitt, Caspi, Dixon, Silva, & Stanton, 1996); callousness emerges as a factor in predicting juvenile aggression in females (Frick et al., 2003). Research on rejection sensitivity in the severe dysphoric/borderline batterer subtype has focused on males; however, it is unclear to what extent this pattern represents bias against the study of women’s violence as opposed
to legitimate identification of a gender difference. In college populations, however, a link between rejection sensitivity and IPV has been documented in both males (Downey, Feldman, & Ayduk, 2000) and females (Ayduk, Downey, & Testa, 1999). Clear gender distinctions in representations of aggression have proven equally elusive. Campbell et al.’s (1992) hypothesis that instrumental aggression is a male-dominated phenomenon has been supported by a number of subsequent investigations (Campbell, Muncer, McManus, & Woodhouse, 1999). On the other hand, the domain of expressive aggression may be more gender-symmetric (Driscoll, Campbell, & Muncer, 1995). Consequently, the applicability of model pathways to both men and women was an important question for the current study.

Sample Characteristics

Much of the violence literature has focused on severe criminal or psychiatric samples of perpetrators; yet, approximately one-third of college students have been involved in some type of IPV (Katz, Street, & Arias, 1997), and women aged 16-24 have the highest per capita rates of IPV victimization (United States Department of Justice, 2000). Accordingly, it appears that non-referred, college-age individuals living in the community are an important population for studies of IPV. Similarly, animal-abuse research has focused on juveniles and/or referred populations (Ascione, 1993; Felthous & Kellert, 1987). The current study investigated concurrent animal abuse and IPV, so the time frame of interest for both variables was adolescence (when most individuals begin entering dating relationships) and beyond. In a study of animal abuse in Massachusetts 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). Individuals living in the community at the juncture of adolescence and adulthood may be an understudied population for investigations of both IPV and animal abuse.

Method

Participants

Data for this study were collected as part of a broader series of studies on IPV. Participants were 228 male and 199 female undergraduates at a large public university in the southeastern United States. The mean age of participants was 19.74 years (SD = 2.08); 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. To avoid potential response problems associated with participants who had little or no experience with animals, the study restricted
itself to dog guardians (owners). Dogs were chosen as the criterion species because of the literature indicating that they are the most frequently abused type of animal (Humane Society of the United States, 2004).

**Measures**

**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 seven-point Likert scale with statements describing insensitivity to the distress of others: “Seeing someone in pain doesn’t bother me too much.” Higher overall scores indicate greater insensitivity. Previous work involving the ETS (Gupta, 2003) has demonstrated it to have fairly robust internal reliability (Cronbach’s $\alpha = .65$) and a clear single-factor structure. In the current study, internal reliability analysis yielded $\alpha = .68$.

**Emotional Toughness Toward Animals Scale (ETAS).** The ETAS (Gupta and 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 seven-point Likert scale with statements describing insensitivity to the distress of others: “If I saw an animal in pain, I wouldn’t be too upset.” Higher overall scale scores indicate greater insensitivity. Internal reliability analysis in the current sample yielded Cronbach’s $\alpha = .77$.

**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: “You ask your boyfriend/girlfriend to move in with you.” Two six-point Likert ratings follow each situation: (a) how concerned or anxious the respondent would be about the other person’s reaction and (b) how much the respondent expects the other person to reject the request. Scores on the first and second items are multiplied; higher scores indicate greater expectations of rejection.

**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 six-point Likert ratings:

1. Situation One asks how concerned or upset the respondent would be if the animal behaved in a way that could be interpreted as rejecting: “How concerned or upset would you be if your dog seemed unenthusiastic at your arrival?” and
2. Situation Two asks how much the respondent expects rejection to occur: “I would expect that my dog would be happy to see me.”

Scoring duplicates that of the RSQ. In the current sample, internal reliability analysis yielded Cronbach’s $\alpha = .85$.

**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.) 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.” The remaining 8 items 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-point Likert scale to indicate level of agreement or disagreement. The current study expanded this to seven choices to minimize potential restriction of range problems and to avoid participant confusion by maximizing consistency with other agree-disagree response scales used in the packet of measures.

**Animal Expagg.** The Animal Expagg, produced in 2002 by Gupta & Beach, 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, all items were designed to pertain to aggression toward dogs. In parallel to the original Expagg, eight 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.” The remaining eight items describe expressive representations: “I believe that my aggression toward my dog comes from losing my self-control.” Items are rated on a seven-point scale; scoring is identical to that of the original Expagg. Internal reliability analysis in the current sample yielded Cronbach’s $\alpha = .86$ for the full scale, .82 for instrumental items and .75 for expressive items.
IPV: Revised Conflict Tactics Scale (CTS2)-Perpetration. The CTS2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) is a 78-item measure of both perpetration and victimization during conflict situations with an intimate partner. For each item, respondents are asked to indicate how frequently each act occurred in the past year, from 0 (never) to 6 (more than 20 times). In the current study, only perpetration items were administered, and the Physical Assault subscale was of primary interest. In addition, this study employed two minor changes to the CTS2. First, the Institutional Review Board’s concern about asking participants to report perpetration of potentially illegal acts of violence prompted 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 was the amendment of instructions for completing the CTS2 to direct participants to report frequencies across their entire dating histories since age 16 rather than the standard past-year time frame. The change took place because lower-level college students might not have been involved in consistent relationships; hence, data based on only the past year may have provided a poor estimate of intimate partner violence.

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 current study used the adult time frame (since age 16) in data collection 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. Items were generated via review of the literature on types of animal abuse (Kellert & Felthous, 1985; Vermeulen & 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 (such as branding, gelding, and slaughter). The current study focused on acts of physical assault. Scoring of the ATAS employs the same method as the CTS2. In previous research by Gupta (2003), the ATAS demonstrated robust internal reliability (Cronbach’s $\alpha = .86$ for all items). In the current study, internal reliability analysis yielded $\alpha = .84$ for all items and .80 for Physical Assault items.

Procedure

Participants completed 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. Upon
completion of the questionnaires, participants completed a demographic form and were then debriefed as to the nature and purpose of the study.

**Results**

*Model Estimation*

The measurement model was estimated using questionnaire items as manifest indicators of latent variables. The items from the ETS (callousness toward humans) and 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) and the situation scores from the RSAQ (rejection sensitivity toward animals) were combined as indicators of the latent construct of rejection sensitivity. The items from the instrumental scale of the Expagg (instrumental representations toward humans) and the items from the instrumental scale of the Animal Expagg (instrumental representations toward animals) were combined as indicators of the latent construct of “instrumental style.” The items from the expressive scale of the Expagg and the items from the expressive scale of the Animal Expagg were combined as indicators of the latent construct of “expressive style.” Item frequency scores from the CTS and ATAS, respectively, represented the two outcome variables in each model (human-directed and animal-directed violence). Goodness-of-fit tests on the measurement model yielded acceptable fit indices, indicating that combining human and animal item indicators simulated the data structure appropriately.

Figure 1 provides a path diagram of the conceptual models, which were identical for males and females. The models were specified by allowing hypothesized parameters (indicated by arrows connecting latent variables in the model diagram) to vary freely and fixing to zero parameters hypothesized to be nonsignificant (indicated by lack of arrows connecting those latent variables in the model diagram). 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.
Structural Model Series for Males

Table 1 reports fit statistics for the base model and subsequent model revision series. Chi-square was significant, but the model demonstrated acceptable overall fit according to fit indices. As expected,

1. the path from callousness to instrumental representations (b1) was significant, $b = .736, p < .001$;
2. modification indices did not suggest a path from callousness to expressive representations;
3. the path from rejection sensitivity to expressive representations (b4) was significant, $b = .075, p < .001$, and modification indices did not suggest a path from rejection sensitivity to instrumental representations; and
4. a significant path led from instrumental representations to animal abuse (b3), $b = 1.542, p < .001$; however, there was no significant path from instrumental representations to IPV (b2), $b = .255, ns$.

The predicted path from expressive representations to animal abuse was significant (b6), $b = -1.505, p < .001$, but the negative path coefficient was unexpected. Contrary to expectation, there was no significant path from expressive representations to IPV (b5), $b = -.305, ns$. 

Figure 1. Conceptual model for males and females
Instrumental and expressive styles were also expected to mediate the paths from personality features to IPV and animal abuse. To test mediation, 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. In this alternative model, which demonstrated substantial improvement in fit over the base model, the direct effects of callousness on both IPV ($b = .671, p < .01$) and animal abuse ($b = 1.465, p < .001$) were significant. However, none of the indirect effects were significant. Thus, neither full nor partial mediation could be supported for any of the paths in the base model.

The presence of several weak paths and the apparently erroneous exclusion of several paths in the base model warrant a nested series of model revisions. 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 (Model 1B), producing substantial improvement in fit. Next, the path from instrumental representations to IPV ($b_2$) 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, removal of path $b_2$ did not appear warranted. Finally, the path from expressive representations to IPV ($b_5$) was constrained to zero (Model 1D), again producing significant deterioration in

### Table 1. Structural Model Series for Males

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<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>df</th>
<th>RMSEA</th>
<th>NNFI</th>
<th>CFI</th>
<th>$\Delta\chi^2$</th>
<th>$\Delta df$</th>
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<td>.055</td>
<td>.949</td>
<td>.955</td>
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<tr>
<td>1A (All direct effects freed)</td>
<td>382.563***</td>
<td>239</td>
<td>.051</td>
<td>.954</td>
<td>.960</td>
<td>$-28.063$***</td>
<td>4</td>
</tr>
<tr>
<td>1B (Direct effects of callousness freed)</td>
<td>385.900***</td>
<td>241</td>
<td>.052</td>
<td>.954</td>
<td>.960</td>
<td>$-24.726$***</td>
<td>2</td>
</tr>
<tr>
<td>1C ($b_2 = 0$)</td>
<td>393.399***</td>
<td>242</td>
<td>.053</td>
<td>.953</td>
<td>.959</td>
<td>$+7.499$**</td>
<td>1</td>
</tr>
<tr>
<td>1D ($b_5 = 0$)</td>
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<td>.052</td>
<td>.953</td>
<td>.959</td>
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Note. *$p < .05$. **$p < .01$. ***$p < .001$. 
fit and indicating that removal of this path was not warranted. Therefore, Model 1B was chosen as the final structural model for males (Figure 2).

Structural Model Series for Females

Table 2 reports fit statistics for the base model and subsequent model revision series. Chi-square was significant; however, the model demonstrated acceptable overall fit. As expected,

1. the path from callousness to instrumental representations (b1) was significant, \( b = .965, p < .001 \); modification indices did not suggest a path from callousness to expressive representations;
2. the path from rejection sensitivity to expressive representations (b4) was significant, \( b = .096, p < .05 \); modification indices did not suggest a path from rejection sensitivity to instrumental representations; and
3. a path from instrumental representations to animal abuse (b3), \( b = .282, p < .05 \) was significant; however, there was no significant path from instrumental representations to IPV (b2), \( b = .145, ns \).

Contrary to predictions, there was no significant path from expressive representations to either animal abuse (b6), \( b = -.060, ns \), or IPV (b5), \( b = .048, ns \).
As in the model for males, mediation tests were established by specifying a nested alternative model (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. In this alternative model, only one of the indirect effects was significant: the indirect effect of callousness on animal abuse via instrumental representations, $b_1 * b_3 = .687$, $p < .01$. 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. No significant indirect effects occurred along either of the hypothesized rejection sensitivity—expressive representations—violence pathways. However, the direct

<table>
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<th>Model</th>
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<th>df</th>
<th>RMSEA</th>
<th>NNFI</th>
<th>CFI</th>
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<td>2A (All direct effects freed)</td>
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<td>2B (Direct effect of callousness on animal abuse freed)</td>
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<td>.948</td>
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</tbody>
</table>

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

The presence of several weak paths and the apparently erroneous exclusion of several paths in the base model warranted a nested series of model revisions. As suggested by the modification indices in the base model and by Model 2A, the direct effect of callousness on animal abuse was added to the model as the first revision (Model 2B), producing substantial improvement in fit over the base model. Next, the direct effect of rejection sensitivity on IPV was added to the model (Model 2C), producing additional improvement in fit over Model 2B. In an effort to improve model parsimony without compromising fit, the path from instrumental representations to IPV ($b_2$) was constrained to zero (Model 2D). This revision produced no significant deterioration in model fit, suggesting that this path could be removed without affecting the model. Next, the path from expressive representations to IPV ($b_5$) was constrained to zero (Model 2E), producing no significant deterioration in model fit and thereby suggesting that this path could be removed without affecting the model. Finally, the path from expressive representations to animal abuse ($b_6$) was constrained to zero (Model 2F); however, this produced a significant deterioration in model fit, which indicated that removal of this path from the model was not warranted. Consequently, Model 2E was chosen as the final structural model for females (Figure 3).

![Diagram of final structural model for females (model 2E)](image)

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

Figure 3. Final structural model for females (model 2E)
Discussion

This study aimed to develop prediction models for IPV and animal abuse using personality features and representations of aggression. With regard to the measurement model, combining human and animal items to form cross-species indicators of the latent constructs of interest was largely successful. This result suggests that callousness, rejection sensitivity, and instrumental and expressive representations in aggression—each of which has 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: callousness toward humans may tend to be associated with callousness toward animals, rejection sensitivity toward humans may tend to be associated with rejection sensitivity toward animals, and instrumental or expressive representations of aggression toward humans may tend to be associated with the same toward animals.

Within the model series for males, several findings provided support for initial predictions. Most notably, there were strong positive relationships between callousness and instrumental representations and between rejection sensitivity and expressive representations. Conversely, there were no significant relationships between callousness and expressive representations or between rejection sensitivity and instrumental representations. These results provided support for the conceptual model identifying (a) callous personality features as predisposing instrumental, but not expressive, representations of aggression and (b) rejection-sensitive personality features as predisposing expressive, but not instrumental, representations.

The hypothesized strength of these two pathways in predicting actual violence perpetration, however, was not illustrated by the data. Instead, it appeared that the best predictor of men’s 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 non-significant even though mediation was occurring. Second, callousness may simply be a much stronger predictor of IPV among males than is rejection sensitivity, such that there is insufficient power to detect effects due to rejection sensitivity when both variables are included in a single model.

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 IPV in a certain way; however, the combination 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 aggression were developed to capture respondents’ views of their own aggression—presumably indicating awareness of their own violent representations—there may be some other unmeasured variable that better encapsulates actual propensity for men to engage in violence. Further research may be needed to identify additional, or at least more proximal, correlates of violent behavior in men and to find ways to incorporate these into prediction models. This task does not obviate the use of such variables as representations of aggression in violence prediction; it simply illustrates that prediction of IPV (and violence more generally) in men is a complex algorithm that may not be fully reducible to simple few-variable models.

Within the model series for females, a somewhat different pattern of results emerged. Similar to the model for males, callousness was strongly associated with instrumental but not expressive representations, and rejection sensitivity was associated with expressive but not instrumental representations. In contrast to the model for males, instrumental representations predicted animal abuse though not IPV. Also, the hypothesized callousness—instrumental representations—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. More interesting, model modifications suggested a significant direct effect of rejection sensitivity in predicting IPV, and this was the only variable in the model that significantly predicted IPV in females. Further research to clarify whether IPV and animal abuse are functionally different phenomena for females would be informative in elucidating why rejection sensitivity predicted IPV but not animal abuse, and why callousness strongly predicted animal abuse but not IPV. With respect to callousness, it may be that animal abuse perpetrated by women differs from IPV perpetrated by women in such a way as to capture—where IPV does not—a callous/instrumental pathway to aggression.

Making a very tentative link to previous literature documenting higher rates of animal abuse among males, severe animal abuse may be sufficiently uncommon among females that it is the chief domain of uniquely callous and instrumentally aggressive individuals. Unfortunately, this study did not permit separate prediction of minor and severe violence due to the small number of severe violence data points that would have been available for analysis. Future work with large-scale community 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.

Conclusion: Limitations and Future Directions

As in all studies of this type, the use of self-report methodology constituted a limitation to the project. Nonetheless, there were several strong conceptual reasons for the choice of self-report, including previous self-report studies of both IPV (Katz et al., 1997) and animal abuse (Baldry, 2003; Flynn, 1999; Miller & Knutson, 1997), 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 animal abuse in adulthood). The next logical step in this line of research would be to cross-validate self-reports with some other measure of violence, such as behavioral observation.

The current findings for both prevalence and violence prediction could be further strengthened by demonstrating their successful extension to other populations, especially non-heterosexual and community populations from different age groups. Finally, the search must continue for other, as yet unidentified, variables that contribute to violence prediction. Ongoing research of this type is an important step in continuing to understand the complex nature of the relationships among personality features, representations of aggression and violence, and the broader question of the functional interconnection of animal abuse and IPV.

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