

An evaluation of the effectiveness of a pilot humane education intervention programme in
increasing empathy for animals and humans

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ABSTRACT

Humane education programmes have demonstrated the ability to increase participants' empathy for humans by encouraging empathy for animals. A humane education pilot intervention was conducted with a sample of 40 Grade 3 boys from a southern suburbs school in Cape Town. The aim of the intervention was to test the effectiveness of the programme in increasing empathy for animals and humans. The research further aimed to determine whether there is a link between animal- and human-directed empathy. The programme consisted of 4 lessons concerning the care for and rights of animals. Pre- and post-tests of animal- and human-directed empathy levels were conducted with an intervention group and a control group. Empathy for humans was measured using the Index of Empathy for Children and Adolescents (Bryant, 1982). Animal empathy was measured using the Primary Attitude Scale (National Association for Humane and Environmental Education, 1983). There was no significant increase in animal- or human-directed empathy from pre-test to post-test for either group. There was a significant positive correlation between animal- and human-directed empathy for both groups at pre-test, but this correlation was not significant for either group at post-test. These results demonstrate that the intervention was not effective in increasing empathy levels for either animals or humans. The results may have been influenced by a strong ceiling effect for the Primary Attitude Scale and by low internal consistency of this measure.

Keywords: humane education; animal-directed empathy; human-directed empathy; children

INTRODUCTION

Empathy is an “innate, hardwired response connecting us as social beings to the emotional plights of others” (Zahn-Waxler & Radke-Yarrow, 1990, p. 111). When one feels empathy for another, one experiences feelings that are similar or identical to those felt by the other (Eisenberg et al., 1994). Empathy involves both cognitive and affective components; the cognitive factor allows an individual to grasp what another being is experiencing and the affective factor is a reaction that stems from this cognitive understanding. People with higher empathy levels are more likely to behave prosocially and altruistically (Eisenberg & Fabes, 1990). It is therefore unsurprising that empathy and interpersonal violence are negatively correlated (Mehrabian, 1997; Ernst, Luk, Staiger, & Mathai, 1999; Flynn, 1999). Considering that levels of interpersonal violence in South Africa are among the highest in the world (UN Office on Drugs and Crime, 2000), attempting to increase empathy and prosocial behaviours in South African citizens may be a worthwhile task.

Furthermore, it has been suggested that an increase in empathy for animals is related to an increase in empathy for humans. Indeed, there are links between cruelty to animals in childhood and later violent attitudes and behaviours (Arluke, Levin, Luke, & Ascione, 1999; Flynn, 1999), which suggests that people who are less empathetic towards animals will be less empathetic towards humans. If it is indeed the case that higher animal-directed empathy is related to higher human-directed empathy, then programmes aimed at increasing empathy for animals may be beneficial in increasing human-directed empathy as well as other prosocial behaviours. Humane education intervention programmes are examples of such attempts to increase animal- and human-directed empathy. Humane education is generally defined as “instilling, reinforcing, and enhancing young people’s knowledge, attitudes and behaviour

towards the kind, compassionate and responsible treatment of human and animal life” (Ascione, 1997, p. 1). Humane education programmes focus on interspecies relations between humans and companion animals, humans and wild animals and/or humans and farm animals. These programmes are usually run through schools and are often blended with the school curriculum. Direct contact with animals is also commonly used within programmes. Humane education programmes could therefore assist the promotion of empathetic and prosocial behaviour in South Africa by promoting empathy for animals.

Review of the literature

Development of empathy and individual differences

Both theory and empirical findings suggest that empathy emerges in the second year of life and increases with age through the preschool and primary school years (for a review, see Eisenberg, Spinrad & Sadovsky, 2006). Young children with inhibited temperaments have been shown to have lower levels of empathy (Young, Fox, & Zahn-Waxler, 1999). It has also been shown that young girls with fearful or insecure attachments have less empathetic concern for strangers (van der Mark, van IJzendoorn, & Bakersmans-Kranenburg, 2002). Females generally score higher than males on measures of empathy (Olweus & Endresen, 1998). Specifically, girls’ empathetic concern for others has been shown to steadily increase between the ages of 10 and 16, whereas boys older than 10 are more likely to have empathetic concern for girls rather than for other boys.

Empathy development in young children can be delayed by maltreatment and parental psychopathology (Zahn-Waxler & Radke-Yarrow, 1990). Robinson and Zahn-Waxler (1994) found that less close relationships between mothers and their young daughters are associated

with lower levels of empathy. They also found that high emotional expressiveness, high maternal warmth and low negative control by mothers were associated with high levels of empathy in early childhood. A longitudinal study by Koestner, Weinberger and Franz (1990) found that children whose fathers were very involved in their upbringing and whose mothers were tolerant of dependency reported higher levels of empathy at age 31. The parents of these empathetic adults had also inhibited their children's aggressive behaviour. This study also found that mothers with higher levels of role satisfaction were more likely to have children who grew up to be more empathetic. The authors noted that, overall, the type of parenting that seems to best predict higher levels of empathy is the authoritative pattern, as described by Baumrind (1967).

Empathy and prosocial behaviour

Empathy is considered by many researchers to be a primary instigator and predictor of prosocial behaviour (Eisenberg & Fabes, 1990; Roberts & Strayer, 1996). Such prosocial behaviour includes altruism; it has been suggested that empathy leads people to desire to reduce a victims' suffering, thus prompting them to behave altruistically (Fultz, Batson, Fortenbach, McCarthy, & Varney, 1986). People with high levels of empathy are also less likely to be aggressive; it has been suggested that empathy prevents aggressive behaviour by making a person aware of the feelings experienced by a victim (Miller & Eisenberg, 1988; Hastings, Zahn-Waxler, Robinson, Usher, Bridges, 2000). Therefore, efforts to increase empathy might decrease aggressive behaviour, as well as increase certain prosocial behaviours.

Links between animal-directed and human-directed empathy

Signal and Taylor (2007) studied the link between attitudes towards the treatment of animals and human-directed empathy. They administered tests to the animal protection community and to the general community. People in the animal protection community had higher levels of human-directed empathy than those in the general community. There was also a significant positive correlation between the two kinds of empathy for both the general community and the animal protection sample.

Empathy generalisation and humane education.

Whether empathy for animals can be transferred to empathy for humans is a separate question to whether there is a correlation between the two. Humane education programmes are premised on the assumption that an increase in animal-directed empathy will generalise to an increase in human-directed empathy and that such a generalisation will be maintained in the long-term (Ascione, 1997; Thompson & Gullone, 2003a). It has long been assumed that fostering animal-directed empathy will promote human-directed empathy. For example, a study by Radke-Yarrow, Scott and Zahn-Waxler conducted in 1973 encouraged kindness to animals as a way to train children to behave prosocially.

Ascione (1992) conducted year-long humane education programmes with 32 classes of Grade 1, 2, 4 and 5 children. Experimental classes were taught using the humane education curriculum and control classes continued to be taught using the standard curriculum. There were only significant differences between the control and experimental group of 4th and 5th graders, with the experimental group showing higher levels of human-directed empathy than the control group. This study supports the assumption that empathy for animals is linked to empathy for

humans, as an increase in the former was related to an increase in the latter. However, it seems that such an intervention was successful only with children in Grade 4 and 5. The 1-year follow-up of the Grade 4 and 5 participants showed that the experimental group maintained more humane attitudes than the control group (Ascione & Weber, 1996). In addition, the 1-year follow-up indicated that the experimental group's enhancement of humane attitudes for animals remained generalized towards humane attitudes for humans. The research suggests that the long-term maintenance of this link between animal- and human-directed empathy is possible.

Shorter, more intensive humane education interventions have seen success too. An intervention as short as 3 weeks with approximately 14 hours of humane education instruction showed that the intervention group had higher post-test scores of human- and animal-directed empathy than the control group (Cameron, 1983, as cited by Ascione, 1997). This supports the hypothesis that human- and animal-directed empathy are linked, as an increase in the former occurred alongside an increase in the latter. However, no long-term follow up was conducted; it is therefore uncertain whether the intervention group retained their elevated empathy scores for both humans and animals.

Fitzgerald (1981, as cited by Ascione, 1997) conducted an evaluation of a humane education programme involving four conditions. Group 1 received a humane education curriculum, which was taught over 2 months. Group 2 was the intensive treatment group, who were taught the curriculum within one lesson. Group 3 was provided with humane education reading material. Group 4 was a no-intervention control condition. These conditions were evaluated using pre- and post-tests of animal-directed empathy. Participants in the intensive treatment group scored significantly higher in animal-directed empathy after the intervention than all other groups. One limitation of this research is that it did not do pre- and post-testing of

human-directed empathy. Therefore, it could not test the underlying assumption of humane education programmes that animal-directed empathy can be generalised to human-directed empathy.

A study conducted by Malcarne (1981) asked children to either role-play animals in distress, role-play humans in distress, or read a story on animals. All groups received post-test measures of animal-directed and human-directed empathy. The study concluded that children who were asked to role-play animals in distress were more willing to help animals in distress than the other two groups. Likewise, children who role-played humans in distress were more likely than the other two groups to want to assist children in trouble. This research therefore suggested that animal-directed empathy does not generalise to human-directed empathy, or vice-versa. However, no pre-tests of empathy were conducted; these results must therefore be interpreted with caution.

Vockell and Hodal (1980) concluded that a single visit by a humane educator resulted in no significant differences in animal-directed attitudes. However, this study used no pre-tests of animal-directed attitudes, so these results cannot be fully interpreted.

There have been many humane education programmes conducted within the past few decades. However, few of these studies have been systematically researched and evaluated. Humane education programmes sometimes measure animal-directed empathy only and assume that this will generalise to human-related empathy. Furthermore, pre-tests of human and/or animal empathy are sometimes not conducted. Therefore, whilst the reviewed studies offer support for the rationale underlying humane education programmes, more well designed evaluations of humane education programmes need to be conducted. When this is not done,

results supporting the effectiveness of humane education programmes will not offer good evidence for their capacity to increase empathy.

Rationale

Since there is a shortage of research utilising both pre- and post-tests of human-directed and animal-directed empathy, the researcher chose to evaluate a pilot humane education programme using such a design. Furthermore, the research investigated the relationship between animal- and human-directed empathy. This research project therefore tested 3 hypotheses:

Hypothesis 1: Humane education is capable of increasing animal-directed empathy.

Hypothesis 2: Humane education is capable of increasing human-directed empathy.

Hypothesis 3: There is a positive correlation between animal-directed empathy and human-directed empathy.

These hypotheses were tested by exposing a group of participants to a pilot humane education programme, whilst another group of participants served as the control group. The intervention was shorter than previous successful interventions; however, the short duration of the programme was necessary due to time and resource constraints. It is also worth investigating whether a shorter humane education programme can have significant effects on animal- and human-directed empathy, as shorter interventions can be more cost-beneficial.

METHOD

Sample

Two groups of participants took part in this research: one control group (n=20) and one experimental group (n=20). Both groups came from an all-boys government school in the

southern suburbs of Cape Town. This school serves a middle- to upper-class population. All participants were Grade 3 boys (age 8-9 years). Two Grade 3 classes were non-randomly assigned to either the control or experimental conditions. One class teacher expressed the desire to supervise the humane education lessons; her class was therefore chosen as the experimental group. Another teacher was willing for her class to be the control group. Whilst 20 boys in each class completed pre-tests, only 18 in the experimental group and 16 in the control group completed post-tests. The 6 boys who did not complete the post-tests were absent from school on the day of testing.

Procedure

Consent phase

Parents of the participants in both the experimental group and control group received letters detailing the study. They were instructed to return a consent form if they gave their sons permission to partake in the study. The boys were also informed that they did not have to partake in the study if they did not want to and could withdraw at any time. Twenty parents in both the control and experimental group gave consent. The parents of 2 boys from the experimental group and 3 boys in the control group advised that they did not authorise their children to take part in the research.

Pre-testing phase

The researcher administered pre-tests of animal- and human-directed empathy. Since the researcher visited the participants during the assembly period, participants who had not received parental consent went to assembly with another Grade 3 class during pre-testing. The class

teachers were present during the pre- and post-testing. The control group was only available to complete the pre-test questionnaires once the experimental group had already received 2 humane education lessons. The researcher informed the participants that she was interested in *their* thoughts and feelings, not those of their parents or friends. The researcher also expressed how important their answers were to her. The participants were assured that neither their parents nor teacher would see their answers and that the questionnaires were not for marks. They were instructed to circle their answer to a question only after the researcher read out that question. The participants were encouraged to ask a question at any point.

Intervention phase

The experimental group received 4 half-hour humane education lessons, which were conducted by the researcher. The participants whose parents had not given parental consent went to assembly during these lessons, as they had done for the pre-testing. The researcher and the experimental group class teacher communicated prior to each lesson regarding the content and the nature of each lesson. The class teacher supervised and assisted with the administration of the lessons. The experimental group received an average of 1 lesson per week over four weeks.

Materials

DVDs, a reader and a worksheet were used as resources during the intervention. The resources were all purchased from or donated by the Humane Education Trust. DVDs included *How to be a Dog's Best Friend* and *Farm Animals and Us*. The researcher led discussions of these DVDs once the participants has watched them. Stories that were selected from the reader included *Kittens, Kittens, Kittens*; *Oscar the Watch Pig*; *The Dog who Lost her Coat* and *Palesa finds a*

friend. The teacher asked each boy to read a paragraph from the story and the researcher led a discussion of the morals of the story once it was finished. A maths worksheet based on *Kittens, Kittens, Kittens* was given to the intervention group, which the researcher, class teacher and students worked through together. The materials were selected due to their multi-cultural South African focus, as well as their focus on both domestic and farm animals.

Post-testing phase

Post-testing occurred 6 weeks after pre-testing for both the experimental group and the control group. The same measures of animal- and human-directed empathy were administered. Once again, those who had not gained parental consent went to assembly with another Grade 3 class. Participants were told that they might recognise the questions, but that the researcher wanted them to answer with how they felt on that day, not with how they felt the last time they saw the questions. Once again, participants were instructed that no one other than the researcher would see their answers, that their thoughts and feelings were very important to the researcher and that the questionnaires were not for marks. The participants were reminded to only circle their answer to a question once the researcher had read it out. Once post-testing was complete, both the experimental group and the control group received doughnuts from the researcher.

Measures

Human-directed empathy

The Bryant Index of Empathy for Children and Adolescents (see Appendix A) was used at pre- and post-test to measure the participants' empathy towards humans (BIE; Bryant, 1982). The original BIE scale contains 22 items to which true or false answers are required. Items 11 and 16

on the original index were excluded because they measure empathy towards animals instead of empathy towards humans specifically. Answers were scored by awarding 1 point for more humane answers and 0 points for less humane answers. Higher scores reflect greater empathy towards humans.

The BIE has adequate internal consistency reliability, with alpha coefficients ranging from .54 for first graders to .79 for seventh graders. The BIE also has adequate test-retest reliability, with coefficients ranging from .74 for first graders to .83 for eighth graders (Bryant, 1982). The index also has good convergent validity with other tests of empathy, such as with Feshbach and Roe's (1968) and Mehrabian and Epstein's (1972) indices (Thomson & Gullone, 2003b).

Animal-directed empathy

The Primary Attitude Scale was used at pre- and post-test to measure the participants' empathy towards animals (PAS; National Association for Humane and Environmental Education, 1983). This original scale contains 23 items to which yes/no answers are required. The PAS is scored by awarding 1 point for more humane answers and 0 points for less humane answers. Higher scores represent higher levels of empathy towards animals. Five items were excluded from this questionnaire. Items 4, 7, 21 and 23, were excluded as they are not suitable for the South African context. Specifically, items 4, 7 and 23 are questions regarding class pets. Since it is now illegal to keep caged animals on school property in South Africa, these questions are not applicable in the South African context ("Values Education", n.d.). Item 21 was excluded as it refers to the presence of neighbourhood animal control. However, such a unit is not available in all neighbourhoods in South Africa. In addition, certain American terminology was changed to

render these words more understandable for South African children. For example, item 6 was changed from “Should you spank a cat to teach it to mind you?” to “Should you spank a cat to teach it to behave?” Item 11, “Is it bad to have more pets around even if there are no homes for them?” was excluded as the researcher considered the wording as confusing for Grade 3 learners. A sample of questions from the PAS is available in Appendix B.

The PAS was developed in previous evaluation studies (Ascione, Latham, & Worthen 1985, Borg et al., 1982, as cited by Ascione, 1992) and has since been refined into its current form (Ascione, 1988, as cited by Ascione, 1992). This test has been shown to have satisfactory internal consistency, with an alpha coefficient of .63 (Ascione, 1992). It has also been shown to be sensitive to gender and grade differences and to a weak humane education intervention.

True/false and yes/no formats for answers were used for both the BIE and PAS as this made answering more simple for participants. A Likert-scale answer format may have confused the participants, due to their young age.

RESULTS

All statistical analyses were conducted using Statistica (version 8, 2007) and all statistical decisions regarding significance were made based on a conventional alpha level of $p < .05$.

Internal consistency

The internal consistency of test scores was calculated using Chronbach’s alpha. Chronbach’s alpha for the pre-test BIE (experimental and control groups combined) was .65. This is below the minimum level of .70 recommended for research use (Nunnally & Bernstein, 1994). Items were therefore considered for deletion if they had an item-total correlation lower than -.10. Item

analysis indicated that item 10 had an item-total correlation of $-.25$ at pre-test and of $-.26$ at post-test. Item 15 was also problematic; it had an item-total correlation of $-.21$ at pre-test and $-.26$ at post-test. It was therefore decided that item 10 and item 15 would be removed from the total scores, thus excluding these items from all subsequent analyses. This increased Chronbach's alpha for the BIE to $.74$ at pre-test and to $.85$ at post-test

Chronbach's alpha for the PAS pre-test could not be conducted due to null variances. Chronbach's alpha was calculated for the post-test as $.40$. This is far below the acceptable level of $.70$. Item 3 was particularly problematic with an item-total correlation of $-.11$. Deleting this item from the total score increased Chronbach's alpha to $.45$.

Descriptive statistics

Descriptive statistics for the BIE and PAS pre and post-test scores for both the intervention and experimental group are presented in Table 1 and Table 2. While the control group's mean BIE score remained the same from pre-test to post-test, there was a slight decrease in the experimental group's mean BIE scores. The experimental group's PAS scores improved slightly from pre- to post-test. The control group's PAS scores decreased slightly from pre- to post-test.

Table 1

Descriptive Statistics for BIE Pre- and Post-Test Scores

Group	Pre-test BIE			Post-test BIE		
	n	Mean	Std Dev	N	Mean	Std Dev
Experimental	20	11.89	2.59	18	10.89	3.95
Control	20	11.75	3.68	16	12.94	4.31

Table 2

Descriptive Statistics for PAS Pre- and Post-Test Scores

Group	Pre-test PAS			Post-test PAS		
	N	Mean	Std Dev	N	Mean	Std Dev
Experimental	20	14.28	1.53	18	14.83	1.69
Control	20	16.15	1.66	16	15.50	1.63

Mixed design ANOVAs

Assumptions of homogeneity of variance and normality of score distributions were checked prior to conducting analyses of variance (ANOVAs), and these assumptions were both met. Two-way ANOVAs with repeated measures on one factor were conducted on the data to examine the hypotheses that the humane education programme would increase empathy levels for animals and humans. The ANOVA table for the human empathy (BIE) scores is presented in Table 3. The within-subjects factor was “group” (either experimental or control). The between-subjects factor was time of measurement (pre- and post-test). There were no significant main effects or interaction effects.

Table 3

Mixed Design ANOVA results for BIE Scores

	SS	df	MS	F	P
Group	40.63	1	40.63	1.74	0.20
Error	748.43	32	23.39		
BIE	4.24	1	4.24	1.20	0.28
BIE*Group	4.24	1	4.24	1.20	0.28
Error	113.00	32	3.53		

The repeated measures ANOVA table for the PAS scores is presented in Table 4. The within-subjects factor was “group” (either experimental or control). The between-subjects factor was time of measurement (pre- and post-test). There was a significant main effect of group. This indicates that there was a significant difference between the control group scores and the intervention group scores at both pre-test (M = 16.15 and 14.28 respectively) and post-test (M = 15.50 and 14.83 respectively). There were no significant interaction effects or main effects for time of measurement.

Table 4

Mixed Design ANOVA results for PAS Scores

	SS	df	MS	F	P
Group	17.18	1	17.18	4.41	0.04
Error	124.76	32	3.90		
PAS	0.79	1	0.79	0.76	0.39
PAS*Group	1.96	1	1.96	1.90	0.18
Error	33.10	32	1.03		

Correlations

Pearson's r was used to investigate the hypothesis that empathy for humans is linked to empathy for animals. The correlation between BIE and PAS scores for the intervention group was a strong and statistically significant positive at pre-test ($r = .70, p = .001, n = 20$). However, the correlation between BIE and PAS scores for the intervention group as at post-test was a weak and non-significant negative ($r = -.23, p = .37, n = 18$).

There was a moderate positive correlation between PAS and BIE scores at pre-test for the control group and this relationship was also significant ($r = 0.69, p = .01, n = 20$). There was no significant correlation between BIE and PAS scores at post-test ($r = 0.01, p = .99, n = 16$)

DISCUSSION

Statistical analyses revealed that the humane education intervention had no significant effect on the experimental group's animal-directed empathy. This result does not support the original hypothesis that humane education is capable of increasing animal-directed empathy. There was also no significant intervention effect on the experimental group's human-directed empathy. This result does not support the original hypothesis that humane education is capable of increasing human-directed empathy.

The correlations between animal- and human-directed empathy were moderately strong for both groups at pre-test. This correlation offers support for the original hypothesis that animal-directed empathy is related to human-directed empathy. The post-test correlations between animal- and human-directed empathy were non-significant for both groups. This result does not support the original hypothesis that animal- and human-directed empathy are related.

This research confirms some of the findings of previous research. For example, Ascione (1992) found that a humane education programme was not effective in increasing animal- or human-directed empathy in children below Grade 4. The findings of this research are therefore compatible with Ascione's study, as the children in this research were in Grade 3. Furthermore, Vockell and Hodal's (1980) research found that a short humane education programme did not bring about increases in animal- or human-directed empathy; this research therefore also confirms this finding. Some shorter interventions have been successful in the past, but these have been more intensive in duration (e.g. Cameron, 1983, as cited by Ascione, 1997). One could therefore assume that one reason for the researched intervention's lack of success was its short duration and lack of intensity, as it only consisted of only 4 half-hour humane education lessons. It was important to investigate whether such a short intervention could be effective, however, due to a general lack of resources available for intervention programmes in South Africa. The intervention was also short due to the availability of humane education teaching materials, as any intervention longer than 4 lessons would have required more activities. Furthermore, the intervention was only 4 lessons long due to time constraints for the researcher.

Another reason why this intervention (and indeed, past interventions) did not succeed may be because it only targeted children in their school environment. If a programme is supplemented by interventions at other levels of a child's life, long-term change is more likely. This can be explained with reference to Bronfenbrenner's ecological theory of childhood development (Bronfenbrenner, 1979). This theory suggests that a child should be perceived as an organism developing in continuing interaction with the environment (Thurman & Widerstrom, 1985, as cited by Bricker & Veldman, 1990). There are 5 levels of a child's environment that influence development: the microsystem (which includes interactions within the child's

immediate settings), the mesosystem (including interactions between Microsystems), the exosystem (environmental factors that influence the child directly), the macrosystem (including ideologies that exist within the child's cultural setting) and the chronosystem (which includes changes in the cultural setting over time). These environments influence a child's behaviour directly and indirectly. It is therefore probable that an intervention into children's lives will only have positive effects if it addresses as many of these levels as possible (Dunst, 1985, as cited by Vincent, Salisbury, Strain, McCormick, & Tessier, 1990). For example, children who receive positive messages about animal rights in the school environment may not change their attitudes or behaviours towards animals if they witness a parent abusing family pet. With reference to the research at hand, it might have been the case that family members, peers, or the broader community were contradicting messages received from the humane education programme. It is worth noting that none of the reviewed humane education programmes utilised a multi-level approach to intervention. This is therefore a limitation of this study and in the field of humane education in general.

Another reason why no significant changes in animal-directed empathy were observed may be due to a ceiling effect. This effect may occur when the participants' scores are so high at pre-test that the intervention is incapable of increasing them significantly. This was the case with the both the experimental group and the control group, as their mean pre-test PAS scores were 14.28 and 16.15 out of 17 respectively. Furthermore, 7 out of the 18 experimental group participants scored 17 out of 17 at pre-test. The small standard deviations for PAS scores for both the control group (standard deviation = 1.66 at pre-test and 1.63 at post-test) and experimental group (standard deviation = 1.53 at pre-test and 1.69 at post-test) indicate a narrow range of scores, which suggests that most scores were very close to mean.

The mixed findings of this research regarding the correlation between animal- and human-directed empathy only partially agree with the findings of past research. While Signal and Taylor's (2007) study found a significant correlation between animal- and human-directed empathy, this research only found such a correlation at pre-test for both the experimental and control group. There was no relation between animal- and human-directed empathy for either group at post-test. This is a surprising result, as no significant changes in animal-directed or human-directed empathy occurred for either group from pre- to post-test. The change in correlation might be explained by the lack of reliability of the animal-directed empathy measure.

Limitations and directions for future research

The empathy measures

The PAS as it was modified for the purposes of this research did not have an acceptable level of internal consistency. In other words, it was not a reliable measure of animal-directed empathy. Many measures have been developed to test children's empathy levels towards animals such as the Children's Treatment of Animals Questionnaire (Thompson & Gullone, 2003b) and the Children's Attitudes and Behaviours Towards Animals questionnaire (Guymer, Mellor, Luk, & Pearse, 2001). However, whether these tests are sensitive to change has not been measured. The researcher therefore decided against using them, as they might not have been able to detect significant change in animals-directed empathy. Researchers may wish to test the sensitivity to change of these other animal-directed empathy measures so that measures that are more reliable can be found and used to evaluate future humane education interventions. Alternatively, a new questionnaire suitable to the South African context could be developed and tested.

The way in which the PAS was administered may have reduced its reliability. This is because many participants went through the tests by themselves and circled answers before the researcher had read through the items with them. This occurred despite the researcher's instructions to circle their answers only after the researcher had read out the question. Some participants may therefore have misread questions and given answers that were not reflective of their thoughts and feelings. Future humane education researchers should consider administering questionnaires verbally, with participants only having to circle their answer next to the question number.

The format of test answers may have contributed to the preponderance of high scores on the PAS. Such an effect may have been avoided by using a Likert-scale format for the answers to the PAS. This is because the yes/no and true/false format forced the participants to choose an answer that may not have been a true reflection of the degree of their opinion. For example, many participants asked questions during testing that suggested they were neutral on the subject, or that they thought the action described was only wrong sometimes. A Likert-scale format for the answers may have picked up these subtleties and allowed for a broader range of scores. However, as already mentioned, a Likert scale was not used as it may have confused the participants. The researcher had to explain the meaning of "true" and "false" to some of the participants, and if the answers had been further divided into a Likert-type scale, this would not doubt have created confusion for some participants.

Social desirability response biases should also be considered as a potential cause for high animal-directed empathy scores. Such an effect might occur with self-report measures when the participants give socially acceptable answers that do not necessarily indicate of their true feelings or opinions. Measures of social desirability would make results more valid and reliable, as they

would be able to identify whether a participant has a tendency to give socially desirable answers (Nederhoff, 1985). It is also worth noting that the experimental group's class teacher told the class when introducing the researcher that the researcher was interested in how they feel about animals. This may have caused socially desirable answers at pre-test, as the participants might have aimed to "impress" the researcher. However, since the control group also showed high pre and post-test animal empathy scores, the fact that the teacher made this announcement probably did not contribute to the high scores. It is possible, however, that there could have been communication between experimental and control groups about the researcher's purpose, since control group pre-testing took place 2 weeks after the intervention group pre-testing. The possible communication between control and experimental groups emphasises the benefits of conducting pre-tests simultaneously.

If social desirability effects did in fact occur, these could have been reduced if the researcher who implemented the intervention did not conduct the pre- and post-tests. This reduces the likelihood of the participants' attempting to "impress" the researcher by simply relaying in the post-test what they were taught during the intervention. The researcher attempted to control for this by asking the participants to answer the post-test questions according to how they felt, and not according to what the lessons said was right or wrong. However, it would probably be more effective to have at least 2 researchers involved: 1 to conduct testing, and 1 to conduct the intervention.

Other methods of measuring animal- and human-directed empathy may also be used in future research. Especially when used with younger children, pen and paper tests may not generate accurate results due to their limited concentration and reading skills. Examples of other empathy measures include the analyses of facial and verbal responses to empathy-evoking

stimuli (Strayer & Roberts, 1997), measuring of physiological responses, and picture-story indices of empathy (Eisenberg & Fabes, 1990). Furthermore, multiple respondents such as parents and teachers can be interviewed on the child's empathy behaviours. These interviews may increase the reliability and validity of obtained information. Such interviews would also have the added benefit of measuring actual changes in behaviour, instead of changes in attitudes only.

Sample selection

Ascione (1997) suggests that humane education research has focussed its attention on middle and upper class families and has ignored children from impoverished environments. The small group of research participants in this sample came from a school that primarily serves an upper-to-middle class population. Such children are more likely than children from lower socio-economic backgrounds to have normative empathy levels, as they do not face many of the empathy-delaying stressors that may be faced by children living in worse socio-economic circumstances (Zahn-Waxler & Radke-Yarrow, 1990). Furthermore, it is unlikely that a child who already possesses normative levels of empathy will show significant increases in empathy levels (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000). It may therefore be more valuable for children with below-normative levels of empathy to receive humane education (Thomson & Gullone, 2003b). If this is the case, then future research needs to utilise larger, more representative samples and focus specifically on children from a lower socio-economic background, as these children are more likely to have below-normative levels of empathy.

Long-term follow-up and longitudinal research

We cannot assume that even a long-term humane education intervention will maintain empathetic attitudes and behaviours in the long-term. For this reason, longitudinal studies of children involved in humane education programmes are necessary in order to determine whether increases in animal- and human-directed empathy (and a generalisation between the two) are maintained. A limitation of this research and of most previous humane education programmes is that no long-term follow-up could be conducted. Long-term follow-up was not necessary for this research as no significant changes occurred in the short-term and are therefore unlikely to occur in the long-term. However, future successful humane education programmes should conduct long-term follow-up. The researcher must keep in mind, when doing post-test follow-ups months or years later, that a child's empathy development follows a normative path: therefore, observed results may be caused by maturation and not by the humane education received (Thompson & Gullone, 2003b). Such an effect illustrates the importance of control groups; if the observed difference is due only to normative increases in empathy, then both groups should show the same increases in empathy levels.

Conclusion

This study has contributed to the body of humane education research in a number of ways. By utilising pre- and post-tests of both animal- and human-directed empathy, it has contributed well-designed research to an area that is largely characterised by research lacking in pre-tests and human-directed empathy measures. It supports previous research which shows that short-term, non-intensive programmes are unlikely to be successful, thus giving direction to future interventions by suggesting the implementation of long-term or intensive programmes. This

research also made evident the need for new or different measures of animal-directed empathy, samples that are more representative, more human and financial resources and multi-level intervention approaches in the area of humane education research.

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Appendix A

Bryant's Index of Empathy for Children and Adolescents (BIE; 1982)

- 1 It makes me sad to see a girl who can't find anyone to play with
- 2 People who kiss and hug in public are silly
- 3 Boys who cry because they are happy are silly
- 4 I really like to watch people open presents, even when I don't get a present myself
- 5 Seeing a boy who is crying makes me feel like crying
- 6 I get upset when I see a girl being hurt
- 7 Even when I don't know why someone is laughing, I laugh too
- 8 Sometimes I cry when I watch TV
- 9 Girls who cry because they are happy are silly
- 10 It's hard for me to see why someone else gets upset
- 11 I get upset when I see an animal being hurt
- 12 It makes me sad to see a boy who can't find anyone to play with
- 13 Some songs make me so sad I feel like crying
- 14 I get upset when I see a boy being hurt
- 15 Grown-ups sometimes cry even when they have nothing to be sad about
- 16 It's silly to treat dogs and cats as though they have feelings like people
- 17 I get mad when I see a classmate pretending to need help from the teacher all the time
- 18 Kids who have no friends probably don't want any
- 19 Seeing a girl who is crying makes me feel like crying
- 20 I think it is funny that some people cry during a sad movie or while reading a sad book
- 21 I am able to eat all my cookies even when I see someone looking at me wanting one

22 I don't feel upset when I see a classmate being punished by a teacher for not obeying school rules

Appendix B

Sample question from the Primary Attitude Scale (PAS; National Association for Humane and Environmental Education, 1983)

8. IS IT OKAY TO LEAVE A DOG BY ITSELF FOR A FEW DAYS AS LONG AS IT'S INSIDE?

YES NO

9. DO YOU THINK IT'S SILLY TO GIVE CHICKENS PLENTY OF SPACE TO MOVE AROUND IN?

YES NO

10. DO YOU THINK THAT PEOPLE WHO WON'T EAT MEAT ARE STUPID?

YES NO