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The effect of recurrent involuntary job loss on the depressive symptoms of older US workers

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Abstract

Objectives—The objective of this study was to assess whether recurrent involuntary job loss among US workers nearing retirement resulted in increasingly less severe changes in depressive symptoms with successive job losses.

Methods—With data drawn from the US Health and Retirement Survey (HRS), we used repeated measures longitudinal analysis to investigate the effect of recurrent job loss on follow-up depressive symptoms, measured up to 2 years following job loss. Study participants include 617 individuals, aged 51–61 years at the 1992 study baseline, who had at least one job loss between 1990 and 2000. Our primary outcome variable was a continuous measure of depressive symptoms, constructed from the 8-item Center for Epidemiologic Studies-Depression (CES-D) battery administered at every HRS wave. A second, dichotomous outcome, derived from the continuous measure, measured clinically relevant depressive symptoms. The exposure (recurrent job loss) was defined by binary dummy variables representing two and three/four job losses. All job losses were the result of either plant closing or layoff.

Results—Our main finding indicates that, after relevant covariates are controlled, compared to one job loss, two job losses result in a modest increase in the level depressive symptoms (not significant) at two-year follow-up. Three or more job losses result, on average, in a decline in depressive symptoms to a level near pre-displacement assessment (not significant). Somewhat in contrast, two job losses were found to be associated with increased risk of clinically relevant depressive symptoms.

Conclusions—The principal finding confirms our hypothesis that, among US workers nearing retirement, repeated exposure to job separation results in diminished effects on mental health. Adaptation to the job loss stressor may underlie the observed response, although other explanations, including macroeconomic developments, are possible.

Keywords

Unemployment; Job loss; Older workers; Depressive symptoms

Introduction

Involuntary job loss and its resulting unemployment are significant stressors associated with adverse mental health effects, as established by numerous longitudinal studies (Frese and Mohr 1987; Kaplan et al. 1987; Brenner and Starrin 1988; Warr et al. 1988; Gallo et al. 2000; Kasl and Jones 2000; Matoba et al. 2003). The role of unemployment in precipitating social, behavioral, and psychological disorders has increasingly received attention from researchers, occupational health physicians, and policy planners worldwide, prompting numerous and varied intervention efforts (Proudfoot et al. 1999). The report of the International Commission on Occupational Health (ICOH) Working Group, “Unemployment and Health,” provides an excellent overview of intervention programs (ICOH working group 1999).

Older workers, whose share of overall job displacements in the US has grown consistently over recent decades, are at increased risk for negative outcomes following job loss (Novo 1999). Such individuals, short of age eligibility for pension benefits, may experience substantial economic hardship during unemployment (Kessler et al. 1988; Dooley and Catalano 1999; Price et al. 2002), while facing limited prospects for reemployment (Hipple 1999; Farber 2003). When reemployed, older workers commonly accept lower wages (Couch 1998; Hipple 1999; Farber 2003), which can affect subsequent public pension payout, and reductions in occupational status and non-monetary benefits (Beckett 1988). Job loss also severs long-standing workplace-identity factors (Joelson and Wahlquist 1987), including social status and interaction (Jahoda 1981; Iversen and Klausen 1986), which are ensconced in long-tenured workers.

Whereas the influence of reemployment has been widely studied in the unemployment–mental health relationship (Warr and Jackson 1985; Kessler et al. 1988, 1989; Claussen 1999; Gallo et al. 2000), with the balance of evidence pointing toward a protective effect of securing economically and psychologically satisfactory new positions (Dooley and Catalano 1999; Fryer 1999; Grzywacz and Dooley 2003), little is known about the impact of subsequent job losses. The question of whether or not later separations result in diminishing effects after the initial response thus remains largely unanswered.

Earlier research (Gallo et al. 2000), based on US Health and Retirement Survey (HRS) data, reported a significant association between a single involuntary job loss and increases in depressive symptoms among individuals aged 51–61 years, the decade prior to eligibility for early public retirement benefits. Using data on multiple job losers from the HRS, in the current study we investigate the impact of successive job losses on both the level of depressive symptoms and the likelihood of clinically relevant depressive symptoms. Supported by the notion that repeated exposure to involuntary job loss will desensitize individuals to the experience of employment separation, creating a form of “immunity” (Carver 1998) against further declines in psychological well-being, we hypothesize that successive job losses will have an increasingly less potent effect on depressive symptoms.

Methods

Study design and data source

This is a prospective longitudinal study that uses data from the first five waves (1992–2000) of the US HRS. The HRS is a nationally representative, longitudinal survey of individuals born

between 1931 and 1941 and their spouses, which was designed to investigate the health and economic experiences of older individuals as they advance from work to retirement. HRS data are collected at 2-year intervals, beginning at the 1992 study baseline, at which interviews were taken from 12,652 participants representing 7,702 households. At subsequent survey dates, respondents were re-interviewed by mail or telephone. Data collection is conducted by the Institute for Social Research at the University of Michigan. A detailed description of the HRS is provided elsewhere (Juster and Suzman 1995).

Study sample

Our study sample comprised all individuals who experienced one or more job losses between 1990 and 2000. To construct the sample, we first used historical data, taken in 1992, to identify participants who suffered job loss in the 2-year interval prior to the baseline. Our goal in using the historical data was to maximize the number of multiple job losers, by having participants with a single job loss enter the study frame. Next, we identified individuals who experienced involuntary job loss in the ensuing 2-year intervals. In all, 647 individuals experienced one or more involuntary job losses between 1990 and 2000. Of these individuals, 65 had missing outcome data. We eliminated 30 individuals who had missing data on consecutive outcome measurements, and imputed the responses for the remaining 35 participants using a multiple imputation algorithm. In this procedure, we imputed five estimates of the equated depression score, based on the full range of predictors included in our data, and then took the mean of the five imputed scores. The final study sample numbered 617 individuals.

Outcomes

Level of depressive symptoms—The primary outcome variable in this study was a continuous measure (score) of depressive symptoms, assessed at Waves 2–5 of the survey. The measure of depressive symptoms (range: 0–8) was based on a shortened form (eight items) of the 20-item Center for Epidemiological Studies–Depression (CES-D-20) scale (Radloff 1977). Of the eight CES-D-8 statements, six are negatively phrased (respondent felt depressed; felt everything s/he did was an effort; experienced restless sleep; “could not get going”; felt lonely; felt sad), and two are positively phrased (respondent enjoyed life; was happy). Because the response metric for the items comprising the depressive symptoms measure was modified (from a 4-point to a 2-point response) between the baseline (1992) survey and all later administrations, cross-wave analysis is not recommended (Steffick 2000). We thus used an equated depressive symptoms scores, generated by an item–response theory based linking algorithm for each respondent at each wave (Jones 2001; Jones and Fonda 2004). The equated measure has a baseline (1992) mean of 0.13 (SD = 0.60), ranges from –0.43 to 2.01, and includes a substantially broader range of values than the unequated (0–8) measure. Higher values represent worsening depressive symptoms. Both the reliability and factor validity of the 8-item depressive symptoms measure underlying the equated measure have been demonstrated (Gallo et al. 2000; Steffick 2000).

Clinically relevant depressive symptoms—A secondary outcome, based on the continuous measure of depressive symptoms, represents “clinically relevant” (Steffick 2000) depressive symptoms. This binary (yes/no) variable indicated a depressive symptoms score ≥ 0.84 , which is one standard deviation above the mean follow-up depressive symptoms value for all participants. The 0.84 threshold corresponds to one of several cutoff points for clinically relevant depressive symptoms identified by Steffick (2000) in the non-equated 1992 HRS CES-D data. The Steffick cutoff point (9 on a 0–33 scale) is the algebraic equivalent of the traditional threshold (16 on a 0–60 scale) for the likelihood of clinical depression that was originally ascertained for the full (20-item) CES-D battery by Comstock and Helsing (1976), and is approximately one standard deviation above the HRS population mean.

Exposure

Recurrent job loss—Recurrent involuntary job loss was represented by two, time-varying binary dummy variables indicating two job losses and three/four (combined category) job losses. These variables were constructed using retrospective data at each follow-up (waves 2–5) period, and were updated to reflect the cumulative job loss experience. A dummy variable representing one job loss was used as the referent category. Involuntary job loss was defined as the loss of a job due to business (plant) closing or layoff between survey waves.

Covariates

Covariates and potential confounding influences from a number of domains were included in our models. Adjustment variables were chosen based on findings from earlier studies (Link and Dohrenwend 1989; Gallo et al. 1993, 2000; Penninx et al. 1998; Dooley and Prause 2004), bivariate associations to the outcome, and relationships with other variables. Covariates comprised demographic (age, sex, race, years of education, changes in marital status), economic (non-housing net worth, divided by 100,000 for scalar consistency), labor market (reemployment in full-time work following job loss), medical (high blood pressure, cancer, heart disease), health habits (alcohol use), and functional (functional status, based on five activities of daily living (ADL), range 0–5) variables. We also controlled lagged depressive symptoms (continuous measure or clinically relevant depressive symptoms), which was measured at the previous survey wave, and constructed identically to the outcomes. Because of their putative concurrent relationship with the outcomes, labor market, medical, health habits, and functional status adjustment variables were updated in each data record.

Analysis

Method and data organization—A repeated measures framework was used to prospectively assess the effect of recurrent multiple job loss on depressive symptoms at the survey immediately following separation, when the most salient effects are likely to be detected. We thus modeled the two measures of depressive symptoms at each follow-up measurement (waves 2–5) as a function of recurrent job loss, designated by the wave-specific dummy variables measuring two or three/four job losses, lagged depressive symptoms (continuous measure or clinically relevant depressive symptoms), and covariates. Correspondingly, the data are arrayed in a repeated measures context, in which sample members are represented by up to five data records, each of which relates to a unique two-year time interval between survey waves, including the 1990–1992 retrospective interval. One result of such a data set-up is that certain data records will reflect the experience of individuals *prior* to their initial job loss. Practically, this scheme requires an additional dummy variable, to signify zero job losses in data records that correspond to time intervals before the first job loss. As the additional variable is extraneous to our objectives, and is not necessary to interpret the findings, it is not reported.

Statistical technique—We used Generalized Estimating Equations (Ware 1985; Zeger and Liang 1986; Wolfinger and O’Connell 1993) to assess the effect of recurrent involuntary job loss on our depressive symptoms outcomes. This procedure is appropriate to our study design, as it corrects for within-subject correlation arising from repeated measures taken from the same individuals. GEE furthermore allows for both Gaussian-distributed outcomes, such as our continuous measure, and binomially distributed (logistic) response variables, such as the secondary outcome measure. We estimated three nearly identical models for the two outcomes. First, we assessed the bivariate relationship between recurrent job loss and our depressive symptoms outcome measures; second, we re-fitted this model, adjusting only for lagged depressive symptoms (continuous measure or clinically relevant depressive symptoms); and third, we re-estimated the model, adjusting for both the lagged depressive symptoms measure

and covariates. One minor difference between the multivariate models for the two outcomes is that cancer prevalence and non-housing net worth were eliminated from the model of clinically relevant depressive symptoms due to small cell size and substantial negative confounding with the exposure, respectively. A fourth model was fitted for the clinically relevant depressive symptoms outcome. In this model, we combined two, three, and four job losses into a single exposure variable for recurrent job loss. Merging exposure categories was used as a robustness check, since the coexistence of three/four job losses and clinically relevant depressive symptoms was fairly low, resulting in somewhat wide confidence intervals in the specification with the disaggregated exposure.

Results

The 617 sample members experienced 673 involuntary job loss events between 1992 and the 2000 HRS follow-up: 528 first job losses, 131 second job losses, 13 third job losses, and one fourth job loss. Of the 145 recurrent job losses, 15 occurred between 1992 and 1994, 19 between 1994 and 1996, 83 between 1996 and 1998, and 28 took place between 1998 and 2000. The decrease in the number of separations between 1998 and 2000 corresponds to the more frequent occurrence of retirements reported at 1998, when many sample members became eligible for private pension and early Social Security benefits. Further description of the study sample is presented in Table 1.

Mean depressive symptoms scores and proportions of study participants with clinically relevant depressive symptoms are presented in Table 2. Pre- and post-job loss figures are given by exposure category for the combined (pooled) sample, with percentage changes calculated based on the pre-displacement values. In the follow-up depressive symptoms scores, we observe a pattern of declining proportional increase, followed by a percentage decrease, from the pre-separation values, across exposure categories. Thus, while one job loss is associated with a 10.5% increase in the depressive symptoms score from the pre-job loss value, two job losses suggests a 7.4% increase, and three/four separations suggests a decline of 13.8%. In contrast, analysis of the proportions of individuals with depressive symptoms scores in the clinically relevant range reveals consistently increasing percentage changes. For the one job loss exposure category, the percent increase in the proportion of the sample with clinically relevant depressive symptoms is 6.8%. The parallel increases for the two-job loss and three/four job loss categories are 10.3 and 16.8%, respectively.

Involuntary job loss and level of depressive symptoms

Table 3 provides unadjusted, partially adjusted, and fully adjusted repeated measures estimates of the effect of recurrent job losses on the continuous measure of follow-up depressive symptoms. Estimates are stated in relative terms, so that the interpretation of the estimated coefficients on the exposure dummy variables represents the difference in the mean of the depressive symptoms score—conditional on the previous level of depressive symptoms, for the adjusted analyses—between the exposure group and the omitted (one job loss) group. Our results indicate that compared to one job loss, two job losses result in a moderate increase in depressive symptoms. This result is statistically significant ($p = 0.05$) at the 5% level of significance in the unadjusted model, but is not significant in the models adjusted for lagged depressive symptoms ($p = 0.10$) and for the full set of covariates ($p = 0.09$). Compared to one job loss, three/four job losses are associated with a non-significant decrease in depressive symptoms.

Involuntary job loss and clinically relevant depressive symptoms

In Table 4, we present results from logistic analyses of the association between recurrent involuntary job loss and the likelihood of clinically relevant depressive symptoms. The first

three models parallel the models fit for the primary outcome; as described above, the fourth model combines exposure categories into a single dummy variable for multiple job loss. Odds ratios and 95% confidence intervals are presented. The relevant odds ratios are interpreted as the odds (risk) of clinically relevant depressive symptoms associated with a one-unit change in the exposure category relative to the omitted (one job loss) group. Odds ratios greater than 1 reflect increased risk of the likelihood of clinically relevant depressive symptoms associated with an explanatory variable, whereas odds ratios less than 1 suggest lower risk. Confidence intervals that do not include the value 1 are statistically significant at the 5% level.

The results indicate that the two-job loss exposure is associated with an increased risk of clinically relevant depressive symptoms between 62 and 68%. Although the results do not suggest additional risk associated with three/four job losses, it is possible that this null finding is due to insufficient statistical power, especially in light of the descriptive results, which indicate that the three/four job loss group contains the largest proportion of participants with clinically relevant depressive symptoms. The estimated results from the adjusted model in which we combine the multiple job loss categories are virtually identical to the fully adjusted results with the disaggregated exposure. Odds ratios and confidence intervals for covariates are also robust to the aggregation.

Discussion

The results of this study suggest that, among older workers, after a significant increase in depressive symptoms associated with the initial job loss (Gallo et al. 2000), additional involuntary separations provoke no such further increase in the average level, confirming the hypothesis that successive job losses would produce increasingly weaker effects on overall depressive symptoms. The findings from our primary analysis demonstrate that, when other factors related to depressive symptoms are controlled, a second job loss is associated with a modest, but statistically non-significant, rise in depressive symptoms, whereas third and fourth job losses result in a decline in depressive symptoms to the approximate pre-displacement level.

This diminishing effect may be indicative of some form of adaptation, or of psychological resilience to the job loss stressor (Hallsten et al. 1999). Decreases in symptomatology could suggest a direct impact of resilience, that having gone through the initial job loss enhances the ability to respond to later occurrences, thus providing a form of “immunity” to subsequent exposures (Carver 1998). Alternatively, the resilience may operate through the style in which individuals cope with the stress of unemployment (Lazarus and Folkman 1984; Grossi 1999; Tugade et al. 2004), or via related behavior, notably post-displacement job seeking and labor market activity (Leana and Feldman 1995; Kanfer et al. 2001; McKee-Ryan et al. 2005). Reasons other than resilience are, of course, also possible. For example, macroeconomic changes over the observation period made involuntary separation increasingly common, and workers’ growing acceptance of job loss as part of the new labor market contract may mean that, in its new context, job loss lacks the cognitive stress necessary to trigger significant adverse changes in psychological well-being. Similarly, for individuals who are gradually withdrawing from the labor force, the loss of a “bridge” job would conceivably be less psychologically damaging.

Somewhat in contrast to the null finding on the level of depressive symptoms, the results of our secondary analyses suggest that recurrent involuntary job loss is associated with nearly two-thirds increased risk of having clinically meaningful depressive symptoms, even after adjustment for the factors controlled in the primary analysis. While this finding is easily interpretable, and implies that important distributional changes are not fully captured in the analysis of depressive symptoms level, it should nonetheless be read with caution. There are

numerous problems associated with the use of cut-off points (Dwyer 1996), not considering our extrapolation of clinical importance from the non-equated CES-D limit. Of greatest concern is the loss of information arising from the imposition of an “artificial dichotomy” (Dwyer 1996, p. 360) on a measure of psychological well being that may be more appropriately represented by a continuum.

Our findings must be interpreted in the context of several limitations. Foremost is the small number of individuals who reported more than two job losses during the study frame, from which two issues arise. First, with few such individuals, there is limited power to draw statistical inference of the effect three and four job losses on our outcomes and insufficient power to statistically evaluate the impact of post-displacement employment transitions with interaction analysis. Second, as the number of job losses is inherently a function of time, concurrent with a growing likelihood of retirement in this cohort, the group that remains in the labor force with the potential to experience higher numbers of job losses may select therein, which could potentially reduce the representativeness of the findings. Selection problems would occur if the determination of this group to participate in the labor force were non-random, for example, based on insufficient retirement savings or dependent children. Finally, in this research, recurrent job loss is defined exclusively within the context of the 10-year study frame. It is, therefore, probable that certain of the job losses that we categorize as a first separation follow earlier, unobserved job losses, and may thus be misclassified as a single separation. Proper interpretation of the findings therefore requires placing them in the perspective of the study period.

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Table 1

Characteristics of sample

Variable	<i>n</i> = 617
^a Age in years (mean + SD)	55.2 (2.9)
Female sex ^a	50.2%
White race ^a	82.2%
^a Education in years (mean + SD)	12.3 (3.0)
^b Widowed, separated or divorced	2.4%
Non-housing net worth ^c	\$30,000 (\$86,900)
Cancer (y/n) ^b	1.3%
Heart disease (y/n) ^b	2.7%
^b Heavy alcohol use (3 + drinks/day)	8.3%
^b Functional status: % dependent in 1 + ADL	5.6%

^aDenotes table value (mean or proportion) measured at 1992 baseline

^bDenotes average proportion over study frame for time-varying characteristic

^cDenotes median and interquartile range measured at 1992 baseline

Table 2

Mean depressive symptoms scores and proportions of participants with clinically relevant depressive symptoms by exposure category: pre- and post-job loss

Exposure category	Pre-job loss	Post-job loss	Percentage change
Depressive symptoms score ^a			
One job loss	0.19	0.21	+10.5
Two job losses	0.27	0.29	+7.4
Three-fourth job losses	0.29	0.25	-13.8
Proportion with clinically relevant depression ^b			
One job loss	17.7%	18.9%	+6.8
Two job losses	22.3%	24.6%	+10.3
Three-fourth job losses	25.0%	29.2%	+16.8

^aVariable range: -0.43, 2.01

^bVariable defined as: 1 = equated depressive symptoms score ≥ 0.84 ; 0 otherwise

Table 3
Effect of recurrent involuntary job losses on level of depression symptoms: unadjusted, partially adjusted and fully adjusted models

	Unadjusted		Partially adjusted		Fully adjusted	
	β -Coefficient (SE)	p-Value	β -Coefficient (SE)	p-Value	β -Coefficient (SE)	p-Value
Recurrent involuntary job loss						
Two job losses	0.10 (0.05)	0.05	0.08 (0.05)	0.10	0.08 (0.05)	0.09
Three-fourth job losses	-0.09 (0.16)	0.56	-0.04 (0.12)	0.76	-0.06 (0.12)	0.64
One job loss	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Lagged depressive symptoms						
Two years lagged depressive symptoms	-	-	0.22 (0.03)	< 0.001	0.24 (0.03)	< 0.001
Covariates						
Age (in years)	-	-	-	-	-0.01 (0.01)	0.34
Female sex	-	-	-	-	0.11 (0.03)	0.001
White race	-	-	-	-	-0.11 (0.04)	0.01
Education (in years)	-	-	-	-	-0.03 (0.01)	< 0.001
Widowed, separated, divorced	-	-	-	-	0.25 (0.08)	0.004
Non-housing net worth	-	-	-	-	-0.01 (0.004)	0.01
Cancer	-	-	-	-	0.23 (0.16)	0.14
Heart disease	-	-	-	-	0.17 (0.07)	0.02
Heavy alcohol use	-	-	-	-	0.17 (0.04)	< 0.001
Physical function (0-5)	-	-	-	-	0.10 (0.03)	0.001
Fulltime re-employed	-	-	-	-	-0.07 (0.04)	0.08
Constant	0.19 (0.02)	< 0.001	0.15 (0.02)	< 0.001	0.81 (0.33)	0.01

β -Coefficient (SE) = estimated coefficient (standard error)

Table 4

Effect of recurrent involuntary job losses on clinically relevant depression symptoms: unadjusted, partially adjusted and fully adjusted models, with exposure categories combined

	Unadjusted		Partially adjusted		Fully adjusted		Exposure categories combined	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Recurrent involuntary job loss	1.67	1.18–2.36	1.62	1.14–2.29	1.68	1.17–2.42	–	–
Two job losses	0.99	0.20–4.93	1.08	0.26–4.57	0.92	0.20–4.19	–	–
Three-fourth job losses	–	–	–	–	–	–	1.62	1.14–2.29
Recurrent job loss	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
One job loss	–	–	–	–	–	–	–	–
Lagged depressive symptoms (DS)	–	–	–	–	–	–	–	–
Two years lagged clinically relevant DS	–	–	1.83	1.27–2.63	1.68	1.16–2.44	1.68	1.16–2.43
Covariates								
Age (in years)	–	–	–	–	0.98	0.92–1.03	0.98	0.92–1.03
Female sex	–	–	–	–	1.51	1.09–2.09	1.51	1.09–2.10
White race	–	–	–	–	0.65	0.44–0.95	0.64	0.44–0.94
Education (in years)	–	–	–	–	0.89	0.85–0.93	0.89	0.85–0.93
Widowed, separated, divorced	–	–	–	–	1.94	1.02–3.68	1.94	1.02–3.69
Heart disease	–	–	–	–	1.16	0.53–2.52	1.12	0.51–2.46
Heavy alcohol use	–	–	–	–	1.06	0.70–1.62	1.07	0.70–1.63
Physical function (0–5)	–	–	–	–	1.38	1.15–1.67	1.37	1.14–1.66
Fulltime re-employed	–	–	–	–	0.88	0.61–1.29	0.88	0.61–1.28

CI confidence interval Model included constant (not reported)