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Effects of prolonged unemployment and reemployment on psychological and physical health

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The purpose of the present study was to explore the impact of prolonged unemployment and reemployment on both psychological and physical health over a period of more than two years. In a three-way longitudinal survey of initially unemployed persons in Croatia, we examined the self-assessed physical and mental health, captured by the *SF-36 Health Survey*, as a group of unemployed persons moved into employment or remained unemployed. The results confirmed that only psychological health depends on the participant's employment status, while physical health wasn't related to prolonged unemployment or (re)employment.

Key words: unemployment, (re)employment, psychological health, physical health

There is a wide-spread conviction that unemployment has adverse health effects. However, the research supporting this conviction is decisive only for various aspects of *psychological* or *mental* health, such as depression and hopelessness, anxiety, psychosomatic symptoms, and negative self-esteem. Indeed, numerous cross-sectional studies have amply shown that job-less individuals have worse mental health than their employed counterparts (e.g., Fryer & Payne, 1986; Hanish, 1999; Warr, 1987; Winefield, 1995, 2000). It is possible that poor mental health predisposes individuals to become and/or remain unemployed (the outcome known as "selection effect"). However, longitudinal studies, which tracked cohorts of individuals from employment to unemployment and conversely, provided convincing evidence that unemployment not only results from, but also causes poor metal health ("social causation effect"). As meta-analytic reviews have unanimously shown (e.g., McKee-Ryan, Song, Wanberg, & Kinciki, 2005; Murphy & Athanasou, 1999), there is significant decrease in mental health following job loss, and a sizable improvement after reemployment. The estimated causation effect is moderate in size and much stronger than the selection effect (McKee-Ryan et al., 2005). Besides, the effect is invariant with the type of mental health indicator used (Paul, 2005). In other words, the observed impact of unemployment is equally pronounced for various measures of distress, anxiety, psychological well-being, or self-esteem.

Research has shown that prolonged unemployment is also associated with impaired *physical* health (see, for example, reviews by Jin, Shah, & Svoboda, 1995, or Mathers & Schofield, 1998). Unemployed individuals report lower subjective physical health and more psychosomatic complains than their employed counterparts (Paul, 2005). They also report more visits to the physician, spend more days in bed sick (Linn, Sandifer, & Stein, 1985), and take more medication (Dragun, Rosso, & Rumbolt, 2006). Moreover, unemployed people, compared to employed counterparts, tend to report higher prevalence of manifest cardiovascular diseases (Brackbill, Siegel, & Ackermann, 1995; Cook, Cummins, Bartley, & Shaper, 1982; Gallo et al., 2004), and higher mortality rates (Iversen, 2006). However, because of many confounding factors and lack of convincing longitudinal research, the underlying causal link is considered unresolved (Weber & Lehnert, 1997).

The main justification for the causation hypothesis, which states that unemployment causes impaired physical health, utilizes the concept of stress and the tenet that for most people unemployment is a stressful situation. Stress, as an organism's total response to environmental threats, involves various physiological changes. Those include

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changes in hormone release that affect the immune system as well as raise cholesterol levels and blood pressure, which, in turn, increase the risk of cardiovascular disease. Earlier studies indicated some influence of unemployment on cardiovascular risk factors, such as increase in serum cholesterol level (Mattiasson, Lindgärde, Nilsson, & Theorell, 1990), and blood pressure (Hammarström, 1994; Janlert, 1992). The two most recent studies extended the evidence by important contributions. One study (Maier et al., 2006) analyzed the effect of unemployment duration on cortisol levels in blood. High level of this corticosteroid hormone, also known as the "stress hormone", has been shown to have negative effects (i.e., increased blood pressure, lowered immunity, and other), which may have detrimental effect on an individual's health. Maier and colleagues found higher cortisol levels among long-term unemployed in comparison to short-term unemployed, and, more importantly, an increase of cortisol levels in the group of short-tem unemployed as they continue to be unemployed. The second study (Cohen et al., 2007), examined the effects of unemployment on natural killer (NK) cell capacity. NK cells are a subset of lymphocytes able to kill a broad array of targets including virally infected and cancer cells. Cohen and colleagues showed that NK cells of unemployed people have lower citotoxicity than the cells of employed people. In addition, their longitudinal analysis revealed that the immune cell functional capacity recovered after (re)employment.

Another line of longitudinal research focused on the subjective assessment of physical health. Several recent studies took advantage of large-scale national surveys, which typically involve annual interviews on representative panels of individuals. Their interviews or questionnaires usually contain one or more questions or scales for recording various health complaints, perceived health change or general health satisfaction. Two surveys from Germany rendered conflicting results. Elkeles and Seifert (1993) analyzed data of the German Socio-Economic Panel, collected from 1984 to 1988. They found unemployed individuals worse on all health indicators (health satisfaction, chronic illness, handicaps in fulfilling daily life task, and disability). However, their longitudinal analyses did not lend much support to the causation hypothesis: participants who had been changing their employment status retained a constant level of health satisfaction. Gordo (2006), who also utilized data from the German Socio-Economic Panel (18 waves, from 1984 to 2001), obtained different results. Gordo focused on general health satisfaction ("How satisfied are you with your health?") self-assessed on a 10-point scale. Her results supported the causation hypothesis: being unemployed for more than two years had significant and negative effect on health satisfaction, while re-employment had positive effect.

Two surveys from North European countries supported both the selection and causation hypothesis. Korpi (2001) utilized panel data from the Swedish Level of Living Survey (for 1981 and 1991) to assess the effects of unemployment on health, and data from the Swedish Longitudinal Survey of Unemployed (1992 and 1993) to examine the health-based selection into and out of employment. Both analyses utilized 32 health-related items from which a total symptom index, an ache index and a circulatory-problems index were calculated. Multivariate analyses revealed evidence of health-based selection into and out of employment, and strong evidence of worsening health due to previous unemployment. Böckerman and Ilmakunnas (2008) used data from the European Community Household Panel for Finland over the period 1996-2001. The participants were asked "How is your health in general?" and their responses ranged from 1 ('very bad') to 5 ('very good'). The analysis revealed that the health status of those who end up as unemployed was lower than the health of continually employed individuals even before the onset of their unemployment episodes. Unemployment as such did not affect the level of self-assessed health, although there was some evidence that long-term unemployment led to worsened health.

The studies utilizing national panels certainly have advantages: they use representative and large samples of participants and cover periods long enough to obtain reliable results about the adverse effects of unemployment. However they use relatively crude measures of health status. Although it has been claimed that subjective single-item measures of general health, which presumably subsume all aspects of health, are closer to the WHO definition of health as a state of complete physical, mental and social well-being (WHO, 2008), they do not allow exploring potentially different impact of unemployment on various aspects of health.

As our short review of research suggests, unemployment certainly affects *mental* health, while the evidence for the causal effect of unemployment on *physical* health remains ambiguous. Given the possibility that the causation underlying the unemployment-health relationship may be different for mental-health and physical-health variables, we specifically need studies that simultaneously assess both kinds of health phenomena, within the same methodological framework and contextual influences. Hence, the purpose of the present longitudinal study was to explore the impact of prolonged unemployment and reemployment on self-assessed measures of both psychological and physical health over a period of several years.

METHOD

This longitudinal and multi-wave study was conducted in Croatia – one of the Central and East European countries that, in the 1990s, underwent a transition from a state-regulated to a market-oriented society. One concomitant of this transformation was the dramatic rise of unemployment. In 2003 when our study was launched, the registered unemployment rate run at 18 % and, after a job loss, an average job seeker needed more than a year to find (re)employment.

The present analysis comprised three waves of surveying, extending over a period of more than two years. The basic, first-wave survey (T1) was conducted in the summer of 2003, and the follow-ups ensued at the end the years 2004 (T2), and 2005 (T3).

Participants and procedure

The participants were unemployed persons registered with the Croatian Employment Bureau. At T1, they were recruited in 25 premises of regional branch offices of the Employment Bureau in almost all Croatian counties. In each office, the pollsters randomly approached to unemployed persons who came for obligatory monthly reporting and asked them to participate in the survey. The number of approached persons was proportional to the real share of the unemployed in the respective county. Out of 1,882 contacted persons, 1,138 (60.5%) agreed to participate. Their geographical and gender structure (58% female) corresponds to that of all registered unemployed persons in Croatia. However, since older or less educated persons more often declined to participate, the sample is biased towards younger and better educated persons. Regarding unemployment duration, 35% of the participants were unemployed for less than 6 months, 32% from 7 months to 3 years, and 26% for more than 3 years. These figures reflect the structure of unemployed population in Croatia, which is characterized by high share of long-term unemployment.

Participants filled out the questionnaire in small groups, mostly on their own, based on the instructions received from the pollsters. It was emphasized that the study was anonymous, undertaken by an independent research institution, for scientific purposes, and potentially useful for social policy. All pollsters wore badges denoting their affiliation to the university. For few respondents unable to read and write, the pollsters read the questions and recorded the answers. The survey took up to 30 minutes. In the end, the respondents were asked for permission to be contacted and surveyed again, a year later. Out of 1,138 participants, 805 (71%) consented and provided their contact data.

The follow-ups (T2 and T3) were organized as mail surveys. The mailed questionnaires repeated all measures from T1 questionnaire deemed to be susceptible of change (including the health measures), and included additional questions about the participants' current employment status. All participants were first contacted by telephone: they were reminded of their consent, informed that they would soon receive the questionnaire by mail, and asked for cooperation. In the two follow-ups the questionnaires were sent to 805 participants who provided their contact data at T1. In 2004 (T2), completed questionnaires were received from 601 participant, which is 53% of those who participated in T1, and 75% of those who consented to participate in the follow-up. In 2005 (T3), the number of participants who returned the questionnaire dropped to 452, which is 40% of those who participated in T1, and 56% of those who consented to participate in the follow-up.

Table 1
Number of participants by the employment pattern

Participants' employment status at successive waves (time points)			
T1	T2	T3	N
U	U	U	206
U	U	E	53
U	E	E	113
U	E	U	22
Total			394

Note. U = unemployed; E = employed

Due to the dropout and missing data, the number of participants who completed the questionnaires in all three study waves was reduced to $N = 394$. For exploring the impact of prolonged unemployment and reemployment on psychological and physical health, they were divided in four groups according their employment status in the three successive waves of survey (Table 1). The participants who remained unemployed in all three time points (UUU) were most numerous, followed by the participants were employed at T2 and remained so at T3 (UEE), and the participants who were employed at T3 (UUE). The fourth group, the participants who were employed at T2 but again unemployed at T3 (UEU), was fewer.

Measures

The questionnaire included questions about participants' demographic characteristics, financial situation, daily activities, social support, job-searching behavior, and health status. Health was assessed with the *SF*-36 *Health* S*urvey*, a psychometrically sound multi-dimensional questionnaire taping both physical and mental health concepts. Developed in the USA (Ware & Sherbourne, 1992; Ware, Kosinski, & Gandek, 2003), it has been widely used internationally. The Croatian version was adapted at Andrija Štampar School of Public Health of the University of Zagreb (Jureša et al., 2000).

The SF-36 is referred to as a generic measure because it assesses basic health concepts, which are "not age, disease, or treatment specific", but "relevant to everyone's functional status and well-being" (Ware et al., 2003, p. 2-3). Multiple indicators used to assess the health concepts include: self-reports of behavioral functioning, perceived well-being, self-reports of limitations connected with social life and the realization of life roles, and direct perception of total health. Altogether the SF-36 comprises eight multi-item scales[1]:

1 The internal-consistency reliabilities (α) given in parentheses are from the Croatian standardization study (Maslić Seršić & Vuletić, 2006).

1. Physical Functioning (10-items, α = 94);
2. Role-Physical (limitations in performing life roles due to physical health; 4 items, α = .94);
3. Bodily Pain (2 items, α = .91);
4. General Health (5 items, α = .78);
5. Vitality (energy level and fatigue; 4 items, α = .85);
6. Social Functioning (2 items, α = .78);
7. Role-Emotional (limitations in life activities due to emotional problems; 3 items, α = .82);
8. Mental Health (anxiety, depression, and psychological well-being; 5 items, α = .83).

As factor analysis has shown (Ware et al., 2003), the first three scales load on the physical health factor, the last three scales on the psychological health factor, while General Health and Vitality load on both factors. The scores on all dimensions were transformed into a scale whose theoretical minimum is 0, and maximum 100 scores, with higher score indicating better health. General psychological health was calculated as a mean score from Social Functioning, Role Emotional, and Mental Health scales. In a similar vein, general physical health was computed as mean result from Physical Functioning, Role Physical and Bodily Pain scales. Considering that we focused only on general psychological and physical health, results on General Health and Vitality scales weren't used in further analyses.

Assessment of non-respondent differences

In order to find out whether the drop-out of participants was systematic, we compared on T1 variables participants who responded in all three study waves (*N*=394) with individuals who failed to respond in the follow-ups (*N*=774), either because they did not agree to participate in the follow-up surveys or because they didn't mail back the questionnaire. No significant differences were found on age, unemployment duration, or T1 physical and psychological health. However, we found that the non-respondents in comparison to the respondents were more likely to be male (45.2 % vs. 37.8%, $p<.05$), and their mean education level was lower (4.8 vs. 5.1). Although statistically significant, the two differences were relatively small and probably did not create systematic bias in our data.

RESULTS

The correlations among the study variables, as well as the mean scores, standard deviations, score ranges for the whole sample (*N* = 394) are presented in the Appendix. However, our analyses focussed on comparing the groups showing different (un)employment patterns (see Table 1). Because of small the N we decided to omit one group (UEU) from further analyses. The analyses thus examined the differences among the UUU, UEE, and UUE groups. The basic socio-demographic characteristics of the three groups and their mean scores on physical and psychological health scales are given in Table 2.

Table 2
Means and standard deviations for the socio-demographic characteristics and health scores of three groups differing in employment pattern

Variables	Groups with differing employment pattern		
	UUU (*N*=206)	UUE (*N*=53)	UEE (*N*=113)
Age	36.4 (12.10)	29.4 (9.89)	29.9 (8.91)
Education	4.7 (1.37)	5.0 (1.23)	5.7 (1.67)
Unemployment duration at T1 (months)	48.8 (53.31)	36.8 (50.51)	17.7 (29.02)
Gender (% male)	37.4	39.6	38.4
T1 Psychological health	62.7 (24.67)	69.6 (19.61)	71.0 (21.09)
T2 Psychological health	60.0 (24.94)	65.4 (24.58)	73.6 (20.19)
T3 Psychological health	60.0 (26.51)	72.5 (22.38)	72.6 (20.95)
T1 Physical health	73.6 (22.81)	79.5 (18.46)	82.9 (17.32)
T2 Physical health	71.9 (24.83)	78.2 (21.57)	80.4 (18.77)
T3 Physical health	70.0 (25.41)	79.8 (20.38)	80.7 (18.59)

Note. Means appear without parentheses and standard deviations in parentheses.
UUU = continuously unemployed participants; UUE = participants who reemployed at T3; UEE = participants who reemployed already at T2.

Table 3
ANCOVA summary table for physical and psychological health

	F-ratio						
	Main effects and interaction			Covariates			
	Time	Groups	Time × Groups	Gender	Age	Unemployment duration	Education
Physical health	0.25	0.68	0.90	1.32	56.21**	1.32	20.40**
Psychological health	0.91	4.19*	3.00*	4.97*	13.23**	0.03	6.48**

Note: *$p<.05$; **$p<.01$.

Pronounced differences among the three groups were found in health variables measured at each of the three time points. However, this may be a confounded outcome because, as can be also seen in Table 2, the three groups differed considerably in age, education, and employment duration.

In order to examine more properly the effects of prolonged unemployment and reemployment on physical and psychological health, we analyzed the health scores of the three groups obtained at the successive time points with the

repeated-measures analysis of covariance (ANCOVA). To control for the potentially confounding influence of the socio-demographic variables, age, gender, education and unemployment duration were used as the covariates. Table 3 reports the ANCOVA summary results.

Table 3 presents the ANCOVA results for group main effects (three groups differing in employment pattern), time main effects (Time 1-3), and group by time interactions. The table also reports the effects of covariates. The significant interaction effect is necessary to attribute changes across time to the impact of prolonged unemployment, and reemployment. None of these effects were significant for the physical health, thus indicating that the prolonged unemployment and movements from unemployment to employment had no significant effects on the physical health of our participants.

However, both group main effect and the group by time interaction were significant for the psychological health. The significant main effect for groups ($F(1,358) = 4.19$; $p<.05$) means that three groups differ in their average level of psychological health, and the significant interaction effect ($F(2,358) = 3.00$; $p<.05$) denotes that changes in psychological health across time are different for the three groups. Figure 1, which plots the adjusted means, exhibits how the groups differ. The chronically unemployed group (UUU) showed a tendency to worsen their psychological health as they continued to be unemployed (although this decrement in health was not statistically significant as proved with an additional repeated-measures ANOVA analysis). However, the two groups of participants who moved into employment exhibited an increase in psychological health coinciding with the time of their reemployment: the group UEE exhibited the increase between T1 and T2, and the group UUE between T2 and T3.

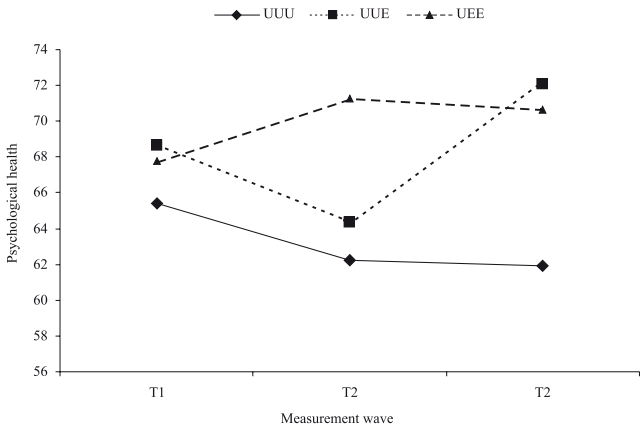

Figure 1. Psychological health of participants differing in employment patterns (adjusted means)

DISCUSSION

The goal of this study was to examine whether prolonged unemployment and reemployment differently affected psychological and physical health. This is probably the first study that examined both kinds of health phenomena within the same methodological framework and identical contextual influences. Once again, the results have clearly confirmed that psychological health depends on the participants' employment status: while the individuals who remained unemployed throughout the study did not change their self-assessed psychological health, the reemployed individuals reported amelioration of their psychological health subsequently to their transition from unemployment to employment. There was no evidence for such changes in physical health. In this study, the changes in employment status did not significantly affect self-assessed physical health. The differing results obtained for the two kinds of health variables indicate that the causation underlying the unemployment-health relationship may be different for mental-health and physical-health variables.

There might be some doubt in the validity of findings obtained with the self-assessed measures of health. Such data are often considered potentially biased, and there exist knowledgeable warnings that self-reported morbidity has limitations and can be misleading (e.g., Sen, 2002). Although, a number of studies have supported the validity of self-reported health measures (e.g., Franks, Gold, & Fiscella, 2003; Idler & Benyamini, 1997; Van Doorslaer & Jones, 2003), there is always a possibility that the self-perceived health assessment is affected by the context in which examination was done. Since our participants were recruited on the premises of the Croatian Employment Bureau, they might have a tendency to overestimate their health in order to present themselves as able-bodied job seekers. However, if provoked, such tendency would also affect the psychological health. We believe that that our procedure emphasizing that the study was conducted by an independent research institution and its results would be used exclusively for scientific purposes diminished the tendency to overestimate their health.

Another possible limitation of this study is the length of the follow-up period (two and half years between T1 and T3). While adequate to demonstrate the changes in psychological health, the period may not be sufficiently long to capture the physical health changes. It may take longer than two years for employment status transitions to show their effects on physical health. However, against this criticism and in agreement with the present longitudinal findings are the results of a large-scale cross-sectional study that used the same measures of psychological and physical health. Šverko, Maslić Seršić, and Galešić (2004) compared health status of a representative sample of unemployed persons in Croatia (characterized by high rates of long-term unemployment) with a large sample of persons drawn from the

general population. In comparison to employed people, the unemployed individuals exhibited impaired psychological health at all age levels, and in particular in the middle-age range. However, no such differences in physical health were found between the compared groups at any age level. Thus, both our cross-sectional and longitudinal evidence supports the view that unemployment differently affects psychological and physical health.

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APPENDIX

Table A.
Descriptive statistics and intercorrelations of variables (*N*=394)

Variable	M	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11
1. Gender[a]	1.6	0.49	1	2	-										
2. Age	33.2	11.30	17	62	.03	-									
3. Education[b]	5.1	1.50	2	9	.05	-.13*	-								
4. Unemployment duration at T1 (months)	36.3	47.68	0	220	.01	.44**	-.16**	-							
5. T1 Physical health	77.8	20.86	10.7	96.7	-.05	-.35**	.27**	-.17**	-						
6. T1 Psychological health	66.9	23.22	4	100	-.12*	-.24**	.19**	-.16**	.59**	-					
7. T2 Employment status[c]	0.3	0.48	0	1	-.01	-.21**	.28**	-.29**	.19**	.14**	-				
8. T2 Physical health	75.9	22.77	4	96.7	-.02	-.39**	.22**	-.19**	.52**	.40**	.15**	-			
9. T2 Psychological health	65.1	24.29	2.7	100	-.05	-.21**	.15**	-.14**	.38**	.50**	.21**	.62**	-		
10. T3 Employment status[c]	0.4	0.49	0	1	-.02	-.26**	.25**	-.23**	.17**	.13**	.61**	.14**	.20**	-	
11. T3 Physical health	75.0	23.44	0	100	-.09	-.36**	.22**	-.19**	.56**	.40**	.17**	.67**	.53**	.20**	-
12. T3 Psychological health	65.5	25.22	4	100	-.14**	-.22**	.14**	-.13**	.43**	.53**	.16**	.49**	.59**	.24**	.66**

[a]1=male, 2=female. [b] from 1 (without school) to 9 (PhD). [c]0=unemployed; 1= employed.
*p<.05; **p<.01.