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The Impact of Pet Loss on the Perceived Social Support and Psychological Distress of Hurricane Survivors

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Associations between pet loss and posthurricane perceived social support and psychological distress were explored. Participants (N = 365) were primarily low-income African American single mothers who were initially part of an educational intervention study. All participants were exposed to Hurricane Katrina, and 47% experienced Hurricane Rita. Three waves of survey data, two from before the hurricanes, were included. Sixty-three participants (17.3%) reported losing a pet due to the hurricanes and their aftermath. Pet loss significantly predicted postdisaster distress, above and beyond demographic variables, pre- and postdisaster perceived social support, predisaster distress, hurricane-related stressors, and human bereavement, an association that was stronger for younger participants. Pet loss was not a significant predictor of postdisaster perceived social support, but the impact of pet loss on perceived social support was significantly greater for participants with low levels of predisaster support.

Pet loss during natural disasters is a relatively common occurrence. Indeed, an estimated 200,000 pets were displaced after Hurricane Katrina and, of those that were rescued, fewer than 5% were reunited with their owners (Lewis, 2006). Despite this prevalence, only one study to our knowledge (Hunt, Al-Awadi, & Johnson, 2008) has investigated its psychological impact. Among 65 participants recruited through a pet rescue Web site, pet loss was associated with depression, acute stress, and posttraumatic stress. This study investigates pet loss among low-income African American single mothers from New Orleans ($N = 365$) who survived Hurricane Katrina and, in some cases, Hurricane Rita. Research has found elevated psychological distress, including levels of depression and anxiety, among people of low socioeconomic status (e.g., Bonanno, Galea, Bucciarelli, & Vlahov, 2007), African Americans (Elliot & Pais, 2006), and women (e.g., Galea, Tracy, Norris, & Coffey, 2008), suggesting that the sample is particularly vulnerable to postdisaster psychopathology.

Analyses are informed by the conservation of resources (COR) theory (Hobfoll, 1989), which proposes that psychological distress results from threatened or actual resource loss, including those resulting from natural disasters (e.g., Kaiser, Sattler, Bellack, & Dersin, 1996). Perceived social support is considered a resource that protects against distress (e.g., Vernberg, La Greca, Silverman, & Prinstein, 1996), while a loss of support exacerbates distress (e.g., Kaniasty & Norris, 2008). Likewise, support from pets might protect survivors from adverse outcomes whereas pet loss might increase risk. Pets can provide owners with nonjudgmental support (Katcher, 1985), buffering against physical and mental health problems (e.g., Serpell, 1990), and decreasing reactivity to stressors (Allen, Blascovich, & Mendes, 2002). Pet loss, in turn, is associated with psychological distress (Gosse & Barnes, 1994).

We predicted that, even after controlling for the effects of demographic, prehurricane and hurricane-related variables, pet loss would be associated with diminished perceived social support and elevated psychological distress. We also conducted exploratory moderator analyses, as several factors appear to exacerbate the impact of pet loss, including younger age and family size (McCutcheon & Fleming, 2001, 2002).

METHOD

Participants

The 365 female participants were part of an educational intervention in New Orleans (Brock & Richburg-Hayes, 2006). The majority (81.9%) were African American, 10.1% were White, and 2.7% were Hispanic, with an average baseline age of 25 years ($SD = 4$). All were mothers, and the average number of children was 1.9 ($SD = 1.2$). Before the hurricane, 72.6% reported living without a spouse or partner. The average prehurricane monthly household income was only $1,547 ($SD = $1,080). All of the participants were living in an area affected by Hurricane Katrina, and among them, 47.4% lived in an area affected by Hurricane Rita.

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Measures

Participants' age and number of children were included. Perceived social support was assessed using nine items (e.g., "There are people I know will help me if I really need it.") from the Social Provisions Scale (Cutrona & Russell, 1987). Items were rated using a 4-point Likert-type scale (*strongly disagree* to *strongly agree;* Time 1 [T1] $\alpha = .83$, Time 2 [T2] $\alpha = .82$; see Procedure below for descriptions of T1 and T2).

Psychological distress was assessed using the K6 scale (Kessler et al., 2003), which screens for anxiety and mood disorders and has been used in previous research on hurricane survivors (e.g., Galea et al., 2007). It includes six items (e.g., "During the past 30 days, about how often did you feel nervous?"), with five response options ranging from *all of the time* to *none of the time* (T1 $\alpha = .70$, T2 $\alpha = .80$).

Participants indicated if they experienced any of the following during each hurricane: (a) no fresh water to drink, (b) no food to eat, (c) felt their life was in danger, (d) lacked necessary medicine, (e) lacked necessary medical care, (f) had a family member who lacked necessary medical care, (g) lacked knowledge of safety of children, and (h) lacked knowledge of safety of other family members. The total number of items endorsed was utilized ($\alpha = .83$).

Participants reported whether they had lost a close friend or family member due to the hurricanes; 28.2% ($n = 103$) answered affirmatively. Participants indicated whether they had experienced the death or loss of a pet due to the hurricanes; 17.3% ($n = 63$) responding affirmatively.

Procedure

At baseline, 1,019 participants, who were initially part of the community college intervention, provided demographic information. Hurricane Katrina interrupted a one-year follow-up ([T1]), at which point only 492 participants had been reassessed in phone interviews. Trained interviewers conducted the T1 assessments, which included measures of perceived social support and psychological distress. After the hurricanes, 402 (81.7%) of the 492 participants were located and reassessed ([T2]). The T2 surveys were administered by telephone and included the measures of support and distress, and questions assessing hurricane-related stressors. The small number of male participants ($n = 16$) were excluded from the study. Listwise deletion was used to handle missing data. The final sample consisted of 365 participants. MANOVA analyses detected no significant differences on any of the variables between retained participants and those who were dropped.

RESULTS

As hypothesized, pet loss was significantly correlated with posthurricane perceived social support ($r = -.11$, $p < .05$) and psychological distress ($r = .18$, $p < .01$). Pet loss was also significantly correlated with bereavement ($r = .21$, $p < .05$), but orthogonal contrasts detected no differences between the nonbereaved pet-loss group ($n = 32$) and the bereaved pet-loss group ($n = 31$) in posthurricane perceived social support, t (361) = 1.77, *ns* or psychological distress, t (361) = 1.76, *ns*. Predictor variables were centered to facilitate moderator analyses, and colinearity statistics indicated an absence of multicolinearity (Tabachnick & Fidel, 2007).

Perceived social support. A regression model predicted T2 perceived social support (Table 1). The variance explained in Step 1, including demographics and T1 support, was significant. Number of children and prehurricane support were significant unique predictors. The additional variance explained in Step 2, including hurricane-related stressors and bereavement, was not significant. Contrary to our hypothesis, the additional variance explained by pet loss in Step 3 was not significant. However, the interaction between pet loss and prehurricane support (Step 4) was significant. Pet loss had a stronger negative association with support for participants with low prehurricane support.

Given the correlation between pet loss and bereavement, a three-way interaction between pet loss, prehurricane support, and

Table 1. Regression Model Predicting Perceived Social Support

Set and predictor	β	R^2 total	R^2 change	F	F change
Demographic and prehurricane variables		.20	.19	30.15**	30.15**
Age	−.06				
Number of children	−.10*				
Prehurricane support	.42**				
Hurricane variables		.21	.01	19.18**	2.38
Hurricane-related stressors	−.05				
Bereavement	−.08				
Pet loss	−.08	.22	.01	16.50**	2.68
Pet loss × pre-hurricane support	.09*	.23	.01	14.83**	3.96*

* $p < .05$. ** $p < .01$.

Table 2. Regression Model Predicting K6 (Distress)

Set and predictors	β	R^2 total	R^2 change	F	F change
Demographic and prehurricane variables		.15	.15	15.22**	15.22**
Age	.08				
Number of children	−.07				
Prehurricane K6	.35**				
Prehurricane support	−.08				
Hurricane variables		.25	.10	16.98**	16.30**
Hurricane-related stressors	.17**				
Bereavement	.11*				
Posthurricane support	−.24**				
Pet loss	.12*	.24	.01	15.68**	6.17*
Pet loss × age	.10*	.25	.01	14.55**	4.32*

* $p < .05$. ** $p < .01$.

bereavement was tested in a supplemental analysis. It was not significant (β = −.07), but the two-way interaction between pet loss and prehurricane support remained significant (β = .13, $p < .05$).

Psychological distress. The next regression model predicted posthurricane K6 (Table 2). Step 1, including demographic variables, prehurricane K6 and support, was significant. Of the predictor variables, only prehurricane K6 contributed significant unique variance. Hurricane-related stressors, bereavement, and posthurricane support were entered in Step 2, which was significant. More hurricane-related stressors, bereavement, and lower posthurricane perceived social support were significantly associated with higher posthurricane K6. Pet loss was entered in Step 3, and, consistent with our hypothesis, was significant. The pet loss by age interaction was also significant (Step 4), and pet loss had stronger negative impact on K6 for younger participants.

Higher-order interactions with bereavement were then entered in a supplemental analysis. The pet loss by bereavement interaction was not significant (β = .02, $p > .05$), and the main effect of pet loss on K6 remained significant (β = .11, $p < .05$). The three-way interaction between pet loss, age, and bereavement was also not significant (β = −.01, $p > .05$), but the two-way interaction between pet loss and age became marginally significant (β = .09, *ns*).

DISCUSSION

This study investigated associations between pet loss and psychosocial functioning in a sample of primarily low-income African American single mothers who endured Hurricane Katrina and, in some cases, Hurricane Rita. Contrary to expectations, pet loss was not a significant predictor of posthurricane perceived social support. However, the interaction between pet loss and prehurricane perceived social support was significant. Participants with low levels of prehurricane support were more vulnerable to the negative impact of pet loss on posthurricane support. Individuals with low prehurricane support may have relied more on their pets for companionship. Without this resource, they may have perceived their posthurricane social networks as less supportive.

As expected, pet loss was a significant predictor of posthurricane psychological distress. Pet loss may have deprived owners of an important stress-reliever after the disaster. The impact of pet loss on posthurricane psychological distress was greater for younger participants. Younger mothers may be both more taxed by the challenges of parenting and less equipped to cope with this stressor. The results generally held when controlling for higher-order interactions with bereavement.

A few limitations should be noted. Several factors were unexamined, including type of pet, length of ownership, and pet attachment (e.g., Archer & Winchester, 1994). Future research should also include more objective measures of hurricane exposure, as well as assessments of post-traumatic stress and grief. The generalizability of this study is also limited by the focus on young, low-income, primarily African American single mothers, a group at relatively higher risk of postdisaster psychopathology. Likewise, mothers of young children may have been especially sensitive to pet loss.

Despite these limitations, this study provides evidence that pet loss may contribute to postdisaster declines in psychosocial functioning. Policies that address the needs of pet owners, including arrangements for pets in shelters and hotels and coordinated efforts to reunite pets with their owners, may prevent some of the difficulties experienced in the aftermath of disasters.

REFERENCES

Allen, K., Blascovich, J., & Mendes, W. B. (2002). Cardiovascular reactivity and the presence of pets, friends, and spouses: The truth about cats and dogs. Psychosomatic Medicine, 64, 727–739.

Archer, J. A., & Winchester, G. (1994). Bereavement following death of a pet. British Journal of Psychology, 85, 259–271.

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. Journal of Consulting and Clinical Psychology, 75, 671–682.

Brock, T., & Richburg-Hayes, L. (2006). Paying for persistence: Early results of a Louisiana scholarship program for low-income parents attending community college. New York: MDRC.

Cutrona, C. E., & Russell, D. (1987). The provisions of social relationships and adaptation to stress. In W. H. Jones & D. Perlman (Eds.), Advances in personal relationships (Vol. 1, pp. 37–67). Greenwich, CT: JAI Press.

Elliot, J. R., & Pais, J. (2006). Race, class, and Hurricane Katrina: Social differences in human response to disaster. Social Science Research, 35, 295–321.

Galea, S., Brewin, C. R., Gruber, M., Jones, R. T., King, D. W., King, L. A., et al. (2007). Exposure to hurricane-related stressors and mental illness after Hurricane Katrina. Archive of General Psychiatry, 64, 1427–1434.

Galea, S., Tracy, M., Norris, F., & Coffey, S. F. (2008). Financial and social circumstances and the incidence and course of PTSD in Mississippi during the first two years after Hurricane Katrina. Journal of Traumatic Stress, 21, 357–368.

Gosse, G. H., & Barnes, M. J. (1994). Human grief resulting from the death of a pet. Anthrozoös, 7, 103–112.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. American Psychologist, 44, 513–524.

Hunt, M., Al-Awadi, H., & Johnson, M. (2008). Psychological sequelae of pet loss following Hurricane Katrina. Anthrozoös, 21, 109–121.

Kaiser, C. F., Sattler, D. N., Bellack, D. R., & Dersin, J. (1996). A conservation of resources approach to a natural disaster: Sense of coherence and psychological distress. Journal of Social Behavior and Personality, 11, 459–476.

Kaniasty, K., & Norris, F. H. (2008). Longitudinal linkages between perceived support and posttraumatic stress symptoms: Sequential roles of social causation and social selection. Journal of Traumatic Stress, 21, 274–281.

Katcher, A. H. (1985). Physiological and behavioral responses to companion animals. Veterinary Clinics of North America: Small Animal Practice, 15, 403–410.

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Groerer, J. C., Hiripi, E., et al. (2003). Screening for serious mental illness in the general population. Archives of General Psychiatry, 60, 184–189.

Lewis, T. (2006, May 22). ASPCA takes lead in relief effort. PR Week, Campaigns, p. 32.

McCutcheon, K. A., & Fleming, S. J. (2001–2002). Grief resulting from euthanasia and natural death of companion animals. OMEGA, 44, 169–188.

Serpell, J. A. (1990). Evidence for long term effects of pet ownership on human health. Retrieved August 15, 2007, from www.deltasociety.org/download/serpell.rtf

Tabachnick, B. G., & Fidel, L. S. (2007). Using multivariate statistics (5th ed.). Boston: Pearson Education.

Vernberg, E. M., La Greca, A. M., Silverman, W. K., & Prinstein, M. J. (1996). Prediction of posttraumatic stress symptoms in children after Hurricane Andrew. Journal of Abnormal Psychology, 105, 237–248.