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Prevalence of Mental Disorders after Catastrophic Financial Loss

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In a controlled study, the authors determined the risk of developing major mental illness after catastrophic financial loss. Seventy-two adults who lost their retirement savings in a bank fraud were interviewed using the Diagnostic Interview Schedule. Major depression by DSM-III criteria was present in 29% of the victims during the first 20 months after their loss as compared with 2% of 66 age, gender, and residential area-matched control subjects ($p < .0001$). Generalized anxiety disorder as defined by DSM-III criteria was experienced by 27% of victims after the loss as compared with 10% of control subjects ($p = .03$). After the loss, victims had lower subjective health ratings, more functional somatic complaints, and higher tranquilizer usage than control subjects. There was no difference between depressed and nondepressed in types of coping responses or use of social supports and confidants. Only four of 21 victims who suffered major depression sought help from a mental health professional. We conclude that catastrophic financial loss may result in the onset of major depressive disorder and generalized anxiety disorder.

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Adversity and loss have long been associated with depression, but only in recent years has there been a systematic approach to the study of stressful life events as antecedents of major depressive episodes. The mechanisms (if any) that relate loss to subsequent depression remain unclear (Barrett et al., 1979; Dohrenwend and Dohrenwend, 1981). We examined a cohort of adults with homogeneous backgrounds (white, older adults with similar work and economic histories) who suffered a sudden, discrete, unanticipated financial loss. We hypothesized that this loss would be a potent cause of depression, as financial ruin appeared to pose a long-term threat to older adults who for the most part would be unable to make up their financial losses within their remaining lifetimes (Brugha et al., 1985). Although a variety of stressors such as loss of a loved one (Bornstein et al., 1973; Parkes, 1970), job loss (Jackson and Warr, 1984; Kasl, 1979), and environmental catastrophes (Bromet and Schulberg, 1986; Shore et al., 1986) have been examined as precipitants of depression, there has been no systematic examination of the relationship of financial loss and depressive disorders.

A disturbing phenomenon in the United States has been the recent growth of illegal investment schemes in which "confidence men" bilk investors of large amounts of money. Many of these swindles are Ponzi or pyramid schemes. In a Ponzi scheme depositors' funds are supposedly placed in low-risk investment programs that promise 20% to 30% yearly rates of return. Early investors report these high returns to friends and coworkers, who then begin to invest capital. It is this capital that is used to meet the demand for interest payments to earlier investors. Most of the funds are never invested but are instead diverted. Nationwide there was a dramatic increase in these schemes in the 1970s and 1980s, and thousands of investors were swindled out of millions of dollars (Leff, 1976; Sacramento Bee, February 17, 1986; Shapiro, 1984).

In April 1985, 450 investors in First Colonial Bank of the Marshall Islands (Pac Rim, Inc.) were notified that the bank was fraudulent and their investments were lost. Most of the investors were employees or recent retirees of a northwest electronics firm. The perpetrator of the fraud was a 23-year employee of the firm who had been a high-level manager and president of the company's credit union. After he retired in 1982, he received a license to sell securities from the Securities and Exchange Commission and made several successful investments for his former coworkers (The Oregonian, June 16, 1985; June 17, 1985). In 1983 the electronics firm, seeking to decrease its work force, offered generous lump sum cash retirement packages to long-term employees in exchange for early retirement. Many retirees placed their money in Pac Rim. In August 1985 the State of Oregon Department of Commerce contacted the Oregon Health Sciences University (OHSU) Department of Psychiatry and requested assistance in assessing and treating the psychiatric sequelae of the loss. The OHSU Department

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of Psychiatry offered all the investors free psychiatric services but only two victims are known to have accepted. After performing a pilot study we conducted a controlled investigation designed to determine the prevalence of mental disorders after financial loss.

Methods

In October 1985, 6 months after the financial loss, questionnaires were sent to 200 Pac Rim victims whose names were received from the State of Oregon Department of Commerce and the Pac Rim Victims' Association. This included all victims whose names and addresses were known to the Department of Commerce by August 1985. One questionnaire was sent per household and in the case of married couples we did not specify which spouse should fill it out. The questionnaire gathered demographic information, included a Beck Depression Inventory (BDI), and contained questions regarding recent stresses. Eighty-nine (45%) of the questionnaires were returned. Twenty-three respondents were excluded from further calculations as they lived outside of Oregon. Twenty-three of the remaining 66 respondents (35%) had BDI scores greater than 11, indicating significant depressive symptomatology (Beck et al., 1961). Of those with BDI scores greater than 11, 75% named financial loss as the greatest stress of the previous year and another 15% alluded to a change in financial status that was stressful.

Based on the pilot's results, we designed a controlled study using a structured interview. We projected a need for 54 subjects in each group (victims and control subjects) to attain 90% statistical power (Fleiss, 1981). The statistical power calculations were based on a hypothesized 5% prevalence of depression in control subjects, a hypothesized 30% prevalence of depression in victims, and a statistical significance level of $p = .05$.

Subjects

Victims were invited to participate in an approximately 1.5 hours interview. Subjects were aware of the reason they had been selected. For logistical reasons, only victims living in the three-county area surrounding Portland ($N = 122$) were invited to participate. The roster of victims obtained from the State of Oregon Department of Commerce listed only one person per household in 89% of the cases. In 11% of the cases either the spouses were listed separately or a single listing included both spouses' names. In the cases of separate listings (or single listings with two names) both husband and wife were considered to be victims. However, many couples had reported only one spouse, usually the husband, to the State of Oregon Department of Commerce. Because the unlisted spouse was also considered to be at risk for adverse effects from the loss, all letters invited the spouse to participate.

We invited 122 victims to participate. Nine victims had moved or their letters of invitation were returned marked addressee unknown. Fifty-five victims agreed to be interviewed and 17 spouses of victims also agreed to participate, bringing the total number of interviewees to 72. Because the 55 victims came from a pool of 113 potential subjects our response rate was 49%.

At our request the Department of Motor Vehicles generated a list of 20,000 licensed Oregon drivers, who served as control subjects. Victims were matched to control subjects by age (within 5 years) and gender. Attempts were also made to match victims and controls on zip code. All control subjects received two letters inviting them to participate in this study. Fifty-eight of 198 invitees and eight spouses of these control subjects agreed to participate. As the 58 control subjects came from a pool of 198 potential subjects, our response rate for control subjects was 29%. Seventy-seven percent of the victim-control pairs were matched on age, gender, and zip code, and 23% of the pairs were matched on age and gender. Six victims, one female and five males, were not matched to control subjects.

Interviews

Interviews took place between September 1986 and January 1987 and were conducted by a mental health nurse and the senior author. Informed consent was obtained from all subjects after the nature of their participation was explained. Interviewers were not blind to the status of victims *vs.* control subjects. Interrater reliability for all Diagnostic Interview Schedule (DIS) diagnoses was kappa = 1 based on six subjects interviewed by both interviewers.

Interviews included the following sections of the DIS: demographics, generalized anxiety disorder, major depression, mania, schizophrenia, alcohol abuse/dependence, and the Mini-Mental State Exam (Robins et al., 1981). The somatization section of the DIS was used to measure the presence of 39 common somatic complaints. Details of employment, income, and financial losses were obtained. We also administered the Billings-Moos Coping Responses to Life Events Inventory and the Rand Quantification of Social Contacts and Resources Scale (Billings and Moos, 1981; Donald and Ware, 1982).

Statistical Analysis

We used McNemar's test for the comparison of two proportions involving paired observations; Wilcoxon's test and the paired t-test were used for the comparison

TABLE 1
Demographic Characteristics of Victims and Control Subjects

Variable	Victims		Control Subjects	
	N	%	*N*	%
Total	72	100	66	100
Gender				
Male	37	51.4	32	48.5
Female	35	48.6	34	51.5
Marital status				
Married	60	83.3	53	80.3
Widowed	6	8.3	2	3.0
Divorced	6	8.3	9	13.7
Separated			2	3.0
Education				
Less than high school	6	8.3	4	6.1
High school graduate	23	31.9	23	34.8
Some college	43	59.7	39	59.1
Income				
> $20,000 in 1984	59	81.9	58	87.9
< $20,000 in 1984	13	18.1	8	12.1
Religion				
Somewhat/very active	24	33.3	28	42.5
Little/inactive	48	66.7	38	57.5
Employment				
Employed	40	55.6	45	68.2
Retired/unemployed	32	44.4	21	38.8

TABLE 2
Lifetime and 20-Month Prevalence of Mental Disorders in Victims and Control Subjects

Variable	Victims		Control Subjects		p^a
	N	%	*N*	%	
Total	72	100	66	100	
Major depressive disorder					
20-month prevalence[b]	21	29.2	1	1.5	.0001
Lifetime prevalence[c]	6	8.3	4	6.1	NS
Generalized anxiety disorder					
20-month prevalence (exclusive)[b, d]	15	27.8	6	10.0	.03
20-month prevalence (inclusive)[b, e]	33	45.8	10	15.2	.004
Lifetime prevalence[c]	14	19.4	12	18.2	NS
Alcohol abuse/dependence					
20-month prevalence[b]	7	9.7	6	9.1	NS
Lifetime prevalence[c]	12	16.6	11	16.7	NS

[a] by McNemar's test.
[b] April 1985 through December 1986.
[c] Before April 1985.
[d] Excludes subjects who suffered GAD associated with another disorder after April 1985 for all calculations. Total number of victims included is 54. Total number of control subjects included is 60.
[e] Includes subjects with GAD associated with other mental disorders.

of paired continuous variables. We used analysis of variance to compare depressed and nondepressed victims (Armitage, 1961).

Results

The demographic data of victims and control subjects are compared in Table 1. The average age of victims was 54.2 years and of control subjects was 53.6 years. There were no statistically significant differences between victims and control subjects in gender, marital status, employment status, activity in religious organizations (by McNemar's test), or in education, income before 1985, or history of marital discord as measured by number of separations or divorces (by Wilcoxon matched-pairs test). Eighty percent of the victims or their spouses had worked for the northwest electronics firm, with an average length of employment of 19.4 years. Forty-six percent of the victims lost more than $40,000 and 14% of the victims lost more than $100,000.

Table 2 shows that 21 of 72 victims (29.2%) suffered a major depressive episode by DSM-III criteria in the first 16 to 20 months after their loss (20-month prevalence), compared with one of 66 control subjects (1.5%) during a similar time period ($p < .0001$ by McNemar's test). Excluding the 17 added spouses, 16 of the original 55 victims (29.1%) suffered a major depressive disorder as compared with one control subject (1.5%). The 95% confidence interval for 20-month prevalence of major depressive episode in the victims is 19% to 40%. In 10 depressed victims (48%), the depressive episode lasted more than 6 months. Five victims had thought of committing suicide after the loss. We found no significant difference between victims and control subjects in lifetime prevalence of major depression before the financial loss as measured by the DIS (by McNemar's test). Five of six victims with a previous history of depression developed a major depressive episode after April 1985.

We also found a significant difference between victims and control subjects in the occurrence of DSM-III generalized anxiety disorder (GAD). Twenty-seven percent of the victims and victim spouses suffered a month of anxiety associated with hypervigilance, apprehensive expectation, autonomic hyperactivity, and motor tension within 20 months of the loss that could not be attributed to another disorder (GAD exclusive—subjects with GAD associated with other disorders are excluded from the calculations). This rate compares with a 10.0% prevalence of GAD (exclusive) in control subjects during the same time period ($p = .03$ by McNemar's test). Forty-five percent of the victims suffered GAD including those who suffered from GAD but also had a concurrent DSM-III condition (GAD inclusive—includes all subjects) as compared with 15% of the controls ($p = .004$ by McNemar's test). There was no difference between victims and control

subjects in lifetime prevalence of GAD before April 1985.

There were no differences between victims and control subjects in lifetime or 20-month (after the loss) prevalences of alcohol abuse or dependence. No victim had the onset of alcohol abuse after the loss of his or her money and none of the depressed victims had ongoing alcohol abuse. There were no cases of mania in either group and only one subject (a control) had schizophrenia. Cognitive function was within normal limits in all subjects as determined by the Folstein-McHugh Mini-Mental State Exam (Folstein et al., 1975).

Table 3 shows several other differences between the victims and the control subjects that were possibly stress related. There were no differences between victims and control subjects before 1985 in subjective ratings of health or tranquilizer usage. However, after 1985 victims had lower subjective physical health ratings ($p < .005$ by Wilcoxon test) and higher tranquilizer usage ($p = .006$ by Wilcoxon test). Functional somatic complaints were more frequent in victims than in control subjects ($p < .05$ by paired t-test). The most common complaints by victims were heart palpitations (18%), headaches (18%), abdominal pain (14%), sensation of a lump in the throat (11%), and chest pain (10%). The correlation between depressive symptoms and somatic symptoms was $r = .26$ ($p = .02$).

There were no differences between victims and control subjects in mental health visits or visits to primary care physicians after April 1985. Sixty-four victims (88.9%) saw a physician at least once during this 20-month period compared with 59 control subjects (89.3%). Eight victims (11.1%) saw a mental health professional compared with 9 (13.6%) control subjects. Only four of the depressed victims saw a mental health professional.

There were no differences between victims and control subjects in yearly income before the loss. Eight-two percent of the victims earned more than $20,000 per year as compared with 88% of the control subjects. However, after April 1985, victims' yearly income was significantly lower than that of control subjects ($p = .001$ by Wilcoxon test), and 29% of victims earned less than $20,000 per year as compared with 12% of control subjects.

The depressed victims were compared with the nondepressed victims to determine risk factors for developing depression after the loss. Including only the victims, multiple regression analysis was performed with the dependent variable being the number of depressive symptoms after April 1985 that lasted at least 2 weeks. The best fitting stepwise model explained 27% of the variance with three predictors: previous history of depression, decreased yearly income after April 1985, and younger age were associated with increased number of DSM-III depressive symptoms. Gender, employment status (retired/unemployed *vs.* employed), marital status, and education were not useful in predicting depressive symptoms. Depressed victims were also compared with nondepressed victims in types of coping responses, social resources, and the use of confidants, but there were no differences on any of these measures between those who suffered a major depressive episode and those who were spared.

TABLE 3
Health Correlates in Victims and Control Subjects after Financial Catastrophe

Variable	Victims		Control Subjects		p
	N	%	N	%	
Total	72	100	66	100	
Subjective health ratings					.005[a]
Excellent	16	22.2	26	39.4	
Very good	20	27.8	22	33.3	
Good	18	25.0	11	16.7	
Fair	16	22.2	5	7.6	
Poor	2	2.8	2	3.0	
Tranquilizer usage					.006[a]
Never	52	72.2	61	92.4	
Some of the time	14	19.4	5	7.6	
Quite a bit of the time	3	4.2			
All of the time	2	2.8			
Missing data	1				
Functional somatic symptoms					.05[b]
None	30	41.7	37	56.1	
1-2 symptoms	22	30.6	24	36.4	
3-5 symptoms	15	20.8	4	6.1	
More than 6 symptoms	5	6.9	1	1.5	

[a] By Wilcoxon test.
[b] By paired t-test.

Discussion

There were two potentially significant sources of bias in this study— low respondent participation and accuracy of respondent reporting. Only half of the invited victims agreed to participate in the study. Naturally, the mental health status and the financial losses of those who refused to participate are unknown. Furthermore, the response rate in the control subjects was low. Nonetheless, our 20-month prevalences of depression, mania, schizophrenia, and dementia in the control subjects were similar to the 6-month prevalences found in the larger Epidemiologic Catchment Area (ECA) study, which had response rates of 75% to 80% (Eaton et al., 1984; Myers et al., 1984). The ECA study did not include the GAD section of the DIS. The lifetime (before April 1985) prevalences of all disorders were similar in victims, control subjects, and other community samples that have been interviewed with the DIS (Robins et al., 1984). Inclusion of spouses of victims resulted in no significant differ-

ence in the prevalence of depression.

A second source of bias is the accuracy of the victim's reporting. Although victims were not involved in or planning litigation at the time of the interview, several had contacted state officials and congressmen. Victims may have seen the interviews as an opportunity to obtain sympathy for their plight. Accuracy of self-reporting is, of course, a common problem in survey research and is not easily overcome. Our results need to be interpreted bearing these caveats in mind.

From the outset we hypothesized that this loss would be a potent precipitant of depression as it posed a significant long-term threat to adults, many of whom took an early retirement and would be hard pressed to recoup their losses. Our results indicate that the financial loss was etiologically related to the onset of major depressive disorder and generalized anxiety disorder but was unrelated to the other DSM-III disorders covered by our restricted version of the DIS. There were no differences between victims and control subjects in lifetime prevalences of any DSM-III disorder before the financial loss. Furthermore, there was no evidence that an ongoing mental illness such as dementia, mania, or depression was related to poor investment decisions.

In studying this group, we attempted to address some of the methodological issues that have affected previous investigations of the relationship between loss and depression. One difficulty in life events research has been a lack of rigor used in defining the dependent variable (Dohrenwend and Dohrenwend, 1978). In using the DIS, which is criterion based and generates both current and lifetime DSM-III diagnoses, we distinguished psychiatric illness from generalized distress, demoralization, or sadness (Robins et al., 1981). A second difficulty has been in determining whether life events actually precipitate psychiatric illness (Lloyd, 1980). The method of probing used in the DIS allows one to anchor the disorder's onset and duration to a stressful event (Shore et al., 1986). In establishing a temporal relationship between the life event and psychiatric illness, one can be more confident about making causal inferences. Cohorts who have experienced stressors such as loss of a loved one (Bornstein et al., 1973; Parkes, 1970), job loss (Jackson and Warr, 1984), and environmental catastrophes (Bromet and Schulberg, 1986; Shore et al., 1986) have been examined previously. These studies show an association between stressors/losses and depression.

Despite the increased confidence that the financial loss precipitated major depression in some of the victims, a more difficult question is whether certain personality characteristics that put one at risk for depression also put one at risk for poor management of one's financial affairs, thereby obscuring the cause-effect relationship. The similarity between the groups in lifetime prevalences of major mental disorders indicates that the victims were indistinguishable in this respect from the control group before the loss of their money. There is also indirect evidence that the victims were not particularly impulsive in other areas of their lives. Victims did not differ from control subjects on measures of marital stability (rate of divorces or separations), nor did they have a history of work instability: 80% of the victims had worked for a northwest electronics firm for an average of 19.4 years.

The mechanisms relating this type of loss to depression and anxiety can only be hypothesized, but some personality characteristics that led the victims to make such an investment may have increased their risk for subsequent psychiatric disorder. High value placed on money may have simultaneously put the victims at risk for high-yield, but unsecured, investments and also made the loss more devastating. Another trait common to most of the victims was their trust in the confidence man. This individual was known to many of the victims for over 20 years. He had a high standing in their community and his betrayal was particularly devastating.

For many victims this loss caused a sudden drop in yearly income; the change in financial assets altered their expectations for retirement such that they were, for example, unable to take vacations as planned or anticipated selling their homes. Our results are consistent with Brown and Harris's (1978) findings in young women that stressors are more likely to precipitate depression if they symbolize a long-term threat.

Finally, there seemed to be a high risk of negative self-judgment, self-blame, and guilt on the part of these victims for allowing themselves to be duped. The notion that the victims caused their own downfall may have served to increase the potency of the stressor as a cause of depression. Costello (1982), in a study of women in Canada, has found that "possibly independent" events, that is, events that may or may not have been caused by the women themselves, were more strongly associated with subsequent depression than were independent events.

Many investigators have suggested that the manner in which the individual uses personal and social resources may modify or attenuate the stress response (Billings and Moos, 1981). There was no evidence that the depressed and nondepressed victims differed in types of cognitive and behavioral strategies (*e.g.*, avoidance, problem-focused coping, emotion-focused coping) used to cope with the loss. Furthermore, there was no difference between the depressed and nondepressed victims in quantity of social resources such as numbers and types of visits to friends and relatives, telephone contacts, or membership in clubs and reli-

gious groups. Attempts were made to measure the quality of supportive relationships by determining how often the victim talked with confidants regarding the loss, but again there was no difference between the depressed and nondepressed victims. A strong social network may be a risk factor for deception by Ponzi scheme as trust in one's friends and co-workers and communication regarding investment earnings are essential for the scheme's success. These social networks apparently stayed intact after the loss but offered little protection from depression.

This loss was also associated with the onset of DSM-III GAD. Blazer et al. (1987) recently demonstrated an association between unexpected, negative, and very important life events and the risk for development of GAD. However, in our study the association between financial loss and GAD is less powerful than the association between financial loss and depression. This result is consistent with the findings by other investigators that losses or "exit events" are more likely to result in depressive disorders whereas anxiety symptoms are more likely to result from performance pressures, threats of loss, or dangerous events (Finlay-Jones and Brown, 1981; Brown and Harris, 1978). There is a caveat to this finding. The majority of the depressed victims met the criteria for GAD. In these victims their anxiety symptoms may have been secondary to their depression. Although they are included in the calculations for GAD (inclusive), they are not included in the calculations for GAD (exclusive).

Much of the victims' distress was expressed physically in the form of somatic complaints, decreased overall health ratings, and increased use of tranquilizers. The majority of the victims visited a primary health care provider after the loss, but the nature of the mental health treatment (if any) provided by these primary care physicians is unclear. Specialty mental health services were used infrequently. Although psychiatric help was offered, few victims accepted treatment. Further research is needed to determine whether specialized mental health care is appropriate for this group and, if so, how it can be provided.

Conclusion

The results of this controlled cohort study support our hypothesis that catastrophic financial loss in older adults leads to the onset of major depressive disorder and generalized anxiety disorder. Despite the fact that the majority of the victims saw a physician after the loss, few sought or received mental health care. Further study is needed to define appropriate mental health treatment for individuals who have experienced financial disaster.

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