CONSTRUCTION AND VALIDATION OF COGNITIVE STRESS APPRAISAL QUESTIONNAIRE

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ABSTRACT

The military makes a challenging context for study of stress in humans. The authors set to compose a cognitive stress appraisal questionnaire adjusted to military environment and military-specific problems, then to test its psychometric properties and, finally, to determine the relationship between cognitive appraisal of stress and some personality characteristics.

The questionnaire was administered with 123 young servicemen at their specialist training in Rijeka. At pre-testing, te respondents (N=50) were asked to describe stressful situations they encountered while doing their term of service. To the situations yielded and then analysed were added situations described in reference to create a 26-item questionnaire describing stressful situations. Also administered was the three-part Cognitive Stress Appraisal Questionnaire, with 26 tems placed in the centre and supplemented with Likert scales placed on the left and right side respectively, to measure stressfulness and controllability. The respondents' task was to rate stressfulness and controllability for each of 26 situations. In addition, the EPQ and STAI questionnaires were administered.

Analysis of metric properties of the Cognitive Stress Appraisal Questionnaire revealed the following:

a) Factor validity of the stressfulness questionnaire yielded 3 factors, based on which 3 sub-scales of stressfulness were created:

1) deprivation of one's habits, life standards and style (alpha=0,90)

2) physical and psychological exertion involved in training (alpha=0,85)

3) separation (alpha=0,72)

b) Reliability of the questionnaire was found high (alpha= 0,93), allowing the use of global index of stressfulness

c) Factor validity of the controllability questionnaire was tested in the same way as the stressfulness questionnaire, and yielded 1 factor

d) Reliability of the controllability questionnaire was high too: (alpha=0,96), allowing thus the use of the global controllability index

e) Analysis check-out revealed the expected high positive correlation between the stressfulness questionnaire and the three sub-scales, whereas the correlation between controllability and stress was found statistically significant and highly negative. Controllability was negatively correlated with the stress subscales, the highest figure being the correlation with the second factor, somewhat lower the correlation with the first factor, and the lowest with the third factor.

f) No association was found between personality characteristics in the EPQ questionnaire and cognitive appraisal of stress, but there it was between anxiety as a personality trait and cognitive appraisal of stress by young servicemen

Studies of the kind bear considerable practical value for the military, and the results obtained recommend further research of peace-time stress in young servicemen.

Introduction

The study is based on the Richard S. Lazarus stress model (1985), defining stress as an individual-environment relationship perceived as over-demanding and threatening his/her wellness. Therefore, stress is the discrepancy between the demands and the individual's perception of his/her abilities. According to this model, the intensity of reactions to stressful arousals is by large a function of subjective perception of the situation, or of cognitive appraisal as a key intervening variable (along with coping) determining the effect of stressful situation. Lazarus (1985) states 3 types of cognitive appraisal:

- **threat** (implying perception of an environmental arousal as threatening and harmful. This stage is primarily characterised by anticipation of threatening signs and mobilisation of cognitive processes manifested subjectively as uncertainty and indecision

- **primary appraisal of threat** - cognitive process of assessing environmental signs by the individual's own experience, expectations and attitudes

Primary appraisal is determined by 2 types of factors: factors related to the psychological structure of the individual (self-confidence, anxiety, self-assessment, individual goals), and on the other it is situational factors (balance of strength between the external threat and the individual's defence mechanism, arousal ambiguity, and conflict imminence). Briefly, the function of the primary appraisal is to assess the threat of a situation to the individual. When a threat is perceived, the following reaction stage occurs:

- **secondary appraisal** of stress situation - cognitive process of choosing the most appropriate defence behaviour. Secondary appraisal is also determined by environment factors and factors of psychological structure of the individual.

It should also be underlined that primary and secondary appraisal do not necessarily occur in that order, as they may co-occur too. The function of secondary appraisal is to determine the effectiveness of defence behaviours.

Secondary appraisal will result in reactions to stress situations, categorized into 2 main groups (Lazarus):

1) direct reactions to stress (escape, attack, withdrawal etc.)

2) defence cognitive mechanisms such as rationalisation, projection, identification etc.

Successful coping with stress can lead to positive stress reactions (enhanced resistance when facing future stressors) or even prevent them.

Unsuccessful coping, especially with intensive or extended stressful experience, can have various negative consenquences ranging from maladjusted behaviour to psychological and/or physical distress and illness. Unsuccessful coping is a result of inadequate appraisal of situation and of one's own capacities. In conclusion, trust in one's own ability to handle events determines the importance attached to them and vice versa, and the overall cognitive appraisal leads the choice of the coping strategy and affects the coping process itself.

Military environment and organisation differ from the civilian in many a way (chain of command, combat, rotating manpower, continuous extensive involvement of young servicemen in their unit's life, transparency, exposure to psychological and physical strain, deprivation of previous habits (living standards, quality of life) of emotional support, demands and standards imposed by the military organisation. It is therefore a very useful setting for stress research. War trauma and PTSD have been the subject of a number of studies already, whereas our study focused on peacetime stress in young servicemen of Croatian Armed Forces by using variables from Lazarus's model of stress - mostly primary and secondary appraisal of stress.

The goal of the study was to construct a stress scale relating to external stressors and their effects and covering specific conditions and problems in military organisation. The scale would serve to at least alleviate unnecessary stressors and their effects, if not prevent, and its results would complement the standard battery of psycho-diagnostic instruments for a more effective assessment of adjustment problems of young servicemen (adjusted and maladjusted behaviour as stress reactions).

The **goal** was to construct a stress questionnaire appropriate for a military setting and its specific problems, and to test its psychometric characteristics.

Demands:

- determine the situations perceived by Croatian Armed Forces members as stressful
- determine the reliability and validity of the stress appraisal questionnaire
- check the relationship between stress intensity and controllability of problems caused by stress situations
- determine the relationship between cognitive stress appraisal and some personality characteristics

Procedure:

- the study was administered on a sample of 123 young servicemen (average age - 20) during the specialist training (Median)

The Cognitive Stress Appraisal Questionnaire has 3 parts. The middle part contains 26 items describing stressful situations, and is encircled by Likert-type scales of stress and controllability. Respondents are supposed to rate subjectively 26 situations on a 1-5 scale (1="not stressful at all" to 5= "highly stressful". The same list of situations was then to be assessed in terms of controllability, with 1="impossible to control anything" and 5="control over problems arising from the situation was absolutely possible".
In addition, the EPQ and STAI questionnaires were administered.

RESULTS:

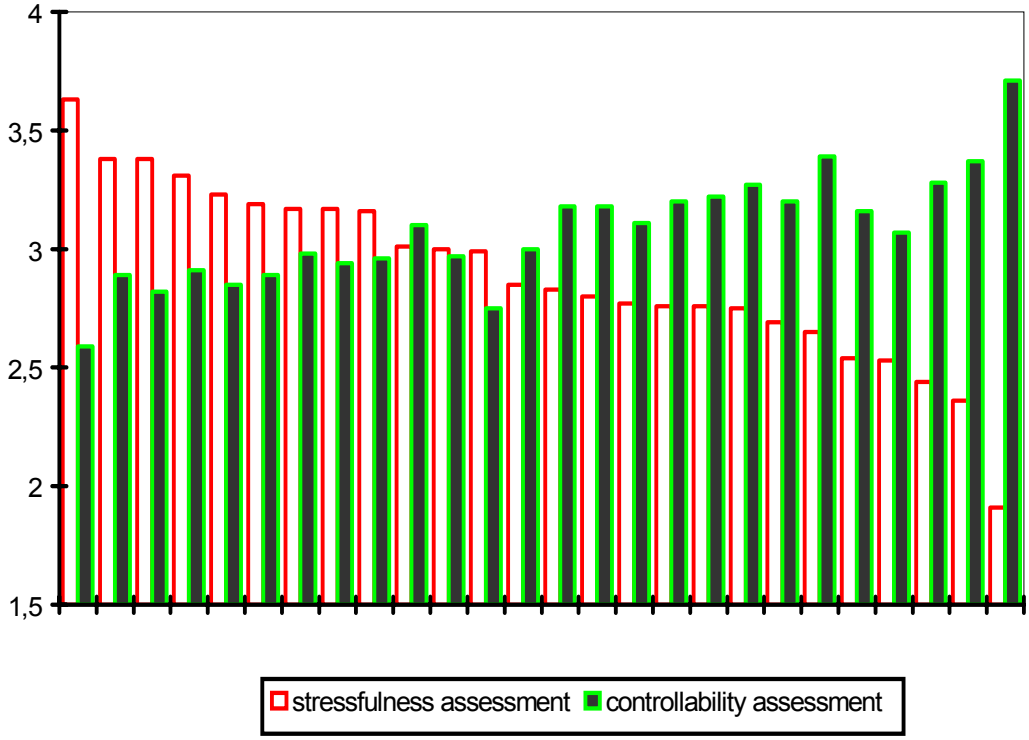
Perception of intensity and controllability of stress:

Table 1.: Mean values (arithmetic means) and dispersion (standard deviation) for each of the 26 situations

No.	Item (nr. of item in the Questionnaire)	Stressfulness of the situation		Controllability	
		M	SD	M	SD
1.	Unjustified punishment (15)	3,63	1,20	2,59	1,33
2.	Hygienic conditions (11)	3.38	1.29	2.89	1.39
3.	Uncertain weekend-leave (20)	3.38	1.24	2.82	1.39
4.	Reduced free time (26)	3.31	1.20	2.91	1.29
5.	Non-availability of daily shower (24)	3.23	1.20	2.85	1.27
6.	Separation from girlfriend/wife/children (06)	3.19	1.36	2.89	1.32
7.	No privacy (22)	3.17	1.25	2.98	1.33
8.	Inability to solve problems at home (13)	3.17	1.35	2.94	1.31
9.	Insults from the part of immediate superior sergeant (18)	3.16	1.45	2.96	1.45
10.	Hygienic conditions related to food (07)	3.01	1.28	3.10	1.40
11.	Collective punishment instances (08)	3.00	1.27	2.97	1.37
12.	Unfair, biased rewarding (25)	2.99	1.43	2.75	1.44
13.	Threats from the part of immediate superior s. (refused weekends off) (03)	2.85	1.28	3.00	1.32
14.	Poor concern for soldiers (12)	2.83	1.28	3.18	1.26
15.	Sergeant shouting at soldiers (18)	2.80	1.44	3.18	1.44
16.	Restricted leaving the barracks (14)	2.77	1.22	3.11	1.30
17.	Working in time-constraint (09)	2.76	1.26	3.20	1.26
18.	Psychological and physical strain in training (04)	2.76	1.20	3.22	1.26
19.	Separation from friends (10)	2.75	1.16	3.27	1.32
20.	Separation from parents/brothers (01)	2.69	1.22	3.20	1.34
21.	Insufficient information on the situation outside the installation (17)	2.65	1.19	3.99	1.31
22.	Strict behaviour rules in the military (19)	2.54	1.03	3.18	1.26
23.	Unclear orders issued (05)	2.53	1.11	3.07	1.33
24.	Failure to meet criteria in training (16)	2.44	1.10	3.28	1.23
25.	Changed nutrition habits (21)	2.36	1.18	3.87	1.36
26.	Behaviour exposed to comments and criticisms from other servicemen (02)	1.91	1.04	3.71	1.27

Fig. 1 Average rating of stress intensity and controllability

The horizontal axis contains 26 situations (items), while the vertical shows average ratings of stress intensity and controllability.



Factor validity and reliability of stressfulness questionnaire

All 26 items of stress intensity were factor analysed for common factors by means of Oblimin rotation and Caiser-Guttman criterion of factor extraction. The analysis yielded 3 factors (results are shown in Table 2).

Table 2. Factor analysis of stressfulness questionnaire:

ITEMS	root	% accounted variance	factor saturation
Factor I: deprivation from previous habits and life quality	**9.246**	**35.6**	
24) Non-availability of daily shower			0.76117
11) Hygienic conditions			0.71661
15) Unjustified punishment			0.69986
18) Insults from the part of immediate superior			0.61440
17) Lack of. information on situation			0.61440
26) Reduced free time			0.59728
25) Unfair, biased rewarding			0.54665
08) Collective punishment instances			0.53011
07) Hygienic conditions of food			0.51534
22) No privacy			0.50279
21) Changed nutrition habits			0.49955
14) Restricted leaving the barracks			0.45453
12) Uncertain weekend-leave			0.40356
13) Inability to solve problems at home			0.37002
Factor II: Psychological and physical strain in training	**1,51742**	**5.8**	
16) Failure to meet criteria in training			0.74489
02) Behaviour exposed to comments and criticism by other servicemen			-0.67138
04) Psychological and physical strain in training			-0.65764
23) Yelling from the part of immediate superior serviceman			-0.58777
09) Working in time constraint			-0.58573
03) Threats from the part of immediate superior serviceman (refused week-ends off)			-0.44661
05) Unclear (uneven) orders issued			-0.41338
19) Strict behaviour rules in the military			-0.36775
Factor III Separation	**1.11768**	**4.3**	
01) Separation from parents/brothers			0.71206
06) Separation from girlfriend/wife/children			0.70589
10) Separation from friends			0.41615

Factor reliability of the questionnaire (Cronbach alpha) = 0.93

Factor analysis yielding 3 factors, 3 subscales of the questionnaire were constructed as more specific parameters of stressfulness:

scale 1: stress due to separation from previous (civilian life) habits and life quality
scale 2: stress due to psychological and physical strain in training
scale 3: stress due to separation from the family, friends and partners

Reliability of single Cronbach alpha scales had following values:
I deprivation: (α=0.90)
II psychological and physical strain (α=0.85)
III separation (α=0.72)

In view of high reliability of the entire scale of stressfulness and the factor I accounting for the highest variance of the questionnaire, the questionnaire is also recommendable as an integral scale, i. e. summary result of all items can be calculated, as an overall index of stressfulness.

Correlation values between the stressfulness factors

	Factor 1	Factor 2	Factor 3
Factor 1	1.00		
Factor 2	-0.51	1.00	
Factor 3	0.40	-0.22	1.00

Comparison of factors by stressfulness:

Table 3. Mean values of stressfulness of individual factors

Factors	M	SD
1Deprivation	3.06	0.83
2.Psych.&phy. strain	2.57	0.85
3.Separation	2.88	1.00

Extracted mean values show the factor “deprivation” to be the most stressful, followed by “separation”, whereas “psychological and physical strain in training” was perceived as the least stressful.

Factor validity and reliability of the controllability questionnaire

All 26 items of the questionnaire were included into factor analysis for common factors through the Oblimin rotation, by means of Scree test criterion of factor extraction. (Table 4)

Table 4. Factor analysis of the controllability questionnaire

ITEMS	root	% accounted variance	factor saturation
Factor I: controllability	18.61825	52.4	
03) Threats from the part of immediate superior serviceman			0.85948
09) Working in time constraint			0.79820
05) Unclear (uneven) orders issued			0.78787
18) Insults from the part of immediate superior serviceman			0.76411
26) Reduced free time			0.76375
23) Immediate superior shouting at soldiers			0.75645
10) Separation from friends			0.75335
08) Collective punishment			0.75283
24) Non-availability of daily shower			0.74996
22) No privacy			0.74809
17) Insufficient information on the situation outside the installation			0.74440
20) Uncertain week-end leaves			0.74208
16) Failure to meet criteria in training			0.73706
12) Poor concern for soldiers' problems			0.73188
25) Unfair, biased rewarding			0.73150
14) Restricted leaving the barracks			0.72968
19) Strict behaviour rules in the military			0.72404
07) Hygienic conditions of food serving			0.70747
11) Hygienic conditions			0.70733
04) Psychological and physical strains in training			0.70592
15) Unjustified punishment			0.68699
21) Changed nutrition habits			0.66103
01) Separation from parents/brothers			0.65272
02) Behaviour exposed to comments and criticism by other servicemen			0.61800
13) Inability to solve problems at home			0.60684
06) Separation from girlfriend/wife/children			0.51589

Factor analysis yielded 1 factor accounting 52.4 % of the total variance of the questionnaire

The Cronbach alpha questionnaire reliability was found very high (α=0.96), justifying the use of global controllability index.

Variables of psychoticism, extroversy, neuroticism, frankness, propensity to crime and anxiety as predictors of cognitive appraisal of stress.

To test the extent of stressfulness appraisal (a type of cognitive appraisal) accounted by the variables of psychoticism, extraversion, neuroticism, frankness, propensity to crime, anxiety and stress control incompetence, the gradual regression analysis was conducted.

Table 5. Results of gradual regression analyses of variables of psychoticism, extroversy, neuroticism, frankness, inclination towards crime, anxiety and stress control inability.

Criterion	STRESSFULNESS				
Predictors	B	SE B	Beta	T	Sig T
STAIOS	.43	.15	.28	2.81	.006
STAISAD	.40	.15	.26	2.64	.010
Multiple R	.48		F= 16.634		
R Square	.23		Sig F= .000		

STAIOS = anxiety as a personality characteristics
STAISAD = anxiety as a condition
Variables not in Equation : EPQ - N, EPQ - P, EPQ -L, EPQ - E, EPQ - C

Table 5 shows the last step in the gradual regression analysis, covering only the variables found significant. Multiple correlation coefficient was statistically significant ($F(2, 112) = 16.63$, $p < .000$)
The results of the analysis show anxiety as personality trait and as condition too as the best individual predictors of stressfulness appraisal, with each of them accounting for 15% of the total variance of the result. The aggregate accounting for the stressfulness variance was 23%.

CONCLUSION

1. In terms of the stress level, the situations found the most stressful were unjustified punishment, bathing hygienic conditions, uncertain week-end leaves, reduced free time and inavailability of daily shower. Among the least stressful were behaviour exposed to comments and criticism by other servicemen, changed nutrition habits, failure to meet criteria in training, unclear orders issued and strict behaviour rules in the military.

2. The study yielded 3 (satisfactorily reliable) stressfulness scales:
- stress relating to deprivation of one's habits and of civilian living standard and quality
- stress relating to psychological and physical strain encountered in training
- stress relating to separation from the family, friends and partners

High coefficient of internal consistency for the entire scale justifies the dual use of the questionnaire, i. e. as an overall stressfulness scale and as 3 separate stressfulness subscales.

Testing the controllability yielded unidimensional and highly reliable scale (0.96)

3. Correlation between stressfulness and controllability was found negative (-0.51). The highest negative correlation was found between controllability and psychological and physical strain in training, followed by the correlation between controllability and "deprivation", and, finally, between controllability and "separation".

4. The best individual predictors of stressfulness appraisal were anxiety as a personality train and as general condition at the moment. The two variables account for 23% of stressfulness variance.

REFERENCE:

1. MACDONOUGH, Tomy: Mirnodopski stres u vojnika, Chapter 27, Handbook of Military Psychology

2. PETROVIĆ, Ivanka (1989): Psihološki stres i modeli suočavanja sa stresom; Odabrane teme kliničke i zdravstvene psihologije.

3. VIZEK-VIDOVIĆ, Vlasta (1979): Modeli stresa, Revija za psihologiju, Vol. 9, br.1-2

4. ARAMBAŠIĆ, Lidija: Stres; "Stres, trauma, oporavak"

5. LAZARUS, R. (1966): Psychological stress and coping processes, McGraw Hill, New York

6. ANIĆ, Nada (1989): Odabrane teme kliničke i zdravstvene psihologije, skripta, Zagreb

7. HUDEK, Jasna (1994): Suočavanje sa stresnim situacijama izazvanim konfliktom između profesionalne i obiteljske uloge (doktorska disertacija), Zagreb