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The Effects of an Acute Stressor on Depressive Symptoms among Older Adults: The Moderating Effects of Social Support and Age

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The Effects of an Acute Stressor on Depressive Symptoms among Older Adults:

The Moderating Effects of Social Support and Age

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Abstract

This study uses longitudinal data to examine the potential moderating effects of social support and age among older adults exposed to an acute stressor. Using a sample of 651 older persons, data were gathered in the spring of 1992 and in the fall of 1993, approximately 60 days after the peak impact of flooding in the Midwest. Results indicate a positive association between pre- and post-flood depression and a negative association between social support and post-flood depression. For the youngest of the two older age groups, there is also a positive association between flood exposure and post-flood depression, controlling for prior levels of depression. Age interactions reveal that social support moderates the effects of flood exposure on depression only for the younger age group.

Research has demonstrated the negative effects that acute stressors, such as natural disasters, have on mental health. Some of these negative outcomes include anxiety, depression, and post-traumatic stress disorder (Canino et al. 1990; Phifer 1990; Phifer and Norris

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1989). Although the level of exposure and the severity of the event influence the magnitude of effects, natural disasters have been found to influence mental health (Bravo et al. 1990; Phifer and Norris 1989). Compared with other acute stressors, exposure to flooding has been found to be a major life stressor with persistent effects. In general, exposure to natural disasters has global and long-lasting effects on social and economic resources (Phifer and Norris 1989). This article takes advantage of a unique set of circumstances to permit a longitudinal investigation of the impact of these types of stressors among an older population. In the spring of 1992, the Iowa Health Poll, which examined mental health and health needs and services in rural and urban Iowa, was administered to respondents. During the summer of 1993, Iowa residents experienced extensive flooding. This was one of the worst floods in the state's history, and Iowa was declared a disaster area in July 1993. Immediately following the floods, funding was secured to conduct a follow-up survey whereby respondents of the first survey were contacted and requested to participate in a second interview, which provided for a prospective study of the effects of an acute stressor in a population survey. Using these data, we were able to control for prior levels of symptoms and stressors, which is important when making projections about the effects of an acute stressor on current depressive levels.

Floods are not equal opportunity disasters. Persons exposed to floods are more likely to live in low-income areas or neighborhoods in flood-prone regions. Thus, post-flood depression could reflect prior economic stress and related problems. A prospective study design permits us to control for this possibility. This approach is also beneficial because research indicates that levels of depression may vary by age. Controlling for previous depression levels allows us to look at change in depression rather than the level of depression, which may reflect age or cohort differences (Mirowsky and Ross 1992).

Age Differences

A review of the literature assessing the impact of disasters reveals that the elderly are particularly vulnerable because they are more likely to sustain physical injury and experience substantial economic loss compared with younger age groups (Kilijanek and Drabek 1979). Having fewer social and economic resources may result in a higher in-

cidence of negative psychological effects. Although little research has been conducted on whether differences in psychological effects exist between older disaster victims, one study found that respondents 55 to 64 years old (the youngest of their elderly) were at greater risk for depressive symptoms compared with older age groups (Phifer 1990). It has also been reported that age groups differ in the types of events experienced (George 1989). Older adults may experience fewer acute stressors compared with their middle-aged counterparts, who may still be employed and caring for teenagers and aging parents. It is possible that the effects of natural disaster on the psychological well-being of older individuals may differ because of where they are in the life course. Therefore, age interactions are hypothesized.

The Impact of Natural Disaster

The impact of natural disaster on psychological well-being has been documented (Canino et al. 1990; Phifer 1990; Phifer and Norris 1989). Phifer and Norris's research (1989) reveals that disaster victims tend to undergo high levels of stress and experience different levels of depression depending on their personal loss and community destruction. Older respondents who had experienced both types of losses were likely to report increasing levels of psychological distress for at least two years. Older persons who had no personal losses but high community destruction were also found to experience a decrease in positive affect (Phifer and Norris 1989).

Canino and colleagues (1990) found disaster victims more apt to report symptoms of depression, anxiety, and post-traumatic stress disorder compared with those respondents who were not exposed. New somatic symptoms as well as the total number of symptoms were found to be more frequent among those who were exposed. Higher exposure was also associated with larger increases in depression and post-traumatic stress disorder. Finally, disaster victims were more likely to report poorer health compared with their nonexposed counterparts. Canino and associates conclude that natural disasters are important stressors that negatively affect the psychological well-being of their victims.

The work of Phifer (1990) demonstrates that older people tend to be more susceptible to health effects following stressful events in comparison with other age groups. In testing for age interactions,

Phifer found that those 55 to 64 years old experienced greater increases in depression following the flood compared with those in the 65 to 74 age range and those 75 years of age and older. Persons with high depressive levels prior to the flood were likely to experience larger increases in depressive symptoms following the flood compared with those who initially had low levels. Flood exposure was found to be associated with increases in anxiety and depression, with symptoms continuing to be evident 16 to 18 months after the flood.

Kilijanek and Drabek's (1979) study of elderly disaster victims reveals that many older respondents did not appear to experience any long-term deterioration in physical health following exposure, but that their ratings were found to be much lower than those of younger disaster victims. Although no long-term effects were reported among older respondents, they were found to be more alienated compared with their younger counterparts, suggesting that the disaster was undoubtedly a source of stress.

In other research, Norris and Murrell (1988) highlight the important role that age plays in the different outcomes that people experience as a result of flooding. That is, persons who experienced disaster earlier in life were less affected by a disaster when it occurred later in life. More experienced older people were able to take their losses in stride and, as a result, did not experience increases in anxiety symptoms. However, the less experienced older adults were more likely to be affected by the disaster. Overall, these studies tend to provide support for the hypothesis that exposure to natural disaster has a negative effect on psychological well-being. However, symptoms may vary depending on the age of the person (Kilijanek and Drabek 1979; Phifer 1990) and his or her experience with prior exposure (Norris and Murrell 1988).

Stress and Social Support

Although acute stressors, such as natural disasters, have been found to have negative effects on mental health, the stress-buffering hypothesis suggests that this relationship is dependent on the level of social support. That is, individuals with a strong social support network should be better able to cope with major life events than those with little or no support who may be particularly vulnerable to life

changes (Thoits 1982). The stress-buffering model also involves an interaction between some sort of stress and some coping measure to define the conditions under which stress does or does not have an impact (Wheaton 1985). Social support is an example of a factor that can mitigate or buffer the effects of stress. Those experiencing a significant life event but who have a strong social support group should experience reduced detrimental effects (Lin and Dean 1984) compared with those with little or no social support.

Studies in support of the stress-buffering hypothesis indicate that social support is an important factor in preventing depression in older adults. In one such study, Cutrona, Russell, and Rose (1986) found that for older respondents, mental health was related to the Stress × Social Support interaction term in that higher levels of social support were found to reduce the negative impact of stress on mental health. Older persons who were in better mental health at the initial assessment experienced fewer stressful events and higher social support over the following six-month period compared with those who were in poor mental health. Holahan and Holahan's (1987) study revealed that the level of social support obtained by older individuals was inversely related to depression. Research by Krause (1986) found support for the buffering effects of social support on bereavement, crime, and network crises among older adults.

Other research that focuses on the effects of social support demonstrates the reciprocal relationship of social support and distress over time. Matt and Dean (1993) found that for their oldest age group (71 years of age and older), those reporting high levels of support at time 1 reported lower levels of distress at time 2, and those reporting high levels of distress at time 1 reported lower levels of social support at time 2. Findings also revealed that age did not influence distress in a direct fashion. The outcome of age interactions suggests that for the oldest age group, low friend support led to high psychological distress and high psychological distress led to low friend support. These findings were not observed for the young-old group. The same level of social support had a different effect on psychological distress depending on age. Results from Russell and Cutrona's (1991) study indicate that individuals who were more depressed initially and reported lower levels of social support were more likely to be depressed during the final interview. Stressful experiences and depression had re-

ciprocal effects on one another: Prior levels of depression increased the likelihood of stressful events, which in turn increased the likelihood of subsequent depression.

Hypotheses

The preceding review indicates a positive association between acute stressors, particularly natural disasters, and negative psychological well-being (Canino et al. 1990; Phifer 1990; Phifer and Norris 1989). However, the introduction of social support has been shown to buffer this effect (Cutrona et al. 1986). Furthermore, the effects of exposure on depression have been shown to vary by age (Phifer 1990). Based on this and the literature review, the current study tests the following hypotheses using a sample of 651 older people recently exposed to the Midwest flooding to determine whether younger cohorts are more or less vulnerable to depression when experiencing flood loss and/or loss of support than older cohorts. To examine the differential impact of age, the sample was divided into two age groups: the young-old (55-69 years of age) and the old-old (70 years of age and older).

Research on natural disaster has demonstrated that those who are exposed to flooding will experience an increase in psychological distress (Phifer and Norris 1989). Accordingly, we hypothesized that the higher the level of flood exposure, the higher the level of depression.

Holahan and Holahan (1987) have found that the level of social support obtained by older individuals is inversely related to depression. Following this, we hypothesized that the higher the social support, the lower the level of depression.

Those who have high levels of depression prior to flooding experience increases in depressive symptoms following flooding according to Phifer (1990); therefore, we hypothesized that the higher the level of depression at time 1 (pre-flood), the higher the level of depression at time 2 (post-flood).

Following from the work of Cutrona and colleagues (1986), who found that mental health was related to the Stress × Social Support interaction term in that higher levels of social support were found to reduce the negative impact of stress on mental health, we hypothesized that the effect of flood exposure on depression would be reduced for those with high levels of social support.

Phifer (1990) has demonstrated age effects in his study whereby those 55 to 64 years of age had greater increases in depression following the flood compared with those 65 years of age and older. In turn, it was hypothesized that the effects of flood exposure on depression would be greater for the young-old age group (55-69 years of age) compared with the old-old age group (70 years of age and older).

Method

Sample

The sample is from the Iowa Health Poll, which is a statewide survey designed to provide information on mental health and health needs and services in rural and urban Iowa. The survey is part of the Institute for Social and Behavioral Research program at Iowa State University. Interviews for the first survey, which were completed in the spring of 1992, took an average of 22 minutes to complete. Questions on numerous topics such as health, mental health, stressful life events, social support, and household demographics were included. Respondents were randomly selected from eligible adults age 18 years or older in a screened household, where the response rate was 76.3%.

Coincidentally, during the summer of 1993, urban and rural residents in the state of Iowa experienced a series of severe storms. Due to one of the worst floods in Iowa's history, the entire state was declared a disaster area in July 1993. The storms, which lasted for months, brought constant record-breaking rains to nine states throughout the summer (McPhee 1996). Although there was minimal loss of life due to the Midwest flooding, there was extensive and widespread damage and financial loss.

In the fall of 1993, approximately 60 days after the peak impact of the flooding in the Midwest, respondents of the first survey were contacted and requested to participate in a second interview. Of the original sample, 81.7% were successfully reinterviewed. This survey repeated the original questions on health and mental health and addressed the potential impacts of the 1993 floods. A total of 1,735 people age 18 years and older completed both interviews. Of these, 651 were over the age of 54 and were selected for these analyses. They

were divided into two age groups: the young-old, persons 55 to 69 years of age, and the old-old, persons 70 years of age and older. The numbers for these two age groups were 397 and 254, respectively. Of these, 55.8% were married and 69% were female. In terms of flood exposure, 46% of the older respondents indicated that they had experienced some level of direct exposure whereas 12% reported exposure that was indirect. Overall, 47% of older individuals reported experiencing some form of flood exposure that was either direct and/or indirect. Depressive levels among older respondents using the recommended cutoff scores of ≥ 16 revealed that 5.5% (n = 23) of the young-old group and 7.9% (n = 33) of the old-old group were at or above this score at time 1 whereas 5.6% (n = 17) and 10.6% (n = 32), respectively, were at this level at time 2. The overall level of depression did not increase significantly over time for the younger age group but was significantly higher for the oldest age group (p = .07, one-tailed).

Analyses of attrition rates revealed that those respondents who were successfully reinterviewed at time 2 were more likely to be less depressed, female, married (as opposed to never married), and living in rural nonfarm communities and have slightly higher household incomes compared with those who were not reinterviewed (Ginexi et al. *in press*). Analysis of the data revealed that attrition did not substantially affect the underlying relationship between variables.

Measures

Acute stress was measured by asking respondents a series of questions at time 2 that dealt with flood exposure (Table 1). These questions were adapted from Smith and associates (1989) and focused on how individuals and their families were affected by the weather and flooding in the Midwest. The flood exposure measure, which consisted of 19 items, was computed by performing a count procedure of all items that included both direct and indirect exposure. Direct exposure items included such stressors as having an illness or injury as a result of the flood or having to temporarily evacuate or move out of one's home due to flooding. Indirect exposure items assessed whether other family members had experienced loss, damage, or injury due to flooding. Possible values ranged from 0 (*no flood exposure*) to 19 (*maximum flood exposure*). Observed values for the flood exposure measure ranged from 0 to 12. The mean level of flood exposure was 1.3 (SD = 1.9).

Table 1. Flood Exposure Questions

Item	Percentage "Yes" Response
1. Have you had to temporarily evacuate or move out of your home any time since June 1993 because of problems with water or flooding?	0.8
2. Did you get water in your home from the flooding this summer?	10.4
3. Was there water on your property?	20.9
4. Were you temporarily or permanently out of work due to the flood?	2.6
5. Were other members of your household temporarily or permanently out of work due to the flood?	1.1
6. Did you or other household members lose income due to the flood?	11.4
7. Did you lose water service due to the flood?	13.9
8. Did you lose electrical service due to the flood?	8.7
9. Did you have any illness or injury as a result of the flood?	1.1
10. Was anyone else in your household ill or injured as a result of the flood?	0.8
11. Did you experience any damage or loss to your property or possessions?	20.5
12. I am going to read a list of items, please identify any losses or damage that you had because of the flood. Did you experience any damage or loss to your	
a. House	6.2
b. Furniture or appliances	5.0
c. Family heirlooms/mementos	1.9
d. Clothes	1.9
e. Car/truck	0.6
f. Crops	9.4
g. Land (topsoil)	8.7
h. Access road to your home	1.8

Social support at time 2 was assessed using the Social Provisions Scale (Cutrona and Russell 1987). Respondents were asked to rate the degree to which their social relationships were currently supplying social integration, attachment, reassurance, alliance, and guidance. Examples include "There are people I can depend on to help me if I really need it" and "I have close relationships that provide me with a sense of emotional security and well-being." Responses ranged from *strongly agree* (1) to *strongly disagree* (4). For scoring purposes, the negative items were reverse coded and summed together with the positive items to form a score for each social provision. The five provisions were weighted and then added to form an overall measure of social support. Cronbach's alpha for this measure was .88.

Depression was measured by the 20-item Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff 1977). Designed for community samples, it measures current level of depressive symptoms and is recognized as possessing acceptable levels of validity and reliability (Radloff 1977). Respondents were asked the frequency with which they experienced each symptom during the past week. Examples include "You felt sad," "You felt happy," "You felt that people disliked you," and "You felt bothered by things that usually don't bother you." Response categories were assigned a score from 0 (*rarely or never* [less than one day]) to 3 (*most or all of the time* [five to seven days]), with a total possible score ranging from 0 to 60. All scales are sums of symptom responses and scored in the same direction. A higher score indicates the presence of more depressive symptoms. Depression was assessed at both time 1 and time 2, with alpha coefficients of .85 and .87, respectively.

Control variables included economic stress, education, health, marital status, and gender. Economic stress was assessed by asking respondents about their economic situation in the past year. Examples include "Have you had a substantial decline in your income?" "Have you had problems paying your bills on time?" "Have you had to use savings to get by financially?" and "Have you been laid off from your job?" These four items were summed into a single measure such that the higher the score, the higher the economic stress. Cronbach's alpha for economic stress was .43. Education was measured by asking the respondent to indicate highest level of education completed. Responses ranged from *less than high school* (1) to *advanced degree* (such as an M.A. or Ph.D.) (8). Health was assessed at time 2 by asking the respondent, "Compared to one year ago, how would you rate your health in general now?" Responses ranged from *much better* (1) to *much worse* (5). Items were reverse coded such that a high score indicated a higher level of health. Marital status was dummy coded such that those who were currently married or living with a partner were coded 1 and those who were not currently married were coded 0. Not currently married included those who were divorced, separated, widowed, or never married. Gender was also dichotomized (0 = *male*, 1 = *female*).

Procedure

The analysis focused on whether those 55 to 69 years of age were more or less vulnerable to depression when experiencing flood loss and/or loss of support than those 70 years of age and older. Ordinary least squares (OLS) regression was used to run a total of four models, two for each age group. The dependent variable was time 2 depression, whereas the independent variables were flood exposure and social support at time 2. Gender, marital status, health, education, economic stress, and time 1 depression were used as control variables in each of the analyses. An interaction term (Exposure × Social Support) was included in the second model for each age group in order to test specific hypotheses. Finally, both age groups were combined and a three-way interaction (Age × Exposure × Social Support) was tested using the original model.

Results

Table 2 reports the correlations among all study variables, the means, and standard deviations. The coefficients for the young-old, shown above the diagonal, indicate that time 1 depression was positively associated with time 2 depression (r = .39). This is consistent with the work of Phifer (1990), who found that high levels of depression prior to flooding were associated with high levels of depression after flooding. Time 2 depression was also positively correlated with flood exposure (r = .19), indicating that the higher the flood exposure, the higher the level of depression. This is consistent with the disaster literature, which finds that those who are exposed to flooding are likely to experience an increase in psychological distress (Phifer and Norris 1989). Depression at time 2 was also negatively associated with social support (r = –.25), suggesting that the higher the level of social support, the lower the level of depression. Finally, time 2 depression was significantly correlated with economic stress (r = .29), health (r = –.20), and marital status (r = –.20).

The results for the old-old age group, shown below the diagonal in Table 2, revealed a very strong correlation between time 1 and time 2 depression (r = .71), suggesting that those respondents who were

depressed prior to the flood were just as likely to be depressed post-flood. Depression at time 2 was negatively associated with social support (r = –.24), indicating that those with low levels of support were likely to experience higher levels of depression. Depression at time 2 was not associated with flood exposure for this older age group. Similar to findings for the young-old group, time 2 depression was significantly correlated with economic stress (r = .21), health (r = –.14), and marital status (r = –.15).

It is interesting to note that the oldest respondents have a higher correlation of time 1 and time 2 depression compared with their younger counterparts. An r-to-z transformation (Snedecor and Cochran 1989) reveals that this difference is in fact highly significant (z statistic = 5.90). Thus, the older age group demonstrates significantly greater stability in depression scores over time compared with the younger age group.

OLS regression was used to determine which factors influenced level of depression post-flood. Results for the young-old age group are presented in Table 3. Model 1 revealed that time 1 depression (β = .31), flood exposure (β = .10), and social support (β = –.22) were all significant predictors of depression. Individuals who had high levels of depression prior to the flood were likely to have high levels of depression post-flood. Older persons who reported higher flood exposure and respondents who reported low levels of social support post-flood were more likely to experience higher levels of depression. Economic stress and health were also significant, suggesting that higher levels of depression were more likely among those who experienced economic troubles and those in poor health. Model 1 for the young-old age group explained 27% of the variance.

Model 2 (Table 3) shows the regression model for the young-old with the interaction term Exposure × Social Support added. The unstandardized beta coefficient for the flood exposure variable (4.54) was inflated due to the interaction term in the model. The unstandardized beta coefficient was .36 (model 1) before adding the interaction term. The interaction term Exposure × Social Support in model 2 was negative and statistically significant. This finding provides support for the stress-buffering hypothesis, suggesting that when social support is low, increased flood exposure results in higher depression levels (Figure 1). However, when social support is high, level of depression remains relatively stable, even as flood exposure increases.

Table 2. Correlation Matrix for All Study Variables

Variable	1	2	3	4	5	6	7	8	9	Mean	SD
1. Depression time 2	—	.39*	.19*	−.25*	.29*	−.09	−.20*	−.20*	.09	5.35	7.20
2. Depression time 1	.71*	—	.09	−.06	.21*	−.08	−.08	−.20*	.16*	4.90	5.88
3. Flood exposure	−.03	.01	—	−.04	.31*	.02	−.01	−.02	.03	1.47	2.04
4. Social support time 2	−.24*	−.19*	.03	—	−.07	.27*	.09	.06	.10*	21.80	2.57
5. Economic stress	.21*	.19*	.10	−.05	—	−.09	−.13*	−.22*	.07	.55	.83
6. Education	−.09	−.15*	.04	.23*	−.11	—	.02	.07	−.12*	3.12	1.97
7. Health	−.14*	−.07	.04	.11	−.17*	.03	—	−.01	.07	2.99	.62
8. Marital status	−.15*	−.26*	.06	−.00	−.16*	.02	.06	—	−.24*	.69	.46
9. Gender	.02	.08	−.04	.06	.06	−.10	−.06	−.48*	—	.65	.48
Mean	5.94	5.39	.97	21.23	.48	2.85	2.99	.41	.72		
SD	7.31	5.95	1.45	2.38	.69	1.90	.68	.49	.45		

Coefficients above the diagonal are for the young-old. Coefficients below the diagonal are for the old-old.

* $p \leq .05$

Table 3. Regression Models for Time 2 Depressive Symptoms among the Young-Old (N = 397)

	Model 1			Model 2		
Independent Variable	B	β	p	B	β	p
Depression time 1	.37	.31	.00	.38	.31	.00
Flood exposure	.36	.10	.02	4.54	1.29	.00
Social support time 2	–.60	–.22	.00	–.28	–.10	.08
Economic stress	1.24	.14	.00	1.27	.15	.00
Education	.08	.02	.64	.03	.01	.84
Health	–1.63	–.14	.00	–1.41	–.12	.01
Marital status	–1.30	–.08	.07	–1.51	–.10	.03
Gender	.72	.05	.29	.81	.05	.24
Exposure × Social Support				–.19	–1.20	.00
Constant	20.50			12.60		
Adjusted R^2	.27			.29		

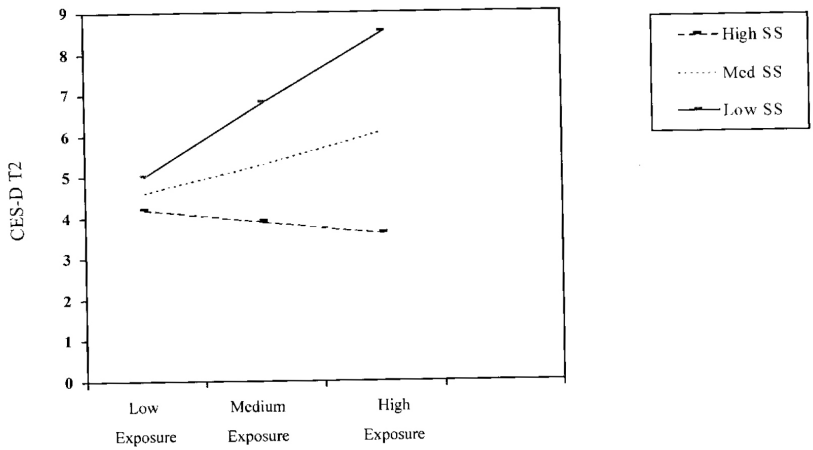

Figure 1. Interaction for Exposure × Social Support (Young-Old)

To help interpret the interactions, we used the regression equation to graph the interaction at high, medium, and low levels of social support and flood exposure. These values were set at one standard deviation above the mean, at the mean, and one standard deviation below the mean, respectively. The regression lines were generated by sub-

Table 4. Regression Models for Time 2 Depressive Symptoms among the Old-Old (N = 254)

	Model 1			Model 2		
Independent Variable	B	β	p	B	β	p
Depression time 1	.85	.69	.00	.85	.69	.00
Flood exposure	–.25	–.05	.27	–4.28	–.85	.05
Social support time 2	–.33	–.11	.02	–.53	–.17	.00
Economic stress	.84	.08	.09	.80	.08	.10
Education	.20	.05	.27	.20	.05	.24
Health	–.76	–.07	.12	–.56	–.05	.25
Marital status	.75	.05	.34	.75	.05	.33
Gender	–.15	–.01	.86	–.13	–.01	.87
Exposure × Social Support				.19	.81	.07
Constant	9.70			13.49		
Adjusted R^2	.52			.52		

stituting these values into the regression equation (Aiken and West 1991). The variables in model 2 explained 29% of the variance for time 2 depression.

The results for the old-old age group are presented in Table 4. Model 1 revealed that time 1 depression (β = .69) and social support (β = –.11) were significant predictors of depression at time 2. Individuals who reported high depressive levels prior to the flood were likely to experience high depressive levels post-flood. Furthermore, those who were low in social support were likely to experience higher levels of depression. Flood exposure was not significant for this particular age group. This model explained 52% of the variance for time 2 depression, indicating the importance of prior depression in predicting current levels for the old-old age group.

Model 2 (Table 4) shows the regression model for the old-old age group with the interaction term Exposure × Social Support added. The unstandardized beta coefficient for the flood exposure variable (–4.28) was inflated due to the interaction term in the model. The unstandardized beta coefficient was –.25 (model 1) before adding the interaction term. The interaction term Exposure × Social Support in model 2 was positive and statistically significant based on a one-tailed test criterion. Although it was hypothesized that social support would buffer the effects of flooding on depression, the findings were

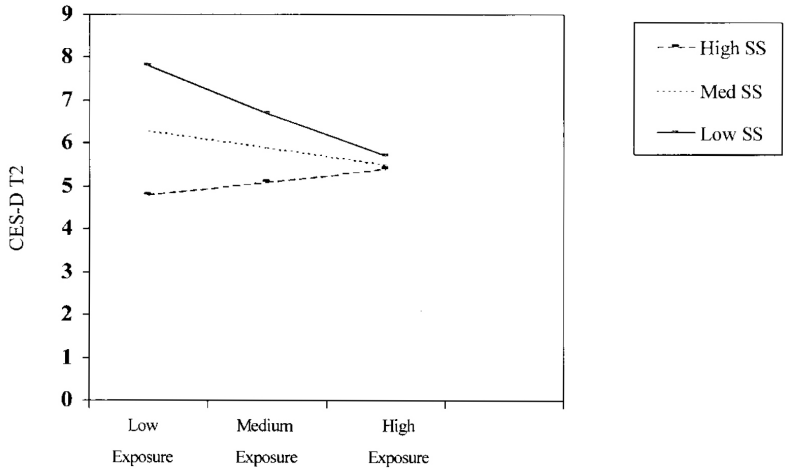

Figure 2. Interaction for Exposure × Social Support (Old-Old)

in the opposite direction. That is, high social support had little effect on depressive levels (Figure 2). Model 2 for the old-old age group explained 52% of the variance in time 2 depression.

A three-way interaction (results not shown) of Age × Exposure × Social Support was tested to see whether the younger members of the two older age groups were more or less vulnerable to depression when experiencing flood loss and/or loss of support than their older counterparts. The three-way interaction term was positive and significant, indicating that this effect does differ for the young-old and old-old age groups. That is, social support buffered the effects of exposure on depression, but only for the younger age group.

Discussion and Conclusion

This research examined the effects of an acute stressor on depressive symptoms among two older age groups, testing for the moderating effects of both age and social support. The results of this study indicate that for both age groups, prior level of depression was a significant predictor of current depressive levels. Furthermore, social support was important for alleviating the effects of depressive symp-

toms among all older respondents. Those with high levels of social support were more likely to experience lower levels of depression compared with those whose support systems were limited. Individuals exposed to flooding were more likely to experience depressive symptoms, although this finding was supported only for the young-old age group.

For the younger age group (55-69 years of age), those who reported higher levels of flood exposure were more likely to experience an increase in depression compared with those individuals who indicated lower exposure. This is consistent with the work of Phifer and Norris (1989), who found that disaster victims experienced varying levels of stress and depression depending on their personal loss and community destruction. Older people who experienced both types of losses were likely to experience increasing psychological distress (Phifer and Norris 1989). It is possible that members of this younger age group are still accumulating resources for retirement or entering retirement, or experiencing other key role changes. In this context, the experience of an acute stressor may be particularly disruptive of their current life course trajectory.

As hypothesized, prior level of depression was predictive of current levels. Younger respondents who had high levels of depression prior to the flood were likely to have high depressive levels post-flood. Controlling for prior depressive levels allows us to look at change in depression rather than the level of depression, which may be a feature of cohort differences (Mirowsky and Ross 1992). The consistency of depression over time is consonant with the work of Phifer (1990), who found that those with high levels of depression prior to the flood experienced larger increases in depressive symptoms following the flood compared with those who initially had low levels. Preexisting levels of depression clearly represent an important vulnerability factor.

Results from the young-old age group also revealed that the availability of social support helped to reduce the negative effects on depression, which is consistent with what was hypothesized. Having a social support network available, and being able to mobilize and use such resources when faced with an acute stressor, appears to be beneficial. If feelings of self-worth and positive self-regard are fundamental for maintaining psychological well-being (Kaplan 1975), then older persons who are provided with such resources should be better able to

cope with major life events compared with those with little or no support who may be particularly vulnerable to life changes (Thoits 1982).

The Exposure × Social Support interaction term was significant for the young-old age group. This finding suggests that the relationship between stress and depression is dependent on level of social support. That is, as flood exposure increased, depression levels remained relatively constant as long as social support was high. However, when social support was low and exposure to the flood was high, levels of depression increased. This finding suggests that social support acts as a buffer between an acute stressor and depressive symptoms and, as such, is supportive of the stress-buffering hypothesis.

For the oldest age group (age 70 and older), time 1 depression was found to be a very strong predictor of current depressive levels. The strength of the correlation between time 1 and time 2 depression for this age group (r = .71) indicates a high level of stability in depressive symptoms. This finding is consistent with the general pattern of increased stability in psychological symptoms among older adults (Usala and Hertzog 1991). Furthermore, because flood exposure was not significant in predicting current depression for this particular age group, it is possible that pre-flood depression levels outweighed the effects of any possible flood exposure. Furthermore, given their stage in the life course, it is possible that the oldest respondents viewed this event as less disruptive or threatening compared with other age-related stressors they may have been experiencing at the time.

Consistent with what was hypothesized, members of the oldest age group who reported high levels of social support were more likely to experience lower levels of depression. It appears that older individuals who have access to social support and who are able to mobilize that support when needed are better able to cope with life changes. However, older people with little or no social support, perhaps due to death of a spouse and/or loss of friends, may have a more difficult time dealing with life changes and, as a result, are particularly vulnerable to increases in depression.

For the oldest age group, the Exposure × Social Support interaction term was statistically significant (using a one-tailed test criterion) but in the opposite direction of what was hypothesized. As was shown in Figure 2, high social support had little influence on the effect of flood exposure on depression. One would expect depressive levels to increase as a result of flood exposure in the face of low social support,

but that is not the case. Indeed, the relationship is in the opposite direction. Why would high levels of social support not show buffering effects for this age group? One possible explanation for this anomaly is that "in its most stringent form, the stress buffering hypothesis suggests that social support is irrelevant to depression under conditions of low stress" (George 1989:257). Our findings reveal a significant direct effect between social support and depression for the oldest age group. Higher levels of social support predicted lower levels of depression. However, it is possible that social support did not buffer the effects of flooding on depression because this acute stressor (i.e., flooding) was not severe enough to qualify as a stressful life event in light of other age-related stressors that these older individuals may have been experiencing at the time.

Another possible explanation for this finding may be the nearly universal impact of this stressor. The presence of a social network of support implies both support and mutual aid. Thus, as opposed to a person-specific stressor, a community-wide event is likely to both engage needed support and increase demand for providing support. The burdens associated with providing this support might counterbalance the positive impact of the support received. Likewise, persons with low levels of personal support might still receive the benefits of community-wide mobilization of support, thus leading to a minor reduction in depressive symptoms over time.

Although this community support interpretation seems to hold promise, it cannot account for the contrast across age groups. For that, we may need to turn to understanding the potential for the differential impact of stressors at different points in the life course. Wethington, Cooper, and Holmes (1997) argue that older persons, when exposed to the same types of stressors as younger persons, may be more likely to respond with endurance and acceptance. They note that older, postretirement respondents may be more likely, given their point in the life course, to accept limitations in their ability to control situations. This may be particularly salient in the context of an event such as a flood, where in many respects there is little that may be done at the personal level to control the situation.

A note of caution is in order with regard to the interpretation of these results. The flooding that these older individuals experienced was not as severe as some other natural disasters (cf. Phifer 1990). As such, the findings might not be directly comparable to other disasters

in which there have been more severe losses and trauma exposure. In part, we address this limitation by treating the flooding experienced by this sample as an acute stressor. Another limitation is the potential impact of attrition. Although attrition did not substantially affect the underlying relationship between variables, it did affect the means and variances of some variables. Thus, it is possible with the measurement taking place soon after the flooding that some of the most affected respondents were not contacted in the post-flood interview. A final limitation is the use of brief self-report measures of the type often used in telephone surveys. In this context, scales with relatively few indicators and simplified response categories may have lower internal consistency (e.g., low alpha reliability for the economic stress measure).

Overall, this study reveals that age differences do exist in terms of flood exposure on depression and loss of social support. These data indicate that for the younger age group, high flood exposure leads to increasing levels of depression when social support is low, but having high social support buffers the effects of flood exposure on depression. For the oldest age group, however, social support does not have the same effect. High flood exposure leads to decreasing levels of depression when social support is low, whereas having high social support does not necessarily influence the effects of flood exposure on depression.

Future research needs to replicate these findings among similar age groups. Although much research has focused on stress and depression and the moderating effects of social support, little research to date has examined how this process may operate differently for distinct age groups. Because people in the two age groups in this article may be experiencing different role changes and different life events, it is possible that their experience with the flood differs, as does their reliance on social support. Testing for age interactions allows us to evaluate whether the effects of an acute stressor on depression vary by level of social support for distinct age groups.

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