Hardiness, Type A Behavior, and the Stress-Illness Relation in Working Women

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Hardiness has been proposed as a stress-resistance resource in maintaining health. This construct has been shown to act in conjunction with the Type A behavior pattern in affecting illness. In this study, we examined this relation in women (N = 82) with the use of the Structured Interview and the Jenkins Activity Survey to assess Type A behavior. As expected, there was a strong stress-illness association. However, there were no hardiness main effects or interactions between stress, Type A behavior, and hardiness. Hardiness was significantly associated with age, education level, and marital status. No differences in hardiness composition were found between high stress/high illness and high stress/low illness groups. Only the Powerlessness scale of hardiness was related to illness. These results are discussed in comparison with other hardiness studies. Particular attention is focused on possible sex differences, and implications for future research are suggested.

Although there has been no scarcity of studies exploring the stress-illness relation (e.g., Garrity, Marx, & Somes, 1978; Holmes & Masuda, 1974; Rahe & Arthur, 1968; Wyler, Masuda, & Holmes, 1968), it is comparatively recently that the role of moderating variables has been included as an area of empirical study. What has emerged from this ever-growing body of research is a complex individual-environment interaction with many different factors influencing not only the probability of a person becoming ill from stress but also pathogenesis, illness behavior, and treatment outcomes (Cobb, 1974; Johnson & Sarason, 1979; Rabkin & Streunng, 1978; Rahe & Arthur, 1978). A number of these factors, including, for example, social support (Cobb, 1976) and coping strategies (Billings & Moos, 1981; Lazarus & Folkman, 1984a), have already been identified. In 1979 a new concept that attempted to explain why some persons are impervious to the debilitating effects of stressful life events was introduced (Kobasa, 1979). This concept, hardiness, focuses on persons that remain relatively healthy after experiencing high amounts of stressful life events.

In the original study (Kobasa, 1979) a group of male executives was separated into high stress/high illness and high stress/low illness groups. These groups were then differentiated on the basis of a battery of personality scales. The personality characteristics that best achieved this dichotomization represented three dimensions that constituted the general concept of hardiness: commitment, challenge, and control. The commitment dimension reflects a sense of meaningfulness about one's life both in terms of having distinguishable personal life goals with a feeling of self-involvement and having a sense of community. Control represents the belief that one can influence or be responsible for one's experiences and life events. Therefore, the possibility for manipulating or counteracting adverse circumstances exists. Finally, the challenge dimension consists of the idea that change, in the form of life events, is a positive phenomenon with the potential of personal growth for the individual (Kobasa, 1979, 1982). A hardy individual possesses a strong sense of all three dimensions, which act together to help buffer the debilitating effects of life stresses, such as physical illness.

Since the original definitive study was carried out, a 3-year prospective study has been done (Kobasa, Maddi, & Kahn, 1982) that yielded similar results. After this, a series of studies followed exploring the interactive effects of hardiness and other proposed stress-moderating variables. These include studies of hardiness and exercise (Kobasa, Maddi, & Puccetti, 1982), constitutional predisposition to illness (Kobasa, Maddi, & Courington, 1981), social support (Kobasa & Puccetti, 1983), and Type A behavior (Kobasa, Maddi, & Zola, 1983). In all these studies, hardiness exerted a direct effect on illness and interacted with stress to affect illness. However, only social support and Type A behavior each were related as well to stress and hardiness in a three-way interaction. It is the latter study that is of particular interest to the present research endeavor.

Type A behavior is a pattern that develops from the interaction of environmental and personality demands. It is characterized by an excessive degree of impatience, time urgency, competitiveness, and hostility (Rosenman, 1978). Although thought to be an independent risk factor for coronary heart disease (Rosenman et al., 1975), Type A behavior's role in other disease processes or general health is not so well established. However, because Type A behavior has been hypothesized to be a maladaptive coping strategy against stress (Glass, 1977; Lazarus & Folkman, 1984b), one might expect the behavior pattern to act as an augmenting stress-moderating variable. Kobasa et al. (1983) put this hypothesis to the test and also examined interactive effects that might occur between hardiness, stress, and Type A behavior. In summary, they concluded that although Type A behavior had no significant direct effect on reported illness, the Type A with low-hardy personalities showed the most illness when faced with mounting stress. Close inspection of their re-
results, however, reveals that their conclusions on the interactive effects of stress, hardiness, and Type A behavior may be overdrawn. When the Schedule of Recent Events (Holmes & Rahe, 1967) was used as the stress index, consistent with results of the original hardiness studies, there were no significant interactions at all; only the main effects of stress and hardiness reached significance. The conclusion that Type A/low hardy individuals under high stress experience more illness was based on post hoc analyses using only work-related items selected from the stress inventory. Even then the interaction was only of marginal significance. We suggest that significance levels might have been improved if the Structured Interview (Rosenman, 1978) had been used to classify Type A behavior, rather than the Jenkins Activity Survey (Jenkins, Zyzanski, & Rosenman, 1979), which may misclassify individuals scoring near the A/B cutoff point.

Whether the results from the original hardiness studies can be generalized to women is an open question. All data so far have been collected from samples of white, male, middle-class business executives or professionals. The three studies that have been done with women, one unpublished, have all focused on psychiatric symptomology rather than on physical illness (Ganellin & Blaney, 1984; Gentry & Kobasa, 1984; Rhodewalt & Agustsdottir, 1984). In each case a negative relation between hardiness and indications of psychiatric strain was found. Kobasa’s sample consisted of women being screened for cervical cancer (Gentry & Kobasa, 1984), whereas Ganellin & Blaney (1984) and Rhodewalt and Agustsdottir (1984) used undergraduate students. It could be argued that both samples are unrepresentative of the general female population.

Therefore, in this study we attempted to examine the relation between hardiness, stress, and Type A behavior in a sample of working women. Secretaries were chosen as the sample population for two reasons: (a) It is currently the second most hazardous occupation in regard to general health (U.S. Department of Labor, 1985), and (b) clerical workers have been identified as being at particular risk for coronary heart disease (Haynes, 1984; Haynes & Feinleib, 1980). Because secretaries are, therefore, at greater risk for both coronary heart disease and general illness, this makes them an important group in which to study the mediating effect of Type A behavior and hardiness on the stress–illness relation.

Method

Subjects and Procedure

Letters from the authors explaining the project and soliciting participation were distributed randomly to female secretaries in administrative and academic offices at the University of Tennessee. After they indicated their willingness to participate, a questionnaire packet was delivered to the secretaries. Of the 110 secretaries who initially received questionnaire packets, 82 completed them, giving us a response rate of 74.5%. The resulting sample was predominantly white (96%) and Protestant (88%), and sample members on average had 2 years of college education. As for marital status, 66% of the subjects were married, 21% were single, and 13% were divorced or widowed. Additionally, the average age was 35 years, with a range of 21 to 59 years.

Measurement of Hardiness and Type A Behavior

Hardiness was measured as a composite of five individual questionnaire scales (Kobasa et al., 1983). These included the Alienation From Work scale and the Alienation From Self scale (Maddi, Kobasa, & Hooper, 1979) for the commitment dimension; the Security scale (Hahn, 1966) for the challenge dimension; and the External Locus of Control scale (Rotter, 1966) and the Powerlessness scale (Maddi et al., 1979) for the control dimension. Following Kobasa et al. (Kobasa, Maddi, & Kahn, 1982; Kobasa et al., 1983), the score from each scale was converted to a standard z score and then summed to give a single composite score for hardiness. The z score for the challenge component was doubled because the other dimensions were each comprised of two scales; the higher the hardiness score, the less hardiness one possesses.

The Jenkins Activity Survey, Form C (JAS; Jenkins et al., 1979) was used to measure Type A behavior. In addition, the Structured Interview (SI; Rosenman, 1978) was used with a subset (n = 64) of the sample that was participating further in an extension of the project. The interview was administered alternately by both authors. The second author, Kathleen Lawler, had been trained to administer the SI by R. Rosenman at the Harold Brunn Institute; Lori Schmied, the first author, was then trained by Lawler. All interviews were evaluated by Lawler. The SI lasted 10 to 15 min and was administered to subjects in the authors’ laboratory approximately 5 to 6 months after subjects completed the questionnaires. Both methods of assessment have shown adequate reliability (.70 to .80 for a 12-month period) and validity when used with male samples (Jenkins, Rosenman, & Friedman, 1965; Jenkins et al., 1979).

Measurement of Illness and Stress

The Seriousness of Illness Survey (Wyler, Masuda, & Holmes, 1968) was used to assess the health/illness status of the subjects during the prior 12 months (divided into two 6-month periods). The survey lists 126 illnesses ranging from the trivial to the catastrophic, with each item weighted according to its assigned severity. Subjects indicated which illnesses they had experienced in each of the 6-month periods.

The Schedule of Recent Events (Holmes & Rahe, 1967) was used to indicate the amount of stress experienced during the same 12 months, also divided into two 6-month periods. Each item on the schedule also has a standard weight assigned to it.

A frequency score was obtained for each instrument. This score consisted of the number of events and illnesses experienced during the past 12 months. A weight score based on the sum of the standard weights of the individual items checked, multiplied by its frequency, was also obtained. Derivation of the weight score followed the method described by Kobasa (1979).

Measurement of Demographic Variables

A personal information sheet was also included to ascertain the demographic characteristics of the subjects. These included age, education, marital status, number of children, race, and religion.

Results

Hardiness and Type A Scores

The mean hardiness composite score was 37, which is similar to that reported by Kobasa et al. (1983). As shown in Table 1, all the scales comprising hardiness were highly intercorrelated. This is also consistent with other hardiness studies (Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982).

Type A scores ranged from −16.1 to +18.1; subjects were classified as As and Bs if their scores fell above or below 0.00, respectively. Structured Interview classification resulted in 26 As, 26 Bs, and 12 Xs; the Xs were excluded from the subsequent analyses. Neither Type A rating correlated significantly with the
Intercorrelation of the Hardiness Scales

Table 1

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alienation From Self</td>
<td>.51***</td>
<td>.73***</td>
<td>.34**</td>
<td>.25*</td>
<td></td>
</tr>
<tr>
<td>2. Alienation From Work</td>
<td>.74***</td>
<td>.28*</td>
<td>.33**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Powerlessness</td>
<td>.45***</td>
<td></td>
<td>.31**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Locus of Control</td>
<td></td>
<td>.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Security</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*p ≤ .05.
**p ≤ .001.
***p ≤ .0001.

composite hardiness score or individual scales, thus reestablishing their independence (Kobasa et al., 1983).

Relation to Demographic Variables

Analysis showed that Type A behavior was not associated with any of the demographic variables. However, hardiness was significantly correlated with three of the variables: age (r = -0.39, p = .0003), education (r = -0.21, p = .06), and marital status (r = -0.26, p = .02). Thus, possessing hardiness was associated with being older, more educated, and married. Subsequent t tests showed that high-hardy and low-hardy subjects differed significantly in their mean ages: M = 39.3 and 30.6 years, respectively, t(81) = -4.03, p = .0001. They also differed significantly in mean number of years of education: M = 14.5 and 13.7 years, respectively, t(81) = -2.16, p = .03.

Stress and Illness Scores

The Seriousness of Illness Survey yielded a mean frequency score of 9.3 illnesses and a mean weight score of 2,351, and the Schedule of Recent Events produced a mean frequency of 12.9 events and a mean weight of 361. These means were similar to those reported by Kobasa and Puccetti (1983) but higher than those reported in other hardiness studies (e.g., Kobasa, 1979; Kobasa et al., 1981). Furthermore, both the illness and stress frequency scores (r = .35, p = .001) and the weight scores (r = .44, p = .0001) were correlated. These correlations were somewhat better than those reported for stress/illness studies (Rabkin & Streuning, 1978).

Hardiness, Type A, and the Stress-Illness Relation

Correlational analyses were conducted on hardiness, Type A behavior, stress, and illness. These relations were summarized in Table 2. Neither hardiness nor Type A behavior was related to illness. However, both variables were associated with stress: Being less hardy was associated with experiencing more life events, as is Type A behavior when assessed with the SI. Also, both weight and frequency scores were highly and significantly correlated, indicating the relative indiscriminate efficacy of using either parameter (Garrity et al., 1978; McGrath & Burkhart, 1983). However, because a somewhat better stress-illness correlation was obtained using the weights, these scores were used in the following analyses of variance (ANOVAs).

A three-way ANOVA was performed on the data, just as Kobasa et al. (1983) had done. Stress, hardiness, and JAS scores were all split into high- and low-scoring groups on the basis of their respective medians. The mean illness weight scores according to these breakdowns are indicated in Table 3. This analysis produced a stress main effect, F(1, 72) = 3.67, p = .05, and a marginal Stress X Type interaction, F(1, 72) = 2.38, p = .12. Thus, high-stress subjects did experience more illness, which verifies the correlational analysis. The interaction reflected a tendency for the high-stress Type Bs to have higher illness scores than did high-stress Type As. Under low-stress conditions A and B illness scores were quite similar.

This same analysis was conducted using SI scores rather than the JAS scores. There were no significant main effects or interactions.

Testing of Group Differences

Because of these unexpected results, procedures described in Kobasa (1979) were followed to see if in fact hardiness was distinguishable by the individual subscales. Subjects were placed into high stress/high illness or high stress/low illness groups on the basis of median scores for stress and illness. This was done with both frequency and weight scores. This is summarized in Table 4. Then t tests were performed on each questionnaire score. There were no significant mean group differences for any questionnaire. The questionnaire scores were also subjected to a discriminant analysis, which yielded no significant variables of discrimination. Inspection of correlation coefficients between illness and individual questionnaires revealed that the Powerlessness scale was the only measure associated significantly with illness-frequency scores (r = .24, p = .03). The Alienation From Self scale was marginally correlated (r = .18, p = .10). In both cases higher levels of powerlessness and greater alienation from self were associated with higher levels of reported illness.

Powerlessness, Type A, and the Stress-Illness Relation

Using powerlessness scores instead of hardiness, the three-way ANOVAs (Powerlessness X Stress X Behavior Type) were again performed with both SI and JAS Type A classification. The JAS analysis yielded marginal main effects for stress, F(1, 72) = 2.94, p = .09, and powerlessness, F(1, 72) = 2.53, p = .11, and a Stress X Type interaction, F(1, 72) = 3.52, p = .06. There were no significant effects using the SI Type A classification. These results are not substantially different from the hardiness analyses.

1 Because of missing data owing to some incomplete questionnaires, the number of subjects and degrees of freedom vary somewhat for the subsequent analyses.
2 Negative correlations indicate positive relations because high-hardiness scores reflect low hardiness.
3 Analyses of variance were run using BMDP2V, a program that makes automatic adjustments for unequal cell sizes.
Table 2
Correlation Coefficients of Stress, Illness, Type, and Hardiness

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illness (frequency)</td>
<td>—</td>
<td>.84***</td>
<td>.35**</td>
<td>.45***</td>
<td>.07</td>
<td>−.06</td>
<td>.09</td>
</tr>
<tr>
<td>Illness (weight)</td>
<td>—</td>
<td>—</td>
<td>.42***</td>
<td>.44***</td>
<td>−.03</td>
<td>−.08</td>
<td>.09</td>
</tr>
<tr>
<td>Stress (frequency)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.94***</td>
<td>−.04</td>
<td>.31**</td>
<td>.36**</td>
</tr>
<tr>
<td>Stress (weight)</td>
<td>—</td>
<td>3.1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>.19</td>
<td>.06</td>
</tr>
<tr>
<td>JAS</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>SI</td>
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<td>—</td>
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</tr>
</tbody>
</table>

Note. JAS = Jenkins Activity Survey (Jenkins et al., 1979). SI = Structured Interview (Rosenman, 1978).

Discussion

Measures of stress, illness, Type A behavior, and hardiness were collected from a sample of 82 female secretaries. As expected there was a strong positive relation between stress and illness, but no relation between Type A behavior and illness. In addition, possessing a hardy personality did not have the buffering effect between stress and illness previously reported, nor did it mitigate any relation between Type A behavior and illness or between stress, Type A behavior, and illness. However, both Type A behavior and hardiness were related to stress levels, with Type As and low-hardy individuals reporting more life events. Thus, Type A and hardiness correlated with stress, and stress correlated with illness, but neither Type A nor hardiness correlated with illness.

Failure to show the stress-buffering effects of hardiness may be due to a number of factors. First of all, hardiness may not generalize to females. The three other studies examining female subjects did not assess the relation of stress and hardiness to physical illness but, instead, compared measures of psychiatric symptoms. In an unpublished study Kobasa and Hill found that women with high stress and low incidence of psychiatric symptoms were more hardy than women with high stress and high incidence of symptoms (Gentry & Kobasa, 1984). Ganellen and Blaney (1984) used a depression scale as their dependent variable with women. Although there was no way to test this finding with the Seriousness of Illness Survey, a post hoc test was performed on the composite hardiness score for subjects who had indicated experiencing depression. Persons with depression had higher composite scores (less hardy) than persons without depression, t(1, 78) = 1.99, p = .05. This result must be viewed with caution as this is a crude measure of depression. However, it is suggestive of other results found in female samples. So although having a hardy personality may in fact act as a resistance resource against mental illness, thus far there is no evidence to say the same with regard to physical illness. In women hardiness may simply be more relevant to mental health.

On the other hand, hardiness effects may appear in a sample of women more comparable to the white, middle-class executives studied in the original formulation. Inasmuch as clerical work is a pervasive occupation for women, and one associated with health risks, our primary interest was to study possible stress buffers in this group. However, the present data suggest that the role of hardiness should be examined in white, middle-class, female managers as well as in workers in other occupations, both male and female.

Second, the personality characteristics that constitute hardiness in men may not be the same characteristics that compose it in women. Support for this explanation was provided by the analyses of group means on each individual hardiness scale. In contrast to Kobasa’s work with men, none of the scales differentiated high stress/high illness and high stress/low illness groups. Similarly, Ganellen and Blaney (1984) also found only one subscale, Alienation From Self, related to mental illness in women. Because group differentiation based on illness is of particular importance. Kobasa has consistently found no...
relation between demographic variables and hardiness in her male samples and has concluded that no confounding has occurred (e.g., Kobasa, Maddi, & Kahn, 1982). The same assumption cannot be made with this sample. It would seem from the present data that the more hardy secretaries were older and more educated than were less hardy persons. Although these variables were not significantly related to illness, it is suggestive that hardiness may be a function of a developmental continuum. No study so far has been done to explore this hypothesis and its corollary that good health despite high stress may lead to increased hardiness rather than vice versa. Perhaps safely weathering stressful events produces a greater sense of commitment and reinforces the notion that not only can one influence the effects of stress but the coping process itself can be beneficial to personal growth.

Finally, the occupational role of the present subjects may have played a critical part in the failure to find hardiness effects on illness. These women were all employed in a single field that may differ on a number of dimensions from male executives and from other workers. With regard to Type A behavior, hard-driving, competitive, and hostile behaviors are unlikely to lead to material rewards in secretaries. Similarly, the job is notice-ably lacking in control and challenge (Haynes & Feinleib, 1980). Given that context, perhaps hardiness (characterized by a high sense of control) is prevented from manifesting its beneficial effects. Related to this issue, a significant correlation was found between the Powerlessness subscale and illness. These data suggest both that secretarial workers should be studied further to discover what traits in these women are associated with health and what other occupational groups should be used as well to investigate the validity of hardiness.

Type A behavior also had little effect on illness. The marginal Stress × Type interaction that was found indicated that it was the Type Bs rather than As that experienced more illness with greater stress. However, it should be remembered that Kobasa et al. (1983) also failed to find any interactions of hardiness, stress, and Type A using the standard stress measure. Only when a work-related subscale was used did even marginal (p > .05) interactions appear. To test whether such interactions might appear in our data, a similar post hoc analysis was performed. Selecting out the work-related items, subjects were classified as high or low on this secondary work-stress scale. An ANOVA was performed with factors of stress, Type A, and hardness. Only the Type × Stress interaction, F(1, 72) = 4.7, p = .03, was significant. However, as reported in the earlier analyses, this effect was due to the increased illness levels in the high-stress Type Bs. Thus, neither altering the stress measure nor including the structured interview for Type A/B classification changed our results. In summary, neither hardiness nor an interaction of hardiness and Type A was related to illness in this sample of working women. Stress did relate strongly to illness, but neither hardiness nor Type A behavior appears to augment or diminish this relation.

### References


HARDINESS AND TYPE A BEHAVIOR


Received November 14, 1985
Revision received March 7, 1986