

Janek MUSEK

Filozofska fakulteta (Faculty of Arts and Sciences), Ljubljana

DIMENSIONS OF PERSONALITY AND PERSONAL HARDINESS

ABSTRACT

The aim of the present study was a further clarification of some unresolved problems concerning the theoretical conception of personal hardiness. Two basic questions were examined in our investigation, the first dealing with the inner structure of personal hardiness, and the second dealing with the relationship between personal hardiness and other perso-

nality traits. The results of correlational and multivariate analyses showed that personal hardiness is not a unique phenomenon. Most probably, it is composed of three or two rather independent components. Additionally, it has been proved, that the subscales as well as the composite scale of personal hardiness are significantly related to the source traits of personality.

The construct of hardiness: Conceptual issues

INTRODUCTION

The research of psychosocial stress and coping processes has increased very strongly in past decades. Recently, a considerable degree of attention has been dedicated to the factors, which have either direct or buffering effects (decreasing or facilitating) on consequences of stressful life events. The research of Kobasa and other authors (Ganellen & Blaney, 1984; Kobasa, 1979, 1982; Kobasa, Maddi, & Courington, 1981; Kobasa, Maddi, & Kahn, 1982; Kobasa, Maddi, & Puccetti, 1982; Kobasa, Maddi, Puccetti, & Zola, 1985; Kobasa, Maddi, & Zola, 1983; Kobasa & Puccetti, 1983; Musek, 1989) demonstrated that the personality dimension called hardiness (or personal hardiness) is responsible for the manner, how people perceive and appraise the stress provoking events and situations and consequently for the success of coping reactions. Personal hardiness evolved as underlying personality characteristic which discriminate between individuals with little stress and high negative consequences (illness and others) and individuals with high stress and low negative consequences.

Kobasa and co-workers conceived hardiness as a common construct combined of three basic components: commitment, challenge and control. Several scales were used for measurement of these components. In recent research (Kobasa et al., 1981; Kobasa et al., 1982; Kobasa et al., 1983; Kobasa & Puccetti, 1983) the following six scales were accepted as measuring instruments for hardiness: the scale of Alienation From Self and the scale of Alienation From Work as measures for commitment subcomponent; the scale of Security and the Scale of Cognitive Structure as measures for challenge subcomponent (in newer research the last one was often omitted); the scale of Powerlessness and the scale of External Locus of Control for control subcomponent (see Table 1). Combined and standardized subjects' scores on these six scales were then taken to constitute the composite score on single hardiness dimension.

Table 1. The components and test measures (subscales) of personal hardiness.

| COMPONENT | SUBSCALE |
|------------|----------------------|
| Commitment | Alienation from Self |
| | Alienation from Work |
| Challenge | Security |
| | Cognitive Structure |
| Control | Powerlessness |
| | External Control |

There are some theoretical as well as methodological questions relating to the construct of hardiness which remained unresolved up to now. Although based on the retrospective data, the concept of hardiness showed itself as a promising one, because it also seems to have a considerable predictive value for prognosing many stress-related behavior patterns. It is questionable however, how hardiness is involved in such behavior: some studies indicate that it has indirect effect by buffering the impact of stressful life-events (Kobasa, 1979; Kobasa & Puccetti, 1983), but some other authors claimed that lack of control and commitment could have direct effects on psychophysical health because it is per se psychologically stressful and that the evidence for buffering effects of hardiness is weak (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987).

The very concept of hardiness is still under critique. There is an open question, whether hardiness is an unique phenomenon at all. Kobasa and coworkers already dropped the scale of Cognitive Structure for its failure to be loaded on the general factor of hardiness (Kobasa et al., 1982). A number of investigators failed to confirm the existence of common general factor of hardiness in their factor analyses of composite scales of hardiness (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). Some researchers obtained only moderate correlations between subscales of hardiness and found other indications for essential mutual independence of them (Ganellen & Blaney, 1984; Rich & Rich, 1985; Schlosser & Sheeley, 1985). According to these results and considerations it would be probably more appropriate to use the hardiness subscales separately and independently.

The aim of the present study was to clarify some of the issues mentioned before. First, we attempted to get more insight into the inner structure of hardiness itself, especially into the nature of relationships between subscales of hardiness as well into the relationship between subscales and the composite scale of hardiness. Second, we attempted to analyze the relationship between hardiness and primary traits of personality in order to obtain the insight into the location of hardiness and its components in the dimensionality of personality structure. Finally, we attempted to compare the relative contributions of integral and separated measures of hardiness in relation to the dimensions of personality.

METHOD

Subjects. 70 subjects from 4. class of high school participated in the study. They were predominantly female (only 5 male subjects were included). The age of the subjects was between 17 and 18 years.

Design of study. The study was programmed as correlational multivariate research. The variables representing personal hardiness (measured by composite scale of hardiness and 6 subscales: Alienation From Self, Alienation From Work, Security, Powerlessness, Cognitive Structure, and External Control) and dimensions of personality (16 primary factors of personality) were entered into correlational design.

Measuring instruments. Hardiness was measured by Personal Hardiness Scale, constructed by Kobasa et al. (1982). The scale contains 6 subscales: Alienation From Self, Alienation From Work, Security, Powerlessness, Cognitive Structure, and External Control. The scoring procedure for the subscales was modified in that manner, that high scores of each subscale indicated high value for hardiness. Personality traits or dimensions were measured by Cattell's 16 PF inventory, containing 16 primary factors of personality (so called "source traits", representing basic stylistic patterns of personality).

Procedure. Both instruments were administered anonymously to the subjects in two respective classes of high school. The results of subjects were then collected and prepared for further analyses. Various kinds of correlational and multivariate analyses were performed including factor analyses, cluster analyses and multidimensional scaling procedures.

RESULTS AND DISCUSSION

The structure of hardiness

According to the findings of some investigators, the conception of hardiness as a unitary phenomenon is highly questionable (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987; Rich & Rich, 1985; Schlosser & Sheeley, 1985).

Thus, the first step in our analyses was an attempt to provide further clarification concerning that issue.

Table 2 shows the correlations between six hardiness subscales. By inspection we can see that both measures of commitment (Alienation From Self and Alienation From Work) correlated significantly, but, surprisingly they correlated also with the measure of control, Powerlessness, which in turn showed not substantial correlation with other measure of control, External control! Powerlessness also correlated negatively with one of challe-

nge measures, Cognitive Structure. Other correlations are insignificant. The correlations of single subscales with composite scores of hardiness are moderate or low, with exception of Security scale, which does not correlate significantly.

Table 2. Correlations between subscales and composite score of hardiness.

| | Alienation from work | Security | Powerlessness | Cognitive structure | External control | Composite score |
|----------------------|----------------------|----------|---------------|---------------------|------------------|-----------------|
| Alienation from self | .4589** | -.0139 | .3917** | .0424 | .0951 | .5224** |
| Alienation from work | | .0020 | .3181* | .1004 | .0565 | .4007** |
| Security | | | .0729 | -.0244 | -.0999 | .0800 |
| Powerlessness | | | | -.2818* | .0853 | .3643** |
| Cognitive structure | | | | | -.1331 | .3335* |
| External control | | | | | | .4519** |

Note: N = 70 Significance of coefficients of correlations: p * -.01, p ** -.001

Factor analysis of six hardiness subscales yielded three factors, explaining 68.8 per cent of variance (see Table 3 and Figures 1 and 2). The Alienation From Self and the Alienation From Work scales (both indices of commitment) and also the scale of Powerlessness loaded heavily

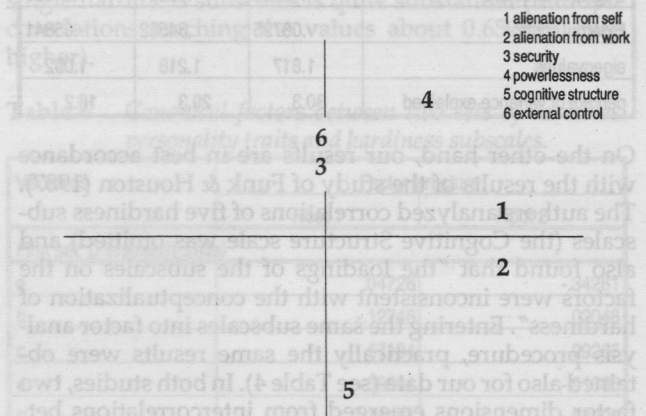


Figure 1. The positions of six subscales of hardiness in the space of first two factor dimensions. Both Alienation scales (1,2) and scales of Security and External Control (3,6), constitute clearly distinctive common clusters, while the Powerlessness scale (4) is about equally close to both of those groups.

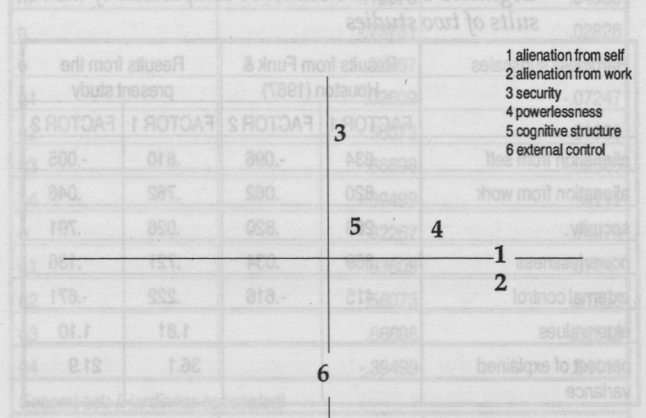


Figure 2. The positions of six subscales of hardiness in the space of first and third factor dimension. The Alienation scales constitute together with Powerlessness scale very distinct cluster. Other three scales are located at more distant positions.

on the first factor; the loadings of other scales on the first factor are unsubstantial. The second factor loaded the Cognitive Structure scale (an index of challenge) and - in opposite direction - the Powerlessness scale. The third factor is bipolar too: it loaded the Security scale (another index for challenge) as contrasted with External control.

In these results, there is obviously no evidence for any general factor of hardiness. Moreover, the dimensional structure of subscales is hardly in accordance with original conceptualization of hardiness. The dimensions obtained could be interpreted as commitment, challenge and control, but their subscale representations were unexpected. Powerlessness is very close to the commitment factor, and Security to the factor of control.

Table 3 Factor analysis of hardiness subscales: loadings of three extracted factors on 6 hardiness subscales.

| | FACTOR 1 | FACTOR 2 | FACTOR 3 |
|-------------------------------|----------|----------|----------|
| Alienation from self | .82809 | .01184 | -.06808 |
| Alienation from work | .81608 | -.12229 | -.01877 |
| Security | .02824 | .21013 | .80830 |
| Powerlessness | .61376 | .55980 | .09223 |
| Cognitive structure | .12386 | -.88364 | .04385 |
| External control | .08795 | .34552 | -.65841 |
| eigenvalues | 1.817 | 1.218 | 1.092 |
| percent of variance explained | 30.3 | 20.3 | 18.2 |

On the other hand, our results are in best accordance with the results of the study of Funk & Houston (1987). The authors analyzed correlations of five hardiness subscales (the Cognitive Structure scale was omitted) and also found that "the loadings of the subscales on the factors were inconsistent with the conceptualization of hardiness". Entering the same subscales into factor analysis procedure, practically the same results were obtained also for our data (see Table 4). In both studies, two factor dimensions emerged from intercorrelations between five scales. The only difference to be worth of mention is the lack of the loading of External Control scale on the first factor in our results.

Table 4 Factor analysis of 5 hardiness subscales (without Cognitive Structure scale): A comparison of the results of two studies

| Hardiness subscales | Results from Funk & Houston (1987) | | Results from the present study | |
|-------------------------------|------------------------------------|----------|--------------------------------|----------|
| | FACTOR 1 | FACTOR 2 | FACTOR 1 | FACTOR 2 |
| alienation from self | .834 | -.096 | .810 | -.005 |
| alienation from work | .820 | .062 | .762 | .046 |
| security | .263 | .820 | .026 | .791 |
| powerlessness | .869 | .034 | .721 | .136 |
| external control | .415 | -.616 | .222 | -.671 |
| eigenvalues | | | 1.81 | 1.10 |
| percent of explained variance | | | 36.1 | 21.9 |

The hierarchical cluster analysis and multidimensional scaling of subscales of hardiness also confirm the findings from factor analyses. The hierarchical structure of subscale similarity indices (Figure 3) shows close association between both Alienation scales and Powerlessness scale and rather independent positions of three remaining scales.

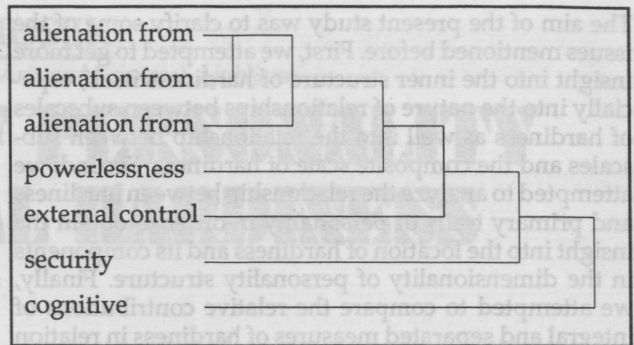


Figure 3. Hierarchical cluster structure of six hardiness subscales.

The location of subscales in the space of MDS dimensions also revealed similar structure: three subscales (Alienation From Self, Alienation From Work, Powerlessness) are located very closely, the others being quite apart (Figure 4). Facet analysis (FSSA; Shye, 1985) solution with six hardiness scales distinguishes quite well a larger group of subscales classified into common facet A. This facet contains both Alienation scales and Powerlessness scale. Facet B contains Security scale and External Control scale and facet C contains Cognitive Structure scale. Facet analysis solution without Cognitive Structure scale confirmed clearly the largest facet defined by Alienation scales and Powerlessness scale, while the other two scales took different independent positions (see Figure 5).

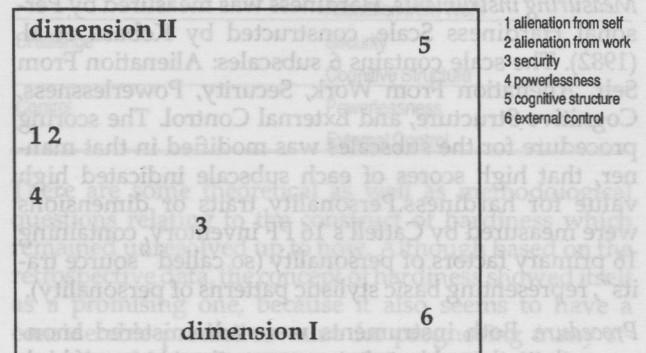


Figure 4. Multidimensional scaling analysis for 6 hardiness subscales: Positions of subscales in the space of first two dimensions for three-dimensional solution.

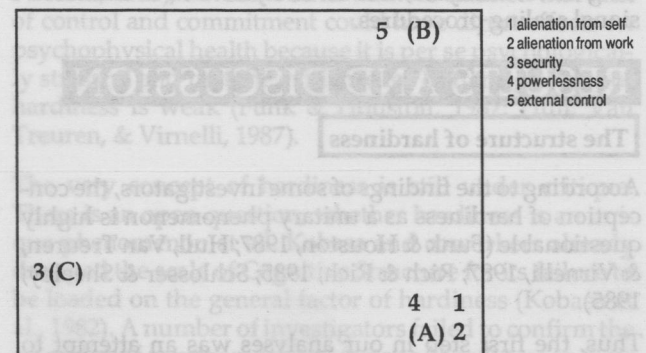


Figure 5. Results of facet-analysis (FSSA) of five hardiness scales. Three scales classified into facet (A) are extremely close, both remaining scales are classified separately into facets A and B respectively.

We can now resume our findings: 1. our results strongly support the idea, that there is no general factor of hardiness in the dimensional space of six or five hardiness subscales; 2. the Powerlessness scale belongs to the same

factor dimension as both Alienation scales while the other scales took rather separate independent positions in the dimensional space of hardiness; 3. Security scale and External Control scale constitute another common dimension taking the positions on both ends of this dimension respectively; 4. Cognitive Structure scale has obviously very little in common with other subscales, it is maybe even slightly oppositional to most of them; 5. the contributions of some subscales to the composite scale of hardiness are negligible (Security scale) and low (Cognitive Structure scale). Our results are consistent with the findings of some other authors (for example Funk & Houston, 1987, Rich & Rich, 1985; Schlosser & Sheeley, 1985; Hull, Van Treuren, & Virnelli, 1987) which also show that hardiness is not unique dimension and which found connections between subscales different from those conceptualized in the previous work of Kobasa and coworkers.

The position of hardiness in personality structure

The next basic question of our study concerns the relationship between hardiness and primary traits of personality. The correlations between 16 personality factors and all scales of hardiness are displayed on Table 5. As we can see, hardiness scales correlate significantly with source traits C (Ego Strength), E (Dominance), G (Superego Strength), H (Parmia), L (Protensia), N (shrewdness), Q2 (Self-sufficiency), Q3 (Self-sentiment) and Q4 (Ergic Tension). The most expressed correlations with personality dimensions could be observed for the composite scale of hardiness (-N, Q3, C, -Q2, -L), for Alienation From Self scale (-N, -Q2, Q3, G), for Alienation From Work scale (-N, C, -Q2), and for External Control scale (Q3, C, -E, -N).

Table 5. Correlations between personality traits and hardiness subscales.

| variable | alienation from self | alienation from work | security | powerlessness | cognitive structure | external control | composite |
|----------|----------------------|----------------------|----------|---------------|---------------------|------------------|-----------|
| A | .1975 | .2153 | .1336 | .2694 | -.0351 | -.1889 | .1175 |
| B | -.0209 | .0307 | -.0557 | -.0107 | .0310 | -.1697 | -.0978 |
| C | .1948 | .3576* | .0437 | .2215 | -.0829 | .3538* | .4205** |
| E | -.1205 | -.0522 | .1989 | -.0373 | .1171 | -.3504* | -.1962 |
| F | .1847 | .0443 | -.1204 | .1557 | -.0475 | .0107 | .0987 |
| G | .3259* | .1754 | -.1480 | .1071 | -.1287 | .2692 | .2734 |
| H | .2600 | .2245 | .0656 | .2787* | -.1859 | .0647 | .2248 |
| I | .1320 | .1297 | -.2300 | -.0313 | .1136 | .2189 | .1966 |
| L | -.2038 | -.1756 | .1258 | -.0413 | -.2051 | -.2190 | -.3071* |
| M | -.1001 | .0151 | -.0219 | -.0345 | .0709 | -.1850 | -.1243 |
| N | -.4116** | -.4224** | .1437 | -.2281 | -.0415 | -.3180* | -.5023** |
| O | -.0977 | -.1774 | -.0805 | .0098 | -.1615 | -.2022 | -.2605 |
| Q1 | -.0322 | .0178 | .0670 | -.1571 | -.0921 | .0770 | -.0448 |
| Q2 | -.4097** | -.2942* | -.0336 | -.2961* | .1240 | -.2313 | -.4095** |
| Q3 | .3329* | .2676 | -.0821 | .1231 | -.0300 | .4005** | .4281** |
| Q4 | -.1637 | -.2552 | -.0097 | -.2632 | .2976* | -.2495 | -.2565 |

NOTE 1-tailed Signif. * -.01 ** -.001

The most informative insight into relationship between both sets of our variables, personality dimensions and hardiness subscales, could be obtained by further multivariate analyses. Thus, the canonical factor analysis was performed in order to reveal latent dimensions (canoni-

cal variates) which should account for the variance between two sets. First canonical variate proved to be significant, extracting more than 17 percent of variance for personality traits and even about 25 percent of variance for hardiness traits. As Table 6 shows, this canonical factor connects personality traits naivete (-N), self-control (Q3), ego-strength (C), group orientation (-Q2), superego-strength (G), confidence (-L), submissiveness (-E) and low frustration (-Q4) with hardiness components of commitment (Alienation from Self and Alienation from Work) and of control (Internal Control). The second canonical variate explained only six percent of variance for personality traits, but more than 20 percent for hardiness traits. This canonical factor associates ergic tension (Q4), low parmia (shyness, -H), and eventually sizia (-A) and self-sufficiency (Q2) positively with Cognitive Structure and negatively with Powerlessness and Security.

It may be concluded from these results that hardiness is connected with quite a number of basic personality traits. That is true for single subscales of hardiness as well as for the composite score of hardiness. The most significant correlations between personality and hardiness dimensions are not high, however, but in the whole, as regression analyses show, the impact of multiple compositions of personality traits on hardiness components as well on single hardiness subscales is quite substantial (multiple correlations reaching the values about 0.65 and even higher).

Table 6 Canonical factors between two sets of variables: personality traits and hardiness subscales.

| Variables | Factor structure | |
|-----------------------------------|------------------|---------|
| | Root 1 | Root 2 |
| First set: (Personality traits) | | |
| a | .04726 | -.34281 |
| b | -.12746 | .02048 |
| c | .57134 | -.29265 |
| e | -.39661 | -.01388 |
| f | .14761 | -.04820 |
| g | .50442 | -.08868 |
| h | .28927 | -.43846 |
| i | .36326 | .29129 |
| l | -.42664 | -.30828 |
| m | -.19376 | .04963 |
| n | -.73731 | .02826 |
| o | -.32267 | -.14074 |
| q1 | .03609 | -.07247 |
| q2 | -.56073 | .31838 |
| q3 | .66698 | -.02565 |
| q4 | -.39499 | .54111 |
| o | -.32267 | -.14074 |
| q1 | .03609 | -.07247 |
| q2 | -.56073 | .31838 |
| q3 | .66698 | -.02565 |
| q4 | -.39499 | .54111 |
| Second set: (Hardiness subscales) | | |
| alienation from self | .68576 | -.06135 |
| alienation from work | .62954 | -.24325 |
| security | -.15840 | -.38394 |
| powerlessness | .31695 | -.57527 |
| cognitive structure | .06231 | .82239 |
| external control | .69085 | .02260 |

GENERAL CONCLUSIONS

Finally, we can resume the conclusions from our investigations as follows:

1. Personal hardiness is probably not a unique phenomenon. The structural analyses of this construct reveal rather independent components, three for six scales solution and two for five scales solution. Therefore, the use of separate subscales of hardiness or the use of new subsets of items based on separate hardiness factors should be preferred over the use of composite scale of hardiness.
2. The factorial loadings of single subscales of hardiness are somewhat different than those originally supposed by Kobasa and coworkers.
3. The components of hardiness as well as the composite scale of hardiness are significantly related to the primary personality traits. The highest single correlations are modest, however, but the compound regressions of personality traits on hardiness traits are quite substantial.

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