DEPRESSIVE REACTIONS AS AN OUTCOME OF STRESS PROCESSES: THE STUDY ON IMPRISONMENT

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UDK: 159.94-058.56
Izvorni znanstveni rad

Primljeno: 15. 3. 2000.

Based on hypotheses of the transactional stress and coping theory, the study examines the role of individual, situational and mediating cognitive factors in accounting for depression in prison inmates. Relevant demographic and criminological measures, and self-report instruments for the assessment of several personality dimensions, situational features, and mediating processes – cognitive appraisals and coping strategies, were taken in the sample of 475 males imprisoned in Croatian penal institutions. Zung Self-report Depression Scale was administered as a short-term measure of inmate adjustment to imprisonment. Hierarchical regression procedures were performed to assess relative predictive power of particular groups of individual, situational and mediating variables, with the cognitive appraisal on event controllability taken as a moderator variable. Results showed that personality dimensions and two sets of mediating processes variables significantly contributed to the criterion variance, with both levels of perceived controllability. The total amount of variance in depression scores explained by the whole system of employed predictors was 41% and 54%, for the low and high event controllability groups, respectively. Observed moderator effects of event controllability primarily refer to the role of coping strategies, i.e., to the amount of their additive contribution, and dissimilar adaptive value of particular strategies in situations differing in the level of perceived controllability.

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The existence of huge variations in how people react to objectively similar stressful conditions has been recognized almost half a century ago (e.g. Lazarus & Eriksen, 1952, cited in Laza-

rus, 1993; Selye, 1956, cited in Thoits, 1995). Since that time, an enormous body of research has been done aiming at explaining and predicting the ways of human adaptation to various common and extraordinary life circumstances. It is generally agreed that how people experience and deal with environmental stressors have an impact on their adjustment and both psychological and somatic health. Much of the study in the area has been greatly influenced by the theoretical work of Lazarus and his associates (Folkman, Schaefer & Lazarus, 1979; Lazarus, 1993; Lazarus & Folkman, 1984; 1987; 1991).

The central role in Lazarus's cognitive mediational theory is given to the processes of *appraisal* – in which people constantly evaluate the significance of what is happening for their personal well-being, and *coping* – a person's ongoing efforts in thought and action to manage specific demands appraised as taxing or overwhelming (Lazarus, 1993). The authors speak of two main types of cognitive appraisals: *primary* – which deals with perceived importance of an event, and *secondary* – which is concerned with one's resources to counteract situational demands. It is proposed that how an event is appraised is a function of stable personal resources as well as of the specific features of the situation. Both types of appraisals are assumed to direct the ways of coping, viewed as context-specific, varying across diverse stressful encounters and over different stages of the same encounter. Its major functions are: alleviating feelings of distress (emotion-focused coping), and altering the troubled person-environment relation (problem-focused coping; Lazarus & Folkman, 1987).

According to the theory (Lazarus, 1993), cognitive appraisal and coping processes are thus critical mediators of unfavorable person-environment relations and various immediate and long-term outcomes. Hence, the dynamics of adaptation is seen as an unfolding process of *causal antecedents*, i.e. individual resources and environmental factors, *mediators*, and *effects* (psychological, physiological and behavioral indices of adjustment).

The components of Lazarus's and related stress and coping models have been tested extensively during the past few decades. There is accumulated evidence showing that personality traits and aspects of self-concept, such as self-esteem, locus of control, perceived self-efficacy, optimism, neuroticism, and anxiety, are related to how people cope with stress (e.g. Andersson, 1996; Bolger, 1990; Chang, 1998; Jerusalem & Schwarzer, 1989; Peacock & Wong, 1996). Numerous studies dealt with establishing the basic dimensions of coping (e.g. Amirkhan, 1990; Carver, Scheier & Weintraub, 1989; Endler & Parker, 1990; Falkum, Olff & Aasland, 1998; Pearlin & Schooler, 1978), exploring the efficacy of various strategies (Aldwin &

Revenson, 1987; Amirkhan, 1998; Bowman, & Stern, 1995; DeGroot, Boeke, Bonke, & Passchier, 1997; Jerusalem, 1993; Masel, Terry, & Gribble, 1996, etc.) as well as the determinants of choice of coping mechanisms in particular stressful situations (e.g. Jerusalem & Schwarzer, 1989: Parkes, 1986; Terry, 1994; Wanberg, 1997; Zeidner, 1994). Mediational role of cognitive appraisals and/or coping measures in the analyses of the relationships between personal or social resources and outcome indices has also been demonstrated by various studies (Bolger, 1990; Florian, Mikulincer, & Taubman, 1995; Jerusalem, 1993; Major, Richards, Cooper, Cozzarelli, & Zubek, 1998; Terry, Rawle, & Callan, 1995; Valentiner, Holahan, & Moos, 1994).

There is, however, considerable inconsistency in the literature on the nature of relationships among particular components of the stress and coping theory. Specific coping strategies were shown to reduce psychological symptoms in one stressful domain, but were ineffective or even detrimental when used to combat other problems (Mattlin, Wethington & Kessler, 1990; Pearlin & Schooler, 1978). Parkes (1994) states several factors potentially relevant to effective coping, including the number of strategies available to an individual, the ability to use strategies selectively to meet situational demands, and appropriate timing in the use of different strategies at different stages of a continuing stressful episode.

Several studies were designed to test Folkman et al.'s (1979) hypothesis on the effectiveness of various coping strategies being dependent upon the match or the 'Goodness of Fit' with the perceived controllability of the stressful event. The authors proposed that problem-focused coping would be adaptive in situations appraised as amenable to control or change, whereas a reliance on emotion-focused coping is considered to be maladaptive response to such events. A reverse pattern of relationships is predicted for low-control situations: the use of emotion-focused strategies is expected to be more adaptive than problem-focused ways of coping. However, research evidence provides only partial support for the 'goodness of fit' hypothesis (Bowman & Stern, 1995; Conway & Terry, 1992; Masel et al., 1996; Vitaliano, DeWolfe, Maiuro, Russo & Katon, 1990; Terry, 1994; Terry & Hynes, 1998; Wanberg, 1997).

Unlike Lazarus's transactional view, some authors suggest that in prediction of coping and its outcomes, stable individual and environmental resources, as well as situational factors should be taken into account as separate and identifiable sources of influence (Parkes, 1986; Terry, 1994; Valentiner et al., 1994). Moos and Schaefer (1993) proposed a model of coping where personal and social resources relate to subsequent mental health both directly and indirectly through adaptive coping responses.

The present study attempts to examine some predictions from transactional theory of stress and coping applied in prison setting. The experience of imprisonment is likely to be followed by feelings of intense and enduring stress since prison inmates are, from the outset, faced with a great variety of demands, deprivations and differences from outside life. As Silverman and Vega (1991) state, prison is perhaps the most unnatural environment in which a human being can be placed. It is characterized by lack of privacy, regimentation, depersonalization, confinement, sexual deprivation, etc. Besides most obvious features, like isolation and excommunication, imprisonment frequently entails collateral stressors such as loss of employment, disruption of family life, and stigmatization.

Conditions of extreme restrictions and narrowed potential for control over the events and their outcomes, and the permanent exposure to highly intensive stressors, therefore, make prison setting very stimulating and suited to the study of coping processes. Moreover, criminological and penological research on the impact of imprisonment on behavior and adaptation of incarcerated offenders fails to prove the assumptions on generally deleterious consequences of the prison life (Bonta & Gendreau, 1990; Bukstel & Kilmann, 1980; Goodstein & Wright, 1989; Zamble & Porporino, 1988) as postulated by prisonization theory and the 'pains of imprisonment' model on the effects of incarceration (see e.g., DiIulio, 1991; Johnson & Toch, 1988). Indeed, the evidence points to considerable inter- and intraindividual differences in perceptions and reactions of inmates to the conditions of prison life (e.g. Biggam & Power, 1997; 1999; Bonta & Gendreau, 1990; Koenig, 1995; Sappington, 1996; Zamble, 1992). Nevertheless, there is little systematic research on the prison experience done within stress and coping framework, other than the work of Zamble and Porporino (1988, 1990; Zamble, 1992).

The aim of this study was to examine the relative contribution of the individual, situation, and mediating cognitive factors in accounting for depression as a short-term measure of inmate adjustment to imprisonment.

Previous analyses (Buško & Kulenović, 1995) showed that specific stressors within the prison environment did not particularly strongly determine either the choice of coping mechanisms or the way prisoners appraised certain aspects of selected stressful encounters. These results suggested that the prison setting could be regarded as a sufficiently specific or uniform context, that is, that selected categories of stressors are rather similar with reference to the way they are perceived and handled by prisoners.

METHOD

Participants

The study was conducted on a sample of 475 males imprisoned in two minimum (N=136), two medium (N=132), and a maximum (N=207) security penal institution in Croatia. The average age of subjects was 34,5 years (SD=10,41), and roughly 68% of the sample were first-time offenders. The amount of time served in the facility ranged from about 1 month to 9 years. The education level for the majority of participants was elementary school or less (63.8%), 32.6% had partial or complete secondary education, and 2.9% of the sample had achieved higher education levels. There were 37.5% of married, and 65.6% of subjects with one or more children. Sentence length for 18.9% of the sample was 12 months or less, 37.3% of subjects served sentences that lasted up to 3 years, 29.1% had terms from above 3 to 8 years, and 14.8% of the sample served more than 8 year prison terms. The demographic and criminological characteristics of the sample mainly correspond to those found in the male prison population in Croatia (see Knezović, Kulenović, Šakić, Zarevski & Žužul, 1989).

Instruments

Variables included in the study were selected so to cover all the main components of the stress and coping model. Antecedent factors were described by groups of *person variables* (demographic, criminological, and personality characteristics), and some *situational variables* (content, duration, and novelty of stressful events). Central mediating processes were represented by measures of main types of cognitive appraisals and the ways of coping.

Demographic variables comprised age, education level (defined on a 5 point scale, from 1 = no formal education, to 5 = two years of university level and more), and two variables taken as a measure of family concern – marital status (as a binary variable – married versus categories of unmarried, widowed, and divorced), and number of children.

Criminological variables included sentence length (in months), number of convictions (first-time offenders versus multiple convicts), previous time in prison (in months), and attitude toward sentence (subject's appraisal on whether the sentence he serves is exceeded or merited with regard to the offense he committed).

Personality characteristics. Three unidimensional scales for the assessment of some aspects of self-concept were administered (Bezinović, 1988): *Perceived Incompetence scale* consisted of 12 items, where higher scores on the scale reflect a sense of

inadequacy or uncertainty regarding one's own capabilities ($\alpha = .80$); Adapted version of the *Fear of Negative Evaluation scale* (Leary, 1983, cited in Bezinović, 1988) consisted of 10 items and aimed at measuring the extent to which others are perceived as sources of one's own apprehension and discontent ($\alpha = .72$); and *Externality scale* consisted of 10 items, where high scores reflect external personal orientation according to which the outcomes of person's behavior are determined by chance, destiny, luck or coincidence ($\alpha = .85$). Items on each scale were rated from 1 (definitely true) to 4 (definitely false). *Cornell Index* (Weider et al., 1945, cited in Momirović & Kovačević, 1970) was also administered to measure personality traits related to neuroticism. Scores on this inventory were defined as the results obtained on each of three second-order neurotic syndrome factors: *Anxiety Syndrome Factor* (F1, $\alpha = .95$), *Psychosomatic Syndrome Factor* (F2, $\alpha = .95$), and *Aggressiveness Syndrome Factor* (F3, $\alpha = .88$).

Sources of stress. Content of stressful events were examined by a list of potential sources of problems in prison classified into the following 7 categories (see Buško & Kulenović, 1995): accommodation, relations with other prisoners, institutional regime, relations with prison staff, contacts with the outside, vagueness in institution, and health problems. Subjects were asked to choose one of the presented and thoroughly described categories of problems – appraised as most stressful in the last two weeks.

Furthermore, subjects were asked to rate the duration of stressful events (0 – they have almost gone, 1 – they still persist), and the degree to which they were surprised by the problems within selected category (on a scale from 0 – I expected them, not surprised at all, to 3 – I was totally surprised, didn't expect them at all).

Cognitive appraisals. Primary appraisal was defined as the perception of stress intensity with reference to the selected category of problems (Buško & Kulenović, 1995), and measured by a 4-point scale (0 – didn't make me upset at all, 3 – it disturbed me very much). Secondary appraisal was defined as the perception of controllability of selected category of stressful events, and assessed by two 4-point scales related to perceived impact on the occurrence as well as the outcome of stressful event (0 – no impact, 3 – thorough).

Coping. Coping with prison stressors was assessed by an inventory composed of nine situation-specific 4-item coping scales (Buško & Kulenović, 1995), measuring: *Information seeking* ($\alpha = .77$) – describing gathering information on the event, asking for advice and help from others; *Planning* ($\alpha = .61$) – comprising mainly cognitive efforts directed to resolving the

problem; *Direct actions* (α=.70) – that involves undertaking of concrete, practical actions aimed at problem solving; *Focus on emotions* (α=.51) – referring to the attempts at relieving distressing emotions by venting of feelings, sleeping, consuming medicine, food, drinks, etc.; *Passivization* (α=.55) – reflecting an opposition to active coping, includes resignation, waiting for problems to be resolved by themselves; *Fatalism and religion* (α=.71) – turning to religion, confidence to the Act of God, or fortune; *Reinterpretation* (α=.57) – which describes efforts to create predominantly positive meaning on the stressful event; *Wishful thinking* (α=.66) – containing desires, daydreaming and fantasies on change or withdrawal of stressful event; *Humor* (α=.79) – concerning attempts at lessening the relevance and severity of the event by introducing humor and recognizing amusing sides of the situation. On the items of this inventory subjects were to appraise how often they used each of the presented ways of coping in previously selected stressful situations (on the scale from 1 – not at all, to 4 – often) within the two-week period. Scores on each coping scale were computed by summing the answers on corresponding items.

Outcome measure. Croatian version of the *Self-Rating Depression Scale* (Zung, 1965) was administered as a short-term measure of inmate adjustment to the conditions of prison life. The scale consists of 20 simple items reflecting depressive symptomatology. Subjects were to appraise each item on a 4-point scale as to how it applied to them within the time interval limited to the last two weeks (1 – a little of the time, 4 – most of the time). Scale scores were defined as linear combinations of ratings given for each of 20 items (α=.79).

Procedure

The data were gathered in one maximum (Lepoglava), two medium (Požega and Turopolje), and two minimum security (Lipovica and Valtura) Croatian penitentiaries. The only criterion for the selection of participants was the basic literacy. Participants were guaranteed that their answers would be treated with full confidentiality and that they had the option of withdrawing at any time. However, of all the inmates contacted only seven refused to participate or gave up during the examination. Instruments were administered in groups of 10-20 subjects. Participants completed the instruments following specific instructions given with each of the questionnaires, along with the supervision and, when needed, additional help from the examiner. Data gathering was conducted by the first author of the paper, in cooperation with psychologists employed in the institutions. The entire procedure lasted 90-120 minutes per group including a short pause.

RESULTS

To assess relative contribution of selected groups of predictor variables in accounting for state depression scores we performed hierarchical regression procedures. The main descriptive statistics for all the variables included into analyses are given in Table 1.

➲ TABLE 1
Means (M) and standard deviations (SD) of measures

Variable	M	SD	N
Demographic characteristics			
Age	34,54	10,41	474
Marital status[a]	0,38	0,49	467
Number of children	1,08	1,19	468
Education level	2,24	1,18	472
Criminological characteristics			
Sentence length (in months)	50,18	45,14	473
Number of convictions[b]	1,32	0,47	475
Attitude toward sentence[c]	1,24	0,43	469
Previous time in prison (in months)	14,37	36,86	469
Personality measures			
Fear of negative evaluation	22,29	5,41	469
Perceived incompetence	21,93	6,21	469
Externality	22,52	6,98	469
Anxiety (Cornell Index F1)	14,99	10,96	457
Psychosomatics (Cornell Index F2)	9,32	9,37	456
Aggressiveness (Cornell Index F3)	6,49	4,76	457
Situational/cognitive appraisals			
Stress intensity	2,17	0,93	467
Impact on event occurrence	1,06	1,06	463
Outcome control	1,05	0,96	465
Novelty of event	1,46	1,2	465
Duration of event	0,69	0,46	465
Ways of Coping			
Information seeking	9,56	3,54	465
Planning	10,5	3,02	465
Direct actions	11,23	3,15	465
Focus on emotion	7,5	2,54	464
Passivization	9,73	3,1	465
Fatalism and religion	8,95	3,58	465
Reinterpretation	11,12	2,96	465
Wishful thinking	10,43	3,17	465
Humor	8,58	3,46	465
Criterion			
Depression	43,68	9,07	470

Note. N slightly varies due to incomplete data, [a] unmarried, widowed, divorced = 0, married = 1; [b] first-time offenders = 1, multiple convicts = 2; [c] exceeded = 1, deserved = 2.

Prior to regression analyses we conducted several control statistical procedures to determine the position of particular variables within the analyses and to ascertain the legitimacy of doing the analyses on the total sample.[1] Thus, the differences on each coping measure with regard to the type of stressors (7 categories of problems) and the amount of time served (defined in 3 levels: less than 2 months, 2-10 months, more than 10 months in prison) were tested by the series of two-way analyses of variance. Main effects of the type of stressor were detected just in two out of nine analyses conducted, namely, for information seeking ($F=3.01$, $df=6$, $p<.01$) and focus on emotion ($F=3.54$, $df=6$, $p<.01$) coping scales. No significant main effect of time nor time by stressor interaction were found in any of the analyses. Further, one-way analyses of variance were done to test the differences on the criterion measure among the groups formed according to the type of stressors selected, $F(6,452) =3.91$, $p<.001$, as well as with regard to the prison where the subjects served their sentences, $F(4,465) =9.23$, $p<.001$. Although statistically significant in both cases, few intergroup differences were found. According to the Scheffe test ($p<.05$), depression scores for health problems were found to be somewhat higher than for two (contacts with the outside and relations with other prisoners) remaining categories of stressors. Likewise, depression scores for the group of inmates serving the sentence in one minimum security prison were lower in comparison to the groups serving in another minimum, one medium, and a maximum security prison. In addition, computed were the correlations of the amount of time served (in months) with all the coping measures and the criterion, yet all of them proved to be insignificant (ranging from -.010 to .097). Based on results of these control analyses it was concluded that neither specific categories of stressors, length of stay in prison nor prison security level are so influential in determining coping and depression scores to be a substantial methodological limitation for doing regression procedures on the total sample.

Regression analyses were executed through several previously specified steps, and the blocks of variables that were entered into equation at the particular steps, and their sequence, were defined according to the hypothesized status of these variables within the stress and coping model. Accordingly, contribution of the groups of antecedent variables was assessed prior to additive contribution of mediating processes variables, with precedence given to stable individual characteristics. Within each step, predictor variables are entered together into analysis which provides the means for control of their interrelationships.

Hence, the first step of the analysis included the set of demographic characteristics: age, education level, marital status, and number of children; criminological variables, i.e. sentence length, number of convictions, previous time in prison, and attitude toward sentence, were entered at the second step; third step involved personality, i.e. three self-concept measures; fourth step comprised situation variables – duration and novelty of stressful events, and the measures of cognitive appraisals – stress intensity and perceived impact on event occurrence; finally, nine coping measures were entered at the fifth step of the analysis. Neurotic syndrome measures derived from *Cornell Index* were entered into regression equation as a separate block of variables at the last step of the analysis. Namely, because of, in our opinion, inflated correlations obtained between *Cornell Index* variables and the criterion, which is at least partly due to content similarity or overlapping between the scales used, block of personality variables appears to account for illusory high proportion of criterion variance. Obviously, under these conditions the chances for potentially significant additive effects of variables at further steps of the analysis to be proved would be considerably reduced.

Also, in accord with research findings on moderator effects of cognitive appraisal on event controllability, and the 'Goodness-of-Fit' hypothesis (Folkman et al., 1979; Moos & Schaefer, 1993; Vitaliano et al., 1990, etc.), the analyses were performed separately for the groups of subjects with low (scores 0 – no impact, and 1 – a little) and high (scores 2 – large, and 3 – thorough) appraisals of controllability of outcome of stressful events. Intercorrelations of measures of personality, appraisals, coping, and the criterion, for high and low control groups, is presented in Table 2.[2]

The main results of the regression analyses are summarized in Table 3. For easy reference, along with multiple correlation coefficients (R) and successive changes in squared multiple correlations (ΔR^2) computed at each step of the analysis, the table contains standardized regression coefficients (β) that proved significant, and which refer to the variables entered into equation at particular steps, solely, as well as simple zero-order correlations between these variables and the criterion (r). All significant beta values obtained at the final step of the analysis (β^a) are given in the last columns of the Table 3. Also, presented are adjusted squared multiple correlation values for the equations derived at the final steps of the analyses (Total $_cR^2$), with corresponding significance test.

The groups of demographic and criminological characteristics do not account for statistically significant portion of depression variance, which is true for both levels of appraised event controllability. Considerable improvement in the prediction of state depression scores was gained by the inclusion

TABLE 2
Intercorrelations among the measures of personality, appraisals, coping, and the criterion

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Personality measures																				
1. Fear of negative evaluation	-	,65	,52	,52	,31	,41	,16	,18	,15	,28	,19	,19	,01	,33	,14	,18	,14	,28	,08	,46
2. Perceived incompetence	,56	-	,56	,60	,43	,60	,15	,18	,15	,31	,08	-,03	-,11	,35	,17	,26	,09	,25	,08	,46
3. Externality	,34	,50	-	,38	,23	,42	,16	,16	,17	,17	,21	,03	,04	,23	,27	,37	,22	,35	,21	,23
4. Anxiety (F1)	,45	,53	,39	-	,80	,84	,19	,07	,18	,35	,23	-,03	-,11	,40	,09	,26	,01	,28	,07	,64
5. Psychosomatics (F2)	,20	,37	,25	,76	-	,75	,15	-,04	,08	,27	,12	-,05	-,02	,38	,07	,20	-,05	,24	,12	,61
6. Aggressiveness (F3)	,29	,38	,38	,71	,61	-	,14	,08	,12	,36	,17	-,03	-,03	,41	,10	,22	,02	,28	,07	,60
Situational/cognitive appraisals																				
7. Stress intensity	,27	,09	,02	,24	,22	,04	-	,08	,44	,23	,12	,12	,06	,15	-,06	,13	,02	,30	-,05	,30
8. Impact on event occurrence	,09	,11	,01	,16	,07	,12	,01	-	,13	,06	,18	,03	,11	,17	,15	,21	,13	,12	-,06	,04
9. Novelty of event	,13	,03	,03	,20	,18	,09	,38	,04	-	,21	,32	,08	,20	,23	,07	,33	,11	,24	-,19	,21
10. Duration of event	,13	,02	,03	,19	,14	,16	,37	,03	,14	-	,15	,03	-,06	,13	-,01	,11	-,04	,10	-,16	,34
Ways of Coping																				
11. Information seeking	,23	,08	,12	,22	,21	,06	,27	,08	,31	,06	-	,47	,54	,40	,18	,39	,34	,32	,12	,10
12. Planning	,23	-,05	,11	,11	,13	,07	,26	,12	,18	,13	,51	-	,45	,26	,09	,11	,47	,32	,19	-,05
13. Direct actions	,11	-,12	,08	,02	,01	-,01	,22	,12	,14	,14	,54	,65	-	,22	,14	,26	,39	,28	,17	-,21
14. Focus on emotion	,21	,27	,23	,30	,26	,33	,12	,22	,07	,15	,19	,22	,18	-	,38	,33	,32	,42	,26	,31
15. Passivization	,14	,13	,27	,14	,02	,12	,02	,09	-,06	,00	,03	,08	,03	,34	-	,32	,39	,32	,28	-,06
16. Fatalism and religion	,25	,23	,41	,29	,15	,14	,09	,10	,12	-,09	,24	,19	,16	,27	,42	-	,39	,33	,13	,12
17. Reinterpretation	,21	,02	,22	,13	,07	,08	,20	,19	,03	,06	,41	,47	,48	,33	,32	,38	-	,45	,32	-,14
18. Wishful thinking	,29	,11	,26	,28	,22	,22	,28	,02	,19	,15	,28	,42	,32	,41	,33	,42	,47	-	,28	,30
19. Humor	-,08	-,05	,08	-,01	,02	,09	-,01	-,05	-,08	,14	,05	,20	,13	,20	,20	,10	,27	,26	-	-,05
Criterion																				
20. Depression	,32	,39	,18	,56	,54	,41	,30	,04	,16	,24	,14	,10	-,03	,20	-,04	,05	-,03	,18	-,10	-

Note. r's for high (N=135) and low (N=330) perceived outcome control groups are given above and below the diagonal, respectively.
All coefficients r > |,17| and r > |,11| are significant with p <,05, for high and low control groups, respectively.

Low perceived outcome control				High perceived outcome control			
Predictor sets of variables	β	r	β^a	Predictor sets of variables	β	r	β^a
Demographic characteristics				Demographic characteristics			
R=.11 R^2=.01				R=.20 R^2=.04			
Criminological characteristics				Criminological characteristics			
R=.18 ΔR^2=.02				R=.26 ΔR^2=.03			
Self-concept measures				Self-concept measures			
Fear of negative evaluation	.13*	.31		Fear of negative evaluation	.32**	.46	.30**
Perceived incompetence	.36***	.39	.18**	Perceived incompetence	.31**	.46	
R=.46 ΔR^2=.18***			R=.55	ΔR^2=.23***			
Situational features and Cognitive appraisals				Situational features and Cognitive appraisals			
Stress intensity	.17**	.30	.12*	Duration of events	.20*	.34	
Duration of events	.13*	.24	.10*	R=.61 ΔR^2=.07*			
R=.52 ΔR^2=.07***							
Ways of coping				Ways of coping			
Humor	-.12*	-.10	-.11*	Direct action	-.22*	-.21	-.24**
Direct actions	-.15*	-.03		Wishful thinking	.30**	.30	.24**
R=.57 ΔR^2=.05*				Reinterpretation	-.22*	-.14	
				R=.72 ΔR^2=.15***			
Cornell index				Cornell index			
Psychosomatics (F2)	.25***	.53	.25***	Psychosomatics (F2)	.36**	.61	.36**
Anxiety (F1)	.23*	.55	.23*	R=.80 ΔR^2=.12***			
R=.68 ΔR^2=.13***							
Total $_cR^2$=.41; F=9.01***; N=330				Total $_cR^2$=.54; F=6.55***; N=135			

*p<.05; **p<.01; ***p<.001; ΔR^2 increment in R^2 after the inclusion of a new block of predictors in the regression equation; ß^a significant beta weights at the final step of the analysis

Table 3
Hierarchical regression analyses on state depression scores with different levels of appraised controllability

of the measures of self-concept into regression equation, which in the group with low perceived controllability equals 18% (p<.001), and in the group with high perceived outcome control equals 23% (p<.001) of criterion variance. The block of situational and cognitive appraisal variables explains additional 7% of variance in depression scores with low (p<.001) and high (p<.05) appraised controllability. Ways of coping account for further 5% of criterion variance with low level (p<.05), and 15% (p<.001) with high level of perceived controllability. Subscales of Cornell Index included into equation at the last step of the analysis, contributed to the explanation of state depression variance as well, with both controllability levels (13%, p<.001, and 12%, p<.001, respectively). The total amount of depression variance explained by the whole system of employed predictor variables was 41% and 54%, for the low and high controllability groups, respectively.

Of the self-concept measures used, fear of negative evaluation and perceived incompetence scales appear as significant predictors of state depression scores with both controlla-

bility levels. In the group with low perceived control, the contribution of fear of negative evaluation scores gets statistically insignificant at the very next step of the analysis (from β =.13, $p<.05$, to β =.05, ns), which could probably be attributed to the obtained correlation of this scale with the appraisal of stress intensity (r =.27). On the other hand, beta coefficient for the perceived incompetence in this subsample (β=.36, $p<.001$) remains rather high even after the coping measures were entered into analysis (β =.33, $p<.001$), and is significant also at the final step of the analysis (β^a =.18, $p<.01$). Furthermore, with low controllability level, state depression is related to higher intensity of stress experienced (β =.17, $p<.01$) as well as to chronicity of events (β =.13, $p<.05$), and the beta values for these variables are also significant in the final regression equation (β^a =.12, $p<.05$, and β^a =.10, $p<.05$). According to the significant predictors within the set of coping variables, it is shown that, with low perceived control, using humor contributes to lower depression scores (β = -.12, $p<.05$), whereas the obtained negative contribution of direct actions scale (β = -.15, $p<.05$) obviously reflects a supressor effect since this variable is unrelated to the criterion (r = -.03).

With high controllability level, fear of negative evaluation significantly and positively contributes to the state depression scores (β =.32, $p<.01$), and the beta value for this scale is equally high at the final step of the analysis as well (β^a =.30, $p<.01$). Obtained, also positive contribution of perceived incompetence scale (β =.31, $p<.01$), in this subsample gets insignificant upon the inclusion of the set of coping variables into the analysis (β =.15, ns). The value of beta coefficient for duration/chronicity of events as the only significant predictor from the set of situation and cognitive appraisals variables, also decreases under the level of significance after the coping measures are entered (from β =.20, $p<.05$, to β =.15, ns). Finally, the data on additive contribution of coping measures show that, in situations appraised as controllable, direct actions (β = -.22, $p<.05$) and reinterpretation (β = -.22, $p<.05$) strategies are related to lower, and wishful thinking (β = .30, $p<.01$) to higher state depression scores. After the inclusion of the last block of variables into analysis, scores on direct actions (β^a = -.24, $p<.01$) and wishful thinking (β^a =.24, $p<.01$) still have significant and equally strong contribution to the state depression variance.

DISCUSSION

This study was conceived as an attempt at the application of transactional stress and coping theory to the analyses of the determinants of inmate adjustment to imprisonment. We tried to examine relative importance of particular individual and situational factors, and the processes of cognitive appraisals

and coping, in accounting for depression, taken as a short-term measure of inmate adjustment to the conditions of prison life. The presented findings generally support basic assumptions proposed by Lazarus and Folkman (1984, 1987) on the relevance of the constructs of cognitive appraisals and the ways of coping in explaining the variability in adaptational outcome indices. It is noteworthy that neither demographic nor criminological variables employed, as rather stable individual characteristics, had any significance in the prediction of state depression variance. This also applies to the more global environmental features, i.e. security level of the institution and the time already served in the facility, as commented within the section on preliminary statistical analyses. On the contrary, both sets of mediating processes variables, along with personality dimensions, significantly contributed to the criterion scores. These results are consistent with those of Zamble and Porporino (1988) who proved the predominance of measures of appraisals and coping behavior over the set of background factors in explaining the changes in several indices of inmate adaptation.

Hence, our findings seem to confirm the usefulness of the stress and coping framework in the research context focusing on prison experience, as well as its superiority over the more prevailing approaches existing in criminological and penological literature, especially those relying on prisonization theory and its deprivation and/or importation models (see DiIulio, 1991; Goodstein & Wright, 1989). Moreover, the results of this study give some support to the hypotheses on the mediating role of coping mechanisms, and the moderating role of the cognitive appraisal on event controllability in clarifying the relationships between personal resources or vulnerability factors and indices of adaptation.

From the results described above, it is evident that there are some differences in the structure of significant predictors, that is, in their relative "power" and in the nature of their contribution in accounting for state depression scores, depending on the level of appraised event controllability. Those differences primarily relate to the role of coping strategies. First, according to the results outlined in Table 3, unique additive contribution of the set of coping variables to the state depression variance is somewhat larger with a high level of appraised controllability (15% versus 5% with low appraised control). Second, according to the data on changes in beta values at particular steps of the analyses, the results for the high event controllability group seem to give more grounds to the assumption of mediating role of coping strategies. Third, the most obvious differences between the results obtained for these two groups refer to the 'adaptive value' of particular strate-

gies as a function of the level of perceived event controllability. As it was shown, lower state depression scores were related to the use of humor in situations perceived to be less amenable to control, and to the use of direct actions and reinterpretation in more controllable situations. Likewise, scores on wishful thinking scale were positively related to depression only in the group with high perceived outcome control.

The data on differential predictive value of coping measures with regard to the level of event controllability are consistent with the work of Pearlin and Schooler (1978) and Valentiner et al. (1994) who provided evidence for the higher importance of coping mechanisms in determining the outcomes of more controllable stressful events, with personality and social resources being more influential in situations less amenable to control. In addition, our data seem to support Valentiner et al.'s (1994) findings on the mediational effects of coping emerging only in situations appraised as controllable.

Furthermore, the pattern of results described above is to some extent congruous with the 'Goodness of Fit' hypothesis of coping effectiveness (Folkman et al., 1979). Provided that the use of direct actions and reinterpretation, according to the functional distinction, can be regarded as problem-focused strategies, and humor and wishful thinking as emotion-focused strategies, our results speak in favour of the assumptions on differential adaptiveness of problem- and emotion-focused ways of coping depending on the perceived controllability of an event. There was, however, no support for the expectation that the use of problem-focused strategies would be maladaptive in low control situations.

Although there is some evidence for the adverse effects of problem-solving coping in situations perceived as uncontrollable (e.g. Terry & Hynes, 1998; Wanberg, 1997), our results are in line with findings from several studies showing no relationship between problem-focused strategies and adaptation in low control situations (Bowman & Stern, 1995; Conway & Terry, 1992; Vitaliano et al., 1990). Besides, studies done on different samples and with regard to diverse stressors, indicated beneficial effects of problem-reappraisal coping irrespective of event controllability (Bowman & Stern, 1995; Masel et al., 1996; Terry & Hynes, 1998), arguing for the conceptual differentiation among problem-focused strategies. A distinction between avoidant-type and emotional approach strategies has also been proposed (Terry & Hynes, 1998) since the latter type of coping was suggested to be moderated by event controllability, whereas escapism, wishful thinking and self-denigration, as avoidant strategies, were generally found to be linked to poor adjustment regardless of the level of appraised control (e.g. Conway & Terry, 1992; Felton & Reven-

son, 1984; Masel et al., 1996). Our results are, however, more congruous with those of Vitaliano et al. (1990) who found positive relations between emotion-focused coping (defined by wishful thinking, avoidance, and self-blame scales) and depression, but only in situations appraised as changeable. Similar depression – wishful thinking relation in people confronted with situations appraised as changeable was also reported by Coyne, Aldwin, and Lazarus (1981, cited in Vitaliano et al., 1990).

Despite certain empirical evidence in favour of Goodness-of-Fit model of coping effectiveness, considerable disparity obviously exists among various findings on the relationships among coping, control, and adjustment. Overall, the present study results add to the accumulated research evidence suggesting that the extent of hypothesized moderator effects of event controllability appears to be dependent on the type of stressful situations examined, specific criteria of adjustment, and the particular coping strategies utilized (see e.g. DeGroot et al., 1997; Mattlin et al., 1990; Wanberg, 1997).

Yet, it should be noted that the range and strength of coping-adjustment relationships found in this study are rather modest. Of the nine coping strategies used, only four proved to have any predictive value in this context. Of course, this could at least partly be attributed to substantial and expectable correlations obtained among particular coping measures (see Table 2), as well as to the relatively large total number of predictor variables included in the analyses. However, apart from these methodological reasons, other explanations more related to the nature of stressful situations and population examined could also be offered. Namely, there are some common features shared by the majority of potential stressors in prison environment. Many problems of prisoners, be they related to the conditions of institutional life or deprivations caused by imprisonment itself, are actually unsolvable since they are embodied in the nature of prison sentence. On the other hand, institutional rules and ordinary conditions of prison life are undoubtedly powerful determinants of prisoners' behavior. As the prison settings are less varied than conditions on the outside, so the range of available coping options seems to be more limited, and the behavior of inmates more uniform.

In this context the findings of Zamble and Porporino (1990) demonstrating substantial coping deficits among prisoners are also noteworthy. In addition, Cooper and Livingston (1991) showed that the extensive use of coping mechanisms in a sample of long-term prisoners was, if anything, associated with an increased level of depression.

Having in mind the situational factors suggested, and other research evidence, the data on the effectiveness of coping processes obtained in our study, including previously com-

mented results on moderator effects of perceived event controllability, in our opinion, should not be underestimated.

Finally, some methodological problems and limitations of this study should be mentioned. These are primarily related to inability to draw inferences about the direction of relationships due to the cross-sectional nature of the study. Further limitation refers to the possibility of inflated correlations among the measures since all the measures used in the study were self-report. This problem particularly applies to the already stated partial content overlap between neurotic syndrome measures and the criterion.

NOTES

[1] Detailed data on the control statistical analyses can be obtained from the authors.

[2] Complete intercorrelation matrix including demographic and criminological data is available from the authors.

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Depresivnost kao rezultat procesa stresa: istraživanje utjecaja zatvorske kazne

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U skladu s pretpostavkama transakcijske teorije stresa i suočavanja, istraživanje se bavi ulogom individualnih i situacijskih čimbenika te posredujućih kognitivnih mehanizama u objašnjenju depresivnih reakcija osuđenih osoba. Na uzorku od 475 osoba muškoga spola osuđenih na izdržavanje kazne u kaznenim zavodima u Hrvatskoj prikupljeni su podaci o općim demografskim i kriminološkim obilježjima te primijenjeni instrumenti za procjenu nekih osobina ličnosti, situacijskih svojstava te posredujućih procesa – kognitivnih procjena i načina

suočavanja sa stresom. Zungova skala depresivnosti poslužila je kao kratkoročna mjera prilagodbe osuđenih na uvjete izdržavanja kazne. Hijerarhijskim regresijskim postupcima procijenjena je relativna prediktivna snaga pojedinih skupina individualnih, situacijskih i posredujućih čimbenika pri čemu je mjera kognitivne procjene o mogućnosti kontrole događaja rabljena kao moderator varijabla. Značajan aditivni prinos objašnjenju depresivnosti utvrđen je za dimenzije ličnosti i dva skupa varijabla posredujućih procesa, uz obje razine procijenjene kontrolabilnosti. Ukupna količina kriterijske varijance objašnjene cijelim skupom primijenjenih prediktora iznosi 41 i 54 posto za skupine s niskom i visokom razinom kontrolabilnosti događaja. Opaženi moderator efekti procjene o mogućnosti kontrole odnose se većinom na ulogu načina suočavanja, količinu njihova aditivnog prinosa te različitu adaptivnu vrijednost pojedinih strategija, ovisno o razini procijenjene kontrolabilnosti.

Depressivität als Folge von Stress: eine Untersuchung zur Auswirkung von Gefängnishaft

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In Anlehnung an die Grundsätze der Transaktionstheorie über Stress und Auseinandersetzung mit Stress, beschäftigt sich diese Untersuchung mit der Rolle individueller und situativer Faktoren sowie vermittelnder kognitiver Mechanismen bei der Erklärung depressiver Reaktionen bei inhaftierten Personen. Über insgesamt 475 männliche Inhaftierte, die zu Gefängnishaft in verschiedenen kroatischen Strafanstalten verurteilt sind, sammelte man Angaben zu allgemeinen demographischen und kriminologischen Merkmalen. Des weiteren wurden Ermittlungsinstrumente angewandt, um bestimmte Persönlichkeitsmerkmale, situative Eigenschaften und vermittelnde Vorgänge, d.h. kognitive Einschätzungen der Stresssituation sowie die Art und Weise der Auseinandersetzung damit offen zu legen. Die Zung'sche Deppressivitäts-Skala diente hierbei als kurzfristiges Ermittlungsinstrument, um die Anpassung der Verurteilten an die Gefängnishaft zu messen. Aufgrund hierarchischer Regressionsanalysen wurde die relative Prädiktabilität individueller, situativer und vermittelnder Faktoren ausgewertet; die kognitive Einschätzung der individuell jeweils möglichen Kontrolle über die Ereignisse diente hierbei als Variablen-Moderator. Es erwies sich, dass bestimmte Persönlichkeitsdimensionen sowie zwei Variablengruppen aus der Gruppe der vermittelnden Vorgänge, ferner die

Einschätzungen zur eigenen Kontrollfähigkeit wesentlich zur Erklärung der Depressivität beitragen. Die Kriterienvarianz, die anhand einer ganzen Reihe von Prädiktoren erklärt wird, beträgt insgesamt 41% und 54% in Bezug auf Gruppen mit geringer und mit großer Kontrollfähigkeit. Der beobachtete Moderator der Einschätzung der eigenen Kontrollfähigkeit bezieht sich hauptsächlich auf die Art der Auseinandersetzung mit Stress, auf das Ausmaß ihres additiven Beitrags sowie auf den unterschiedlichen Adaptationswert einzelner Strategien, je nach Umfang der eingeschätzten eigenen Kontrollfähigkeit.