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The Children's Treatment of Animals Questionnaire (CTAQ): A Psychometric Investigation

ABSTRACT

Recognizing the importance of increasing the levels of children's humane behavior toward animals other than humans relates to the developing of valid and reliable measures of such behavior. This study reports the psychometric properties of the Children's Treatment of Animals Questionnaire (CTAQ), which assesses children's humane behavior toward nonhuman animals. The findings, based on self-reports by 61 elementary school children (25 boys; 36 girls), showed that the 13-item scale has adequate internal consistency. In addition, comparing two administrations of the scale over a five-week period demonstrated good test-retest reliability. The scale's convergent validity was demonstrated with significant correlations between responses on the CTAQ and two previously validated measures of empathy. The study concluded that the CTAQ is a valid and reliable measure for assessing the degree to which children's behavior toward nonhuman animals is humane. Determining the sensitivity of the measure to change (following humane education) and the predictive validity of the measure (identification of children who are cruel to animals) will require further research.

For centuries, the proposed relationship between violence toward animals and violence toward humans has received much theoretical attention (Ascione,

1993). It has been suggested that the potential to engage in abuse is related to the compromised development of empathy (Ascione), which in turn is proposed to affect pro-social behavior. Hence, in an attempt to increase children's humane treatment of animals, humane education programs have been administered and evaluated (Ascione, 1997).

Defined as being "an emotional response that stems from another's emotional state or condition" (Eisenberg & Strayer, 1987, p. 5), empathy commonly is conceptualized as consisting both of a cognitive component and the ability to vicariously experience another's emotion (Barnett, 1987). Moreover, it has been suggested that the relationship between empathy and pro-social behavior \neq the latter defined by Eisenberg and Miller (1987) as intentional, voluntary behavior that benefits another—may be a fundamental motivator in eliciting altruism and inhibiting aggressive acts (Zahn-Waxler & Radke-Yarrow, 1990). Given that empathy and aggression are inversely related (Miller & Eisenberg, 1988), *normative* levels of empathy may serve the role of protecting individuals against the potential to engage in aggressive acts. Hence, it has been argued that if perpetrators can experience vicariously the distress they have inflicted upon another through the immediate proximal feedback provided by empathy (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000), they will be less likely to continue to hurt the persons and, instead, will be more likely to assist the individuals (Zahn-Waxler & Radke-Yarrow).

The most commonly found group difference in empathy is between the sexes. Studies have found that girls, from the second year of life to adolescence, show more concern for others than do boys (Hastings et al., 2000). Studies also have found that males consistently score lower than do females on measures of empathy (Eisenberg, Fabes, Murphy, Karbon, Smith, & Maszk, 1996; Hanson & Mullis, 1985; Hoffman & Levine, 1976; Vidovic, Stetic, & Bratko, 1999).

Irrespective of gender, the development of empathy in most individuals progresses along a normative path. Consequently, it is not expected that significant increases in empathy would occur in a child who already possessed normative levels of this construct (Hastings et al., 2000). However, compromised levels of empathy and related constructs, particularly concern for others, have been shown to be characteristic of children with externalizing disorders—Conduct Disorder.

Interventions aimed at fostering normative levels of empathy in these “at risk” children is of utmost importance as deficits in empathy often are associated with callous and aggressive behavior such as cruelty to animals (Hastings, et al., 2000). As a result of this proposed relationship, formalized interventions aimed at preventing the cruel treatment of animals have been developed. Despite being only a relatively recent phenomenon, humane education interventions are becoming increasingly widespread. A main assumption governing these programs is that teaching children to be kind, compassionate, and caring toward animals may foster a heightened respect and sensitivity for *all* living creatures (Dillman, 1999). Related to this assumption, many interventions also strive to intervene effectively in the cycle of abuse (Flynn, 1999; Rathmann, 1999), given the empirical reports that childhood animal cruelty is related to violence toward humans (Ascione, 1993; Felthous, 1980; Flynn, 1999; Kellert & Felthous, 1985).

A number of school-based humane education interventions have been implemented and evaluated. Because increases in animal-directed empathy (proposed to be increased via humane education) may generalize to human-directed empathy, the focus typically remains on measurements of human-directed empathy (Dillman, 1999; George, 1999).

However, humane education studies, such as that conducted by Hein (1987), have focused on the effects of these programs on *attitudes* toward the treatment of animals. Although his study revealed that the children who participated in a humane education program demonstrated *statistically* significant increases in humane attitudes toward animals (in comparison to a control group), Hein concluded that a more intensive program would be required to achieve *practically* significant changes in humane *behavior* toward animals. Hence, while research such as this has revealed promising findings, humane education research has yet validly to examine other important aspects such as children’s actual behavior toward both companion and non-companion animals. Such research would be invaluable as, arguably, the actual *treatment* of animals would be highly relevant in determining whether a child is at risk of committing animal abuse.

The lack of humane education research into children’s behavior toward animals may be due largely to the absence of an appropriate measure. Related to this, many studies have used measures of empathy to assess the efficacy

of interventions. However, as empathy is a normative construct, it would be expected that humane education would result in increased empathy only for those children whose level was below the norm at pre-test. Consequently, although an intervention may prove effective in increasing empathy levels among children with compromised levels of this construct, empathy may not be the most relevant target of change if the samples are representative of the normal population.

As such, measures of empathy may not be the most appropriate tools to evaluate interventions targeting “normal” populations. Thus, a measure that specifically assesses children’s humane behavior toward animals may prove to more accurately operationalize the behavior targeted by the intervention. If effective, humane education interventions can be expected to result in increased levels of humane behavior in *all* children. Furthermore, given that a valid measure of humane behavior toward animals would assess behavior that is humane, one would expect such an instrument to correlate significantly with measures of empathy.

This study examines the psychometric properties of a measure designed to assess humane behavior toward animals (the Children’s Treatment of Animals Questionnaire: CTAQ). To ensure the representativeness of the sample in relation to empathy assessment, it was expected that girls would score higher than boys on empathy measures. Given that empathy significantly predicts associated behavior (low levels of empathy are related to high levels of aggressive behavior), it was predicted that reports of humane behavior toward animals would correlate significantly with empathy. Further, given that boys have been reported to score higher on measures of cruelty to animals (Guymer, Mellor, Luk, & Pearse, 2001; Luk, Staiger, Wong, & Mathai, 1998) and given their generally lower levels of empathy, it was expected that they would score lower, compared to girls, on the measure of humane behavior toward animals.

Method

Participants

The study obtained approval to approach primary schools from both the University Ethics Committee and the Director of Catholic Education. The

Victorian Board of Education (VBE) was contacted; however, because of time constraints (the VBE approval took considerably longer to obtain), it was not possible to wait for approval to approach public schools. Consequently, 28 Catholic and independent primary schools were approached and asked if they would be interested in participating in the study. Nine schools expressed initial interest and subsequently were sent further information. The principals of three of these nine schools volunteered classes to complete the questionnaires.

Children who took part in the study were recruited through a parental explanatory statement that the children gave to their parents. The regular classroom teacher distributed the statements to the children. Participating children were those whose parents signed the consent form. Additionally, all children who had received parental permission were provided with an explanatory statement for participants and allowed to give their own consent to take part in the study. Approximately 55% of parents who received an explanatory statement gave consent for their child to participate in the study.

The final sample was comprised of 61 participants from three Catholic primary schools in the southeastern region of Melbourne. There were 25 boys and 36 girls in the sample. Overall, the age range varied from 8 to 10 years (age: $M = 9.26$, $SD = 0.60$ years).

Measures

CTAQ. This measure was developed initially to assess children's attitudes and behavior toward animals. Consideration of the content of published animal bonding and animal cruelty scales for children was central to the development of the *CTAQ* (Ascione, Thompson, & Black, 1997; Poresky, Hendrix, Mosier, & Samuelson, 1987). In addition, research findings regarding the relationships between children and their companion animals were consulted (Ascione, 1993; Boat, 1995, 1997; Bryant, 1990; MacDonald, 1979; Melson, 1990). This process resulted in the development of 29 items, 19 of which reflect activities and behaviors that a child may engage in with a companion or other animal; the remaining 10 reflect attitudes toward nonhuman animals ("e.g. Animals are not important like people are," and "Animals can make really good friends"). Given the extremely poor psychometric properties for the attitudinal items (low test-retest, poor internal consistency), these were consequently

dropped from the questionnaire. A further six behavioral items were deleted because of low item-total correlations (see Results).

This resulted in a final total of 13 behavioral items (see Table 1). For each item, the children were required to indicate whether they “Often” (score = 3), “Sometimes” (score = 2), or “Never” (score = 1) engaged in the particular activity. Children with no companion animals were instructed to answer in relation to other people’s companion animals or to imagine that they had companion animals and answer the questions accordingly. Such a technique is consistent with that used in the assessment of other constructs. In research examining normative fear, children are instructed, in reporting their fear for various stimuli (snakes, spiders, ghosts, earthquakes), to imagine how fearful they would be in relation to stimuli they have not encountered (Gullone & King, 1992; Gullone & King, 1997).

Responses are scored such that higher scores reflect higher levels of humane behavior toward animals. Of the original items, several required reverse scoring (“Often” = 1, “Sometimes” = 2, and “Never” = 3) as they measured cruel behaviors toward animals. However, all but one of these items were deleted from the final version of the scale.

Table 1. The Items of the Children’s Treatment of Animals Questionnaire (CTAQ)

| Item | |
|--|--|
| 1. Play with | 11. Be nasty to for no reason * ^d |
| 2. Give food or water to | 12. Allow to stay in my room |
| 3. Tease or play rough with * ^d | 13. Hit or kick * ^d |
| 4. Take for a walk | 14. Play dress up with |
| 5. Pat | 15. Put on a chain or tie up * ^d |
| 6. Yell at * | 16. Groom |
| 7. Cuddle | 17. Lock up just for fun * ^d |
| 8. Treat in a nasty way when I am angry * ^d | 18. Tell my secrets to |
| 9. Cry with when I am sad | 19. Spend time with |
| 10. Talk to | |

Note: * Indicates items that are reverse scored.

^d Items included in the original 19 item version of the CTAQ, but deleted from the final measure.

Bryant's Index of Empathy for Children and Adolescents (BIE; Bryant, 1982). Children's level of human-directed empathy was measured using this index. This measure consists of 22 statements, each of which requires the children to mark the response ("Yes" or "No") that best applies to them. Example: "It makes me sad to see a girl who can't find anyone to play with." Responses are scored such that higher scores reflect higher levels of empathy.

The index has been reported to have adequate internal consistency reliability, with Cronbach's alpha coefficients ranging from .54 for first graders to .79 for seventh graders. Test-retest reliability coefficients, indicating an adequate degree of stability, have been reported to range from .74 for first graders to .83 for seventh graders (Bryant, 1982). The measure also has been demonstrated to have good convergent validity through moderate to strong correlations with Feshbach and Roe's (1968) and Mehrabian and Epstein's (1972) measures of empathy. These were .33 for first graders, with the Feshbach and Roe measure, and .76 for seventh graders, with the Mehrabian and Epstein measure.

Social Skills Rating System (SSRS; Gresham and Elliott, 1990). The empathy subscale of the SSRS was used as a second measure of empathy. The SSRS measure is applicable for children and adolescents up to the 12th grade. The empathy subscale consists of 10 statements relating to social skills, whereby the children are required, on a 3-point scale ("Never," "Sometimes," "Very Often"), to indicate how often they engage in the behavior or experience a particular emotion as described by each item. Example: "I feel sorry for others when bad things happen to them." This subscale is scored such that higher scores correspond with higher levels of empathy.

On the whole, the SSRS has been reported to be psychometrically sound. Good internal consistency has been reported, with a Cronbach's alpha of .74. Good test-retest reliability also has been reported with a reliability coefficient of .66.

Procedure. The first author visited the participating schools, introduced herself to the children, and briefly described what their participation would involve. Caution was taken to limit the amount of detail given (to as brief a summary as possible) such that informed consent could be obtained without compromising the validity of the data. Therefore, children were informed that they would be asked questions about themselves and about their interactions with animals. Children also were advised that their participation

would be voluntary and that code names would keep their responses anonymous. No compensation was provided for participation.

Immediately following the researcher's introduction of the study, the measures were administered. Children were instructed to answer *every* question, including those relating to demographic information (age and gender). Children also were instructed not to spend too much time on any one question and were informed that there were no right or wrong answers. The children completed the questionnaires, along with their classmates, in their regular classroom. The order in which questionnaires were administered was counter-balanced across different classroom groups.

Five weeks later, the questionnaires were re-administered to all 61 participants. Re-test administration was identical to that of the initial administration. Following the second administration of the questionnaires (retest), the researcher fully informed participants of the purpose of the research and gave the children the opportunity to ask questions about the study.

Results and Discussion

Data Screening and Preliminary Reliability Analyses

Following data screening, which revealed that neither univariate nor multivariate outliers were present in the data set, reliability analyses were performed on the CTAQ. Both the reliability of the CTAQ and the contribution of each of the original 19 items to the overall reliability of the measure were investigated. These analyses revealed that 6 of the 19 items had item-total correlations less than .3. Consequently, these items were deleted, resulting in the retention of 13 of the original 19 items. These six items, marked in Table 1, were excluded from subsequent analyses. It is noteworthy that all six items with low item-total correlations reflect cruelty toward animals (hence, these items are reverse-scored).

Descriptive Statistics

The means and standard deviations at times one and two were calculated for each of the questionnaires. These were determined for the entire sample and separately for boys and girls. Boys scored lower on the CTAQ compared to

girls at both times one and two (see Table 2). Although in the expected direction, two-tailed independent samples *t*-tests revealed that this gender difference was not significant [Time 1: $t(59) = -1.09, p > .05$; Time 2: $t(59) = -1.34, p > .05$].

Providing support for the generalizability of the sample and the validity of the empathy data, boys obtained lower mean scores than did girls on both measures of empathy at times one and two (Table 2). Two-tailed independent samples *t*-tests revealed that these differences were significant for both the BIE [Time 1: $t(59) = -2.32, p < .05$; Time 2: $t(40.71) = -4.01, p < .001$] and the SSRS empathy subscale [Time 1: $t(38.34) = -2.66, p < .05$; Time 2: $t(31.83) = -3.32, p < .01$].

Reliability of the CTAQ

The CTAQ's internal consistency was examined by calculating Cronbach's alpha coefficients for the entire sample and separately for boys and girls. This yielded a coefficient of .81 for the entire sample (boys = .74; girls = .85). To determine the test-retest reliability of the CTAQ, Pearson's correlation coefficients between the two administrations were calculated. Demonstrating good test-retest reliability, a coefficient of .64 ($N = 61, p < .001$, two-tailed) was found for the entire sample. The correlations for the sample broken down by gender were identical (boys: $r = .63, n = 25, p < .01$, two-tailed; girls: $r = .63, n = 36, p < .001$, two-tailed).

It is noteworthy that, particularly for girls, a significant increase in scores was found between test and retest. Paired samples *t*-test results for the overall sample, and broken down by gender were as follows: Overall sample: $t(60) = -6.52, p < .001$; boys: $t(24) = -4.35, p < .001$; girls: $t(35) = -4.85, p < .001$.

Table 2. Means (and Standard Deviations) for Each of the Measures at Times 1 and 2

| Measure | Total Sample (N = 61) | | Boys (n = 25) | | Girls (n = 36) | |
|---------|-----------------------|------------------|------------------|------------------|------------------|------------------|
| | Time 1 M (SD) | Time 2 M (SD) | Time 1 M (SD) | Time 2 M (SD) | Time 1 M (SD) | Time 2 M (SD) |
| CTAQ | 28.02 (4.88) | 31.48 (4.85) | 27.20 (4.25) | 30.48 (4.45) | 28.58 (5.26) | 32.17 (5.06) |
| BIE | 14.02 (3.42) | 14.03 (3.67) | 12.84 (3.80) | 11.92 (3.83) | 14.83 (2.91) | 15.50 (2.75) |
| SSRS | 17.10 (2.55) | 16.92 (3.23) | 16.04 (2.95) | 15.24 (3.97) | 17.83 (1.95) | 18.08 (1.92) |

Past research, albeit in relation to different constructs, has reported significant differences between test-retest of similar magnitude. This has been referred to as the “retest artifact.” Researchers examining normative fear self-reports have reported significant correlations between test-retest and also a significant decrease in reports between testings (Arrindell, Emmelkamp, & Van Der Ende, 1984; Gullone & King, 1992; Jorm, Duncan-Jones, & Scott, 1989). Arrindell and Buikhuisen (1992) have proposed that such changes may be due to an increase in social desirability responding where, given a second opportunity, subjects may present themselves in a more acceptable light. This clearly is a limitation of self-report. However, if documented, it need not adversely affect results, because establishing norms for test-retest scores will alert researchers and clinicians to this trend. As such, intervention would be expected to result in changes over and above those that are a consequence of the retest artifact.

Convergent Validity of the CTAQ

Pearson’s analyses also were calculated to determine the correlations between the CTAQ and both measures of empathy. Supporting the convergent validity of the CTAQ, when analyses were carried out on the entire sample at both test and retest, these analyses yielded moderately sized and significant correlations between the CTAQ and both the BIE and the SSRS empathy subscale (see Table 3). However, with the exception of the first administration of the SSRS for the boys, smaller—and generally non-significant correlations—were yielded when these analyses were conducted separately on each gender group. The small sample sizes (boys: $n = 25$; girls: $n = 36$) likely affected correlations; it has been found that it is difficult to establish

Table 3. Pearson’s Correlation Coefficients between the CTAQ and the Two Measures of Empathy at Times 1 and 2

| Empathy Measure | Pearson Correlation Coefficient | | | | | |
|-----------------|---------------------------------|--------|-------------------|--------|--------------------|--------|
| | Total Sample (N = 61) | | Boys ($n = 25$) | | Girls ($n = 36$) | |
| | Time 1 | Time 2 | Time 1 | Time 2 | Time 1 | Time 2 |
| BIE | .25* | .20 | .17 | .04 | .27 | .21 |
| SSRS | .37** | .27* | .56** | .32 | .19 | .13 |

Note: Correlation is significant at: * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

conclusively a correlational relationship when sample sizes are small (Anastasi & Urbina, 1997).

Conclusion

As expected, analysis of gender differences revealed that, compared to girls, boys scored significantly lower on both measures of empathy. This is consistent with past research findings that girls predictably score higher than do boys on measures of empathy (Eisenberg et al., 1996; Hanson & Mullis, 1985; Hastings et al., 2000; Hoffman & Levine, 1976; Vidovic et al., 1999). Although this same trend was observed for the CTAQ, the means of boys and girls were not found to be significantly different. This may have been because of the slightly wider spread of scores on this measure when compared to the empathy measures. Alternatively, it may be an accurate reflection of no difference because it may be reasonable to expect that, in general, boys and girls do not differ significantly in their humane behavior toward animals. The differences only may become apparent at the distribution extremes (low empathy, cruel treatment) (Hastings et al., 2000). Future research is required to determine whether a gender difference in line with that for empathy should be expected for humane behavior.

The psychometric properties of the CTAQ were found to be acceptable. Good internal consistency and test-retest reliability were demonstrated. Further, adequate convergent validity was illustrated by analyses that, on the whole, yielded small to moderate, yet statistically significant, correlations between the CTAQ and the two previously validated measures of empathy. Thus, the present study provides evidence of the reliability and validity for this newly developed measure of children's humane behavior toward animals.

It is noteworthy that although 7 of the 19 items included in the original version of the CTAQ assessed cruel behavior toward animals ("e.g. Hit or kick"), all but one of these items ("Yell at") were deleted because of their having low internal consistency with the overall measure. This resulted in a measure that almost purely assesses the presence of humane behavior, suggesting that humane behavior and cruelty toward animals may be two independent constructs rather than opposite ends of the one dimension. Such a proposal, however, requires further investigation.

These outcomes make an important contribution to research into human-animal interactions. Nevertheless, several limitations require mention. First, given the limited size of the sample, age differences were not explored. Future work should be conducted to investigate possible age differences and to determine the psychometric appropriateness of the measure for children older than 10 years. Related to the sample size, the analyses of gender differences also should be investigated further to determine whether differences are yielded in a different sample. Second, future work should attempt to recruit a more representative sample (government schools and independent school children). Furthermore, additional research is required to determine the relationship between children's reports on the CTAQ and their actual behavior toward animals. This may need to involve either parents' reports (Guymer et al., 2001) or an observational procedure. Finally, future research is required to determine the sensitivity of the measure to change (following humane education intervention) and the predictive validity of the measure (identification of children who are cruel to animals) (Ascione, 1997).

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Note

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