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**Animal Abuse Proclivity: Behavioral, Personality and Regulatory Factors Associated
with Varying Levels of Severity**

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Abstract

To date, research into adult-perpetrated animal abuse has consisted of studies using forensic and psychiatric samples. Given that animal abuse goes largely unreported, it is unclear whether the findings from the current literature are generalizable to unapprehended, undetected abusers in the community. However, the emergence of proclivity methodologies fill this gap by examining the relationships between animal abuse propensity and factors such as empathy, attitudes towards animals and antisocial behavior. The current study aimed to extend this literature by examining further individual-level variables (i.e., personality traits) and behavioral factors as correlates of animal abuse proclivity and as a function of varying levels of animal abuse severity (e.g., neglect versus severe violence). 150 participants took part in this correlational study. We found low extraversion, agreeableness, neuroticism, anger regulation, and illegal behavior to be significant factors related to animal abuse proclivity. We also found low extraversion, anger regulation, and illegal behavior to be significant factors across varying levels of animal abuse severity, but low neuroticism to be a unique factor related to less severe forms of animal abuse proclivity. These findings are further discussed in light of their theoretical and treatment implications.

Keywords: Animal Abuse, Proclivity, Personality, Illegal Behavior, Anger Regulation

Animal Abuse Proclivity: Behavioral, Personality and Regulatory Factors Associated with
Varying Levels of Severity

Every year in the United Kingdom (UK) the Royal Society for the Prevention of Cruelty to Animals (RSPCA) investigates more than 150,000 complaints of animal abuse resulting in approximately 2,500 convictions (RSPCA, 2014). Despite these significant figures, it is likely they are under-estimates of prevalence because: (1) they are limited to those who report animal abuse, and (2) there is a lack of a centralized database where data on these offences are gathered (e.g. RSPCA, 2009). Without this knowledge, it is difficult to develop prevention and intervention strategies that are effective. This is a particular concern considering that there is an increasing body of literature that suggests a strong association between animal cruelty and a variety of other antisocial behaviors (Gullone, 2012; Kavanagh, Signal, & Taylor, 2013; Sanders & Henry, 2015).

The current state of the animal abuse literature is heavily focused on child perpetrators, diverting attention and resources from adult perpetrators and the associated consequences (Ascione, 2005). This could be explained by the higher rates of self-reported animal abuse in younger populations (Kavanagh et al., 2013). However, there is limited evidence to suggest that children who commit animal abuse are more likely to continue this behavior into adulthood (Tallichet & Hensley, 2005). This finding was further substantiated by Wright and Hensley (2003) where they found that methods of animal abuse employed during childhood are often repeated in adult expressions of interpersonal violence and aggression. Findings such as these have led to greater focus on the violence graduation hypothesis, which cites animal abuse as a precursor to later incidents of interpersonal violence (Hensley, Tallichet, & Dutkiewicz, 2009). However, there are conflicting findings when empirically testing for this relationship directly. That is, in addition to the studies that support the hypothesis, there are several studies which have found no evidence for this

relationship (Arluke, Levin, Luke, & Ascione, 1999; Miller & Knutson, 1997). Moreover, this hypothesis fails to specifically address animal abuse perpetrated by adults.

We refer to animal abuse as “all socially unacceptable behavior that intentionally causes pain, suffering or distress and/or death to an animal” (Ascione, 1993, p.83). But to be more specific, in our study we are interested in adult perpetrators of animal abuse. Of the available studies which focus on adult perpetrators, participants are generally recruited from prisons, clinical settings, or domestic violence shelters (e.g., Allen, Gallagher, & Jones, 2006; Ascione, 1998; Carlisle-Frank, Frank, & Nielson, 2004; Febres et al., 2012; Flynn, 1999; Loring & Bolden-Hines, 2004; Tallichet & Hensley, 2005). But due to the nature of the offending (and victims) most adult perpetrators are likely to go undetected (Ascione, 2010). Thus, it is important that this behavior is researched within the general public to capture the undetected offenders. Recent studies have begun to include normative samples, which predominantly consist of student samples (e.g., Alleyne, Tilston, Parfitt, & Butcher, 2015; Flynn, 2002; Gupta, 2008; Henry, 2004; Schwartz, Fremouw, Schenk, & Ragatz, 2012). Whilst student samples are typically comprised of participants from a narrow demographic, there is evidence that findings from student-based studies can be generalizable (Wiecko, 2010). In fact, in their proclivity study, Alleyne and colleagues (2015) did not find any significant differences between their UK student sample and their online crowdsourced sample in participants’ responses to animal abuse behavioral propensity, despite the varying demographics. The current study aims to examine adulthood animal abuse propensity within a normative sample.

Animal Abuse as an Indicator of Other Antisocial Behaviors

The relationship between adulthood animal abuse and antisocial behavior has growing support in the current literature. It has been found that animal abusers are more likely to have a history of criminal behavior, such as past convictions, and that they engage in a myriad of

offence types (Arluke, Levin, Luke, & Ascione, 1999). Of particular note is the criminogenic impact of the mere exposure to animal abuse (e.g., witnessing instances of abuse) on criminal behaviors generally (Henry & Sanders, 2007). But one of the most replicated findings is the link between animal abuse and human-directed aggression. That is, animal abusers are more likely to engage in interpersonal violence with the associated supportive attitudes which endorse antisocial or violent behavior (Febres et al., 2012; Parfitt & Alleyne, 2016). Such findings highlight the proposition that animal abuse could be a precipitate and/or risk factor for interpersonal violence. However, it is important to note that some researchers have found that animal abuse is no more likely to precede than follow, both violent and non-violent behavior, which provides limited support for this assumption (Arluke, Levin, Luke, & Ascione, 1999). Such findings also indicate animal abuse is just as predictive of other types of antisocial behavior, such as property offences, drug offences, and public disorder offences.

There is limited empirical evidence substantiating (over and above interpersonal violence in a more detailed fashion) the specific types of antisocial behavior animal abusers are likely to commit. Only one known study has examined drug use in animal abusers, and found that persons diagnosed with a lifetime drug use disorder were significantly more likely to report animal abuse than those without (Vaughn et al., 2011). Whilst this does provide evidence for the association between animal abuse and substance/alcohol abuse, it is not specific to adulthood animal abuse, as participants were asked if they have ever engaged in this behavior. Given the link between substance/alcohol abuse and antisocial/aggressive behavior generally (Walters, 2014) and drug-related offences/convictions specifically (Arluke & Lockwood, 1997), we would expect substance/alcohol abuse would feature prominently amongst adult animal abusers. This hypothesis is supported by the finding that animal abusers and individuals who engage in antisocial behavior share a number of unique characteristics, including aggression, poor impulse control, and exposure to interpersonal violence (Ascione,

2005; Tapia, 1971). Moreover, drug use is known to result in behavioral disinhibition, which can precipitate aggressive and violent behavior (Maldonado, Watkins, & DiLillo, 2015).

Despite this, there is little empirical evidence of the potential relationship between substance misuse and adult animal abuse. But taken together, these findings can be used to make an inference between the abuse of animals and the abuse of drugs. Through identifying the various antisocial behaviors associated with animal abuse, the potential warning signs and patterns of violent behavior can be better established.

Psychological Characteristics of Animal Abusers

In addition to behavioral factors, it is important that psychological characteristics seen in related literatures on aggression (e.g., personality, self-regulation) are examined to better understand their predictive value relative to animal abuse. The relationship between animal abuse and personality traits has received limited attention. This is surprising considering what differences have been identified in the behaviors of animal abusers in comparison to non-animal abusers (i.e. animal abusers are more likely to engage in human-directed aggression and antisocial behavior; Parfitt & Alleyne, 2016). Such differences in behavior can be seen as indicative of specific personality types, which has been examined in other offending literatures. For example, low agreeableness, low conscientiousness and high neuroticism have all been shown to predict physical aggression (Gleason, Jensen-Campbell, & Richardson, 2004), and conscientiousness has been found to correlate negatively with interpersonal violence and vandalism/theft (Heaven, 1996). As is evident in previous literature, antisocial/violent behavior appears to vary along differing personality traits.

To date, only one such study examines animal abusers' personality traits (Schwartz, Fremouw, Schenk, & Ragatz, 2012), in which the authors were unable to find specific personality traits that distinguished animal abusers from non-animal abusers. The authors note that different measures should be explored, as they found very low base rates of animal

abuse self-report in their sample. However, there is an association between callousness and adolescent animal abuse (Dadds, Whiting, & Hawes, 2006). Callous traits manifest as patterns of behavior that reflect a disregard for others, such as a lack of empathy or guilt. Adults who exhibit these traits also self-report animal abuse perpetration during their childhood (Gleyzer, Felthous, & Hollzer, 2002). Based on this, highly callous individuals are at greater risk of engaging in antisocial behaviors, such as animal abuse (Habel, Kühn, Salloum, Devos, & Schneider, 2002). Such elevated levels of callous and unemotional traits are also indicative of extraversion (i.e. outgoing and energetic) and neuroticism (i.e. anger/hostility; Patrick, 2006). But, there is yet to be any evidence to support the direct link between these specific personality traits and adult animal abuse. This is important to know in order to understand what is predisposing socio-cognitive processing and other behavioral intentions. Moreover, personality traits are quite stable and difficult to affect or change, but there have been recent developments in the treatment literature on how to manage stable traits in the rehabilitation process (Fortune et al., 2011).

In addition to personality characteristics, psychological factors related to the regulation of behavior and emotions, and their association with antisocial behavior are evidenced in the wider offending literature (Gannon et al., 2013; Rode, Rode, & Januszek, 2015). A dominant finding has been the impact of impulsivity on antisociality. From a developmental perspective, the 'violence graduation hypothesis' argues that children who abuse animals often go on to aggress against people (Hensley, Tallichet, & Dutkiewicz, 2012). One explanation which has been offered for this escalation is an inability to control aggressive impulses (Arluke, 2002). Based on this, animal cruelty has been said to be a sign of 'impulsive character development' (Felthous, 1980). Despite this finding, no known studies have directly examined the link between impulse control and animal abuse within a general adult sample. This is important to identify as impulsivity may be a key factor in adult

animal abuse perpetration, because it can be a target for treatment programs to reduce risk of future offending. Based on the literature review, the purpose of the current study is to examine whether factors derived from related literatures on human-directed aggressive behavior are also related to adult-perpetrated animal abuse (i.e., behavioral factors, personality differences, and regulatory processes).

Current Study

In past literature, there have been various approaches to assessing offending behavior within community samples. These approaches predominantly include attitudinal self-report measures. There currently exists the following ways of assessing animal abuse: attitudinal scales (i.e. Attitudes Towards the Treatment of Animals Scale; Henry, 2004), behavioral scales (i.e. Boat Inventory on Animal-Related Experiences (BIARE); Boat, 1999) and proclivity scales (i.e. Animal Abuse Proclivity Scale (AAPS); Alleyne, Tilston, Parfitt, & Butcher, 2015). Proclivity scales are a self-report method, designed to measure participants' proclivity, or likelihood, to engage in a particular behavior. Assessing behavioral propensity is a validated method of deriving inferences about offending behavior via the process of motor imagery (Jeannerod & Frak, 1999). In a non-offending sample, the process of motor imagery has been shown to activate the same/similar offence-supportive attitudes and beliefs as those reported by offenders who actually engage in the behavior (e.g., Bohner et al., 1998; Malamuth & Check, 1980). So far, proclivity measures have been successfully applied to unapprehended populations to assess for unreported incidences of rape and fire-setting (Bohner et al., 1998; Gannon & Barrowcliffe, 2012). By adopting this measure, we can learn more about the factors related to animal abuse proclivity within a community sample, and thus, make inferences about perpetrators of animal abuse who are undetected.

However, there are varying degrees of severity of animal abuse that the current AAPS and existing literature do not address. To date, the majority of past literature has grouped all

types of animal abuse into one homogenous variable (e.g., Arluke, Levin, Luke, & Ascione, 1999; Febres et al., 2014; Flynn, 2002). Whilst this is informative and allows broad relationships to be established, the vast variability of animal abuse is overlooked, and subtle differences missed. By distinguishing between less and more severe types of animal abuse, the current study aims to identify these differences and provide a more enhanced understanding of this behavior and its unique relationships depending on the severity. Thus, to examine this, the current study will develop a modified version created for this study, including scenarios that range from high to low severity animal abuse. So far, research tells us that animal abuse is more prevalent in violent offenders, compared to non-violent offenders (Walters, 2013). Therefore, it is assumed that antisocial and aggressive tendencies will be more pronounced in individuals who are more likely to endorse high severity animal abuse.

In light of the current state of literature on adult-perpetrated animal abuse, it is apparent that further research is needed to identify more of the characteristics that distinguish animal abusers in the general public. Such information would provide better understanding of the types of people who commit such offences, and the motivations required to do so, which in turn can be applied to methods aimed at reducing this behavior. Thus, this study will examine the following hypotheses: (1) illegal/aggressive behaviors and drug misuse will be significantly related to adulthood animal abuse propensity; (2) specific personality traits, including neuroticism and extraversion, and impulsivity will be significantly related to adulthood animal abuse proclivity. The final aim of this study is an exploratory examination of the psychological and behavioral factors that distinguish high and low severity animal abuse propensity.

Method

Participants

Participants were recruited from a university campus in the South East of England and were compensated with course credit. The sample was composed of 150 participants, consisting of 48 males (32.0%), 101 females (67.3%) and 1 participant (0.7%) who preferred not to disclose. The mean age of participants was 21 years old ($SD = 5.26$, range = 18-51) and their ethnicity was predominantly White/Caucasian (64.7%).

Materials and Measures

Childhood and Adulthood Animal Abuse. To assess experiences with animals, this study utilized an adaptation of the original BIARE (Boat, 1999) by Flynn (1999), which excludes items relating to sexual contact with animals. This modified version focuses on participation in animal abuse, including four items each with a yes or no response. For each item, participants were instructed to report incidents before the age of 16 and since the age of 16, so that childhood and adulthood experiences could be assessed. Example items include: “Have you ever killed a pet?”, and “Have you ever tortured an animal?”. Sixteen years of age was deemed as an appropriate age bracket, as under United Kingdom laws it is legal to buy an animal, leave home, buy/rent accommodation, and seek employment at this age. Thus, they hold similar responsibilities to that of an adult.

Modified-Animal Abuse Proclivity Scale (M-AAPS). The M-AAPS is a self-report measure based on the AAPS developed by Alleyne et al. (2015). Participants’ likelihood to engage in animal abuse is measured through six modified hypothetical scenarios which participants are instructed to read and imagine themselves as the protagonist, before responding to four items. There were three high severity scenarios which included behaviors such as severely beating a dog, throwing a kitten until it is motionless, and microwaving a cat, and three low severity scenarios, which included behaviors such as abandoning a dog, neglecting a dog, and kicking a cat on one occasion. Responses were recorded on a 5-point scale, ranging from 1 (not at all), to 5 (very strongly), for items including “In this situation,

how thrilled would you be?”, “How powerful would you have felt?”, “Could you see yourself doing the same?”, and “Imagine that someone has seen you in this situation. How much would you have enjoyed watching their reaction?”. The internal consistency of the original scale has been found to be .93 (Alleyne et al., 2015). With the current sample, including the scale modifications, the Cronbach’s alpha showed good internal consistency at .95.

Texas Christian University Drug Screen (TCUDS). The TCUDS (Simpson & Knight, 1998) is a 17-item self-report measure used to identify substance misuse. It consists of 12 items which assess the extent of participants’ drug and alcohol use with a yes or no response including “Have you ever tried to cut down on your drug use but were unable to do it?”, and “Has your drug use ever caused emotional or psychological problems?”. Participants who responded yes on any items were assigned a value of 1, indicating substance misuse. Participants who responded no on all items were assigned a value of 2, indicating no substance misuse. Due to limited empirical evidence of the potential relationship between substance misuse and adult animal abuse, only the presence of substance misuse was assessed in the present study, rather than severity. The remaining items assess for more detailed information on the use of specific types of drugs, and also includes alcohol. The Cronbach’s alpha for this scale was .86, demonstrating good internal validity.

Big Five Inventory (BFI). The BFI (John & Srivastava, 1999) is a 44-item self-report measure used to assess the Big Five dimensions of personality. Participants were instructed to indicate on a 5-point scale, ranging from 1 (disagree strongly) to 5 (agree strongly), the extent to which they agree or disagree with each of the statements. The Big Five dimensions are: extraversion (e.g. “Is talkative”), agreeableness (e.g. “Tends to find fault with others”), conscientiousness (e.g. “Does a thorough job”), neuroticism (e.g. “Is depressed, blue”), and openness (e.g. “Is original, comes up with new ideas”). The Cronbach’s alphas for the five

BFI subscales have previously demonstrated good internal consistency ranging from .87 to .93 (Zheng et al., 2008). The current sample yielded alphas ranging from .80 to .90.

Novaco Anger Scale and Provocation Inventory (NAS-PI). The NAS-PI (Novaco, 2003) was used to assess how participants experience anger and the extent to which they respond to various types of provocations. This self-report measure is divided into two parts: the NAS and PI. The NAS consists of 60 statements relating to how individuals experience anger. The NAS can be broken down into four subscales including: cognitive (i.e., anger justification, hostile attitude), arousal (i.e., anger intensity, irritability), behavior (i.e., impulsive reaction, verbal aggression) and anger regulation (i.e., ability to regulate anger-engendering thoughts). Participants were instructed to indicate on a 3-point scale how true each statement is to them, ranging from 1 (Never True) to 3 (Always True). Example items include: “When something is done wrong to me, I am going to get angry”, and “When I get angry, I stay angry for hours”. The PI subscale consists of 25 statements relating to situations that provoke an aggressive response. Participants indicated on a 4-point scale, ranging from 1 (not at all angry) to 4 (very angry), how angry each situation may or may not make them feel. Example items include: “Being criticized in front of other people for something you haven’t done”, and “People who act like they know it all”. The internal consistency of the NAS-PI was good with alphas ranging from .89 to .94.

Barratt Impulsiveness Scale (BIS-11). The BIS-11 (Patton et al., 1995) was used to measure trait impulsivity. It consists of 30 statements relating to how people act and think in different situations. The statements form into three subscales: non-planning, motor impulsivity, and attentional impulsivity. Participants were required to indicate on a 5-point scale, ranging from 1 (Rarely/Never) to 5 (Almost Always/Always), which response best describes the way they act or think. Example items include: “I plan tasks carefully”, and “I concentrate easily”. The BIS-11 has demonstrated good internal validity with Cronbach’s

alphas ranging from .79 to .82 (Vasconcolos, Malloy-Diniz, & Correa, 2012). In the current sample, internal validity was good at .73.

Illegal Behavior Checklist (IBC). The IBC (McCoy et al., 2006) is a 22-item self-report measure used to assess the extent to which participants may have engaged in illegal activities. Participants were asked whether or not they had previously engaged in the following four types of behaviors: violent crime (e.g. “Been in a gang fight”), property crime (e.g. “Intentionally set fire to destroy property that did not belong to you”), drug crime (e.g. “Sold marijuana”), and status offences (e.g. “Skipped school without an excuse more than ten days”). Participants were required to give a yes or no response to each item. Each no response was assigned a value of 1, and each yes response was assigned a value of 2. To calculate the IBC total score, the item responses were summed with higher scores indicating greater involvement in illegal activities. Previous studies have found good internal validity with overall reliability at .89 (Knight, Simpson, & Morey, 2002). In the current sample, previous internal validity was nearly matched at .86.

Procedure

After gaining ethical approval from the University’s Ethics Committee, participants were recruited to complete the questionnaire online via the course credit framework. The questionnaire took approximately 20 minutes to complete. Before taking part in the study, participants were instructed to read the information sheet provided and to give their consent. Participants first responded to questions on demographic characteristics, then the remaining measures on childhood and adulthood animal abuse perpetration, animal abuse proclivity, substance misuse, personality dimensions, anger regulation/experience, impulsivity, and illegal behaviors, in that order. On completion, participants were directed to the debrief sheet which reiterated the purpose of the study, and provided information on withdrawal procedures and support services such as help-lines, if required.

Results

Childhood and Adulthood Animal Abuse

Of the 150 participants which responded to the childhood and adulthood animal abuse items, 15 (10.0%) reported carrying out an act of animal abuse before the age of 16, and 13 (8.7%) reported carrying out an act of animal abuse since the age of 16. During childhood (i.e. before 16 years of age), seven (4.7%) participants reported killing a pet, four (2.7%) participants admitted to killing a stray animal, five (3.3%) participants reported torturing an animal and six (4%) participants admitted to threatening or harming an animal as a means to control someone. During adulthood (i.e. since 16 years of age), two (1.3%) participants reported killing a pet, eight (5.3%) participants admitted to killing a stray animal, three (2.0%) participants reported torturing an animal, and three (2.0%) admitted to harming or threatening an animal as a means to control someone.

Animal Abuse Proclivity

Unless participants completely rejected the animal abuse scenarios, all other responses were considered as an interest in animal abuse. Similar methods have so far proven effective when used with the existing proclivity scale (Alleyne et al., 2015). Table 1. provides descriptive statistics for all variables used in the study. To account for possible differences based on gender, an ANOVA was conducted, however, no significant differences for the M-AAPS and its subscales were found (see Table 2. for the means, standard deviations, and F statistics).

Results showed that 85 (56.7%) of participants reported some level of endorsement in the six scenarios (scored as > 24). Fifty-six (37.3%) participants reported some endorsement of excitement, 78 (52%) participants reported an endorsement of power, 42 (28%) reported a behavioral propensity and 37 (24.7%) reported some endorsement of enjoyment from watching another's reaction to the scenarios. Bivariate correlation analysis indicated a strong

positive correlation between childhood animal abuse and an overall interest in animal abuse ($r(150) = .28, p = .001$), and adulthood animal abuse and an overall interest in animal abuse ($r(150) = .35, p < .001$). Both childhood animal abuse ($r(150) = .29, p < .001$) and adulthood animal abuse ($r(150) = .45, p < .001$) were positively correlated with a likelihood to engage in animal abuse (i.e., behavioral propensity).

Animal Abuse Behavioral Propensity Preliminary Analyses

To examine which psychological and behavioral factors from the literature are associated with animal abuse behavioral propensity, a bivariate correlation was carried out between the summed score of the M-AAPS propensity subscale items (higher scores indicating higher levels of behavioral propensity) and the summed scores of illegal behavior, anger regulation/experience, substance misuse, personality dimensions, and impulsivity (see Table 1. for descriptive statistics).

Following a bivariate correlation, animal abuse behavioral propensity showed a significant negative correlation with agreeableness and conscientiousness. Animal abuse behavioral propensity also showed a significant positive correlation with impulsivity and its subscale, non-planning impulsivity, illegal behavior and its subscales property crimes, violent crimes, drug crimes, and status crimes, and the NAS and three of its subscales (i.e. behavior, arousal, and cognitive; see Table 3.).

Multivariate Analyses

In order to identify which psychological and behavioral factors accounted for the most amount of variance in a regression analysis we next employed a backward linear regression. In doing so, the variables most closely related to a likelihood to engage in animal abuse can be drawn out. The summed score of the behavioral propensity items was used as the dependent variable; whereas the summed scores of the personality dimensions (i.e. extraversion, agreeableness, conscientiousness, neuroticism and openness), drug misuse,

illegal behavior, impulsivity and anger regulation, were inputted as independent variables.

Six models were computed with the final model being significant, $F(5, 141) = 9.79, p < .001$, explaining 26% of the variance. The remaining independent variables were all significant; i.e., extraversion, agreeableness, neuroticism, illegal behavior and anger regulation (see Table 4. for β coefficients and p values).

Correlates of High and Low Severity Animal Abuse Proclivity

To identify the significant correlates of high and low severity animal abuse proclivity, two separate backward linear regressions were conducted to isolate and eliminate the least important variables. The summed score of the behavioral propensity items from the three more severe and three less severe animal abuse scenarios were used as the dependent variables, and the remaining factors were inputted, as above, as the independent variables.

For high severity animal abuse propensity, seven models were computed with the final significant model, $F(4, 142) = 7.58, p < .001$, explaining 15% of the variance. The remaining independent variables were all significant; i.e., extraversion, illegal behavior and anger regulation (see Table 5. for β coefficients and p values).

For low severity animal abuse propensity, seven models were computed with the final significant model, $F(4,142) = 8.54, p < .001$, explaining 17% of the variance. The remaining independent variables were all significant; i.e., extraversion, neuroticism, illegal behavior, and anger regulation (see Table 6. for β coefficients and p values).

Post-hoc power analyses based on a medium effect size (.15), with 10 predictors, and sample size of 150, yielded a power of .91. This is greater than the recommended convention of .80 (Cohen, 1988).

Discussion

The aim of the current study was to examine the behavioral and psychological correlates of adulthood animal abuse proclivity, but also specifically, the factors that are

related to varying severity of animal abuse. Taken from the current literature, two behavioral factors (i.e., illegal behavior and substance misuse) and three psychological factors (i.e., personality traits, anger regulation and impulsivity) were examined. In congruence with the initial hypotheses, it was found that illegal behavior was significantly related to animal abuse propensity. Of the Big Five dimensions of personality, agreeableness, extraversion and neuroticism were all significantly related to animal abuse propensity in adults. Specific aspects of self/emotion regulation in the forms of impulsivity and anger regulation, were also significantly related to a propensity to engage in animal abuse. When examining variations in severity of animal abuse propensity, extraversion, anger regulation, and illegal behavior were found to be significant correlates of both high and low severity animal abuse. However, neuroticism was a unique correlate for low severity animal abuse proclivity.

The first hypothesis set out to examine whether illegal behavior and substance misuse were significantly related to adulthood animal abuse. In line with previous findings (Arluke et al., 1999; Parfitt & Alleyne, 2016), as behavioral propensity increased, illegal behavior, including all of the subscales (i.e. property crimes, violent crimes, drug crimes, and status crimes), also increased. These findings are in line with the current literature, that is, animal abuse (in our case, propensity) has a significant overlap with illegal behavior across types (Parfitt & Alleyne, 2016). Based on previous research which has associated animal abuse with only violent offending, as opposed to non-violent offending (Walters, 2013), these results suggest a much more general relationship between animal abuse and illegal behavior. This association highlights the importance of assessing for non-human directed violence and human-directed violence in individuals detained for other illegal behaviors.

No significant results were found for substance misuse. This is surprising considering the extensive research associating substance misuse with antisocial behavior and aggression (Walters, 2014). On this occasion, it is possible that the measure used to assess substance

misuse may have limited these findings. Also, utilizing a student sample may restrict the range of substance misuse that would otherwise be found in a more diverse sample recruited from the general public. However, literature generally supports inferences made from student data to the general public (Wiecko, 2010). Based on these findings, it may be evident that there is no relationship between animal abuse and substance misuse. By utilizing a more diverse range of participants, this should be further explored.

The second aim of this study was to examine the psychological correlates (i.e., personality traits, anger regulation and impulsivity) of adulthood animal abuse propensity. Of the Big Five dimensions of personality, agreeableness, extraversion and neuroticism were all negatively related to animal abuse propensity. According to Costa and McCrae (1985), low agreeableness describes someone who is less trusting, sympathetic and cooperative. Elements of this personality trait overlap with low empathetic concern (i.e., lack of sympathy and compassion towards others), which has previously been associated with adulthood animal abuse (Parfitt & Alleyne, 2016). Thus, it is possible that these findings are due to the lack of empathy associated with animal abuse behavior.

Accordingly, extraversion refers to someone who is high on sociability, talkativeness, energy and assertiveness (Costa & McCrae, 1985). Therefore, a low score on extraversion is reflective of an introverted personality, which can be characterized as someone who bears a reserved, reflective personality, and often viewed as self-absorbed. In previous literature, extraverts are considered to be more predisposed to carrying out acts of violence and various antisocial behaviors. In line with this, introverts have been associated with negative attitudes towards the use of animals in research (Sharp, Wuensch, Eppler, & Harju, 2006), indicating a more positive attitude towards the treatment of animals. However, these current results contradict what the literature and theory regarding introvert personality types would suggest. Rather, this study suggests that an introverted personality type is more of a risk factor for

animal abuse behavior. Perhaps, it can be argued that introverts exhibit difficulties with communication, and thus, (inappropriately) abuse animals as a form of expression. But this is an assertion yet to be tested empirically. If supported, then this finding would have significant clinical implications, in that any treatment administered to animal abusers of this category would need to be tailored to accommodate their unique needs. As introverts are largely asocial, and most treatment approaches rely on discussion and conversation, they may be better suited to alternative modes of therapy, such as mindfulness-based or online therapy (McCrae, Robert, Costa, & Paul, 1989).

A paradoxical finding was that neuroticism was negatively associated with adulthood animal abuse propensity. This finding contradicts previous research linking high neuroticism with physical aggression and other types of general offending behaviors (Gleason et al., 2004; Patrick, 2006). However, low neuroticism is indicative of emotional stability and awareness (Costa & McCrae, 1992). Thus, the exact nature of this relationship is unclear, as research so far indicates that antisocial behavior in general is largely underpinned by high neuroticism (Jakobwitz & Egan, 2006). One possible explanation of this finding is that low neuroticism is related to a particular type of animal abuse, one that is well-planned, more methodical, and committed by perpetrators who are emotionally stable. Low neuroticism is indicative of high levels of emotion/self-regulation, thus, the current findings may be indicative of the more calculated abusers, rather than the explosive and impulsive type. This is further supported by the positive correlation found between animal abuse proclivity and an ability to regulate ones' anger. It would be beneficial for future research to explore how these two constructs are related in greater detail. In addition, recent statistical findings indicate that those who score highly on psychopathy measures also score highly on measures of neuroticism (Paulhus & Williams, 2002). Whilst this is not implying that all animal abusers are psychopaths, it does posit an interesting relationship between the two constructs. Animal

abuse is an illegal and antisocial behavior, so it may appeal to those who are low on neuroticism, as they are less deterred by feelings of anxiety, worry or guilt. Such characteristics allow them to emotionally disengage from their behavior, which, in turn, facilitates the behavior. Contrary to previous trends within the literature, the remaining personality traits, conscientiousness and openness, were not significantly related to animal abuse propensity.

Yet, in contrast to the theory posited above regarding emotional stability and effective regulation, impulsivity was positively associated with adulthood animal abuse propensity. This adds to the current literature which so far has only focused on impulsivity in children who abuse animals (Ascione, 2005). Therefore, these findings strengthen the current relationship between impulsivity and animal abuse, by highlighting the importance of this psychological construct in both adults and children who abuse animals. Relative to the contrasting findings discussed above, which suggest animal abusers are more likely to be emotionally stable, these findings may be tapping into the more explosive type of aggressors. Such aggressors would be less capable of controlling their emotions, and more likely to act impulsively without giving much regard to the consequences of their actions. However, there is limited research available to support this theory. Thus, further research is required here to explore the various types of animal abusers and how these types may (or may not) be distinguished by different types of emotion/self-regulation.

Taken together with previous findings (i.e. animal abuse propensity and illegal behavior) the associations found between animal abuse propensity, illegal behavior, and impulsivity may also be indicative of antisocial personality disorder. Antisocial personality disorder is a clinical diagnosis characterized by a persistent pattern of disregard for, or violation of, the rights of others without remorse (American Psychiatric Association, 2013). Those diagnosed often engage in illegal and impulsive behaviors, and violate social norms.

Given that the main features (i.e. illegal behavior, impulsivity) have already been identified in the current study, it is possible that this study has identified the symptoms of this disorder.

Previous research has already identified the potential link between these two constructs (e.g., Arluke et al., 1999; Gleyzer et al., 2002). To further explore this, future research should seek to examine how antisocial personality disorder may interplay with differing severities of animal abuse.

When examining anger management more directly, we found the anger regulation subscale of the Novaco Anger Scale to be significantly related to adulthood animal abuse propensity, which is indicative of an individuals' ability to regulate their anger experiences. As animal abuse proclivity increases so does ones' ability to regulate their own anger. This finding is particularly significant given that one of the primary intervention strategies in the USA is to refer animal abusers to anger management programs as a form of rehabilitation (American Humane Association, 2001). However, individuals who are more capable of regulating their anger could be more likely to commit indirect animal abuse, whereby an individual is a perceived provocateur, and harming the animal is an outlet for the aggression (i.e., form of indirect aggression, Baldry, 2004). In this instance, the ability to regulate their anger prevents them from directing their aggression towards another person, and instead they mis-regulate by directing it towards the animal which could be regarded as less consequential. Future research should examine how anger regulation relates to different types of animal abuse in more detail, as well as how this relationship is potentially mediated by empathy for human versus animal victims.

The final aim of this study was to examine whether high and low severity animal abuse propensity in adults would be related to different psychological and behavioral characteristics. While it was expected that groups would differ, illegal behavior and anger regulation were positively related to both high and low severity animal abuse propensity, and

extraversion was negatively associated with both high and low severity animal abuse. The single factor that differed between animal abuse severity types was neuroticism, which was negatively related to low severity animal abuse propensity in adults. It is possible that this unique relationship could be explained by the calmer and more emotionally stable nature of someone who scores low on neuroticism (Costa & McCrae, 1985). Low severity acts of animal abuse (as depicted in the scenarios), such as neglect, are much less temperamental than acts of high severity animal abuse. Therefore, it is unsurprising that individuals scoring low on neuroticism are more likely to endorse low severity animal abuse.

So, in summary, based on the existing literature, which suggests that animal abuse is more prevalent in violent offenders compared to non-violent offenders (Walters, 2013), it was assumed that antisocial and aggressive tendencies would be more pronounced in individuals who are more likely to endorse high severity animal abuse. However, the only factor which differed between animal abuse severities was low neuroticism, which was uniquely predictive of low severity abuse. Whilst these findings do not entirely support our hypothesis, they do highlight key psychological and behavioral features (i.e., illegal behavior, introversion, anger regulation) that are related to either level of animal abuse severity.

The current study has extended the current literature on adulthood animal abuse by highlighting key correlates of animal abuse propensity, but it is not without its limitations. Firstly, the self-report method utilized is vulnerable to socially desirable responding. To reduce this bias, the current study was conducted online so that participants could complete the study in private wherever they deemed appropriate. Future studies should include a social desirability scale to further address this issue (e.g., Crowne & Marlowe, 1960). Similarly, the current study is also vulnerable to common-method variance. To address this in future studies, attention-filters should be included to ensure the required attention is maintained throughout. Secondly, childhood and adulthood animal abuse items relied on retrospective

reporting, which is a common limitation encountered throughout the animal abuse literature (e.g., Henry, 2004). However, without access to case files or official documents, retrospective reports were considered the most suitable means to collect the data. Future research should aim to replicate this study using a convicted sample of animal abusers. This would provide further validation for the findings established within the current study. Finally, despite previous literature reporting gender differences in behavioral propensity (e.g., Alleyne et al., 2015; Schwartz et al., 2012), the current study did not support these differences. This may be a result of the amendments made to the original AAPS (Alleyne et al., 2015) created for this study. By replicating this study with an even distribution of male and female participants, this could be further validated.

The findings from this study add to the existing literature by highlighting the relationship between animal abuse, illegal and aggressive behavior and anger regulation. This further supports the notion that animal abusers and other aggressive individuals are likely to share a number of underlying characteristics that explain such behaviors. Moreover, this is the first study to acknowledge the relationship between personality traits and adulthood animal abuse propensity, in particular low extraversion, low agreeableness and low neuroticism. This study also highlights the important role of impulsivity in animal abuse perpetration. Taken together, these findings extend the current literature by identifying key behavioral and psychological characteristics that can be targeted for future prevention strategies. Although it is important not to assume that those who indicate a high behavioral propensity will engage in this behavior, related literatures have found that those who score high on offending proclivity share the cognitions found in apprehended offenders (Bohner et al., 1998; Malamuth & Check, 1980). Therefore, the factors identified in this current study may be targeted in treatments and interventions aimed at apprehended offenders.

Findings may also assist in identifying individuals who are vulnerable to committing animal abuse, as well as other violent offences. By being aware of the associations identified in this current study, individuals can be identified and services can be offered when instances of animal abuse occur, to prevent future antisocial behavior. In summary, this study has highlighted the behavioral and psychological correlates of animal abuse propensity in an adult community sample. Future studies should focus on identifying specific types of crime associated with animal abuse, so that the associated risk factors can be further identified and validated. Further exploration of the impact of substance misuse on this behavior should also be considered to identify whether there is a relationship to be evidenced.

Overall, animal abuse is largely underreported, and as a result, we are still not fully aware of the devastating impact and consequences of such aggression. Research focusing on adult perpetrators is gradually starting to emerge, but more is needed to achieve a fuller understanding of what the underlying characteristics are that contribute to and maintain this behavior in adults. This can then be fed directly into the development of effective treatment programs aimed at reducing animal abuse.

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Table 1.
Means and Standard Deviations of the Measures and subscales (N = 147).

Measure	Minimum	Maximum	M	SD
Modified AAPS				
Overall Thrill	6	30	8.61	5.22
Overall Power	6	28	9.98	5.91
Overall Behavioral propensity	6	21	7.25	2.85
Overall Others' reaction	6	21	6.97	2.42
High severity propensity	12	41	15.97	6.73
Low severity propensity	12	48	16.85	6.96
Total Score	24	86	32.82	13.27
TCUDS –Total	1	2	1.56	0.50
Big Five Inventory				
Extraversion	9	40	26.0	6.14
Agreeableness	18	45	33.20	5.86
Conscientiousness	18	44	30.46	5.34
Neuroticism	11	39	24.63	6.04
Openness	22	50	36.39	5.31
Illegal Behavior Checklist				
Status	5	10	6.50	1.11
Property	7	13	7.46	1.12
Drugs	5	10	5.78	1.23
Violence	5	8	5.41	0.74
Total	22	39	25.14	3.47
Barratt Impulsiveness Scale				
Attentional	9	26	17.08	3.29
Motor	14	41	23.07	4.55
Non-planning	13	38	24.62	4.82
Total	44	92	64.78	9.40
Novaco Anger Scale				
Behavioral	16	45	25.33	6.05
Arousal	16	48	27.88	6.03
Cognitive	16	44	28.79	4.89
Anger regulation	16	36	25.81	4.16
Total	52	139	81.97	15.11
Provocation Inventory	30	97	63.33	13.52

Table 2.

ANOVA statistics for gender differences in responses on the M-AAPS (N = 147)

Subscale	Males	Females	F	p	η_p^2
	Mean (SD)	Mean (SD)			
Thrill	9.08 (5.96)	8.42 (4.86)	.39	.678	.005
Power	10.33 (6.39)	9.83 (5.72)	.17	.842	.002
Behavioral propensity	7.75 (3.72)	7.03 (2.32)	1.14	.322	.015
Others' reaction	7.33 (3.02)	6.81 (2.09)	.83	.436	.011
Total	34.50 (15.62)	32.09 (12.06)	.67	.515	.009
High intensity					
Behavioral propensity	16.89 (7.73)	15.52 (6.20)	.94	.395	.013
Low intensity					
Behavioral propensity	17.52 (8.18)	16.56 (6.35)	.39	.679	.005

Table 3. Bivariate correlations between the related variables (N = 150).

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Animal Abuse Propensity	-																					
2. Illegal Behavior	.36**	-																				
3. Status Crimes	.22**	.77**	-																			
4. Property Crimes	.36**	.88**	.54**	-																		
5. Violent Crimes	.53**	.70**	.39**	.58**	-																	
6. Drug Crimes	.16*	.86**	.53**	.71**	.46**	-																
7. NAS	.31**	.26**	.15	.22**	.36**	.16*	-															
8. PI	.12	.13	.10	.15	.15	.03	.62**	-														
9. Behavior Subscale	.32**	.35**	.27**	.31**	.38**	.23**	.92**	.53**	-													
10. Arousal Subscale	.23**	.20*	.11	.17*	.34**	.10	.92**	.60**	.75**	-												
11. Anger Regulation Subscale	-.14	-.16	-.19*	-.13	-.20*	-.05	-.39**	-.29**	-.41**	-.40**	-											
12. Cognitive Subscale	.31**	.15	.03	.11	.26**	.13	.87**	.57**	.70**	.72**	-.26**	-										
13. Substance Misuse	-.16	-.48**	-.39**	-.31**	-.32**	-.52**	-.21*	-.06	-.27**	-.11	.16	-.20*	-									
14. Extraversion	-.11	.00	.06	.00	-.13	.01	.08	.09	.13	.04	.14	.01	-.08	-								
15. Agreeableness	-.32**	-.28**	-.22**	-.27**	-.30**	-.17*	-.52**	-.28**	-.51**	-.44**	.49**	-.47**	.26**	-.12	-							
16. Conscientiousness	-.19*	-.29**	-.23**	-.26**	-.28**	-.19*	-.21*	-.01	-.31**	-.10	.23**	-.17*	.20*	.20*	.41**	-						
17. Neuroticism	-.04	.04	.05	.00	.14	-.02	.37**	.32**	.26**	.44**	-.38**	.30**	-.03	-.20*	-.30**	-.11	-					
18. Openness	-.14	-.21*	-.12	-.17*	-.28**	-.13	-.16	-.03	-.21*	-.20*	.51**	-.02	.09	.26**	.30**	.18*	-.15	-				
19. Impulsivity	.22**	.42**	.35**	.39**	.29**	.32**	.32**	.19*	.45**	.22**	-.25**	.19*	-.21*	.09	-.28**	-.59**	.11	-.10	-			
20. Attentional Impulsivity	.13	.28**	.25**	.21*	.25**	.22**	.38**	.22**	.40**	.31**	-.22**	.33**	-.17*	-.09	-.35**	-.55**	.22**	-.10	.72**	-		
21. Motor Impulsivity	.11	.31**	.24**	.29**	.18*	.26**	.21*	.19*	.31**	.11	.08	.11	-.13	.25**	-.02	-.23**	-.01	.17*	.76**	.43**	-	
22. Nonplanning Impulsivity	.23**	.33**	.28**	.34**	.22**	.22**	.17*	.03	.32**	.11	-.42**	.04	-.18*	.00	-.28**	-.55**	.08	-.29**	.74**	.32**	.24**	-

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

Table 4.

Regression statistics for related measures predicting the overall behavioral propensity score on the M-AAPS (N = 147).

Variable	Mean (SD)	β	t	p
Extraversion	26.07 (2.87)	-.17	-2.22	.028
Agreeableness	33.31 (5.84)	-.17	-2.19	.03
Neuroticism	24.56 (6.02)	-.23	-2.80	.006
Illegal Behavior	25.14 (3.47)	.25	3.30	.001
Anger Regulation	81.97 (15.11)	.24	2.65	.009

Note.

$R^2 = .26$

Table 5.

Regression statistics for related measures predicting the high severity animal abuse propensity score on the M-AAPS (N = 147).

Variable	Mean (SD)	β	t	p
Extraversion	26.07 (6.12)	-.20	-2.51	.013
Illegal Behavior	25.14 (3.47)	.28	3.59	.001
Anger Regulation	81.97 (15.11)	.22	2.54	.012

Note.

$R^2 = .15$

Table 6.

Regression statistics for related measures predicting the low severity animal abuse propensity score on the M-AAPS (N = 147).

Variable	Mean (SD)	β	t	p
Extraversion	26.06 (6.12)	-.19	-2.47	.015
Neuroticism	24.56 (6.02)	-.18	-2.15	.033
Illegal Behavior	25.14 (3.47)	.28	3.60	.001
Anger Regulation	81.97 (15.11)	.26	3.07	.003

Note.

$R^2 = .17$