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Animals, Empathy, and Violence

Can Animals Be Used to Convey Principles of Prosocial Behavior to Children?

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This study evaluates the effectiveness of a school-based violence prevention/intervention and character education program that uses rescued shelter dogs to teach antiviolenence and prosocial messages to elementary and middle school students. This study uses student self-report, disciplinary data, and teacher observational data to measure violent and aggressive behaviors, beliefs about aggression, and levels of empathy in program participants before and after exposure to the program's curriculum. Findings indicate that receiving the program significantly alters students' normative beliefs about aggression, levels of empathy, and displays of violent and aggressive behaviors.

Keywords: *violence; aggression; empathy; animal-assisted programs*

The American rate of youth homicide is twice that of other industrialized nations (U.S. Department of Justice, 1996). In the general population, 21% of all deaths of individuals aged 5 to 24 are the result of homicide. The rate of other violent crimes, such as assault, battery, and rape, is three times higher among youth than adults (Sickmund, Snyder, & Poe-Yamagata, 1997). In light of these statistics, it is not surprising that 8.8 million children between the ages of 12 and 18 have witnessed someone shot, stabbed, assaulted, or threatened with a weapon (National Criminal Justice Reference Service, 2003).

A significant portion of the violence and aggression to which youth are exposed occurs in school settings (Bureau of Justice Statistics, 1991; Howard, Flora, & Griffin, 1999; Sickmund et al., 1997). Violent and aggressive acts are prevalent in high, middle, and elementary schools. A 1996 Center for Disease Control and Prevention (CDCP) national survey of high school students discovered that 10% of students had brought a gun or knife to school for protection within the previous month, and 16% had participated in a fight within the previous year. Among middle schools students, 14% were very worried or somewhat worried about being physically attacked or threatened at school (Everett & Price, 1995). Even elementary schoolchildren are not sheltered from display of violence and aggression. In a study of New Orleans schoolchildren aged 9 to 12, 49% had witnessed a person injured by violence (Osofsky, Wewers, Hann, & Fick, 1993). As early as 1991, the federal government publicly recognized the need to decrease school violence (Public Health Service, 1991). School-based programs are often used as mechanisms to reduce or prevent the formation of violent and aggressive attitudes, beliefs, and behaviors in youth. It is estimated that 50,000 schools have implemented one or more of the 300 commercial violence prevention programs on the market (Powell, Muir-McClain, & Halasyamani, 1995) and that

more than one third of the nation's schools have a violence prevention program in their curriculum (Price & Everett, 1997).

The Program

Healing Species is a private nonprofit, animal-assisted, school-based violence prevention/intervention and character education program. Healing Species is universal or inclusive of all students, rather than targeted, or inclusive of only "troubled" students. The organization's founder, a criminal attorney, noticed two common traits in many of the violent offenders she was assigned to defend—lack of empathy and a history of animal abuse during childhood. Studies support this observation, indicating that individuals who commit violent crimes have little to no concern for the thoughts and/or feelings of others and often abused animals in their youth (Wright & Hensley, 2003). The relationship between cruelty toward animals in childhood and cruelty toward humans in later life has been repeatedly validated (Merz-Perez, Heide, & Silverman, 2001; Miller, 2001; Miller & Knutson, 1997; Wright & Hensley, 2003). Therefore, teaching children to treat all living creatures with respect and dignity is hypothesized to be the first step in inhibiting the development of or decreasing existing violent and aggressive tendencies.

The basic premise of Healing Species is that the escalating cycle of aggression to violence can be interrupted through the use of animals to teach children (a) how to identify and practice prosocial behaviors and (b) how to be empathic. Once students begin to consider the thoughts and feelings of others, it is difficult to commit violent or aggressive acts toward others. Healing Species consists of eleven 45-min weekly lessons, typically involving an animal as the teacher. Near the end of the lesson, the Healing Species instructor will connect the animal's story to human experience. Lessons taught include grieving, empathy, self-responsibility, sharing, cooperating, and service to others. Children are given the opportunity to practice their new skills through interactive projects and service learning activities. The modeling of prosocial behavior is often absent in the homes from which violent and aggressive children are raised (McGinnis & Goldstein, 1997). The dogs' physical presence in the classroom provides children with the opportunity to witness prosocial behavior (e.g., petting a frightened animal), practice prosocial behavior (petting the dog themselves), and be reinforced for their behavior (praise by Healing Species staff).

Healing Species lessons can accommodate various class sizes, large or small; however, only one "teacher" dog is taken into the classroom during each visit. All human program instructors receive in-depth training and induction to the Healing Species curriculum and shadow other instructors before taking on classes of their own. A 4-year degree is the minimum level of education accepted to be an instructor with Healing Species.

The current study evaluates the Healing Species and is concerned specifically with physical violence, aggression, and empathy in individuals under the age of 18. This study examines whether the use of rescued shelter dogs in a school-based violence prevention/intervention and character education program can increase empathy while decreasing violent and aggressive beliefs and behaviors. This study is grounded in a multitheoretical framework that views youth violence and aggression as (a) learned behaviors, (b) influenced

by the presence or absence of empathy, and (c) escalating in severity unless treated. This theoretical lens is consistent with the two most frequently cited theories in the study of violence prevention—social learning (Bandura, 1973, 1986) and moral development (Eisenberg, 1986; Kohlberg, 1969).

Theoretical Application

Proponents of social learning assert that children witness (i.e., modeling) violent and/or aggressive behaviors in the community, at home, on television, or in school and then repeat or rehearse these behaviors. When the behavior is repeated in certain contexts, the child receives positive reinforcement (fear, status, respect, money, etc.) or negative reinforcement (attention from parents, teachers, or peers). The behavior is then internalized and repeated until an extinguisher is introduced (Astor, 1995; Bandura, 1968, 1973, 1977; Bandura & Walters, 1963; Bemak & Keys, 2000; Price & Everett, 1997).

Drawing on the tenets of social learning theory, violence prevention programs often attempt to teach children more appropriate ways of handling and expressing their emotions through modeling, rehearsing, and reinforcing anger management, conflict resolution, and peer mediation skills. Another popular trend in violence prevention is to teach children prosocial skills, such as listening, joining, sharing, helping, apologizing, and empathizing (McGinnis & Goldstein, 1997). Theories of moral development assert that children gradually learn to participate in prosocial behaviors through the process of chronological development (Bryan, 1975; Kohlberg, 1981).

The connection between empathy and prosocial behavior has been well documented (Eisenberg, 1986; Eisenberg-Berg, 1979; Eisenberg, Lennon, & Roth, 1983; Eisenberg & Strayer, 1987; Eisenberg et al., 1987; Hoffman, 1984). Prior to age 6, most children respond to situations using hedonistic gain and primitive needs-oriented empathic reasoning (Eisenberg et al., 1987). However, as children enter elementary school, their capacity to reflect on the outcome of their behaviors increases, leading children to behave in ways that are considered “good” and that will gain adult approval. The quest for approval alone does not dictate behavior; empathy is the key factor in sustained prosocial behavior (Eisenberg & Miller, 1987; Hoffman, 1984). Many children will often act in socially sanctioned and appropriate ways in the presence of adults. Yet when the adults are absent, children capable of empathic reasoning will continue to behave in prosocial ways, whereas children concerned only with pleasing adults will often resort to violent or aggressive behaviors.

An additional theory applicable to the current study is the theory of planned behavior. This theory asserts that the amount of behavioral control an individual perceives himself or herself to have is strongly associated with the opportunities, resources, and skills available to him or her (Ajzen, 1991; Zint, 2002). Greater resources, opportunities, and skills result in an individual having a higher level of perceived behavioral control. The converse is also true. Perceived behavioral control has a reciprocally influential relationship with attitudes and beliefs. For example, as the Healing Species curriculum teaches students new skills of conflict resolution and empathy, their perception of behavioral control increases because they have new mechanisms with which to respond to confrontational situations, leading to a subsequent decrease in violence and aggression.

Methods and Participants

The purpose of the study was to determine what effect participation in the Healing Species program had on students' normative beliefs about aggression, levels of empathy, and outwardly aggressive and violent behaviors. The study is quantitative, using a pretest–posttest design to measure levels of the dependent variables (empathy, violent behaviors, aggressive behaviors, and normative beliefs about aggression) prior to and after students received the program (independent variable). Additional independent variables—socioeconomic status, gender, grade level, and ethnicity—were examined for associations with the dependent variables. The overarching hypothesis of the study was that participants would score higher on the empathy measure and lower on the violence and aggression measures at posttest than at pretest.

Approximately 190 fourth graders, 60 fifth graders, and 130 sixth graders from four schools were invited to participate in the study. Because of the relatively small class sizes, all classes receiving the Healing Species curriculum were selected for inclusion in the study, with the exception of one school. In this particular school, fourth graders were selected for inclusion based on schedule and availability for testing. Of the 383 parental consent forms distributed, 328 were returned for a response rate of 85.6%. Of those forms returned, 316 parents gave permission for their children to participate in the study. Of those 316 parents who provided permission for their children's participation, 310 students chose to participate in the study. These 310 students participated in pretesting, whereas 296 participated in posttesting. For students who were absent during the posttesting, the mean score was substituted for their measures. No student dropped out of the study once it began.

Two schools chosen for inclusion were predominately Caucasian and in middle- to upper-class neighborhoods, whereas the two additional schools were predominately African American and in low-income districts. The study sample ($N = 310$) comprised 154 males (49.7%) and 156 females (50.3%). Almost 44% (43.9%, $n = 136$) of these participants were African American, 52.9% ($n = 164$) were Caucasian, 1.6% ($n = 5$) were Asian American, and 1.6% ($n = 5$) were Latino/Hispanic. Participant grade level, used as a proxy for age, consisted of 57.1% ($n = 177$) fourth graders, 12.3% ($n = 38$) fifth graders, and 30.6% ($n = 95$) sixth graders.

Instruments and Procedures

Students participating in the study received two instruments: Index of Empathy for Children and Adolescents (IECA; Bryant, 1982) and Normative Beliefs About Aggression Scale (NOBAGS; Huesmann & Guerra, 1997; Huesmann, Guerra, Miller, & Zelli, 1989) 1 week before and 1 week after completing the Healing Species violence prevention/intervention program. Each of these instruments was standardized and normed on schoolchildren similar to those in the study population, indicating an appropriate use of the measures.

The NOBAGS has two subscales—Retaliation Aggression (questions 1-12) and General Aggression (questions 13-20)—and one large scale—Total Aggression (questions 1-20). The instrument has an alpha of .86. Lower scores are indicative of few normative beliefs about aggression, whereas higher scores are indicative of greater normative beliefs about aggression. Each question is scored on a 4-point scale. The lowest possible score on the Retaliation Aggression subscale is 12, whereas the highest is 48. The lowest possible score

on the General Aggression subscale is 8, whereas the highest possible score is 32. For Total Aggression, the lowest possible score is 20, whereas the highest possible score is 80 (Huesmann & Guerra, 1997; Huesmann et al., 1989).

The IECA is one large scale (items 1-22), with a minimum score of 0 and a maximum score of 22 ($\alpha = .81$). Because the majority of respondents were under age 12, a yes/no format was used. A higher score indicates high levels of empathy, whereas a lower score indicates low levels of empathy (Bryant, 1982).

Teachers were asked to complete the Aggressive Behavior Teacher Checklist (ABTC) (Dodge & Coie, 1987) prior to and after their students received the Healing Species. The ABTC has a minimum score of 6 and a maximum score of 30 ($\alpha = .90$). A higher score indicates high levels of outward aggression, whereas a lower score indicates the teacher's perception of low levels of outward aggression. The number of out-of-school suspensions for physical fights used to ascertain the amount of violent behavior present in study participants in the period 1 month prior to pretest and posttest was collected from school counselors and teachers. Although this measure may not be as enlightening as other measures used in the study, it was the only method of violent behavior data collection available to the researcher during the course of the study.

Statistical Analysis

Correlation analysis was completed to assess the degree and strength of association between student scores on each dimension of the NOBAGS, IECA, and ABTC. Correlation analysis was also used to determine the association between instrument scores and the demographic variables such as gender, grade level, and socioeconomic status. Because of the anonymous method of collecting out-of-schools suspension data, this measure could not be included in correlation analysis or multivariate analysis of variance (MANOVA). MANOVA was conducted to examine how participation in the Healing Species program influences empathy, aggressive behavior, and beliefs about aggression in students. MANOVA statistical procedures also incorporated the demographic variables to ascertain their main and interaction effects on program outcomes. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 12.0.

Findings

Pretest and posttest scores revealed directionally predicted correlations among all instruments employed in the study. Using Pearson's two-tailed test of significance, it was determined that, at pretest, each NOBAGS dimension (retaliation aggression, general aggression, and total aggression) was moderately positively correlated with the ABTC ($r = .48, p < .01$; $r = .43, p < .01$; $r = .50, p < .01$, respectively; Table 1). At posttest, however, student scores across each NOBAGS subscale and total scale exhibited stronger positive correlations with the total ABTC scores ($r = .76, p < .01$; $r = .77, p < .01$; $r = .80, p < .01$, respectively; Table 2). Conversely, both the NOBAGS and the ABTC were negatively correlated with participants' total scores on the IECA at pretest ($r = -.55, p < .01$; $r = -.52, p < .01$; $r = -.58, p < .01$; $r = -.46$, respectively; Table 1) and posttest ($r = -.87, p < .01$;

Table 1
Pretest Instrument Intercorrelations

	Retaliation Aggression	General Aggression	Total Aggression	ABTC	IECA
ABTC	.48*	.43*	.50*		-.46*
IECA	-.55*	-.52*	-.58*	-.46*	

*Pearson's correlation is significant at the $p < .01$ level (two-tailed).

Table 2
Posttest Instrument Intercorrelations

	Retaliation Aggression	General Aggression	Total Aggression	ABTC	IECA
ABTC	.76*	.77*	.80*		-.80*
IECA	-.87*	-.86*	-.91*	-.80*	

*Pearson's correlation is significant at the $p < .01$ level (two-tailed).

$r = -.86, p < .01$; $r = -.91, p < .01$; $r = -.80$, respectively; Table 2). Once again, correlation strength was greater at posttest than at pretest. These findings indicate that in this particular study, levels of empathy increase as levels of aggressive behaviors and beliefs decrease.

Demographic Variable Correlations

To obtain a thorough portrait of the study population, all instruments used during the study were correlated with the demographic variables. Significant correlations at pretest and posttest were detected. At pretest, an analysis of the NOBAGS revealed that each dimension of the scale was weakly positively correlated with grade ($r = .30, p < .01$; $r = .29, p < .01$; $r = .33, p < .01$, respectively) and weakly negatively correlated with socioeconomic status ($r = -.29, p < .01$; $r = -.24, p < .01$; $r = -.30, p < .01$, respectively). Correlations between gender and the NOBAGS were only significant on one dimension, total score ($r = -.12, p < .01$), at pretest (Table 3). However, posttest correlations revealed significant positive correlations between grade ($r = .21, p < .01$; $r = .24, p < .01$; $r = .24, p < .01$, respectively) and significant, weak negative correlations with gender ($r = -.23, p < .01$; $r = -.18, p < .01$; $r = -.26, p < .01$, respectively) and socioeconomic status ($r = -.25, p < .01$; $r = -.29, p < .01$; $r = -.28, p < .01$, respectively; Table 4). These findings indicate that overall, scores on the NOBAGS decreased when participants were young, female, and from high socioeconomic areas and increased when participants were older, male, and from low socioeconomic areas.

Similar to the NOBAGS findings, an analysis of the ABTC and demographic variables revealed a positive correlation with grade level ($r = .27, p < .01$) and a negative correlation with socioeconomic status ($r = -.21, p < .01$) at pretest (Table 3), whereas correlations between gender and ABTC scores were not significant. At posttest, analysis indicated that the ABTC was positively correlated with grade ($r = .29$) and negatively correlated with both

Table 3
Instrument Correlations With the Demographic Variables at Pretest

	Retaliation Aggression	General Aggression	Total Aggression	ABTC	IECA
Grade	.30*	.29*	.33*	-.27*	-.17*
Socioeconomic	-.29*	-.24*	-.30*	-.21*	.18*
Gender	-.10	-.08	-.12*	-.08	.14*

*Pearson's correlation is significant at the $p < .01$ level (two-tailed).

Table 4
Instrument Correlations With the Demographic Variables at Posttest

	Retaliation Aggression	General Aggression	Total Aggression	ABTC	IECA
Grade	.21*	.24*	-.24*	.29*	-.19*
Socioeconomic	-.25*	-.29*	-.28*	-.15*	.22*
Gender	-.23*	-.18*	-.26*	-.30*	.22*

*Pearson's correlation is significant at the $p < .01$ level (two-tailed).

socioeconomic status ($r = -.15$) and gender ($r = -.30$; Table 4). These findings, combined with NOBAGS correlations, further indicate that females received greater net gains in altering aggressive beliefs and behaviors from program participation because a significant difference between posttest NOBAGS and ABTC by gender was detected in the absence of a similar pretest finding.

Conversely, the researcher discovered that the IECA was positively correlated with socioeconomic status ($r = .18$, $p < .01$) and gender ($r = .14$, $p < .01$) and negatively correlated with grade level ($r = -.17$, $p < .01$) at both pretest (Table 3) and posttest ($r = .22$, $p < .01$; $r = .22$, $p < .01$; $r = -.19$, $p < .01$, respectively; Table 4). These findings indicate that scores on the IECA were higher, suggesting greater levels of empathy, when participants were young, female, and from high socioeconomic areas, and lower, suggesting lower levels of empathy, when participants were older, male, and from lower socioeconomic areas.

Pretest to Posttest Comparisons

The mean score on the retaliation aggression dimension of the NOBAGS was 24 (SD 7.6) at pretest, yet reduced to 14 at posttest (SD 4.1). Similarly, the general aggression dimension of the NOBAGS garnered a mean score of 14 (SD 5.7) at pretest and mean of 10 (SD 3.3) at posttest, whereas the Total Aggression Scale declined from a mean of 37 (SD 12.2) at pretest to a mean of 24 (SD 7.0) at posttest (Table 5). The mean score on the ABTC at pretest was 12.7 (SD 6.6), whereas the mean at posttest was 8.5 (SD 5.0; Table 5). Conversely, the mean score on the IECA increased from 10.6 (SD 5.0) at pretest to 19 (SD 4.7) at posttest (Table 5). Finally, the number of out-of-school suspensions for physically fighting, used to indicate violent behavior, decreased from 13 at pretest to 6 at posttest (Table 5).

Table 5
Pretest to Posttest Mean Score Changes

Dimensions	Pretest		Posttest		Change
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Retaliation aggression	24	7.6	14	4.1	-10
General aggression	14	5.7	10	3.3	-4
Total aggression	37	12.2	24	7.0	-13
IECA	10.6	5.0	19	4.7	+8.4
ABTC	12.7	6.6	8.5	5.0	-4.2
Violent behavior	13 (total)		6 (total)		-7

Table 6
Demographic Variable Influences on Individual Instruments

Variables	Instruments	<i>df</i>	<i>F</i>	Sign
Grade	ABTC	1	5.77	.017
Ethnicity	ABTC	1	3.5	.007
	IECA	1	2.3	.050
Grade × Gender × Ethnicity	ABTC	1	4.0	.045
	IECA	1	3.0	.050

MANOVA

A MANOVA statistical analysis comparing pretest to posttest scores was conducted to determine the effect of exposure to the Healing Species program on participants' instrument scores. Because of the anonymous manner in which out-of-school suspensions were collected, inclusion in the MANOVA analysis was not possible for this measure. MANOVA results indicate that receiving the Healing Species curriculum (Wilks's Lambda = .47, $F = 17.94$, $p = .000$) significantly affects the dependent variables of total aggression (NOBAGS scores), empathy (IECA scores), and aggressive behavior (ABTC scores). With regard to the main effects of the independent variables on group scores, only grade ($F = 3.16$, $p = .024$) and ethnicity ($F = 1.71$, $p = .05$) were significant. In addition, the MANOVA revealed that interaction between grade, gender, and ethnicity ($F = 2.1$, $p = .05$) also significantly affected instrument scores. However, when the independent variables were analyzed in conjunction with individual instruments' pretest and posttest scores, several significant relationships were found. Grade significantly affected ABTC total scores at pretest and posttest ($F = 5.77$, $p = .017$), with younger children scoring lower, whereas ethnicity significantly affected both ABTC total score ($F = 3.5$, $p = .007$) and IECA total score ($F = 2.3$, $p = .05$), with minority children scoring higher on the ABTC and lower on the IECA at pretest and posttest. Similarly, the combination of grade, gender, and ethnicity significantly affected ABTC ($F = 4.0$, $p = .045$) and IECA ($F = 3.0$, $p = .05$) scores at pretest and posttest (Table 6). All other variables and variable combinations insignificantly affected the study's findings.

Post hoc testing was conducted using Tukey's calculations to determine the difference in scores across participant ethnicity and grade. The demographic independent variables gender and socioeconomic status did not meet the specified parameters of SPSS 12.0 post hoc testing, a minimum of three categories, and were therefore not included. With regard to ethnicity, only scores between African Americans and Caucasians were significantly different across all instruments. Similarly, fourth- and sixth-grade participants were significantly different across each instrument. In addition, fourth- and fifth-grade participants differed significantly on total aggression and IECA scores, whereas fifth- and sixth-grade participants differed significantly on total aggression and ABTC scores. In sum, younger participants exhibited less aggression and higher levels of empathy than their senior counterparts, whereas African American participants scored notably higher on both measures of aggression and lower on measures of empathy than Caucasian study participants. There were no additional significant relationships revealed by post hoc testing.

Discussion

As hypothesized, the current study's findings indicate that the Healing Species positively affects participants' normative beliefs about aggression, violent behaviors as measured by out-of-school suspensions, levels of empathy, and teachers' perceptions of outwardly aggressive behaviors. Explanations for the apparent success of this program and further support for the research hypotheses are presented using relevant literature and applicable theories.

The theory of planned behavior suggests that as the Healing Species teaches participants empathy and means of resolving conflicts without violence, participants' attitudes toward violence and beliefs about aggression are positively altered. As a result, their perception of behavioral control increases because they have new mechanisms with which to respond to confrontational situations. This increased sense of control further modifies attitudes and beliefs about the acceptability of violence and aggression, which in turn further decreases the presence of outwardly violent, aggressive, and nonempathic behaviors.

With regard to social learning theory, study participants were exposed to prosocial messages regarding animals and humans, given opportunities to apply these messages through activities and community-based service projects, and reinforced for their positive behaviors by Healing Species staff, teachers, guidance counselors, and peers. These prosocial messages and positive reinforcers are often absent in homes where violent and aggressive children are raised. Consequently, many participants may have been exposed to prosocial behaviors and empathic reasoning marginally prior to participating in the Healing Species program, thus resulting in a significant pretest to posttest belief and behavioral change.

According to Kohlberg (1969), children between the ages of 9 and 15 are in the third or conventional stage of moral development. At the beginning of this stage, individuals are concerned with gaining approval, whereas at the conclusion, persons have begun to internalize societal norms. Because participants in the current study spanned these ages, it is possible that younger participants exhibited lower levels of violence and aggression and higher levels of empathy because they were more concerned with pleasing Healing Species staff and the researcher than older participants. However, study participants are

chronologically and developmentally advanced enough to reflect on their behaviors and engage in perspective taking (Eisenberg, Carlo, Murphy, & Van Court, 1995). Therefore, it is also possible that the consistent emphasis on empathy in the program led participants to consider the impact of their behaviors on others, thereby reducing violence and aggression and increasing empathy levels.

The use of animals in violence prevention and offender rehabilitation programs has demonstrated the ability to reach even the most resistant, troubled individuals (Ascione & Weber, 1996). It is the researcher's contention that the use of rescued shelter dogs to teach elementary and middle school students' antiviolence, empathy, and character education traits is the key factor in the apparent success of the Healing Species program. By transcending one of the largest barriers to successful violence prevention/intervention program outcomes—participant apathy—the dogs are used to convey principles of kindness, empathy, and cooperation. These fundamentals are then transferred to human experience by the weekly lessons, an occurrence supported by the findings of Ascione and Arkow (1998). Students are able to relate the experiences of the “teacher” dogs to events occurring in their own lives or the lives of those around them. In addition, the physical presence of the animals in a classroom setting provides a unique type of experiential education. Specifically, the hands-on interaction with the animal increases integration of the program's core principles and possibly lengthens the retention rate of program information among participants.

The demographic variables such as gender, grade level, socioeconomic status, and ethnicity exhibited a moderate influence on program outcome. Females, younger children, individuals of Caucasian decent, and those from higher socioeconomic statuses received the greatest benefits from the program across dimensions of at least one instrument used in the study. Females frequently receive gender role socialization that discourages acceptance of violence and aggression (Fried & Fried, 2003; McGinnis & Goldstein, 1997), whereas younger individuals are more likely to be influenced by violence prevention and empathy promotion programs (Bemak & Keys, 2000). Similarly, nonminority participants and individuals from higher socioeconomic status encounter fewer environmental stressors and have a greater number of protective mechanisms than their low socioeconomic status counterparts (Garmezy, 1993; Rutter, 1987). Consequently, the observed outcomes were not unexpected.

Limitations, Recommendations, and Conclusions

It is important to note that several extraneous factors could hold intervening roles in the study's results. First, it is possible that the study participants were calmer and more adjusted to their classroom routines at posttest. As the school year progressed and anxiety dissipated, the students' true beliefs and behaviors may have been captured. Although this event is unlikely to produce the significant pretest/posttest score change observed in the study, the use of control groups would assist in determining whether such an effect does exist.

A second limitation is the absence of a control group. However, the results of this study provide preliminary indications that the program is effective. Replication studies are needed to verify this assertion. A follow-up or longitudinal study should also be conducted to assess whether the program's apparent effects are short-term or long-lasting.

In summary, the results of the current study indicate that the Healing Species is positively affecting public schoolchildren in elementary and middle schools across the state of South Carolina. Therefore, other programs intervening with children and adolescents should begin to view animals and an emphasis on empathy as viable change mechanisms, particularly because many violence prevention/intervention programs currently in use have produced insignificant results (Coie, Underwood, & Lochman, 1991; Cooper, Lutenbacher, & Faccia, 2000; Mytton, DiGuiseppi, Gough, Taylor, & Logan, 2002). It is the hope of this researcher that schools, parents, and teachers will continue to support and advance the Healing Species. Current and future generations deserve the safer, kinder school environment it creates.

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