The Personality Construct of Hardiness, III: Relationships With Repression, Innovativeness, Authoritarianism, and Performance

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ABSTRACT Previous research has established hardiness as a dispositional factor in preserving and enhancing performance and health despite stressful circumstances. The present four studies continue this construct-validational process by (a) introducing a shortened version of the hardiness measure and (b) testing hypotheses concerning the relationship between hardiness and repressive coping, right-wing authoritarianism, innovative behavior, and billable hours (a measure of consulting effectiveness). Results of these studies suggest the adequate reliability and validity of the Personal Views Survey III-R, which is the shortened, 18-item measure of hardiness. Further, results support the hypothesis that the relationship of hardiness is negative with repressive coping and right-wing authoritarianism and positive with innovative behavior and billable hours. Hardiness also appears unrelated to socially desirable responding.

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Over the past 20 years, personality hardiness has emerged as a combination of attitudes that enhance performance, health, and mood despite stressful circumstances (e.g., Maddi, 1990, 1994, 1998, 1999, 2002; Maddi & Kobasa, 1984; Maddi, Khoshaba, Harvey, Lu, & Persico, 2001). The present study continues the process of construct validation for this personality characteristic.

Specifically, the hardiness attitudes are the three Cs of commitment, control, and challenge. People strong in commitment find it interesting and meaningful to stay involved with the people and events around them rather than retreating into isolation under stress. Those strong in control believe that if they struggle and try, they may be able to influence the outcomes taking place, and so sinking into powerlessness and passivity seems wasteful. People strong in challenge do not believe that they are entitled to easy comfort and security. Rather, they see change as natural and an opportunity to continue to grow by what is learned through negative as well as positive experiences. Positively correlated, though hardly the same thing, these three attitudes are conceptualized as combining to form *hardiness*, or the existential courage and motivation to cope effectively with stressful circumstances (e.g., Maddi, 1986, 1998). As courage and motivation, hardiness permits one to face stressful events (rather than deny and avoid them), discern what can be done to transform them from potential disasters into opportunities, and then take on the hard, even risky, work of trying to accomplish that hoped-for end.

Hardiness was discovered though a longitudinal research project at Illinois Bell Telephone (IBT) from 1975 through 1986 (Maddi, 2002; Maddi & Kobasa, 1984). In this study, managers in the sample were tested psychologically and medically each year. As expected, the telephone industry was federally deregulated in 1981 in a process that included mandating the divestiture of American Telephone and Telegraph's member companies (including IBT), all in order to pave the way for the modern telecommunications industry. The upheaval that this deregulation produced is still regarded as among the greatest in corporate history. For example, IBT had lost almost half its employees by 1982, with understandably major disruption of functioning attending this downsizing. Not surprisingly, most of the managers in the research sample were severely disrupted, disoriented, and demoralized, and many showed health deterioration. But some managers survived and thrived. Scrutiny of the psychological

data accumulated prior to 1981 identified hardiness as a basis for resiliency under the cataclysmic stresses.

Since the IBT study, ongoing research has tended to confirm that hardiness maintains and enhances health under stressful circumstances. In a wide range of stressful contexts, ranging from life-threatening events of military combat and peacekeeping (e.g., Bartone, 1999), through the culture shock of immigration (e.g., Kuo & Tsai, 1986) or work missions abroad (e.g., Atella, 1989), to everyday work or school pressure and demands (e.g., Maddi, 2002), the buffering effect of hardiness is shown in decreasing mental and physical illness symptoms, whether these be self-reported or more objectively measured.

Further, there is research showing that hardiness leads to the maintenance and enhancement of performance under stress. Examples are the positive relationship between hardiness and subsequent (a) basketball performance among varsity players (Maddi & Hess, 1992); (b) success rates in officer training school for the Israeli military (Florian, Milkulincer, & Taubman, 1995; Westman, 1990); (c) effective leadership behavior among West Point military cadets (Bartone & Snook, 1999); (d) retention rate among entering, high-risk community college students (Lifton, Seay, & Bushke, 2000); and (e) speed of recovery of baseline functioning following disruptive culture shock (Atella, 1989; Kuo & Tsai, 1986).

Supplementing these findings on health and performance is research elaborating the construct validity of hardiness. In an experiential sampling study (Maddi, 1999) in which participants were paged at random to comment on their ongoing activities, there was a positive relationship between hardiness and (a) involvement with others and events (commitment), (b) the sense that the activities had been chosen and could be influenced (control), and (c) the positive process of learning from what was going on (challenge). Other findings are consistent with the hypothesis that hardiness leads to beneficial health and performance effects by providing the courage and motivation needed to carry out coping, social support, and self-care efforts (Maddi, 1986, 1994, 1997, 2002). For example, results show that hardiness is related to the tendency to view stressful life events as more tolerable (Ghorbani, Watson & Morris, 2000; Rhodewalt & Zone, 1989), cope transformationally with these events (Maddi, 1999; Maddi & Hightower, 1999), avoid excessive physiological arousal (Allred & Smith, 1989; Contrada, 1989), and pursue posi-

tive while avoiding negative health practices (Maddi, Wadhwa & Haier, 1996; Weibe & McCallum, 1986).

There is also a training procedure for hardiness that was begun at IBT (Maddi, 1987) and has been elaborated since then (e.g., Khoshaba & Maddi, 2001; Maddi, 2002). Consistent with hardiness theory (e.g., Maddi, 2002; Maddi & Kobasa, 1984), this approach emphasizes assisting trainees in coping effectively with their stressful circumstances, interacting with significant others by giving and getting assistance and encouragement, and learning how to use the feedback from these efforts to deepen the hardiness attitudes of commitment, control, and challenge (Khoshaba & Maddi, 2001). Thus far, there is some evidence that this training procedure is effective not only in increasing hardiness attitudes but also in enhancing performance and decreasing illness symptoms for working adults (Maddi, 1987; Maddi, Kahn & Maddi, 1998) and college students (Maddi, Khobasa et al., 2002).

The original measure of hardiness, called the Personal Views Survey, was composed of six available scales from other tests that seemed relevant to commitment, control, and challenge (cf. Maddi, 1997). It was this questionnaire that led to the early criticisms that hardiness (a) was not a unitary characteristic, as the challenge component was unrelated to the commitment and control components in some samples, and (b) was little more than the opposite of negative affectivity or neuroticism (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987). As to the alleged nonunitary quality of hardiness, the major difficulty emerged as due to one of the scales used to measure challenge. The items on this scale appeared to be interpreted differently by college students than by working adults, leading to a unitary measure in the latter population and a nonunitary measure in the former population (cf. Maddi, 1997). As to the alleged redundancy of hardiness with negative affectivity, the problem appeared to be that several of the scales initially used to measure the former characteristic included only negatively worded items (cf. Maddi, 1997).

The original hardiness measure was quickly supplanted by the Personal Views Survey, Second Edition (PVS II) and then Third Edition (PVS III), and this seemed to ameliorate both problems (cf. Maddi, 1997; Maddi & Khoshaba, 2001). In particular, the PVS II and III include only items written specifically for relevance to hardiness (rather than including scales already in use for other purposes)

and use an equal number of positively and negatively worded items for the components of commitment, control, and challenge. As expected, the PVS II and III characteristically yield estimates of the three components that are positively intercorrelated in samples not only of working adults and college students, but even of high school students (e.g., Maddi & Hess, 1992; Maddi & Khoshaba, 2001; Maddi et al., 1996).

Further, there are studies showing that the PVS II does not appear to be redundant with negative affectivity. For example, the pattern of negative relationships between hardiness and the clinical scales of the Minnesota Multiphasic Personality Inventory persists even after controlling for a standard measure of negative affectivity (Maddi & Khoshaba, 1994). This suggests that although hardiness is indeed a measure of mental health, its measurement effectiveness in this regard does not depend on negative affectivity. Further, in a study with the PVS III (Maddi, et al., 2001) involving the NEO-FFI (Costa & McCrae, 1989), hardiness is not only negatively related to Neuroticism but also positively related to all four of the other factors in the Five-Factor Model. As these five factors are independent of each other, it would be difficult to conclude that hardiness is nothing more than a negative indicator of Neuroticism or negative affectivity. Furthermore, in the attempt to use it as a predictor, the NEO-FFI accounted for only about one-third of the variance of hardiness, suggesting that the latter variable may be substantially unexplained by the Five-Factor Model. Also, the findings of a recent methodological study (Sinclair & Tetrick, 2000) speak to both early criticisms by confirming that, as expected, commitment, control, and challenge are best regarded as related subcomponents of a higher-order hardiness factor and that this factor is empirically distinct from negative affectivity or Neuroticism.

As will be elaborated in Study 1, the measurement equivalence of the PVS III will be compared with a further shortened form of that test. A really short, yet still reliable and valid, hardiness measure would be quite useful. As will be explained, the shortened version used in the following studies includes the 18 most reliable and valid items from the previous versions.

The other studies to be presented continue the construct validation process, by testing four hypotheses concerning hardiness. The first hypothesis is that there is a negative relationship between hardiness and repressive coping style. If hardiness is indeed existential

courage and motivation, then it should lead to the heightened awareness of stressful circumstances necessary for planning and taking decisive action rather than the denial and avoidance involved in repressiveness. The second hypothesis is that there is a negative relationship between hardiness and authoritarianism. It is the nature of the three Cs to lead people to be interested in and involved with all the people and events around them and to try to keep learning through negative as well as positive experiences. This orientation should be incompatible with the stereotypical, power-oriented, negativistic orientations of authoritarianism. The third hypothesis is that there is a positive relationship between hardiness and innovative functioning. This is because people high in hardiness believe that change is not only normal but useful in personal development and that it is worth struggling to find new ways that have a decisive influence on what is going on around them. They should, therefore, be oriented toward innovative behavior. The fourth hypothesis is that hardiness is positively related to the work performance criterion of billable hours that consultants accumulate. This is because doing well in a job that is judged by the number of hours for which one can bill clients is an entrepreneurial accomplishment that requires reliance on oneself to find and convince companies to be one's clients, appreciation and servicing of the needs of the companies, and the strategic flexibility to find a relationship with the client that continues to be successful for both. People with hardy attitudes should be more effective in such work situations.

STUDY 1

The aim of this study was to develop a shortened form of the hardiness measure. Although a significant advance over the original hardiness measure, the PVS II involves 50 rating-scale items and is cumbersome in length for many uses. Accordingly, the Personal Views Survey, Third Edition (PVS III) used the 30 most reliable and valid items from the PVS II in a shortened measure of hardiness (Maddi, & Khoshaba, 2001). Research suggests that the PVS III has operated as expected (e.g., Maddi, Brow, Khoshaba, & Vaitkus, 2003).

The present study attempts to shorten measurement time even further by introducing the Personal Views Survey, Third Edition—

Revised (PVS III-R), which comprises the 18 most reliable and valid items from previous versions. This study compares the estimates of hardiness total and component scores obtained from the PVS III-R with those obtained from the PVS III regarding intercorrelation, reliability, and some basic convergent and divergent validity.

Method

The sample of 1,239 participants included both college students and working adults who completed questionnaires on a volunteer basis, either as part of a course or a workshop. The sample included 753 females (60.8%) and ranged in age from 17 to 85 (with a mean of 31.2). The breakdown of race and ethnicity was: Caucasian, 66.5%; Asian, 22.1%; and all others, 11.4%.

As to hardiness measurement, the participants completed the 30-rating-scale-item PVS III, which includes the 18 items used in the PVS III-R. All items use a 4-point rating scale regarding personal relevance. In the PVS III-R, commitment, control, and challenge are each measured by three positively and three negatively worded items. Examples are, for commitment, "I often wake up eager to take up life wherever it left off" (positive indicator) and "Its hard to imagine anyone getting excited about working" (negative indicator); for control, "When I make plans, I'm certain I can make them work" (positive indicator) and "Most of what happens in life is just meant to be" (negative indicator); and for challenge, "Changes in routine provoke me to learn" (positive indicator) and "I am not equipped to handle the unexpected problems of life" (negative indicator). The resulting data permitted the comparison of the PVS III-R with the PVS III.

For validation purposes, participants also completed questionnaires concerning their demographic status, experiences of stress and strain, and coping and social support efforts. The demographics included were gender, age, race and ethnicity, and years of education. The stress measure included items that tap the subjective experience of both acute stresses (i.e., disruptive changes) and chronic stresses (i.e., continuing mismatches between what one wants and what one gets). Used in several previous studies (e.g., Maddi & Hightower, 1999; Maddi & Kobasa, 1984), this stress measure has shown adequate construct validity. Strain, the organism's arousal response to stresses, was measured using the total score from the Symptom

Check List-90 (Derogatis, 1992). This approach has shown adequate reliability and validity in previous studies (e.g., Derogatis, 1992; Maddi, 1999). As to the measurement of coping, participants completed the COPE Test (Carver, Scheier, & Weintraub, 1989). The items of this test were organized into subscales, one for transformational (or problem-solving) coping and the other for regressive (or denial and avoidance) coping (Maddi & Hightower, 1999). These two subscales have been shown (Maddi & Hightower, 1999) to have adequate internal consistency reliability and construct validity. As to patterns of social interaction, the participants were administered items based on Moos's (1993) questionnaire charting the social support experienced at work and in private life. This questionnaire has also shown adequate reliability and validity (Moos, 1993).

Results and Discussion

As Table 1 shows, the intercorrelations of hardiness and its components are very similar in and across the PVS III and the PVS III-R. As expected, within each test, the components and total score intercorrelate positively. Further, the components and total score correlate at a high, positive level across the two tests. This pattern of findings suggests that, despite being shorter, the PVS III-R measures the same thing, at the same level of conceptual adequacy, as the PVS III.

Table 1
Interrelationships of Hardiness and Its Components in the PVS III-R and PVS III ($N = 1239$)

	1.	2.	3.	4.
1. Commitment	.93**	.56**	.49**	.86**
2. Control	.56**	.88**	.30**	.74**
3. Challenge	.38**	.24**	.93**	.79**
4. Total Hardiness	.83**	.75**	.73**	.96**

Note. PVS III-R findings are in the upper, and PVS III in the lower triangle. The intercorrelations of each component and total hardiness across the PVS III-R and PVS III are shown in the diagonal.

Table 2
Coefficient Alphas for Hardiness and Its Components in the PVS III-R and the PVS III ($N = 1239$)

	PVS III-R	PVS III
1. Commitment	.69**	.69**
2. Control	.57**	.57**
3. Challenge	.73**	.69**
4. Total Hardiness	.80**	.80**

**$p < .01$ by two-tailed test.

As to internal consistency reliability, estimates of the latent construct (Nunnally, 1978) of hardiness were obtained for both the 30-item PVS III, and the 18-item PVS III-R. The same coefficient alpha of 0.80 was obtained for each test. Further, coefficient alphas for the three latent variables of commitment, control, and challenge obtained were, .69. .57 and .69, respectively, for the PVS III, and .69, .57 and .73, respectively, for the PVS III-R. One interpretation of the pattern of internal consistency findings is that the theorized, unidimensional construct of hardiness, formed by the three first-order attitude variables, yields a more reliable estimate than does the three attitudes measured separately. Further, the PVS III-R appears as reliable as the longer PVS III. A confirmatory factor analysis (Kline, 1998) was performed on the PVS-III and PVS III-R showing that the data collected in this study were consistent with the measurement model. An estimate of the factor loadings on each of Commitment, Control, and Challenge on Total Hardiness in the PVS-IIIR are .869, .761 and .671, respectively. The goodness-of-fit (GFI) statistics for the PVS III-R measurement models is .901.

A check on the validity of the PVS III-R appears in Table 3, which summarizes the relationships between hardiness and both conceptually predicted and demographic variables. Theoretically (cf. Maddi, 1994, 2002), a negative relationship is expected between hardiness and strain (the organism's arousal response to perceived stresses). The results suggest that the PVS III-R is as adequate in showing this relationship as is the PVS III. The mild positive relationship shown by both tests between hardiness

Table 3
Correlations of Hardiness in the PVS III-R and PVS III With Stress, Coping, Social Support, and Demographic Variables ($N = 1239$)

	PVS III-R				PVS III			
Variables	Commitment	Control	Challenge	Hardiness	Commitment	Control	Challenge	Hardiness
Stress	.08	.02	.12**	.10*	.09	.03	.10*	.10*
Strain	−.43**	−.29**	−.33**	−.44**	−.41**	−.25**	−.30**	−.42**
Active Coping	.48**	.38**	.34**	.50**	.50**	.40**	.32**	.52**
Regressive Coping	−.48**	−.41**	−.32**	−.50**	−.47**	−.39**	−.31**	−.51**
Work Support	.36**	.31**	.19**	.35**	.38**	.27**	.20**	.36**
Family Support	.37**	.31**	.23**	.38**	.40**	.27**	.17**	.36**
Age***	.19**	.05	.21**	.20**	.13**	.01	.22**	.17**
Sex***	.08	.05	.06	.07	.09	.06	.08	.07
Race***	.09	.02	.03	.06	.07	.01	.03	.04
Education***	.18**	.08	.21**	.19**	.13**	.01	.22**	.16**

*$p < .05$. **$p < .01$.
***These variables were dichotomized for this analysis.

and stress (the perception that occurrences are problematic) is also theoretically expected (Maddi, 2002). While hardiness facilitates the accurate perception of circumstances as problematic (so that they can be coped with effectively), it simultaneously protects against the catastrophysing that can motivate ineffective coping through denial and avoidance (Maddi, 1994).

Conceptually, hardiness provides the existential courage to facilitate effective coping and social interaction (Maddi, 1986, 1998). Specifically, hardiness should be positively related to transformational, or active, coping and negatively related to regressive, or denial and avoidance coping. The results shown in Table 3 are consistent with this expectation. In social interactions, hardiness is conceptualized to lead to giving and getting assistance and encouragement rather than competition and overprotection (Maddi, 2002; Maddi & Kobasa, 1984). On this basis, a positive relationship between hardiness and perceived social support is hypothesized. The results in Table 3 concerning both work and family support are consistent with this expectation and are very similar for both the PVS III-R and PVS III.

There are no available hypotheses concerning the relationship of hardiness and demographic variables. Nonetheless, there is a pattern of low correlations shown in Table 3, indicating that hardiness has a slight tendency to increase with age and education. No racial or sex differences emerge in this sample. From the pattern of correlation size, it would appear that the relationships of hardiness with strain, coping, and social support variables are not merely a reflection of demographic characteristics. In any event, the similarity in the demographic relationships derived from both hardiness tests further indicates that nothing is lost in utilizing the shorter PVS III-R.

Further, Table 3 also shows that for both the PVS III-R and the PVS III the pattern of correlations between hardiness components and external variables is similar to, but generally not as strong as, that of the total hardiness score. These results are consistent with the conceptual model (Maddi, 2002; Maddi & Kobasa, 1984) and empirical findings (e.g., Sinclair & Tetrick, 2000) suggesting that commitment, control, and challenge are subcomponents of the superordinate variable of hardiness. Once again, the shorter PVS III-R appears to measure this as well as the PVS III.

STUDY 2

This study concerns the relationship between hardiness and the two cognitive/emotional characteristics of repressive coping style (Weinberger, Schwartz, & Davidson, 1979) and right-wing authoritarianism (Altemeyer, 1996). As hardiness is conceptualized as existential courage and motivation (cf., Maddi, 1997, 2002), it is what renders the person strong enough to discern and contemplate changing circumstances and impending decisions clearly and completely enough, despite their stressfulness, to fashion a course of action that can be simultaneously effective and developmentally fulfilling. The level of awareness and reflectiveness this process requires is not likely to be accomplished if the person engages in a repressive coping style. After all, the aim of repressive coping is to render oneself unaware of a strong need to find social approval, and the low self-esteem that fuels it, so that these characteristics will not lead to painful anxiety. It is hypothesized, therefore, that hardiness and repressive coping style are negatively related.

The conceptualization of hardiness as existential courage and motivation also emphasizes the reflectiveness, flexibility, and imagination required to reconsider and change one's views in order to find courses of action that are not only effective solutions to problems but that also spur personal development and greater intimacy with people (cf., Maddi, 1970, 1997, 2002). Right-wing authoritarianism, in contrast, involves stereotypic and critical ways of thinking that probably inhibit personal change and growth and preclude closeness with others through social stereotyping and resentment (Altemeyer, 1996). Consequently, it is hypothesized that hardiness and right-wing authoritarianism are negatively related.

Method

The 128 participants in this study were college undergraduates who completed the relevant questionnaires on a volunteer basis in class and received extra credit for so doing. Demographic information collected indicated that the sample included 95 females (74.6%) and ranged in age from 18 to 56 (mean = 22.3). The racial makeup and ethnicity of the sample was as follows: Caucasian, 22.9%; Asian, 50.0%; Hispanic, 12.9%; African American, 2.9%: and all others, 11.4%.

As to the questionnaires, the PVS III-R was used to measure hardiness. The Marlowe-Crowne Social Desirability Scale (MC SDS), and the Taylor Anxiety Scale (TAS) were administered to generate a commonly employed measure of repressive coping style (Weinberger et al., 1979). Finally, the generally accepted Right-Wing Authoritarianism Scale (RWA) was also included (Altemeyer, 1996). Emphasizing stereotypic views of people and social institutions, this scale is considered among the most effective measures of authoritarianism available (Billings, Guastello, & Rieke, 1993).

Results and Discussion

Table 4 indicates that this sample shows the expected pattern of substantial positive correlations among the commitment, control, and challenge components, and between them and total hardiness, as estimated by the PVS III-R. As to internal consistency reliability, latent construct (Nunnally, 1978) estimates were obtained. For the 18-item PVS III-R measure of hardiness, a coefficient alpha of .77 was obtained for total hardiness. Also, there are no significant

Table 4
Interrelationships of Hardiness and Its Components in the PVS III-R

	1.	2	3.	4.
Study 2 ($N = 128$)				
1. Commitment	–	.53**	.52**	.85**
2. Control		–	.45**	.80**
3. Challenge			–	.80**
4. Total Hardiness				–
Study 3 ($N = 148$)				
1. Commitment		– .55**	.54**	.86**
2. Control			– .49**	.83**
3. Challenge				– .84**
4. Total Hardiness				–
Study 4 ($N = 47$)				
1. Commitment		– .56**	.51**	.87**
2. Control			– .51**	.83**
3. Challenge				– .84**
4. Total Hardiness				–

**$p < .01$.

correlations between total hardiness and age ($r = -.09$, *ns*), sex ($r = .21$, *ns*), and race ($r = .04$, *ns*). As to the correlations between the components of hardiness and these demographic variables, only that between control and sex achieves significance ($r = .29$, $p < .01$).

As shown in Table 5, hardiness shows a negative correlation with both the M-C SDS ($r = -.41$, $p < .0001$), and the TAS ($r = -.33$, $p < .0001$). This pattern of significant negative correlations appears consistently with all three hardiness components as well. As expected, it appears that as hardiness increases, there is less general anxiety and less need to appear socially desirable to everyone. The latter result is also relevant to discriminant validation of the PVS III-R as it suggests that the hardiness score is not an artifact of responding to questionnaire items in a socially acceptable fashion.

The generally accepted procedure (Jamner & Schwartz, 1986; Myers & Steed, 1999; Weinberger et al., 1979) of estimating repressive coping style from the combination of high M-C SDS and low TAS scores was followed here. High and low scores on these variables have been achieved in some studies by median splits and in others by utilizing top and bottom quartile scores. Both procedures were employed in this study. As shown in Table 5, the correlation between hardiness and repressive coping is $-.50$ ($p < .0001$) utilizing the median split, and $-.53$ ($p < .0001$) utilizing the bottom and top quartile scores. Clearly, there is support for the hypothesized

Table 5
Relationships of Hardiness and Its Components With Repressive Coping Style ($N = 128$), Right Wing Authoritarianism ($N = 128$), and Innovativeness ($N = 148$)

Variables	Commitment	Control	Challenge	Hardiness
Social Desirability	−.21*	−.51**	−.28**	−.41**
Anxiety	−.27**	−.26**	−.28**	−.33**
Repressive Coping (Median Split)	−.38**	−.46**	−.38**	−.50**
Repressive Coping (Quartile Split)	−.41**	−.51**	−.39**	−.53**
Right Wing Authoritarianism	−.20*	−.16	−.14	−.21*
Unusual Uses	.21*	.13	.15	.24**

*$p < .05$. **$p < .01$ by two-tailed test.

negative relationship between hardiness and repressive coping. There is also support shown in Table 5 for the hypothesized negative relationship between hardiness and right-wing authoritarianism, as the correlation between the PVS III-R total score the RWA scale is $-.21$ ($p < .02$).

STUDY 3

The picture that is emerging is of hardiness as the courage and motivation to face stresses and solve them and the future orientation to keep developing meaning out of new experiences (cf. Maddi, 2002). In this, hardiness is conceptualized to encourage imaginativeness and flexible reflection upon alternatives so that potentially disruptive changes can be turned to advantage instead. A definite implication of this is that hardiness will lead to innovative behavior rather than the repetitive functioning less inducive of creativity. Testing this hypothesis was the aim of this study.

Method

The 148 participants in this study were college undergraduates who completed the relevant tasks in class for extra credit. Demographically, the sample included 109 females (73.1%) and ranged in age from 17 to 43 (mean = 20.5). As to racial and ethnic makeup, they were Caucasians, 22.7%; Asians, 54.5%; Hispanics 9%; African Americans, 1.5%; and all others, 10.5%.

All participants completed the PVS III-R as a measure of hardiness and the Unusual Uses Test (UUT) as a measure of innovative behavior (Guilford, 1967; Harrington, 1975; Li, 1978). The UUT asked participants to list four uses for each of four common objects (i.e., a clip, a brick, a shoe, and a pencil). It is worth pointing out that the UUT is not self-report, but a performance task. It was assumed that the first use of each object mentioned would likely be common for all participants. But for each of the second, third, and fourth objects listed, a frequency distribution of uses for the entire sample was constructed of the uses that were indeed useful (not irrelevant). The second, third, and fourth usages offered by each participant were given a score that reflected how infrequent (unusual) they were by comparison with those given by other participants. Thus, the

higher the participant's score on the UUT, the greater was his/her innovativeness.

Results and Discussion

Table 4 shows the correlations, derived from the PVS III-R on this sample, among the commitment, control, and challenge components and between them and total hardiness. As to internal consistency reliability, latent construct (Nunnally, 1978) estimates were obtained. For the 18-item PVS III-R, a coefficient alpha of 0.70 for total hardiness was obtained. In this sample there are no significant correlations between total hardiness and age ($r = -.02$, *ns*), sex ($r = .06$, *ns*), and ethnicity ($r = .04$, *ns*). Also, none of the correlations between each of the three components of hardiness and the demographic variables achieved significance.

As shown in Table 5, the obtained correlation between hardiness and innovative behavior is .24 ($p < .001$). Generally consistent with this are the correlations of innovative behavior with the hardiness components, which are all in the expected direction, with that for challenge reaching statistical significance ($p < .05$). These findings support the hypothesis that the higher the hardiness, the greater the likelihood of innovative, creative functioning.

STUDY 4

It is useful at this point to project what has been learned about hardiness into how it influences behavior at work. The findings of the studies reported here support the conceptualization of hardiness as involving openness to experience, avoidance of social stereotyping and resentment, and functioning in innovative ways. Although generally admirable, this pattern of functioning should be especially useful in the entrepreneurial work situations that emphasize not only providing needed services but also finding a way of doing this that is convincing enough to gain clients and satisfying enough to keep them (Maddi, Khoshaba, & Pammenter, 1999).

This study concerns the performance effectiveness of consultants whose task it is to (a) convince companies that they can help in the improvement of the functioning of their employees in a manner that leads the companies to be clients and (b) provide services to them that continues to be satisfactory so that they remain clients over

time. The most decisive measure of effectiveness in this entrepreneurial task is billable hours, that is, the number of hours per week for which the consultant receives pay from the various companies that are his/her clients. The hypothesis of this study is that among consultants who must develop and service clients in order to derive income, hardiness is positively related to the work performance criterion of billable hours.

Method

The 47 participants in this study were consultants in an organization that provides human resource services to a wide variety of companies. The services range from criteria and procedures for selecting and training personnel to advice on benefits and civil rights requirements for the company to adopt. Situated in various areas of the United States and abroad, these consultants have responsibility for selling their services to companies and, once they became clients, for providing the services in a convincing, effective fashion. The sample included 30 males (64%), and ranged in age from 33 to 64 (with a mean of 52) and in education from 20 to 25 years (with a mean of 22 years). As to racial and ethnic makeup, there were 36 Caucasians (76%), 4 Asians (9%), 4 Hispanics (9%), and 3 African-Americans (6%).

All participants completed the PVS III-R in a group setting at a retreat. The company provided records on the participants for the year during which the retreat took place, and for the following year as well. The records were for billable hours and also a global job evaluation given to these participants by senior management each year. The global evaluation was based not only on billable hours but also on more subjective evaluations of selling and servicing effectiveness, and on estimates of potential. These evaluations were made without knowledge of participant's scores on the PVS III-R.

Results and Discussion

Table 4 shows the intercorrelations of hardiness and its components deriving from the PVS III-R on this sample. As to internal consistency reliability, latent construct (Nunnally, 1978) estimates were obtained. For the 18-item PVS III-R, there was a coefficient alpha of .74 for total hardiness. Once again, these results are similar to those

Table 6
Correlations of Hardiness and Its Components With Billable Hours and a Global Effectiveness Estimate ($N = 47$)

	Billable Hours		Global Effectiveness	
	First Year	Second Year	First Year	Second Year
Commitment	.27	.29*	.26	.33*
Control	.30*	.31*	.27	.32*
Challenge	.26	.28*	.29*	.36*
Total Hardiness	.30*	.30*	.30*	.46**

*$p < .05$. **$p < .01$.

of the other studies, and indicate the conceptual and measurement adequacy of this test on this sample. Also, there were no significant correlations between total hardiness and age ($r = .03$, *ns*), sex ($r = .05$, *ns*), and race ($r = -.09$, *ns*). Neither were there any significant correlations between each of the three components of hardiness and these demographic variables.

Table 6 indicates the relationships between hardiness and both billable hours and global effectiveness scores. Both in the year during which the PVS III-R was administered and the following year, hardiness showed significant positive correlations with both billable hours and the global effectiveness estimate. That the correlation with the global effectiveness estimate actually increased in the year following the PVS III-R administration suggests a causal role for hardiness. Although there was a similar pattern of positive correlations between the hardiness components and the two performance measures, not all the relationships were statistically significant.

These findings are important in that they are not limited to abstract test responses but instead involve the actuality of work behavior. This suggests that hardiness is important in practical life applications. It appears that hardiness is helpful in the difficult consulting process of finding and retaining clients who are willing to pay for services only if they are effective. These results add to those already indicating performance effectiveness in actual life contexts, such as the relationship between hardiness and leadership behavior (Bartone & Snook, 2002), basketball prowess (Maddi & Hess, 1992), success in officer training school (Westman, 1990), and retention in college (Lifton et al., 2000).

CONCLUDING REMARKS

The results of the present studies are consistent with the conceptualization of hardiness as the existential courage and motivation to involve oneself in, try to influence, and continue to learn from complex and changing circumstances (Maddi, 1997, 2002). In this regard, that hardiness emerged here as negatively related to repressive coping is consistent with its previously reported negative relationship with regressive (denial and avoidance) coping and positive relationship to transformational (problem-solving) coping (Maddi & Hightower, 1999). Further, that a negative relationship to right-wing authoritarianism and a positive relationship to innovative behavior was found here for hardiness suggests that it encourages openness to other people and a willingness to strike out in uncharted directions. Not available in previous studies, these findings add to an understanding of the mechanisms whereby hardiness can lead to especially effective functioning, such as the positive relationship with billable hours among consultants reported here and the leadership and success reported in previous studies (e.g., Bartone & Snook, 2000; Lifton et al., 2000; Maddi & Hess, 1992; Westman, 1990). The present results concerning possible mechanisms whereby hardiness has its effects may also help in the understanding of the role of this disposition in enhancing mental and physical health despite stressful circumstances (Bartone, 2000; Maddi, 1994, 2002; Maddi & Khoshaba, 1994; Maddi & Kobasa, 1984).

The results of these studies also suggest that hardiness is not very likely to be a mere expression of demographic characteristics. To be sure, in the first study, there was a mild positive relationship between hardiness and both age and education. But there were no significant relationships between hardiness and demographics in the other three studies. It should be recognized that the range of age and education in the first study was quite large since participants included college students and working adults.

Hardiness has emerged, over the years, as a positive dispositional force in encouraging an active, effective, healthy life (cf. Maddi, 2002). A matter of interest, therefore, is its conceptual and empirical overlap with other proposed positive characteristics that also appear important in explaining effective functioning and health. Initial efforts along these lines that did not include hardiness suggest that the characteristics of self-esteem, emotional stability, locus of control,

and self-efficacy may be indicators of a common core construct, and that their discriminant validity is also questionable (Judge, Erez, Bono, & Thoresen, 2002). Although hardiness was not included in this study, empirical effort evaluating its status with regard to other seemingly similar constructs is warranted. This is especially important given the accumulating evidence that hardiness has construct validity. Although hardiness appears theoretically distinct, due to its grounding in existential theory (e.g., Maddi, 2002), it will nonetheless be useful to determine whether it is empirically distinct through the approach taken by Judge et al. (2002).

A start on the question of construct distinctness has been made by taking a comparative analytic stance (Maddi, 1968/1996) in which hardiness and other positive factors are empirically evaluated as to their relative effectiveness in relating to specific, conceptually relevant, dependent variables. For example, Maddi and Hightower (1999) reported that in three studies, differing in the stressful circumstances involved, hardiness was a more powerful positive predictor of transformational (problem-solving) coping and negative predictor of regressive (denial and avoidance) coping than was optimism. Also, Maddi et al. (2003) obtained results showing that hardiness had a stronger negative relationship to depression and anger than did religiosity. Further, in regression analyses, only hardiness retained a main effect. Somewhat relevant are the findings of Maddi et al. (2001), who correlated hardiness with the five factors, as measured by the NEO-FFI. Results showed that although hardiness is related to all five of the factors, their combination accounts for only a small amount of hardiness variance. This opens the way for comparing the relative effectiveness of hardiness and the Five-Factor Model in explaining relevant dependent variables. More comparative analytic studies building on those mentioned here would be of interest in furthering conceptualization of the dispositional pattern or patterns that contribute to an effective life.

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