Economic Change and Change in Well-being in the Czech Republic, with Comparisons to Married Women in the United States*

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Abstract: This paper examines the effects of economic change on change in individual well-being for a panel of Czech respondents during a time of rapid social and economic transformation (1990-91), and compares married Czech women with a sample of married women in the United States. In examining five specific hypotheses from the stress-distress tradition in the United States, data from a panel of 192 Czech men and women showed that respondents who were forced to make economic adjustments reducing their standard of living also reported increased health problems and depressive symptoms. Contrary to findings sometimes observed in the United States, the relationship between economic adjustments and change in depressive symptoms was strongest among those who reported having the strongest sense of personal control (mastery) and the highest perceived social support. Compared with the sample of married U. S. women from Iowa, married Czech women reported more depressive symptoms, had more health problems, and were lower in feelings of mastery. In addition, these Czech women recorded significantly stronger paths linking education to changes in both health conditions and depressive symptoms, whereas Iowa women had signficantly stronger paths linking actual economic conditions to subsequent economic adjustments. The data suggest that the stress-distress model developed in the U. S. applies in the Czech Republic as well, but further understanding of the differentiated role of social support and mastery for Czech and U.S. women is necessary to more completely interpret the observed interactions.

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The transition from state socialism to a market economy has made Eastern Europe an important environment in which to study social change and its consequences. One important framework used in the United States to study the effects of change on individuals is the "stress-distress" perspective [Coyne and Downey 1991; Lin and Ensel 1989; Turner, Wheaton and Lloyd 1995]. This perspective focuses on the physical and emotional consequences to individuals of society- or community-wide events such as the

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Great Depression, the Farm Crisis of the mid-1980s, and plant closings [Elder 1974; Lorenz, Conger, Montague and Wichrama 1993; Voydanoff and Majka 1988]. In this paper, we apply the stress-distress approach to a panel of adults in the Czech Republic in order to (1) model the effects of economic change on changes in individual well-being, as indicated by both physical health conditions and psychological distress, (2) examine the moderating effects of personal control and social support, and (3) compare married Czech women with a sample of women from a parallel study conducted during the same time in the state of Iowa in the United States.

Economic change in the Czech Republic

Unlike the context of most previous studies done in the United States, the rapid economic change in Eastern Europe since 1989 is perceived by many to be positive. But the transformation of the Czech Republic into a democracy and a market economy has had social costs from the beginning. When we collected data for this paper in 1990 and 1991, economic output was in decline, and inflation and unemployment reached levels not seen in Europe since World War II. Food prices increased by 26 percent in July of 1990, petrol prices by 50 percent, and the cost of train travel rose by 100 percent. Prices of goods and services in the third quarter of 1990 were 14.1 percent higher than they were during the same quarter of 1989. Wages increased by only 3.4 percent during the 1980s, but personal loans increased by 34 percent [Pechacova and Hraba 1991].

Through all this, individuals had to earn a living even while the rules governing economic exchanges were being renegotiated almost daily. Over 80 percent of a national sample in 1990 believed their personal circumstances would deteriorate over the next two years, over 80 percent found it necessary to economize, over 65 percent reported problems getting desired food, and 60 percent said they had problems in obtaining good clothing (Institute of Sociology, Czechoslovak Academy of Sciences 1990). Thus, the idea of reform may have been well-received by both Czech and world opinion, but the personal uncertainty it created shares many parallels with conditons under which the stress-distress perspective has been applied in the United States.

Hypotheses from the stress-distress tradition

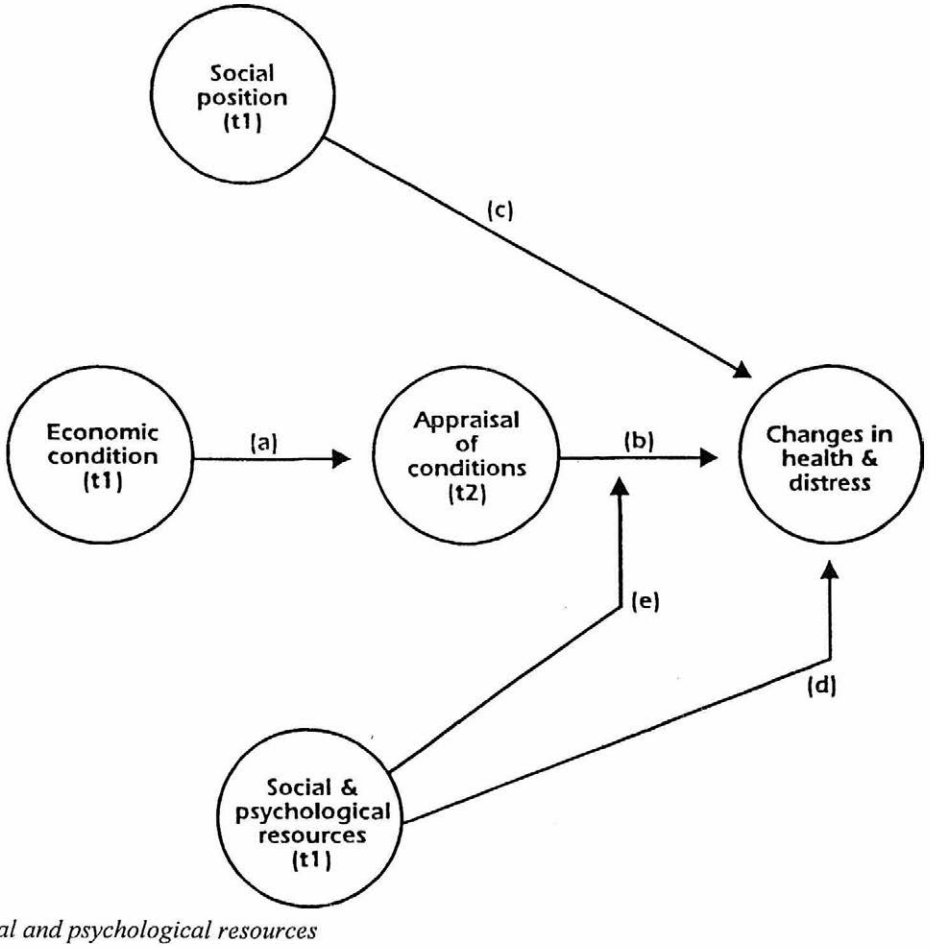
The representation of the perspective that we are applying to the changing Czech economy is shown in Figure 1. This figure visually summarizes five key hypotheses from the stress-distress tradition [Ensel and Lin 1991; Lin and Ensel 1989]. These hypotheses take into account both the social and economic stressors that can affect individuals' sense of well-being and the resources that can help them.

Economic and social stressors

Our central hypothesis is that economic events can undermine individual well-being. This hypothesis, referred to as the *victimization hypothesis*, is reflected in paths (a) and (b). Based primarily on empirical observations from the United States, these two paths underscore the idea that one's economic circumstances can create physiological demands and emotional arousal, not directly, but indirectly through a process of appraisal and accommodation [Lazarus and Folkman 1984]. Attempts to cope with a changing economy may deplete physical and psychological resources, thus increasing the probability of illness, injury or disease [Holmes and Rahe 1967], or the probability of psychological distress or disorder [Brown and Harris 1978].

Path (c) reflects an important related hypothesis, the *social causation hypothesis*. This hypothesis highlights the importance of social positions as a source of role strain, rewards, and resources which may impact well-being [Hraba, Lorenz, Lee and Pechačová 1994; Mirowsky and Ross 1989; Pearlin 1989]. Women, the elderly, the unmarried, and those with fewer economic resources have been found to exhibit higher psychological distress than their higher-status counterparts [Conger, Lorenz, Elder, Simons and Ge 1993; Thoits 1993]. For Czech as for U. S. citizens, key explanatory roles and positions are denoted by age, gender, marital status, education and number of children living in the household.

Figure 1. The life-stress perspective applied to economic change in the Czech Republic



Social and psychological resources

Individual's experiencing economic and social stressors do not all suffer the same physical and emotional distress. One reason may be that some people are protected more than others by social and psychological resourses. Our third and fourth hypotheses, represented by paths (d) and (e), capture arguments for why social resources (social support) and psychological resources (sense of control) should help people maintain their

sense of well-being even when facing adversity. For path (d), the *additive burdens hypothesis* emphasizes the importance of both psychological and social resources in maintaining well-being [Cohen and Wills 1985; Kobasa 1987; Lin and Ensel 1989]. For example, social support as indicated by the size and availability of friendship networks has been found to improve health, perhaps because supportive friendships encourage and monitor healthful behaviors, model good habits, and urge medical treatment at key times [Cohen and Wills 1985; Thoits 1993].

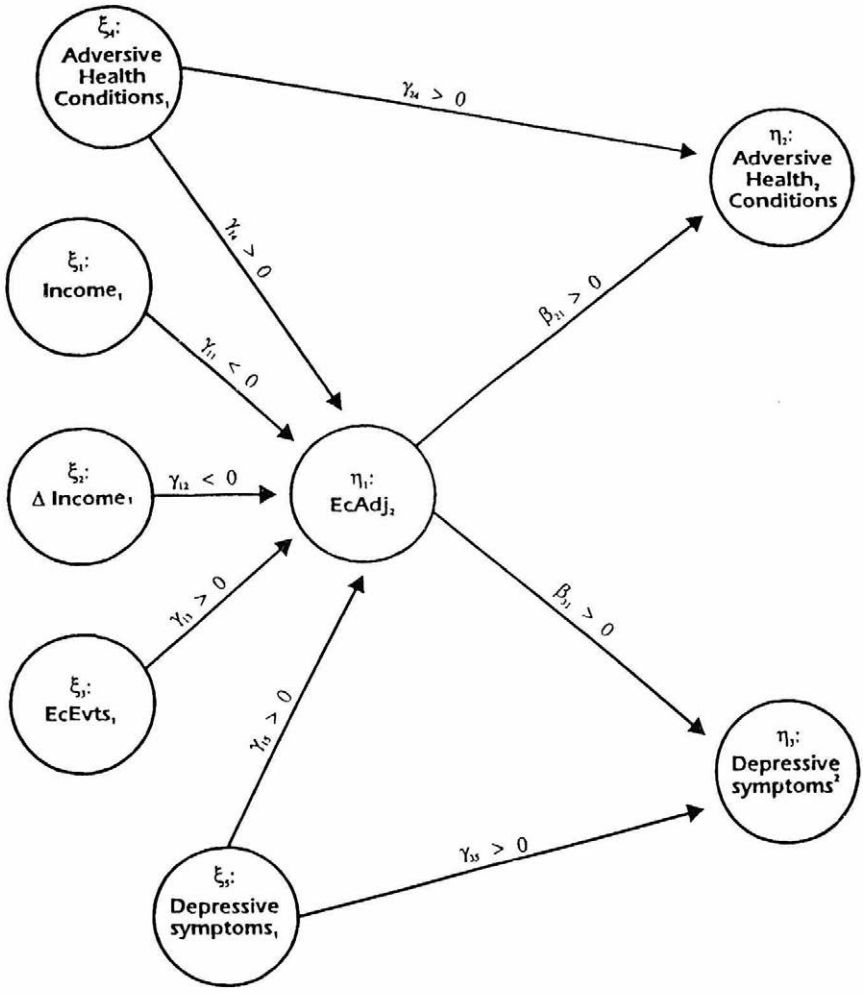
Path (e) denotes the *vulnerability hypothesis* [Lin and Ensel 1989], which argues that the strength of the relationship between economic conditions and subsequent well-being depends on the level of social support and personal control. Respondents with high support or a strong sense of control are expected to demonstrate a weaker relationship between economic conditions and well-being; that is, the negative consequences of economic conditions on well-being should be weak or non-existent among Czechs who (1) felt they were receiving relatively high levels of support from friends [Cohen and Wills 1985], and (2) felt they had a strong sense of mastery or control over events in their lives [Hraba et al. 1994; Kobasa 1987].

Modeling change in well-being

Most studies use data collected at one point in time. One problem with cross-sectional data is that we must infer intra-individual change from inter-individual differences. With panel data, we are able to directly observe intra-individual changes in health and distress, and estimate the effects of stressors and resources on these changes. How this is done is illustrated in Figure 2. The victimization hypothesis denoted by paths (a) and (b) in Figure 1 is elaborated by introducing adverse health conditions (η_2) and depression symptoms (η_3) as two important aspects of well-being. Adverse health conditions reflect the effects of nonspecific sources of stress on subsequent changes in physical health [Lazarus and Folkman 1984; Selye 1976]; depressive symptoms are interpreted in sociology as one important indicator of individual response to inequality and change [Mirowsky and Ross 1989]. Both are included because there are good reasons to believe that physical health problems and psychological distress follow different etiologies [Aneshensel, Rutter and Lachenbruch 1991; Thoits 1993].

In Figure 2, *changes* in the Czech respondents' physical health problems and depressive symptoms between times 1 (1990) and 2 (1991) are incorporated into the model by including initial health conditions (ξ_4) and depressive symptoms (ξ_5) in the model. Applying the calculus of change for panel studies [Kessler and Greenberg 1981], paths γ_{24} and γ_{35} estimate the stability of adverse health conditions and depressive symptoms between times 1 (1990) and 2 (1991). The variance that remains after controlling for stability is then interpreted as change, and significant paths linking economic variables to subsequent health conditions and depressive symptoms are interpreted as the effects of the economic variables on changes in health and depression.

Figure 2 Model of the effects of economic conditions on physical health and psychological distress



The respondents' experience of economic change and reform are represented by the exogenous variables on the left hand side of Figure 2. For most families in the Czech Republic, as in the United States, having a low income is the most tangible measure of susceptibility to economic hardship. But more importantly for our study, change in income (ΔIncome) and negative economic events (EcEvts) represent two ways in which the larger macro-process of social change directly impacts individuals and their families [Elder, Conger, Foster and Ardelt 1992]. A loss in income, or even small gains in a time of high inflation, represents a general decline in the ability of families to make purchases they need to maintain their accustomed standard of living. Negative economic events (e.g. loss of job, cut in wages, etc) reflect explicit shifts and dislocations that may result when families are caught in major social change [Hamilton, Broman, Hoffman and Renner 1990; Voydanoff and Majka 1988].

For Czech families in our study, the process of appraisal and accommodation that links objective economic changes to changes in health conditions and depressive symptoms is represented in economic adjustments (EcAdj), the extent to which respondents acknowledged the widespread inflation and economic uncertainty they faced and accordingly reduced their standard of living. Tensions rise when family income fails to cover expenses; economic adjustments follow as families make overt reductions in expenditure that include cutting costs, avoiding or postponing expenditures, and taking-on additional jobs [Elder et al. 1992]. We hypothesized that Czech families in this study would be forced to reduce their level of consumption during the second year of the study (1991) if, during the prior year (1990), they had relatively low levels of income ($\gamma_{11} < 0$), they experienced declining income ($\gamma_{12} < 0$), or they accumulated negative economic events such as job losses or other economic setbacks ($\gamma_{13} > 0$).

Individuals who were forced to accommodate declining economic conditions were expected to experience increases in depressive symptoms ($\beta_{31} > 0$), a result that has been inferred from cross-sectional analyses and confirmed by longitudinal studies in the U.S. [Lin and Ensel 1989; Lorenz et al. 1993]. But we also expect the process of accommodation to be reflected in changing levels of physical health problems, as indicated by the path $\beta_{21} > 0$, in part because of the effects of nonspecific stressors [Ensel and Lin 1991; Rabkin and Struening 1976], but more directly because respondents who were lowering their consumption may also have been working harder and longer hours, eating poorly, and may have been less attentive to preventative health care practices. When initial levels of health conditions (ξ_4) and depressive symptoms (ξ_5) are introduced as control variables, paths $\beta_{21} > 0$ and $\beta_{31} > 0$ imply that Czechs with relatively high levels of economic adjustments between 1990 and 1991 also experienced *increases* in adverse health conditions and increases in depressive symptoms, respectively.

Although our central argument is that economic change undermines physical and emotional health, a competing hypothesis is that prior physical or mental health problems may be instrumental in creating economic hardship. This hypothesis, known as the *selection* or *event proneness hypothesis*, argues that pre-existing illnesses, injuries or psychological conditions may force respondents to reduce consumption if, as a result, they worked less, earned less, and spent more discretionary income on treatment and medicine. To control for this possibility, we introduce paths $\gamma_{14} > 0$ and $\gamma_{15} > 0$ to represent the selection or event proneness hypothesis as our fifth and last hypothesis [Lin and Ensel 1989; McLeod and Kessler 1990].

Methods

Sample

The hypotheses outlined in Figures 1 and 2 were applied to a sample of 294 households selected in 1990 from a sampling frame of 4000 households maintained by the Czech Statistical Bureau. Questionnaires were distributed in person during October, 1990. Respondents were instructed to mail completed questionnaires to the Agricultural University of Prague. Two hundred and thirty-four questionnaires were returned for an initial response rate of 80%. Respondents were also asked to give their names and addresses if they were willing to participate again, and a second questionnaire was sent to those in October 1991. From this group, 199 responded and, after adjusting for

miscellaneous missing cases, complete information was available on 192 Czech adults, including 61 men and 131 women.

To begin to generalize the stress-distress perspective across cultures, we contrast the Czech data to a U. S. sample in which most key concepts were measured in exactly the same way. The comparison group for which we have direct access is the Iowa Youth and Family Project (IYFP), a large scale panel study of two-parent families that started in 1989 in central Iowa. The Iowa panel offers an interesting contrast to the Czech families because many of the respondents were also experiencing traumatic social change brought on by the Farm Crisis of the mid-1980s [Lorenz et al. 1993]. During this time, a major financial restructuring of farms took place, whereby many farmers were forced to give up farming, and may small businesses in small towns closed.

Details about the IYFP study design, sampling procedures, and reliabilities of measures are summarized elsewhere [Lorenz and Melby 1994], but we note several key features of the study: (1) it included only married couples with a 7th grade child in 1989, so the range of age of the women is narrower than in the Czech study; (2) the couples lived on farms, in the countryside, or in small villages or cities in an eight county area of Iowa, whereas the Czech respondents are from rural and urban places; and (3) the data were collected by personally-delivered self-administered questionnaires and by videotaping families in interaction. Although the IYFP data contain more detailed information about families, to facilitate comparisons all key measures in this paper were constructed with the same items as were used in the Czech sample. Because the number of Czech men in the study was relatively small (n = 61), we limited our comparative analyses to married women.

Measures

The descriptive statistics for the Czech respondents who completed both waves of the survey, along with comparative data on married Czech and Iowa women, are summarized in Table 1. The average age of the Czech respondents at the time of the first survey in October, 1990 was 39.5 years, with men averaging one year older (40.1) than women (39.1). Education, also measured in 1990, was obtained by asking for the highest level of education completed, where the response categories were elementary (1), vocational (2), secondary school (3), college (4) and university (5). Of the 192 respondents, 59 percent reported finishing secondary school and another 22 percent said they finished university. For the Iowa sample, education was reported in years of school completed so that the average of 13.3 implies slightly more than one year of college or technical school. Number of children in the household averaged 1.3 for the Czech sample, with 33 percent reporting no children in 1990. The Iowa average of 2.9 is larger than the U.S. average because of characteristics of the sampling procedures.

Income in 1990 was obtained by asking, as a monthly estimate, the "present total income including all benefits, allowances, extra income in your household." The average income was 5,030 Crowns (approximately $180; $1 = 27.8 Kč's) per month, with an actual range from 580 Kč to 11,400 Kč. Although difficult to directly compare, the average annual income for the Iowa families was $41,100. For comparative analyses, the incomes of married Czech and Iowa women are standardized. Change in income between 1989 and 1990 was obtained by asking both Czech and Iowa respondents to "think about how *much* your family's monthly income from all sources *has changed during the past year*." Categories ranged from decreases of more than 30 percent (0) to less than 5

percent either up or down (4) to increases by more than 30 percent (8). Fifty-one percent of the Czech respondents reported that their income changed "less than 5%" in the previous year, while 24 percent recorded reductions in income and 25 percent reported increases.

Negative economic events experienced during 1990 was obtained by providing respondents with a list of events they could have experienced, and then asking them if each event happened to them. Sixty three percent of the respondents reported no events during the preceding 12 months. Among those Czechs reporting events, the most common included taking care of an elderly relative (17%), getting demoted (9%), taking a cut in wages (7%), changing jobs for a worse one (6%), and stopping work (5%).

Economic adjustments between 1990 and 1991 were measured by presenting respondents with a list of 35 possible adjustments and asking, "in the last 12 months, has your family made any of the following adjustments in your family financial management practices because of *financial problems or difficulties*?" The number of adjustments made during the 12 months between October 1990 and October 1991 ranged from 0 for 38 respondents to a high of 17 for one respondent. The mean was 7.2 with a median of 6. Examples of the types of change people made included using savings to meet expenses (71%), changing food shopping and eating habits (65%), cutting entertainment budgets (64%), reducing use of utilities (53%), postponing vacations (33%), taking on additional employment (27%), borrowing money from relatives or friends (19%), and postponing medical care (5%).

Table 1. Descriptive statistics for all Czech respondents, and for married Czech and Iowa women

	All Czechs (n = 192)		Married Czech Women (n = 115)		Married Iowa Women (n = 386)	
Variables	Mean	SD	Mean	SD	Mean	SD
Age in 1990	39.5	9.6	38.9	8.9	38.8	4.0
Education	3.3	1.1	3.2	1.0	13.3	1.6*
Number of children	1.3	1.1	1.5	1.1	2.9	0.9
Income (in hundreds of Crowns per month)	50.3	22.3	56.1	21.1	41.1	19.2**
Change in income during 1990	3.9	1.2	3.9	1.3	3.6	1.4
Negative Economic during 1990	0.5	0.9	0.6	0.9	0.6	1.1
Economic Adjustments during 1991	7.2	3.3	7.2	3.4	6.7	5.5
Level of Mastery in October, 1990	24.4	4.5	24.2	4.5	26.6	3.9
Level of Social Support in October, 1990	128.3	13.9	40.2	5.3	40.8	5.3
Health symptoms in October, 1990	3.6	2.9	4.2	2.7	1.0	1.5
Depressive symptoms in October, 1990	8.3	7.8	9.2	7.9	6.5	6.2
Health sumptoms in October, 1991	3.4	2.6	3.8	2.6	1.0	1.5
Depressive symptoms in October, 1991	8.1	7.1	8.8	7.1	6.4	7.3

*) Czech data are reported in highest level of school completed; U.S. data reflect years in school.

**) U.S. income data reflects annual total family income.

Mastery, our measure of one's sense of personal control over events, was measured using Pearlin et al.'s [1981] seven item index. The index included items such as "There is really no way I can solve some of the problems I have" and "I can do just about anything I really set my mind to." Each item was scored on a four-point scale from strongly disagree (1) to strongly agree (4) so that higher scores indicated higher levels of mastery. The seven items had an internal consistency estimate of reliability (Cronbach's α) of 0.68. Scores ranged from 12 to 34 and averaged 24.4 There was no significant differences between Czech men and women, but married Czech women had a significantly lower sense of mastery (24.2) than their Iowa counterparts (26.6).

Social support in 1990 was obtained from Cohen's 40 item Interpersonal Support Evaluation List (ISEL), which measures perceived emotional, appraisal, belonging and tangible support. Examples of items include "There are several people I can trust to help solve my problems" and "I feel I am not always included by my circle of friends" [Cohen, Mermelstein, Kamarck and Hoberman 1985]. Each item was scored on a four-point scale from definitely true (1) to definitely false (4) and then recoded so that higher scores imply higher levels of perceived social support. The reliability of the index was estimated at 0.78, while actual scores ranged from 90 to 155 and averaged 128.3. There were no significant differences between Czech men and women in their reports of support.

When comparing Czech and Iowa married women, social support was re-calculated using a subset of 12 items used in the Iowa study. This shortened index included 4 items representing each of the domains of appraisal, belonging and tangible support [Lorenz and Melby 1994]. Married Czech women reported slightly lower levels of perceived social support (40.2) than did Iowa women (40.8), a difference which was not significant.

Health conditions in both 1990 and 1991 were obtained by presenting respondents with two lists. First, they were presented with a list of medical conditions and then asked, "during the last 12 months, have you had any of these conditions?" The list included anemia, asthma, artritis, bronchitis, cancer, chronic liver trouble, diabetes, serious back troubles, heart trouble, high blood pressure, kidney trouble, stroke, tuberculosis, and ulcer. Second, they were presented with a list of symptoms and asked whether they had "experienced any of them *fairly often in the past 12 months*." Examples from this list include feeling weak all over, feeling hot all over, heart beating hard, poor appetite, nervousness, acid stomach or indigestion, and insomnia. Responses to the two lists were combined, with a mean of 3.6 in 1990 and 3.4 in 1991. The average number of symptoms reported by Czech women (4.2 in 1990 and 3.9 in 1991) was significantly higher than the average reported by Czech men (2.3 in both 1990 and 1991). Married Czech women reported significantly more symptoms than did the Iowa women, both in 1990 and in 1991.

Depressive symptoms in both 1990 and 1991 were measured using 13 items from Derogatis' [1983] SCL-90 symptomology checklist. Respondents were asked "how much discomfort have you had during the past week" from the items listed, with response categories ranging from not at all (0) to extremely (4). Examples of depressive symptoms include loss of sexual interest or pleasure, low energy, thoughts of ending your life, crying easily, and feeling lonely. The reliability of the index was estimated at 0.86 in 1990 and 0.87 in 1991. Average scores on the depressive dimension were 8.3 in 1990 and 8.1 in 1991. Again, Czech women scored significantly higher (9.6 and 9.3 in 1990 and

1991, respectively) than men (5.4 and 5.2, respectively), consistent with gender differences in the United States. Married Czech women were significantly higher in depressive symptoms than their Iowa counterparts in both 1990 and 1991.

Results

Before testing the five hypotheses proposed in Figures 1 and 2, we first examined correlations among variables to make sure there were no serious problems of collinearity. From this correlation matrix, we noted that adverse health conditions and depressive symptoms were strongly correlated in both 1990 (0.46) and 1991 (0.51), and the stability correlations between time 1 and time 2 were 0.68 for adverse health conditions and 0.70 for depressive symptoms.

For ease of interpretation, the results obtained when actually modeling the data are presented in standardized coefficients; however, all model estimates are based on covariances. Although all variables in the study are directly observed and do not contain corrections for measurement error, we actually obtained maximum likelihood estimates using the LISREL computer program. In the analyses that follow, we first fit the models outlined in Figures 1 and 2 to the entire Czech sample; next, we examined the data for evidence of hypothesized moderator effects; and then we directly compared married Czech and Iowa women.

Economic conditions, adverse health and depression symptoms

The models outlined in Figures 1 and 2 were estimated for the Czech sample, with the results summarized in Table 2. The first column in Table 2 shows the results for the first endogenous variable, economic adjustment. First, the number of economic adjustments reported by the families during the second year of the study (1991) was weakly related to family income reported at the end of 1990 (-0.13; t = -1.6). Second, and central to our hypothesis about the effects of change, economic adjustments were significantly related to change in income during the previous year (-0.16; t = -2.3). Economic events, however, did not predict adjustments (0.02; t = 0.2). Third, consistent with the selection or event proneness hypothesis, respondents who were initially high in depessive symptoms also reported more adjustments (0.23; t = 2.8). We suspect that respondents who were feeling depressed at the beginning of the study may have been reacting defensively to changing economic conditions rather than proactively embracing the challenge of change.

The variables representing social position were entered as control variables, and some predicted economic adjustments. Specifically, number of adjustments was predicted by gender, with women reporting more adjustments than men (-0.14; t = -1.8); by education, with more highly educated families experiencing significantly fewer adjustments (-0.14; t = -1.8); and by the number of children living in the home (0.28; t = 3.5). In addition, number of adjustments was significantly related to initial level of perceived social support (0.20; t = 2.6). This implies, contrary to our expectations, that those who were initially relatively high in feelings of support were also those who later made more economic adjustments, even after controlling for actual economic circumstances. The predictor variables, taken as a group, accounted for 21 percent of the variance in economic adjustment.

Table 2. Standardized regression coefficients (with t-tests) for adverse health conditions and psychological distress for Czech men and women (n = 192)

	Economic Adjustment (t2)	Adverse Health Conditions (t2)	Depressive Symptoms (t2)
$Income_1$	-0.13 (-1.6)		
Change in $income_1$	-0.16 (-2.3)*		
$Economic\ events_1$	0.02 (0.2)		
$Health\ conditions_1$	0.09 (1.1)	0.58 (10.7)**	
$Depressive\ symptoms_1$	0.23 (2.8)**		0.63 (10.9)**
$Economic\ Adjustments_2$		0.16 (2.9)**	0.14 (2.4)**
Age	0.02 (0.2)	0.15 (2.7)**	0.04 (0.6)
Gender (1 = men; 2 = women)	-0.14 (-1.8)*	0.08 (1.5)	0.09 (1.6)
Marital status (single = 0)	0.01 (0.1)	-0.11 (-2.0)*	-0.07 (-1.6)
Education	-0.14 (-1.8)*	-0.15 (-2.5)*	-0.06 (-1.1)
Number of children	0.28 (3.5)**	0.00 (0.0)	-0.04 (-0.7)
$Mastery_1$	0.00 (0.1)	0.00 (0.1)	0.05 (0.9)
Perceived social support	0.20 (2.6)**	0.05 (0.9)	-0.08 (-1.4)
R-Squared:	0.21	0.54	0.52
Chi-squared (8 df):	8.75		

*) One-tailed test significant at the 0.05 level.
**) One-tailed test significant at the 0.01 level.

The second and third columns of Table 2 show evidence supporting our central hypothesis. After controlling for initial levels of health (0.58; t = 10.7) and depressive symptoms (0.63; t = 10.9), the number of economic adjustments the family made during the year was significantly related to *changes* in both adverse health conditions (0.16; t = 2.9) and depressive symptoms (0.14; t = 2.4). Although the magnitude of these effects are not large in absolute value, they do reveal a discernable relationship between economic events and changes in health conditions and depressive symptoms over the fairly short period of one year. Taken together with the finding that change in income does effect economic adjustments, these paths linking economic adjustments to subsequent changes in both health and depression provide direct evidence for our proposed victimization hypothesis.

In addition, consistent with the social causation hypothesis, adverse changes in health conditions are related to increasing age (0.15; t = 2.7) and are significantly higher for single compared with married respondents (-0.11; t =-2.0), but are lower for the better educated (-0.15; t =-2.5). In aggregate, there was no significant relationship between changes in adverse health conditions and either mastery or perceived social support. Thus, we have little evidence supporting the additive burdens hypothesis outlined by Lin and Ensel [1989].

In reviewing the third column, only economic adjustments predicted depressive symptoms; there were no significant paths linking depressive symptoms to either social roles and positions, to mastery or perceived social support. This latter conclusion will be

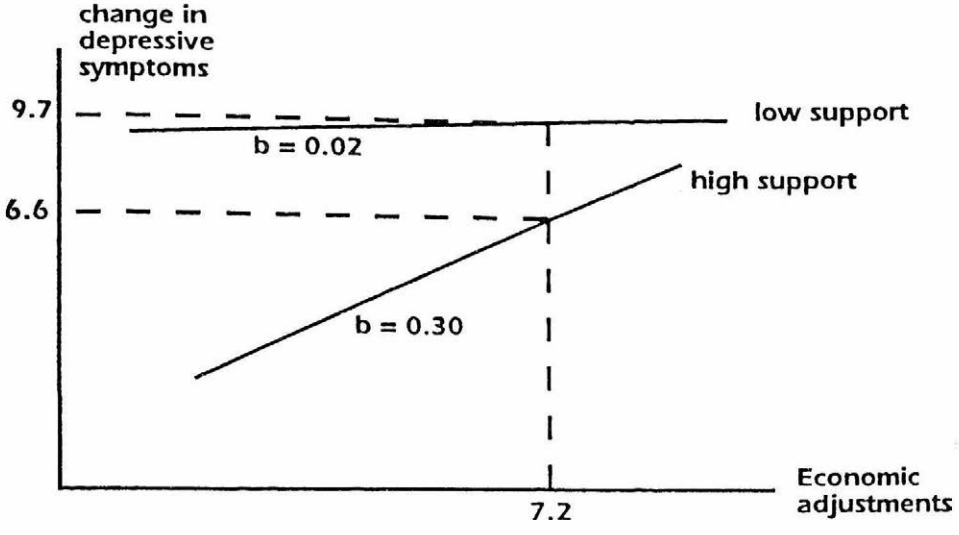
examined more closely, however, when examining the moderating roles of social and psychological resources.

Modeling moderator effects

To evaluate the vulnerability hypothesis using structural equations, we twice split the sample into two parts, first according to those who were initially high or low on perceived support in 1990, and then again according to those who were high or low on mastery in 1990. For social support, the vulnerability hypothesis predicts that the relationship between economic adjustments and adverse health conditions, and between economic adjustments and depressive symptoms, should be stronger for those low on perceived support than for those high on support.

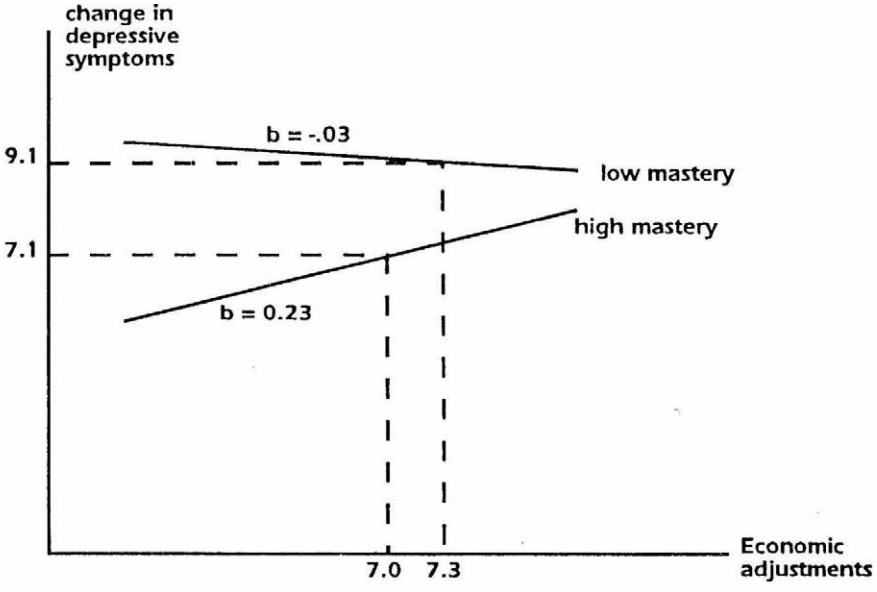
To test this hypothesis, the low (n = 94) and high (n = 98) groups were estimated simultaneously according to procedures outlined by Jøreskog and Sorbom [1989: 255-272]. In examining our results, we found no differences between the two groups in terms of the relationship between economic adjustments and adversive health conditions, but we did find significant differences in the strength of the relationship between economic adjustments and depressive symptoms. Surprisingly, it was in the opposite direction than predicted by the vulnerability hypothesis. The relationship between economic adjustments and depressive symptoms was positive and strong for the high social support group (0.30; t = 4.2) but virtually zero for the low support group (0.02). When the change in chi-square was used to test the difference between the two slopes, it was found to be significant ($\chi^2(1) = 7.4$). As illustrated in Figure 3, these two groups were not significantly different in their average number of adjustments (7.2 in both groups), but Czech respondents who were relatively low in perceived support had comparatively high levels of depressive symptoms, regardless of the number of economic adjustments they had to make, whereas those high in support had low depressive symptoms only when they had to make few economic adjustments. It appears that for this sample of Czech citizens, freedom from depressive symptoms is contingent upon having enough money to avoid economic cutbacks and having friends with which to do things. With increasing levels of economic adjustments, the effects of support in reducing feelings of depression appear to dissipate.

Figure 3. The moderating effects of high (n = 98) and low (n = 94) perceived social support on the relations between economic adjustment and depressive symptoms for Czech respondents



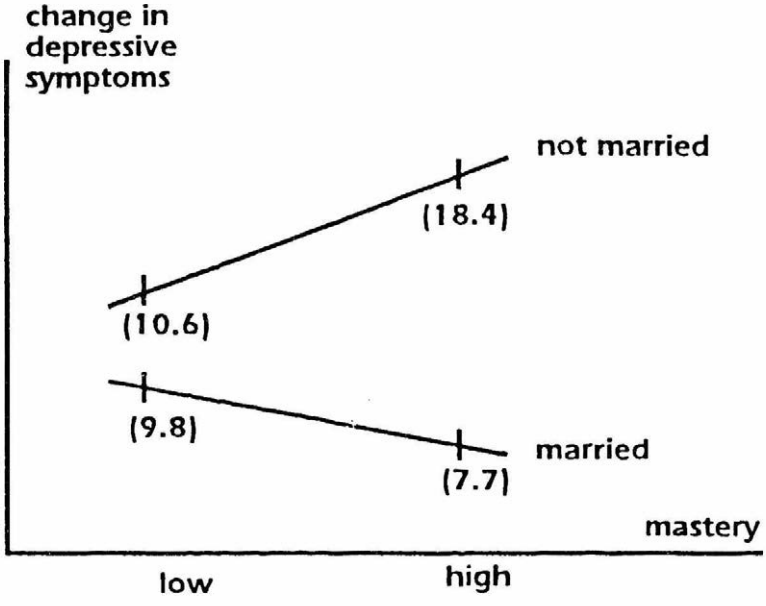
To examine the vulnerability hypothesis with respect to mastery, the sample was again divided into two groups to compare those who were relatively high in mastery (n = 97) with those who were relatively low (n = 95). A series of model comparisons revealed two points at which mastery served as a moderating factor, but again not as predicted by the vulnerability hypothesis. First, the slopes linking economic adjustments and changes in depressive symptoms were significantly different for the two mastery groups ($\chi^2(1) = 5.1$), but in the opposite direction from that predicted by theory and previous research on personality [Kobasa 1987]. Contrary to the vulnerability hypothesis, the relation between economic adjustments and depressive symptoms is virtually zero for those low on mastery (-0.03), but significantly positive for those high on mastery (0.23; t = 3.7). As illustrated in Figure 4, these two groups were not significantly different in their average level of economic adjustments. Respondents low on mastery, however, had relatively high levels of depressive symptoms regardless of their level of economic adjustments, whereas those high on mastery had comparatively low levels of depressive symptoms when they also had low levels of economic adjustments. Using an explanation similar to Elder's [1974] in his study of the Great Depression, the results suggest that respondents who initially felt "in control," perhaps invulnerable to change, were the ones who were the most devastated when adverse changes in economic conditions directly affected their lives.

Figure 4. The moderating effects of high (n = 97) and low (n = 95) mastery on the relations between economic adjustment and depressive symptoms for Czech respondents



Second, the relation between marital status and depressive symptoms was significant in the high (-0.39; t = 5.75) but not the low (0.06) mastery group. Looking closely at this data, we found that of the 61 men in this study, only one was single. Among the 60 married men, those high in mastery reported lower levels of distress (4.4) compared with those high on mastery (7.1). For women, 16 of the 131 were single and they averaged remarkably higher levels of depressive symptoms (13.1) than their married counterparts (8.8). As sketched in Figure 5, however, the role of mastery is complex: the five single women with high levels of mastery have the highest level of depressive symptoms of all (18.4), more than doubling the scores of the 58 married women with high mastery (7.7) and substantially higher than the 11 single women with low mastery (10.6). Dividing the sample in this way leaves us with few cases in each group, and our results must be replicated with a larger sample. The results do imply, however, that the relationship between sense of control and depressive symptoms is more complex than originally supposed, and may be closely tied to expectations about relationships and the social evironment in which people must live and work.

Figure 5. Relations between economic adjustments and depressive symptoms in married and single women with high and low mastery



Comparing Czech and Iowa women

To directly compare our two samples, we applied the model in Figure 2 to the covariance matrices for married Czech (n = 115) and Iowa (n = 386) women simultaneously, again using procedures outlined by Jøreskog and Sorbom [1989]. The results are summarized by the standardized coefficients shown in Table 3.

First, by examining the magnitude of the coefficients linking economic adjustments to income, change in income, and negative economic events, we are led to conclude that economic adjustments are less strongly related to actual economic circumstances among Czech women compared with the Iowa sample. Statistically, the change in chi-square when the coefficients for these two groups were forced to be equal is signficant ($\chi^2(3) = 28.7$). These differences were particularly strong for income and economic events. For our sample of married Czech women, only change in income was significantly related to subsequent economic adjustments (-0.17; t = -1.7), whereas in the Iowa sample all three measures of economic circumstances were significantly related to economic adjustments in the predicted direction. In addition, economic adjustments were significantly related to the number of children living at home (0.27; t = 2.5 among Czechs and 0.14; t = 3.2 for the Iowans), and to prior level of depressive symptoms (0.22; t = 2.1 for Czechs and 0.13; t = 2.2 for Iowans) but not to prior health conditions. This significant path linking initial depressive symptoms to subsequent economic adjustments suggests that depressed women may be interpreting economic changes with greater severity and pessimism, and reacting more strongly to each new economic report.

Table 3. Standardized regression coefficients linking adverse health conditions, symptoms of distress, and economic conditions for married Czech (n = 115) and Iowa (n = 393) women

	Married Czech women			Married Iowa women		
		Adverse	Symptoms		Adverse	Symptoms
	Econ.	Health	of	Econ.	Health	of
Explanatory variables	Adj.	Cond.	Depress.	Adj.	Cond.	Depress.
$Income_1$	-0.08			-0.23**		
$\Delta Income_1$	-0.17*			-0.22**		
$EcEvts_1$	0.02			0.23**		
Economic $Adjs_2$		0.13*	0.10		0.10**	0.14**
$Health_1$	0.11	0.59**		0.06	0.53**	
$Depression_1$	0.22*		0.67**	0.13**		0.50**
Age	-0.08	0.08	-0.01	-0.02	0.04	-0.02
Education	-0.08	-0.22**	-0.16*	-0.04	-0.01	0.04
Children at home	0.27**	0.00	-0.05	0.14**	0.02	-0.02
$Mastery_1$	0.07	-0.01	-0.00	-0.06	-0.17**	-0.17**
$Social\ Support_1$	0.13	0.07	-0.06	0.04	-0.05	-0.05
R-squared:	0.19	0.51	0.52	0.32	0.38	0.45
Chi-squared (8 df)			16.33			19.20

*) One-tailed test significant at the 0.05 level.
**) One-tailed test significant at the 0.01 level.

Second, the relations between economic adjustments and changes in health conditions (0.13; t = 1.7) and symptoms of depression (0.10; t = 1.3) for Czech women were *not* significantly different from those same coefficients for the Iowa sample (0.10; t = 2.5 and 0.14; t = 3.5, respectively). The change in chi-square that results when constraining these two pairs of coefficients to be equal was not significant ($\chi^2(2) = 1.7$). Thus, the relationships between actual economic conditions and subsequent adjustments were significantly stronger among the Iowa women than among the Czech women, but the effects of the adjustments on changes in their health and psychological well-being were not significantly different.

Third, among the variables measuring social position, only education predicted changes in either adverse health conditions or depressive symptoms, and then only for the Czech sample. For the Czech women, the relation between education and changes in health conditions (-0.22; t = -3.0) and symptoms of depression (-0.16; t = -2.2) were significant, implying that those with higher levels of education reported fewer changes in health conditions and depressive symptoms. When constraining these two coefficients to be equal, the chi-square changed 11.7 with 2 degrees of freedom, a difference which is significant.

Finally, mastery was significantly related to both changes in health conditions (-0.17; t = -3.8) and depressive symptoms (-0.17; t = -3.8) for the Iowa women, whereas in aggregate these variables appear unrelated in the Czech sample (-.01 and -.00, respectively). Yet, when constraining the two sets of coefficients to be equal, their differences were not significant ($\Delta\chi^2(2) = 4.2$).

Discussion

The results from our analyses provide several points for further elaboration. The model we tested was based on a perspective developed in the stress-distress literature in the United States [Coyne and Downey 1991; Lin and Ensel 1989; Mirowsky and Ross 1989; Turner et al. 1995]. Our application of this model to the sample of Czech respondents is encouraging: indices developed in the United States to measure control, perceived social support, and depressive symptoms had high reliabilities in our Czech sample. And we found support for several key hypotheses. Consistent with the victimization hypothesis, change in income was significantly related to economic adjustments, and economic adjustments were significantly related to *changes* in both adversive health conditions and psychological distress. There was also evidence for the selection, or event proneness, hypothesis that argues that initial levels of depressive symptoms do in fact lead individuals to differentially interpret how dramatically they must adjust to changing economic conditions.

For the Czech sample, the additive burdens hypothesis was not supported; that is, we found little evidence to suggest that either social support or psychological control (mastery) predict changes in either health conditions or depressive symptoms. Only in the Iowa sample was mastery significantly related in the predicted direction to these two outcome variables.

There were some surprising differences between our Czech and U. S. samples. First, different aspects of socioeconomic status appear to have important roles in affecting health and distress. In contrast to married Iowa women, the married Czech women had weaker links between actual economic circumstances and subseqent adjustments. Perhaps the economic adjustments Czech families had to make during the early transition years of 1990 and 1991 were still less strongly tied to actual income and work stability than is typical in the United States because of the safety net of social programs and state support still in place from its socialist era. For the Czech women when compared with Iowa women, education seems to have a stronger effect in suppressing adversive health conditions and depressive symptoms. Because of this intriguing education effect, future research should ask whether the effects of education on health and depression can be explained in terms of socioeconomic conditions (less hazardous and more rewarding jobs) or other factors such as better information processing and coping skills. Whether these differences replicate in subsequent years as the Czech (and Iowa) social structures change with the time remains to be seen.

More dramatic and surprising were the moderator effects. The results for the Czech respondents were unlike many studies in the United States which have found evidence of moderator effects due to supportive relationships [Cohen and Wills 1985] and a "hardy" personality [Kobasa 1987]. The Czech data suggest that it was those who initially felt they had supportive friends and who were initially high in control (mastery) who were also the ones reporting the sharpest increases in symptoms of depression. This pattern did not show up when changes in health conditions was used as the outcome variable. For social support especially, one has the image that low levels of distress are associated with a combination of enough money to do things plus friends to do them with. Conversely, the protective support of friends appears to evaporate once individuals begin to make the economic adjustments necessary to bring spending in line with income. This finding is at odds with most previous research in the United States, but it replicates cross-sectional results obtained in an earlier paper in which higher levels of both self-esteem and

perceived social support exacerbated feelings of depression and hostility in Czech men [Lee, Hraba, Lorenz and Pechacova 1994]. One possible interpretation of these interactions is that those who were high in mastery and feelings of support were also in advantaged positions during the Communist era and may now feel abandoned or are struggling to come to terms with changing social structure.

More generally, the strength and consistency of the interaction effects relating mastery and perceived social support to depressive symptoms in the Czech sample are dramatic enough to merit further investigation in the United States and elsewhere. If these results hold up under replication, it implies that economic change may be the most devastating emotionally to men and women who initially feel "in control" or perceive themselves to have strong friendships. Actual economic setbacks may have their most devastating effects among those for whom the sense, or illusion, of control and support was initially the strongest. Coupled with other evidence that a "hardy" personality moderates the relation between stress and distress, the question for further research then becomes: under what conditions does one's sense of control moderate, and under what conditions does it exacerbate, the relation between stress and distress?

Future research should strengthen the link between macro-economic and macro-political change and the individual's response to the resulting opportunities and hardships. Although we had information on income and specific life events, we were unable to ask detailed information about the role of individuals in the old regime. The sensitivity of asking about these roles is subsiding as the new government is solidifying its position. Yet there are dramatic and interesting changes going on. Since our data were collected, the Czech Republic and Slovakia have split, and dramatic economic change is continuing. News from the Czech Republic indicates a conservative backlash: political parties dominated by unions, especially unions representing agricultural workers, miners, and heavy industry are gaining popularity. These parties, whose leadership draws from the old communist hierarchy, are arguing that reforms must proceed more slowly. If agricultural and mining unions continue to gain strength, future research would benefit from a comparison of groups within the Czech Republic, especially by comparing rural and urban families and by comparing families that benefited from a controlled socialist society and those who are now seizing opportunities provided by newly emerging markets.

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References

Aneshensel, C. S., C. M. Rutter, P. A. Lachenbruch 1991. "Social structure, stress, and mental health: Competing conceptual and analytic models." *American Sociological Review* 56: 166-178.

Brown, G. W., T. O. Harris. 1978. *Social origins of depression: A study of psychiatric disorder in women.* New York: Free Press.

Cohen, S., T. A. Wills 1985. "Stress, social support, and the buffering hypothesis." *Psychological Bulletin* 98: 310-357.

Cohen, S., R. Mermelstein, T. Kamarck, H. Hoberman 1985. "Measuring the functional components of social supports." Pp. 73-94 in *Social support: Theory, research and applications*, ed. by I. G. Sarason and B. R. Sarason. Bordrecht, Netherlands: Martinus Nijhoff.

Conger, R. D., F. O. Lorenz, G. H. Elder, Jr., R. L. Simons, X. Ge 1993. "Husband and wife differences in response to undesirable life events." *Journal of Health and Social Behavior* 34: 71-88.

Coyne, J. C., G. Downey 1991. "Social factors and psychopathology: Stress, social support, and coping processes." *Annual Review of Psychology* 42: 401-25.

Derogatis, L. R. 1983. *SCL-90-R: Administration, Scoring, and Procedures Manual II (2nd ed.).* Towson, MD: Clinical Psychometric Research.

Economic expectations and attitudes. 1990. Prague: Institute of Sociology of the Czechoslovak Academy of Sciences.

Elder, G. H., Jr. 1974. *Children of the Great Depression.* Chicago: University of Chicago Press.

Elder, G. H., Jr., R. D. Conger, E. M. Foster, M. Ardelt 1992. "Families under Economic Pressure." *Journal of Family Issues* 13: 5-37.

Ensel, W. M., N. Lin 1991. "The life-stress paradigm and psychological health." *Journal of Health and Social Behavior* 32: 321-341.

Hamilton, V. L., C. L. Broman, W. S. Hoffman, D. S. Renner 1990. "Hard times and vulnerable people: Initial effects of plant closing on autoworkers' mental health." *Journal of Health and Social Behavior* 31: 123-140.

Holmes, T. H., R. H. Rahe 1967. "The social readjustment rating scale." *Journal of Psychosomatic Research* 11: 213-218.

Hraba, J., F. O. Lorenz, G. Lee, Z. Pechačová 1994. "Economic change, inequality, and distress in the Czech Republic." *Czech Sociological Review* 2: 173-185.

Jøreskog, K. G. and D. Sorbom 1989. *LISREL VII User's Reference Guide.* Mooresville, IN: Scientific Software.

Kessler, R. C., D. F. Greenberg 1981. *Linear Panel Analysis: Models of Quantitative Change.* New York: Academic Press.

Kobasa, S. C. O. 1987. "Stress responses and personality." Pp 308-329 in *Gender and Stress*, ed. by R. C. Barnett, L. Biener, G. K. Baruch. New York: The Free Press.

Lazarus, R. S., S. Folkman 1984. *Stress, Appraisal, and Coping.* New York: Springer.

Lee, G., J. Hraba, F. O. Lorenz, Z. Pechacova 1994. "Economic reform in the Czech Republic: Economic strain, depression, hostility and the difference gender makes." *Socioloigcal Inquiry* 64: 103-113.

Lin, N., W. M. Ensel 1989. "Life stress and health: Stressors and Resources." *American Sociological Review* 54: 382-399.

Lorenz, F. O., R. D. Conger, R. B. Montague, K. A. S. Wichrama 1993. "Economic conditions, spouse support, and psychological distress of rural husbands and wives." *Rural Sociology* 58: 247-268.

Lorenz, F. O., J. Melby 1994. "Analyzing family stress and adaption: Methods of study." Pp. 21-54 in *Families in troubled times: Adapting to change in rural America*, ed. by R. D. Conger and G. H. Elder, Jr. Hawthorne, NY: Aldine de Gruyter.

McLeod, J. D., R. C. Kessler 1990. "Socioeconomic status differences in vulnerability to undesirable life events." *Journal of Health and Social Behavior* 23: 220-234.

Mirowsky, J., C. E. Ross 1989. *Social Causes of Psychological Distress.* New York: Aldine de Gruyter.

Pearlin, L. I. 1989. "The sociological study of stress." *Journal of Health and Social Behavior* 27: 161-178.

Pearlin, L. I., M. A. Lieberman, E. G. Menaghan, J. T. Mullan 1981. "The stress process." *Journal of Health and Social Behavior* 22: 337-356.

Pechacova, Z., J. Hraba 1991. "Coping with change in Czechoslovakia: A preliminary report." Paper presented at the April 1991 meetings of the Midwest Sociological Society in Chicago, IL.

Rabkin, J. G., E. L. Struening 1976. "Life events, stress, and illness." *Science* 194: 1013-1020.

Selye, Hans 1956. *The Stress of Life.* New York: McGraw-Hill.

Thoits, P. 1993. "Stress, coping, and social support processes: Where are we? What next?" A paper presented at the August 1993 American Sociological Society meetings in Miami, FL.

Turner, R. J., B. Wheaton, D. A. Lloyd 1995. "The epidemiology of social stress." *American Sociological Review* 60: 104-125.

Voydanoff, P., L. C. Majka (eds) 1988. *Families and Economic Stress: Coping strategies and social policy.* Newbury Park, CA: Sage.

Wheaton, B. 1985. "Models for the stress buffering functions of coping resources." *Journal of Health and Social Behavior* 26: 352-64.