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Measurement of Cruelty in Children: The Cruelty to Animals Inventory

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Abstract Cruelty to animals may be a particularly pernicious aspect of problematic child development. Progress in understanding the development of the problem is limited due to the complex nature of cruelty as a construct, and limitations with current assessment measures. The Children and Animals Inventory (CAI) was developed as a brief self- and parent-report measure of F. R. Ascione's (1993) 9 parameters of cruelty. The CAI emerged as a reliable, stable, and readily utilized measure of cruelty using parent and child reports. Children (especially the older children) reported higher rates of cruelty than their parents and boys reported more cruelty than girls. Self- and parent-reports showed good convergence with independent observations of cruelty versus nurturance during free interactions with domestic animals. The results indicate that cruelty to animals can be reliably measured using brief child and parent report measures.

cruelty to animals - measurement - child psychopathology - aggression

Cruelty to animals has been part of the criteria for conduct disorder (CD) in the last two editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association [APA], 1987, 1994) and there is evidence that it may be a particularly pernicious symptom. Frick et al.'s (1993) meta-analysis of 60 studies found that cruelty to animals was useful in discriminating between children with severe conduct problems (destructive subtype) and mild conduct problems (nondestructive subtype). Luk, Staiger, Wong, and Mathai (1999) also found that children described as cruel to animals by their parents were more likely to experience severe conduct problems. Very few prospective studies are available, however, the weight of evidence indicates that cruelty to animals may be stable and prognostic through childhood and adolescence.

Tapia (1971) showed that of a small sample of cruel clinic-referred 5- to 15-year-old children, 62% were reported to still display cruelty to animals years later (Rigdon & Tapia, 1977). Adolescent forensic samples show high rates of torturing or hurting animals in the last 12 months (The Utah Division of Youth Corrections, 1992—data presented by Ascione, 1993; Lewis, Shanok, Grant, & Ritvo, 1983; Wochner & Klosinski, 1988). Retrospective research on incarcerated adults (Felthous & Kellert, 1986, 1987; Kellert & Felthous, 1985) has also been consistent in demonstrating links between childhood cruelty to animals and later violence and aggression towards humans (see also Arluke, Levin, Luke, & Ascione, 1999; Ressler, Burgess, & Douglas, 1988; Tingle, Barnard, Robbins, Newman, & Hutchinson, 1986).

One factor limiting progress in this area is the absence of measures that are both theoretically astute and readily usable in clinical and research settings. The single item "cruel to animals" on the Child Behavior Checklist (CBCL; Achenbach, 1991) has been used by researchers to estimate the prevalence of cruelty (Achenbach & Edelbrock, 1981; Achenbach, Howell, Quay, & Conners, 1991; Offord, Boyle, & Racine, 1991), and to look at the factor structure of conduct problems in children (e.g., Frick et al., 1993). As no definition of cruelty is provided

by the CBCL item, it is difficult to interpret these results.

Other researchers have used structured interviews to measure cruelty (e.g., Boat, 1995; Kellert & Felthous, 1985). These are useful in that they allow for the collection of information about multiple aspects of behavior that are held to underlie the cruelty construct. For example, Ascione, Thompson, and Black (1997) developed the Cruelty to Animals (Children and Animals) Assessment Instrument (CAAI) which provides information on types of cruel acts and animals, estimates of frequency and severity of cruelty, motives and social context of the cruelty, and degree of remorse shown. Evaluations of the CAAI are positive, however it is a lengthy interview, greatly limiting its use in clinical settings and research projects in which multiple constructs need to be assessed.

Guymer, Mellor, Luk, and Pearse (2001) produced a parent-report questionnaire version (the CABTA) of Ascione's measure. Psychometric properties of their measure were encouraging, however, the study was limited by the use of small, highly selective samples. Further, their measure was only developed for parents. Given that acts of cruelty would be expected to occur under a level of secrecy, parental reports of children's cruelty would not be reflective of actual levels of cruel behavior. Prevalence rates for child cruelty increase dramatically when based on children's self-reports rather than parental reports on the CBCL (Offord et al., 1991). It would therefore seem helpful to design a questionnaire that could be administered to both parents and children. Finally, the CABTA refers specifically to intentional behavior in one item only, with the possibility that high scores on the CABTA may reflect other nonintentional maladaptive behaviors in children. Hence, while Guymer et al. (2001) took an important first step in developing a questionnaire measure of childhood cruelty to animals, it is clear that further development is necessary. The aim of the first study was thus to build on the work of Ascione et al. (1997) and Guymer et al. (2001) by developing a valid and reliable questionnaire measure of children's cruelty to animals. The measure was constructed such that it was expected to display strong internal consistency, good test-retest reliability, and some convergence between child and parent reports. As with measurement of other constructs in children (e.g., Mesman & Koot, 2000), child and parent reports were expected to show a low but statistically significant correlation.

The second and third studies used the Cruelty to Animals Inventory with larger sample of children and their parents to further examine reliability and validity, and to examine age and gender trends in the development of cruelty to animals. It was hypothesized that boys would show more cruelty overall owing to observed gender difference in aggressive and nurturing behaviors, and that cruelty would decrease with age in line with decreases in general behavioral dyscontrol up until the adolescent years. The final study aimed to assess whether self- and parent reports of cruelty are predictive of actual behavior. Cruelty is generally a low-frequency secretive behavior that would be difficult to observe; however, it is likely that a propensity to cruelty may be manifest in common interactions with pets. If cruelty does manifest at a more observable level of interaction, this raises the possibility that interventions can be designed to improve the quality of these and perhaps reduce isolated acts of cruelty in the meantime.

STUDY 1: DEVELOPMENT OF THE CRUELTY TO ANIMALS INVENTORY

The Children and Animals Inventory (CAI: Appendix A) was developed for this study. It includes parent and child self-report forms based on the Children and Animals Assessment Instrument (CAAI; Ascione et al., 1997), a semistructured interview for children.

Nine theory-driven aspects of cruelty are assessed as follows: severity (based on degree of intentional pain and injury caused to an animal), frequency (the number of separate acts of cruelty), duration (period of time over which the cruel acts occurred), recency (the most recent acts), diversity across and within categories (number of animals abused from different categories and the number of animals harmed from any one category), sentience (level of concern for the abused animal), covertness (child's attempts to conceal the behavior), isolation (whether the cruelty occurred alone or with other children/adults), and empathy (the degree of the child's remorse for the cruel acts).

To develop the CAI, scoring criteria for the CAAI were converted to Likert scales. Each item offered a negative response such as "I have never hurt an animal" to allow a total score of 0 for children who reported never having displayed intentional cruelty to animals. In addition to the nine Likert-type items, a free-response question (item 10) asked the reporter to describe an incident or pattern of cruelty. Responses to this item were scored from 0 to 3 according to a specified coding system to obtain a score for severity (see Appendix B for more information on scoring). Total possible scores for the CAI range from 0 (no instances of animal cruelty) to 39 (severe, chronic, and recent cruelty to a range of animals with the child showing no empathy). Two versions of the CAI were developed to create a child report and a parent report of cruelty to animals. Both versions use the same items but the wording is slightly different. For example, "Have you ever hurt an animal on purpose?" is phrased "Do you know of, or have you witnessed your child deliberately treating an animal in a cruel or troubling way?" in the parent version.

Thirty-six parent and child pairs participated in a preliminary study. All children were aged between 6 and 13 years of age (M D 11.4 years, SD D 1.8). Participants were recruited on a voluntary basis from Griffith University through classes or through acquaintances of the research team; all were from a middle class, Caucasian background, and gender ratio of females to males was 50%. Internal consistency was high: CAI-Child D .96, CAI-Parent D .88. Significant, positive correlations were found between parent and child reports of cruelty in both the first ($r D .51, p < .05$), and second administrations ($r D .46, p < .05$). One-week test-retest correlations showed strong positive correlations between administrations for both the child ($r D .75, p < .01$) and parent ($r D .80, p < .01$) versions. These findings indicate that the CAI is potentially a valid and reliable measure of children's cruelty to animals; however, the distribution of CAI scores was skewed in these nonclinic samples, with the majority of participants scoring zero. This can artificially inflate correlations. The next study used a larger sample of children to allow for the use of more appropriate statistical techniques, that is, stability and convergence within the sub sample scoring greater than zero, and internal consistency using Rasch scaling, a variant of item response theory.

STUDY 2: VALIDATION OF THE CAI IN A LARGER SAMPLE

Method

Participants were 330 children aged 6–13 years and their parents, recruited from five independent schools within southeast Queensland, Australia. The participant pool included 155 boys and 175 girls (M age Boys D 10 years, SD D 2.2; M age Girls D 10.1 years, SD D 1.1). The five schools were from several different locations including rural, coastal, and suburban areas (approximately 33% each). All schools were located in or around Brisbane, a city with a population of 1.3 million residents that contains a mix of European, Asian, and Indigenous cultural backgrounds but is predominantly Caucasian.

Of the child participants in this study, 18.3% were only children, 44.8% had one sibling, and 36.9% had two or more siblings (M number of siblings D 1.51); 81.8% of the parents were married/defacto and 18.1% were single parents. The average number of pets owned by the families was 2.02 with 73.6% of families owning four or fewer, and 14.5% having none. Of the fathers, 31.8% had completed college or higher, 24.5% had completed college/trade certificate, 15.2% had completed high school, and 26.4% had completed grade 10. For the mothers, 34.2% had completed college or higher study, 24.2% had attended college/trade, 15.2% had finished high school, and 26.1% had completed grade 10. Therefore, parents in this study were generally educated, middle class, Caucasian, and of average SES.

The test battery consisted of an information and consent sheet, the Children and Animals Inventory—Parent version (CAI-P), and the Children and Animals Inventory—Child version (CAI-C), completed anonymously, as well as a return envelope and a raffle ticket to enter a draw for a prize. The completed questionnaires were returned in the reply-paid envelope with return rates across schools ranging from 30.5 to 78.8% return rate. To check that variations in return rates were not introducing sampling biases, we compared the participants with the larger population from which they were drawn, and looked for any relationships between return rates and results obtained.

Our sample matched education district population data for parental education and income, and ethnic status. Further, differential return rates were not predictive of any demographic differences in participants, or means, SDs and ranges on the CAI, between the different schools.

Results

Internal Reliability

By way of comparison to the pilot data, traditional analyses using Cronbach's statistic showed both the CAIP and the CAI-C attained an alpha of .96. These dropped to .88 and .89 when cases scoring zero were deleted. When measured in nonclinical populations, cruelty and thus the CAI has a very low base rate and therefore results in highly skewed item response distributions. This violates the assumptions of correlation-based scale statistics, making statistics such as Cronbach's alpha inappropriate. Therefore, Rasch scaling (a variant of item response theory) was used to examine the psychometric properties of the CAI. This approach enables the researcher to model the relationship between a trait and the expected response pattern on a group of items. For the purposes of this study, Rasch scaling was used to test the reliability of the items making up the CAI while avoiding assumptions about the distribution of scores. Data were analysed within the computer program Rasch Unidimensional Measurement Models (RUMM; Andrich, Sheridan, Lyne & Luo, 1998; Rasch, 1960/1980). This model is applicable to items with extended nondichotomous response categories, such as those used in this study. The RUMM program estimates item parameters that are used to map item response categories onto the underlying latent trait. The program then substitutes those parameters back into the model and examines discrepancies between expected values (predicted from the model) and observed values. Three sources of evidence regarding the appropriateness of the model are produced: the item-trait test of fit, average fit of persons across items, and average fit of items across persons. The first of these is a chi-square test of the consistency of item parameters across person measures for each item. The latter two examine the residuals between expected and actual values for each person on each item and for each item on each person. The residuals are used to produce fit statistics that tend towards a distribution with a mean of zero and standard deviation of one in the case of a good-fitting model. The RUMM program also produces an index of person separation, which is a scale statistic conceptually equivalent to Cronbach's alpha. That is, it represents the proportion of variance that is true (not error).

Parent Ratings

The item-trait interaction test produced a chi-square (df D 12) value of 20.94 ($p < .05$). The mean and SD of the person-fit statistic was μ 0.07 and 1.07 respectively. The mean and SD of the item-fit statistic were 0.22 and 1.99 respectively. These results support the measurement model. The index of person separation had a value of .90, indicating that the measure is highly reliable and that only 10% of variance was error variance.

Child Ratings

The item-trait interaction test produced a chi-square (df D 12) value of 41.08 ($p < .001$). The mean and SD of the person-fit statistic was μ 0.17 and .98 respectively. The mean and SD of the item-fit statistic were 0.07 and 2.02 respectively. These results support the measurement model. The index of person separation had a value of .90, indicating that the measure is highly reliable and that only 10% of variance was error variance. Parent-Child Agreement There was a high rate of agreement between parents and children on reports of cruelty; girls, r D :66; boys, r D :42. Removal of participants scoring zero on one or other of the child and parent reports only marginally reduced these correlations (girls, r D :43; boys, r D :32). Thus, agreement between parents and children occurred for level of cruelty, not just nonoccurrence versus occurrence. Participants were divided by gender and placed in two age groups (6–9 years and 10–13 years) and correlations between child and parent reports of cruelty were examined. It was hypothesized that the correlation between child and parent reports of cruelty would increase with age. This was not supported. For both boys and girls, convergence between child and parent reports was significant but decreased somewhat with age, boys 6–9 years: r D :58, $p < .01$; boys 10–13 years: r D :35, $p < .01$, girls 6–9 years: r D :83, $p < .01$; girls 10–13 years: r D :57, $p < .01$. Overall, girls' reports of cruelty

were more highly correlated with their parents' reports than were boys', however differences between the sizes of the correlations were not significant in this sample size using Fisher's z tests at $p < .05$.

An ANOVA was used to examine the differences between child and parent reports of cruelty in each group. Means and SDs are shown in Table I. A significant main effect was found for reporter, $F(1, 326) D, 11.78, p < .001$.

Children were found to report higher rates of cruelty than their parents. A significant main effect was also found for gender, $F(1, 326) D, p < .05$, such that boys reported more cruelty than girls. A main effect was found for age, $F(1, 326) D, p < .001$, whereby younger children had higher parental CAI scores. All the foregoing main effects were qualified by a three-way interaction between, gender, age, and reporter, $F(1, 326) D 6.07, p < .01$. Parents reported higher rates of cruelty in the younger children than in the older children, and on average reported more cruelty by boys than by girls. In the younger age group, parents reported more cruelty by boys than by girls, however, in the older age group, parents reported no difference between rates for girls and boys. Therefore, according to the parents, cruelty was more prevalent in young children, especially young boys. It reduced with age, but diminished less so in girls who started from a lower level than boys in the younger age group. In contrast, children's self-reported cruelty was higher for boys than girls in both age groups. Additionally, older children of both genders reported higher rates of cruelty than younger children. A total of 81.5% of parents and 69.4% of children reported no cruelty to animals. For those children disclosing some cruelty to animals, scores were spread across

Table I. Means, SDs, Frequencies, and Potential Cutoff Scores on the CAI Parent and Child Versions: $n D 330$ From Study 2 6–9 years 10–13 years
 Male ($n D 61$) Female ($n D 72$) Male ($n D 94$) Female ($n D 103$)
 Parent Child Parent Child Parent Child Parent Child
 report report report report report report report report
M (*SD*) 6.01 (8.85) 5.61 (8.68) 2.17 (5.96) 2.14 (5.85) 1.51 (4.67) 5.95 (8.96) 1.78 (5.10) 2.92 (5.82)
 Frequencies
 0 59.0% 59.0% 86.1% 81.9% 88.3% 59.6% 85.4% 75.7%
 1–10 8.1% 13.1% 1.4% 5.6% 4.3% 9.7% 4.9% 9.8%
 11–20 23.8% 14.6% 11.2% 12.6% 6.5% 23.3% 8.8% 12.7%
 21–30 9.8% 11.4% 1.4% 0 1.1% 5.3% 1.0% 2.0%
 30C 0 1.6% 0 0 0 2.2% 0 0
 Top 5% >23 >25 >17 >16 >15 >21 >16 >16
 Top 10% >20 >20 >14 >12 >10 >18 >15 >14
 >2 *SD* >23 >23 >12 >11 >11 >24 >11 >14

the severity ratings with the 11–20 range being the most common. Scores above 30 were unusual with only 1.8% of boys and no girls falling into this category. Table I includes potential cutoff scores based on percentile rankings and scores greater than two SDs above the mean. Amongst the boys, child reports indicated that rates of cruelty show a trend to increase with age. Using the parents' information, scores for cruelty were highest for boys aged 6–9 years of age. For the girls, the child reports indicated that girls are relatively stable across age with a slight increase in the older girls; however, the parents' reports of cruelty for girls were highest in children aged 8–11 years but decrease with the child's age after that.

STUDY 3: PARENT REPORTS OF CRUELTY IN YOUNGER CHILDREN

Study 2 assessed the CAI using parent- and child report in 6- to 13-year-old children. The middle years of childhood, viz. 6–9 years, are well known as the transition period when children develop the skills to accurately report on their behavior and experiences. Individual differences are large, however, and many children in this age range cannot reliably report on themselves. Thus, most psychological measures for children are not appropriate for use in participants under 7–9 years of age. Given that most behavioral problems and specifically

cruel behavior, generally start before this age, and that intervention is generally more effective with younger children, we were interested in using the CAI with younger children using parent reports only. Study 3 assessed the CAI-parent-report with a large community sample of 3–9 to year-old children, and tested demographic, family conflict, and child characteristics as correlates of cruelty. The overlap in age with the participants in study 2 (i.e., 6–9 years olds) was designed so that we could cross-validate results for at least one subsample.

Method

Participants were 1,333 children aged 3–9 years and their caregivers, recruited from 12 preschools and state schools within southeast Queensland, Australia. The participant pool included 686 boys and 647 girls (M age 6.2 years, SD 1.10). The schools were from several different locations including rural, coastal, and suburban areas. Of the children in this study, 19.2% were only children, 46.8% had one sibling, and 34.0% had two or more siblings (M number of siblings 1.51). A total of 88.8% of the parents were married/defacto and 11.1% were single parents. Of the fathers, 34.3% had completed college or higher, 33.2% had completed college/trade certificate, 16.7% had completed high school, and 15.7% had completed grade 10. For the mothers, 33.6% had completed college or higher, 15.6% had attended college/trade, 26.6% had finished high school, and 23.8% had completed grade 10. Ethnicity was similar to study 2.

The test battery comprised an information and consent sheet, the Children and Animals Inventory—Parent version (CAI-P), a selection of measures of child adjustment and parenting style, and a reply-paid envelope. Return rates across schools ranged from 32.5 to 74.8%. As in study 2, variations in return rates were not predictive of any demographic differences in participants, or means, SDs, and ranges on the CAI, between the different schools. Because this sample was participating in a larger study of children’s development, the CAI was completed as part of a larger battery of measures and was not anonymous.

The Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996) parent-report form was completed by the child’s primary caregiver, who in the vast majority of families was the mother. The APQ consists of 42 items presented with a 5-point endorsement scale: Never, Almost Never, Sometimes, Often, and Always. It is scored on subscales: parental monitoring and supervision, inconsistent punishment, corporal punishment, positive parenting, involvement, and other discipline practices (focussing on use of planned ignoring, time-out, and contingent reward and loss of privileges). The APQ has good psychometric properties in Australian community samples in this age range (Dadds, Maujean, & Fraser, 2003). The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a 25-item rating scale that includes child- and parent-report versions. It can be scored as a total difficulties score or into five subscales: hyperactivity, conduct problems, emotional symptoms, peer problems, and prosocial. In the present study, the SDQ was completed by the primary caregiver. The SDQ has good psychometric properties and discriminative validity with this age group (Goodman, 1997).

Results

Using traditional Cronbach’s alpha, the CAI-P attained an alpha of .96, dropping to .89 with cases scoring

Table II. Means, SDs, Frequencies, and Provisional Banding for Children and Animals Inventory (CAI)—Parent Report for 3- to 9-Year-Olds,

n = 1,333 From Study 3

3–5 years 6–9 years

Male Female Male Female

(n = 395) (n = 392) (n = 290) (n = 255)

M (SD) 3.20 (7.19) 1.21 (4.28) 2.92 (6.96) 1.03 (4.39)

Frequencies

0 77.0% 87.2% 77.5% 92.9%

1–10 4.8% 4.4% 3.9% 2.0%

11–20 9.9% 6.5% 8.6% 3.2%

21–30 4.5% 0.8% 5.7% 1.6%

30C 0.2% 0 0.3% 0.4%

Top 5% >21 >13 >21 >10
Top 10% >16 >1 >16 >0
>2 SD >17 >9 >17 >9 zero removed.

The item–trait interaction test produced a chi-square (df = 12) value of 65.08 ($p < .001$). The mean and SD of the person-fit statistic were 0.00 and 0.63 respectively. The mean and SD of the item-fit statistic were 0.99 and 1.84 respectively. These results support the measurement model. The index of person separation had a value of .91, indicating that the measure is highly reliable and that only 9% of variance was error variance.

Means and SDs for the sample split by gender and age (3–5 versus 6–9) are shown in Table II. An ANOVA showed main effects for gender only, $F(1, 1328) = 34.54, p < .001$, such that more cruelty was observed in boys. Comparison with the parent data reported in study 2 shows discrepancies in mean levels, with reported rates of cruelty consistently lower than those found previously for the 6–9 age group. Regression was used to predict children’s cruelty scores from three groups of predictors:

- (1) demographics—age, mother’s education, and family income;
- (2) child adjustment—subscales of the SDQ including hyperactivity, conduct problems, emotional problems, peer problems, and prosocial; and
- (3) parenting style as reported on the APQ including monitoring/supervision, positive parenting, inconsistent discipline, and harsh punishment.

For boys, demographics were not significant. Addition of block 2 child adjustment variables added significant prediction, $R^2 \text{ change } = .17, F(5, 660) = 27.58, p < .001$. Parenting variables did not add to the prediction. Once all predictors were entered, those with unique significant prediction were education of mother ($\beta = .12, p < .005$), conduct problems ($\beta = .30, p < .001$) and hyperactivity ($\beta = .16, p < .001$). For girls, demographics were not significant. Addition of block 2 child adjustment variables added significant yet minimal prediction, $R^2 \text{ change } = .05, F(5, 627) = 6.64, p < .001$. Parenting variables did not add to the prediction. Once all predictors were entered, those with unique significant prediction were education of mother ($\beta = .08, p < .05$), conduct problems ($\beta = .11, p < .05$) and hyperactivity ($\beta = .12, p < .05$). Thus, these data confirm higher rates of cruelty in boys, but show no consistent age effects across the 3–9 age range. Means were generally lower in this study than in the previous study, possibly due to the nonanonymous use of the CAI and its place in a large battery of measures. An examination of correlates of cruelty showed that it was associated with lower education of parents and a broader pattern of conduct problems in the child. The sample size in this study provided adequate power to allow examination of associations between specific aspects of cruelty and indices of adjustment in the child. This was examined by using the conduct problems subscale, and the two global adjustment subscales of the SDQ, the Total Difficulties and Impact scores, as dependent variables in a regression using the items of the CAI-P as predictors. For each of the dependent measures, the results were identical and thus, only those for Total Difficulties are presented here. For boys, zero-order correlations between the items of the CAI and Total Difficulties were all significant at $p < .05$ and ranged from .18 to .35. When all were entered, 19% of variance in Total Difficulties was accounted for, $F(14, 327) = 5.35, p < .05$. Items showing unique predictive power were “presence of any deliberate cruelty” ($\beta = .54$), “species of animal treated cruelly” ($\beta = .21$), and “cruelty enacted while alone” ($\beta = .21$).

For girls, zero-order correlations between the items of the CAI and Total Difficulties were all significant at $p < .05$ and ranged from .13 to .23. When all were entered, 14% of variance in Total Difficulties was accounted for, $F(14, 246) = 2.73, p < .05$. The only item showing unique predictive power was “presence of any deliberate cruelty” ($\beta = .59$).

STUDY 4: RELATIONSHIP OF THE CAI TO INDEPENDENT OBSERVATIONS OF CRUEL AND NURTURING BEHAVIOR

The final study aimed to assess whether scores on the CAI would be predictive of actual quality of child–animal interactions. We were unable to locate an observation system of child–animal interactions that produced indices of cruel versus nurturing behaviors, so one was developed for the study: The Cruelty to Animals Observation (CAO). Thus, we assessed the internal validity, interrater reliability and external validity of the CAO. Given the low rates

of cruelty reported for girls, we limited this first trial of direct observations to boys.

Method

Participants

Participants were school-aged children from a state primary school in Brisbane, Australia. From a total school population of 654 children (334 boys, 320 girls) aged between 5 and 13 years, 30 boys were selected to continue in the study based on their scores on the CAI-C in order to ensure that a broad range of CAI scores were represented in the final sample (low D 0, medium D 1–12, or high D 13–22). Initially, all children completed the CAI and scores were entered into a computer. Ten children from each score range were then selected by computer generated random identification numbers based on their CAI-C scores. Two children were absent during the session and so the final sample consisted of $n = 28$ (low D 10, medium D 10, high D 8). Age ranged from 6 to 12 years ($M = 8.93$, $SD = 1.81$).

Measures and Procedure

Parents and children completed the CAI as described in the previous studies. Boys, in groups of three, were then invited to play with a pet mouse in a specially setup room in the school. Two 16-week-old mice were used and were alternated after each group of children to reduce stress on the animals. The three activities with the animal included:

Activity 1, Free-play using a "Runabout Ball™" in which the mouse can run and thus propel itself around the room: 5 min. Activity 2, Training the mouse to run a maze—children were asked to help the mouse run a simple maze. Equipment provided included a maze, food, and small blunt guiding sticks: time allowed 3 minutes.

Activity 3, Feeding the mouse – children were invited to feed the mouse: time allowed 3 min. With the use of two room dividers, the researcher was able to be in the same room and thus supervising the children under study, yet appearing to be detached from the children's interactions with the mice. These sessions were recorded using a stationary video camera. The streaming of video allowed for live capture of picture and direct recording to VHS tape, and simultaneous viewing of behavior on a television or monitor. The children's behavior was scored and rated from the videotapes across the three dimensions of the CAO (Nurturing: caring, empathic, gentle behavior; Cruelty: careless and/or aggressive behavior with potential to distress animal; and Engagement: active verbal and/or nonverbal involvement with the animal) that rate the quality of interactions between a child and a companion animal.

Observers were trained in the CAO definitions and procedure using training tapes of child–animal interactions, and were kept naive to the boys' CAI scores. Each interaction was rated from 1 to 5 for each of the three dimensions, and individual interaction (activity) scores were added to create total scores for each scale (Nurturing, Cruelty, and Engagement in the Activity). Two observers were used for 36% of observations in order to check interrater reliability. Agreement was adequate, with all correlations between ratings over the three dimensions and tasks ranging from $r = .77$ to $.85$. The correlation between the Cruelty and the Nurturing scale Total scores was $-.92$, indicating our constructs, or observers' interpretations of them, were largely capturing two ends of the same cruelty–nurturance dimension. Engagement in Activity was not correlated with either the Nurturing ($.09$) or Cruelty ($.09$) scales, indicating that results below for these scales are not confounded by level of engagement.

Ethics approval was obtained from Griffith University and Education Queensland. An observer was present at all times and was instructed to intervene and temporarily suspend the session and instruct the relevant child to play more gently should any child's behavior have the potential to harm the mouse. This happened twice. In general, behavior we defined as cruel was low level and involved overly rough pushing and prodding of the mouse in the Runabout Ball™ and maze run, respectively.

Results

On 5-point scales of low to high, participants were quite involved with the mice ($M = 3.5$, $SD = 0.60$; range 2.67 – 5), moderately nurturing ($M = 2.98$, $SD = 0.91$; range 0.33 – 4.33), and less cruel ($M = 1.96$, $SD = 0.88$; range 0.67 – 4.67) across the three interactional

tasks. To confirm the reliability of the CAI scales, parent and child versions were assessed for convergence before comparison with the CAO. As reported in the previous studies, convergence between parents and children was high ($r = .79, p < .01$, dropping to $.59$ with those scoring zero on the CAI-C removed, and $r = .60, p < .01$, after zeros on the CAI-P were removed). Given that this sample ranged in age from 6 to 12 years and that the previous studies showed a relationship between age and CAI cruelty scores, it was important to ensure that any relationship between CAI scores and independent observations was not a by-product of the child's age. Bivariate correlations showed that age was inversely (but nonsignificantly) related to level of engagement with the animal ($r = -.29, p > .05$), but was unrelated to either cruelty ($r = .03, p > .05$) or nurturing ($r = .05, p > .05$). Analysis of the correlations between the CAI and CAO revealed the following: CAI-Child report, $r = .55, p < .05$, for Cruelty, $r = .52, p < .05$, for Nurturing, and $r = .03, p > .05$, with Engagement in the Activity. For CAI-Parent report, $r = .38, p < .05$, for Cruelty, $r = .41, p < .05$, for Nurturing, and $.00$ with Engagement in the Activity. Thus, independent observations of the child's behavior in the classroom setting were convergent with both child and parent reports of the child's history of cruel behavior.

DISCUSSION

Previous research into cruelty to animals has been limited in modes of assessing cruelty. Many studies have used the single item "cruel to animals" from the Child Behavior Checklist (CBCL; Achenbach, 1991) and others have used structured interviewing (Boat, 1995; Kellert & Felthous, 1985). Both these methods have limitations. Assessing cruelty based upon a single item can lack scope and detail, and structured interviewing can be labor-intensive and lengthy. Therefore, to facilitate the assessment of childhood cruelty to animals, the current study extended the work of Guymier et al. (2001) by developing the Cruelty to Animals (Children and Animals) Inventory (CAI). The CAI is a paper and pencil, self- and parent-report inventory that derives a total score representing Ascione's nine aspects of cruel behavior. The results from this research provide support for Guymier et al.'s (2001) finding that Ascione's nine aspects of cruelty can be reliably measured using a questionnaire format. Using the CAI in normative community samples such as those employed in these studies produced low rates of cruelty overall and thus, skewed distributions of scores. According to parent- and self-reports, most children do not engage in deliberate cruelty to animals. For the small percentage who do, behaviors range from mild infrequent episodes to repeated and extreme cruelty without remorse. The hypothesis that the CAI would show adequate psychometric properties was supported across three samples, showing strong internal consistency, test-retest reliability, and convergence between parent and child reports. Importantly, the present study showed that the CAI converged with independent observations of child-animal interactions scored both for cruelty and nurturing behaviors.

With regard to the convergence data, relatively high levels of agreement were found between parents' and girls' reports, and to a lesser extent, parents' and boys' reports. The child psychopathology literature typically finds small but significant positive correlations between parents' and children's reports, especially for secretive and private events. The strong convergence levels found for our cruelty data attest to the salience of such behavior and support the validity of collecting self-or parent-reported estimates. Parents of boys were found to show the lowest levels of convergence and mean levels indicated that parents tended to underreport their sons' cruelty, indicating either lack of knowledge of the behavior, differences in their understandings of cruelty and the acts that constitute it, or different reporting biases. It appears that as boys age, their cruelty may be increasingly unknown to parents, reinforcing the need for the multiinformant measurement strategy.

Contrary to expectations, reports of cruelty did not decrease with age. This was especially true for child reports. The hypothesis that cruelty would decrease was based on the observation that, prior to adolescence when there is a temporary increase, aggressive and oppositional behavior (externalizing problems) tends to decrease with age in the normal population (e.g., Loeber, 1990). Assuming that most cruel behavior is associated with a general pattern of behavioral dyscontrol, we expected cruelty to decrease with maturity through the childhood years; however, the findings of this study clearly contradict the age trend. There are a number of potential reasons for this finding. The most obvious and least interesting explanation is that several of the questions included in the CAI concerned all acts of cruelty committed during the child's lifetime. Hence, higher levels of reported cruelty

amongst older children may have been an artifact of the longer period of time older children had to report on. Related to this, older children would be expected, on average, to have a better memory for past episodes of cruelty than younger children, owing to greater development of their long-term memory capacity. Additionally, older children may have received higher scores for the free response question (item 10) owing to increased verbal fluency, and hence more elaborate, detailed responses.

The failure of cruelty to decrease with age may have been due to the salient use of “intentional” and “deliberate” acts in the definition of cruelty in the CAI. Previous studies using the CBCL item leave the definition up to the parent or child, thus allowing parents and children to report both intentional and unintentional acts of cruelty. Similarly, Guymier et al. (2001) did not incorporate intentionality into their measurement. As children mature, the number of unintentional acts causing harm to animals may decrease due to increased knowledge and behavioral control in the child. Further, the accuracy with which an act could be judged to be “intentionally” cruel would increase with age and would be easier to report for older children. Additionally, children aged 10–13 years reach a stage of development of the conscience where they become more responsible for their actions and more likely to feel a sense of affective discomfort and remorse leading to disclosure. Research exploring the development of the conscience in children has found that the sophisticated concepts of guilt, remorse, and empathy begin to develop in middle childhood (Kochanska, 1993). Thus, consistent with the current data, when acts are limited to those considered “intentionally” cruel, reported past instances are unlikely to decrease with age. As expected, cruelty was higher amongst boys. There are likely to be both general and specific reasons for this. In general, boys are more aggressive and display higher rates of externalizing disorders than girls (e.g., Loeber, 1990).

Thus, to the extent that cruelty is part of a pattern of aggressive behavior, the current findings are to be expected. More specifically, research examining nurturing and play behavior in male and female children has shown significant gender differences. Around the age of five years, boys decrease and girls increase their behavioral interest in and responsiveness towards babies, however, as they acquire gender-stereotyped behaviors and interests, boys increasingly avoid and girls seek out opportunities to nurture babies (Berman & Goodman, 1984; Melson & Fogel, 1982). While girls and boys do not differ in time spent playing with or caring for family pets (Melson & Fogel, 1989), girls have been shown in some studies to be more involved in pet care than boys (Kid&Kid, 1990). Rost and Hartmann (1994) found that girls reported a closer emotional bond with their animals than boys and that they rated the interaction with their pet as more important than the boys did. They also found that ownership status impacted directly upon the degree of caring and responsibility experienced by the child for their pet. Perhaps girls’ early identification and interest in nurturing activities predisposes them to take on more responsibility for their pet’s care, instilling “ownership” status, and closer emotional bonds than boys.

Regression analyses using the data from study 3 suggested that the most powerful predictors of cruelty in children are maternal education, conduct problems, and hyperactivity. Given the observed relationship between cruelty and conduct disorders (e.g., Miller, 2001), it was expected that conduct problems would be predictive of cruelty towards animals. The predictive power of the related construct, hyperactivity, suggests that cruel behaviors may be due in part to poor impulse control. Additionally, the predictive power of maternal education is in accordance with research (e.g., Flynn, 2001) suggesting that children’s cruelty is associated with demographic variables for which low maternal education can be considered a marker, such as low socioeconomic status, poor vocabulary, social skills, and educational culture within the home, and exposure to risk factors such as crime in the child’s neighborhood. Interestingly, the hypothesis that parenting style would be predictive of child cruelty was not supported. From previous research (e.g., Deviney, Dickert, & Lockwood, 1983; Flynn, 1999; see reviews by Dadds, Turner, & McAloon, 2002; Miller, 2001), the relationship between parenting and child cruelty is well-established; however, there are important reasons why this relationship may not have been replicated in the current study.

First, previous research on the relationship between parenting and child cruelty has not considered parenting within a multi-factorial model. Thus, it is possible that any observed

relationship between parenting practices and child cruelty is mediated by other variables, such as the child's general level of behavioral dyscontrol. Second, much of the literature linking child cruelty to parenting (e.g., Deviney et al., 1983) is based on cases of abusive or extremely coercive parenting practices. Although designed to measure harsh and inconsistent parenting, it is possible that the Alabama Parenting Questionnaire did not capture such extremes. Alternatively, as APQ scores were based on parents' self-reports, it is possible that parents whose practices could be considered abusive failed to report these practices, or elected not to participate in the study. This is especially possible given that parents in study 3 were asked to provide their names for follow-up purposes. In either case, the range of parenting behaviors may have been restricted, reducing the power of the parenting construct to predict cruelty. Another surprising finding was that mean parent reported cruelty scores were substantially higher in study 2 than for the same age range in study 3. Although this may arouse concern regarding the observed means, there were a number of methodological differences between the two studies that could account for this finding. In study 2 a child version was also completed and returned along with the parental measure. This may have encouraged parents to confer with their children (either directly, or by reading the child's responses) before completing the CAI-P, thus increasing parents' estimates of reported cruelty. In study 3 the CAI was one of a number of measures that parents were asked to complete. This heavier load may have encouraged more cursory responses to the CAI, resulting in lower average scores. The third and most interesting possibility is that the differences in mean scores may have been due to the different levels of anonymity provided by the two studies. While in study 2 responses were completely confidential and were only for research purposes, in study 3 parents were asked to include their names for potential follow-up. If this factor influenced responses and parents are indeed more reluctant to report their child's cruelty when their reports could have diagnostic implications, this again underlines the importance of using multiple informants in a clinical setting.

It should be noted that approximately 30% of the children in this study reported partaking in cruelty to animals to some degree. This may highlight the seriousness of this problem, not just for the animals that suffer, but also for the community as a whole. As noted, however it may also reflect definitions that are used with any particular measure in large population studies. There is a paucity of research into rates of cruelty to animals in normal populations and no prior study has used a multiinformant, well-validated measure of cruelty. Thus, it is difficult to interpret prevalence rates. Findings of this magnitude are typically found in clinical samples of children diagnosed with disorders such as conduct disorder or oppositional-defiant disorder.

For example, Luk et al. (1999) reported that 28% of their conduct problem sample children were cruel to animals. Thus, prevalence estimates need to be carefully interpreted in terms of specific behaviors being referred to. The qualitative analyses presented for the current sample showed that recurrent, severe cruelty was present only in a very small percentage of children. A final issue concerns the identification of specific aspects of cruelty to animals that may be particularly important in predicting outcomes for children. To test this we regressed the items from the CAI parent-report against global indices of child adjustment taken from the SDQ. All items on the CAI showed positive and significant associations with poorer adjustment in both males and females. Items that showed unique associations were limited to the first item assessing whether any instance of deliberate cruelty had ever occurred, and for boys only, the items indicating that cruelty typically occurred while alone, and had been inflicted upon higher species animals (i.e., mammals, pets). The importance of the first item reflecting the "presence versus absence" of any cruelty indicates that the dichotomous splitting of samples into cruel versus not-cruel may be an important shorthand for characterizing risk. For example, Dadds, Whiting, and Fraser (submitted) have shown recently that such dichotomous scoring accurately classifies both male and female children on the basis of scores on callous/unemotional traits, a putative ingredient of early psychopathy (e.g., Frick & Ellis, 1999).

A particular strength of this study was validation of the measure against independent observations of children's interactions with a pet. Both child and parent reports of cruelty were predictive of the levels of both cruel and nurturing behavior shown, and were unrelated to the

level of engagement the child showed with the animal. The fact that the reported cruelty converged with low levels of nurturing behavior deserves comment. This may be due to our observers inadvertently rating nurturance as the “absence” of cruelty. If this is the case, more work may be needed with observational systems to more clearly discriminate between these behaviors. If the relationship between reported cruelty and lack of nurturing behaviors is a substantive finding over and above any methodological shortcomings, this might point to important directions for research and clinical practice. Given that cruelty may often be a low-prevalence, secretive behavior, its amenability to intervention is limited. If cruelty does reliably vary with nurturing behavior, the latter may serve as a more practical target for the development of empathic positive skills in a child and remediation of aggressive, cruel behavior.

It should be noted that the observational sample was restricted to boys and further research is needed to assess the validity of observations with girls. In terms of our normative data, some sample biasing may have resulted from the selection of schools, the middle-class nature of the sample, and the participation rates we achieved which, while in the high range for those typically achieved, still may have resulted in some sample biasing. The results of this study need to be replicated in a larger and more diverse sample of children and their parents to gather more information about the prevalence and severity of cruelty to animals in a community population. In summary, the CAI represents a comprehensive and simple to administer self-rating scale for cruelty to animals in 6- to 13-year-old children, with a parallel version for parents that can be used with 3- to 13-year-olds. While no such data were collected in the current studies, its application with older adolescents may also be useful and warrants attention. The child and parent versions measure a range of parameters characterizing cruelty and have good internal consistency when combined to create an overall index of cruelty. Convergence between parents and children, temporal stability, and convergence with independent observations of cruel versus nurturing behavior, all supported the utility of the measure.

APPENDIX A

The Cruelty to Animals Inventory

1. Have you ever hurt an animal on purpose? (tick):

Never !

Hardly ever !

A few times !

Several times !

Frequently !

2. How many times have you hurt an animal on purpose? (tick):

Never !

Once or twice !

Three to six times !

More than six times !

3. a) What types of animals have you hurt in the past

(tick as many boxes as needed):

None

Wild animals ! How many?

Stray animals ! How many?

Farm animals ! How many?

Pet animals ! How many? 3. b) Which of these animals have you been cruel to? (tick):

None !

Worms or insects !

Fish, lizards, frogs etc. !

Birds or mammals !

4. How long did you do this for (on and off)? (tick):

Never !

For about 1 month !

For about 6 months !

Longer than 6 months !

5. When was the last time you hurt an animal on purpose? (tick):
I have never hurt an Animal !
More than a year ago !
Less than 1 year ago but more than 6 months ago !
In the last 6 months (half a year) !

6. Do you treat animals cruelly in front of others or
by yourself? (tick):
I have never hurt an animal !
In front of others !
Alone !

7. a) If you hurt an animal with others, are they adults
or friends? (tick):
I have never hurt an animal !
Adults who were also hurting the animal !
Friends who join in !
With friends who don't join in !

7. b) If you hurt an animal by yourself, do you try to hide what you have done?
I have never hurt an animal !
No, I don't try to hide it !
Sometimes I try to hide it, not always !
Yes, I do try to hide it !

8. If you purposely hurt an animal, do you feel very sorry for
it and feel sad that you hurt it?
I have never been cruel to an animal !
Yes, I feel very sad for the animal !
Sometimes I feel bad, not always !
No, I do not feel bad for the animal !

9. How do you feel about people hurting animals?
Very sad and upset !
Don't know !
They deserve it !
It is fun !

ANSWER THIS LAST QUESTION IF YOU HAVE HURT AN ANIMAL ON PURPOSE.

10. Can you tell us what happened when you hurt an animal on purpose or what you usually
do if you hurt animals often?

Scoring Chart

Item Response Score

1. Frequency Never 0
Hardly ever 1
A few times 2
Several times 3
Frequently 4

2. Frequency Never 0
Once or twice 1
Three to six times 2
More than six times 3

3. a) (i) Diversity: Across Categories Note 0
One of four types (wild, pet, stray, farm) harmed 1
Two of four types 2
Three or four of four types 3

3. a) (ii) Diversity: Within Categories None from any categories 0
No more than two animals from any one category 1
More than two but fewer than six from one category 2
Six or more animals from any one 3
Category

3. b) Diversity Note 0
Animal maltreated is an invertebrate (worm, insect) 1
Animal is a cold blooded vertebrate (fish, amphibian, reptile) 2
Animal is warm blooded vertebrate (bird, mammal) 3

4. Duration Never 0
Maltreatment occurred in a one month period 1
Occurred in a 6 month period 2
Occurred in a period longer than 6 months 3

5. Recency Never 0
Maltreatment occurred over 1 year ago 1
Occurred over 6 months ago 2
Occurred in the last 6 months 3

6. Covert Never hurt an animal 0
Child performs act in front of peers 1
Child is alone 2

7. a) Isolate Never hurt an animal 0
Child is with one or more adults 1
Child is with one or more peers who are participants 2
Child is with peers who are not participants 3

7. b) Conceal Never hurt an animal 0
Don't try to hide it 1
Sometimes hide it 2
Always try to hide it 3

8. Sentience Never been cruel to an animal 0
Child indicates remorse or sensitivity to animal's distress 1
Oscillates between sensitivity and callous uncaring 2
No evidence of caring or empathy 3
9. Empathy Very sad and upset 0
Don't know 1
they deserved it 2
It is fun 3

10. Severity (free response) If no instances of maltreatment or only one case of minor, teasing, nondestructive, or nonpainful act is mentioned.
More than one case of above acts. is assumed that the acts would not cause
0
It physical harm, e.g. annoying, teasing, frightening, restraining, or interfering. Examples: loud noise to scare sleeping pet, bangs on birdcage, chases ducks, etc. No
1
malicious intent. One or more acts of maltreatment assumed to result in pain or discomfort to the animal, maybe accompanied by minor physical damage. No use of weapons or tools. Examples: twisting leg, throwing something at an animal, tying 2 legs together with string, pressing jaws together.

One or more instances of maltreatment considered to result in significant pain or discomfort to an animal, maybe accompanied by physical damage. Examples: deep cuts, loss of parts of limbs, prolonging suffering, torturing, using instruments (weapons, extremes of temperature, caustic agents), suffocation.

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