Intervening variables of stress, hassles, and health

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The relations between psychological/physical symptoms, hassles, and intervening variables of stress were explored in Japanese subjects. The intervening variables were five coping strategies, Type A behavior, hardiness, social support, and social interest. As expected, there was a strong hassles-symptoms association, and symptoms were related to avoidance, emotion-focused coping, Type A behavior. This study also examined which intervening variables were more effective in decreasing the negative effects of stressors by multivariate analysis of variance. The individuals with high symptoms tended not to use problem-focused coping and showed more Type A behaviors. Further researches in Japanese subjects that would provide a better understanding of intervening variables of stress were proposed.

Key words: intervening variables, hassles, psychological/physical symptoms, multivariate analysis of variance.

Increasing emphasis has been placed on the role of intervening variables of life stress, since Selye (1956) suggested that individuals respond in a distinctive way to stressors. Investigating the possible joint effects on the stress-illness relationship of various intervening variable has been of great importance. The intervening variables were coping responses, Type A behavior, hardiness, social support, and social interest.

Coping was mostly defined as behavioral or psychological responses which designed to reduce the aversive stimuli in the stressful situation (Folkman & Lazarus, 1980). Several descriptive classification systems for coping responses have been developed. One formulation is composed of two categories concerning coping focus: problem-focused and emotion-focused coping (Folkman, 1984). Problem-focused coping refers to action of removing or circumventing the source of the stress, and emotion-focused coping refers to attempts to reduce or eliminate psychological distress associated with stress.

Another classification form of coping is composed of active-cognitive coping, active-behavioral coping, and avoidance. Active-cognitive coping is an attempt to control one's appraisal of the stressfulness of the event. Active-behavioral coping is a behavioral attempt to deal directly with the problem. Avoidance is an attempt to avoid actively confronting the problem (Billings & Moos, 1981).

Type A behavior pattern is considered to be a consistent coping style of dealing with stressors. Type A behavior is the most important predictor of coronary heart disease and is characterized by an excessive degree of impatience, time urgency, competitiveness, and hostility (Glass, 1977). Type A behavior has not only been hypothesized to be a maladaptive coping style but also been discussed as a stress-mediating variable with hardy personality.

Kobasa, Maddi, and Zola (1983) studied interactive effects among hardiness, stressful life events, and Type A behavior and concluded that Type A individuals with low-hardiness showed more symptoms in stressful situations. Type A behavior was, however, reported to have no significant effect on illness. Kobasa, Maddi, and Kahn (1982) reported that persons who remained healthy after experiencing stressful life events had hardy personalities.

Hardy personality has three dimensions: control, commitment, and challenge (Kobasa, 1979). Howard, Cunningham, and Rechnitzer (1986) used the secondary di-
mension entitled dependence/independence of the Sixteen Personality Factor Questionnaire (16PF) to measure hardiness. Highly independent people have internally autonomous, more radical, less conservative personality characteristics similar to those of hardiness in the original Kobasa’s study.

Social support has been generally characterized as the degree of support provided to an individual by the persons such as spouse, family, friends, neighbors, fellow workers, and community members (Smith & Hobbs, 1966). Several studies (e.g., Ganellen & Blaney, 1984) suggested that social support may become a moderator of the negative effects of stressors. Holahan and Moos (1981) conducted a longitudinal study to analyze social support and found that a reduction in social support leads to psychological distress.

The concept of social interest is a matter of value: being interested in and caring about things beyond the self and is linked with psychological variables: cognitive (e.g., understanding, identification), emotional (e.g., empathy, sympathy), motivational (e.g., urge, striving), and behavioral (e.g., cooperation, contribution). Social interest is reported to be a moderator of the relation between stressors and symptoms (Crandall, 1984).

The modest relationship between stressors measured by major life events and psychological/physical health status has been reported (Holmes & Masuda, 1974). Focusing on such major events, however, ignored individual differences and resources in stress research. Kanner, Coyne, Schaefer, and Lazarus (1981) developed the Hassles Scale, based on the criticism of preoccupation with dramatic events and heavily burdened situations in stress measurement. Hassles are frequently experienced stressors, defined as irritating, frustrating, distressing demands on everyday transactions with the environment. Hassles are reported to be more predictive of adaptational outcomes and psychological symptoms than major events (Kanner et al., 1981).

Although stress is considerably drawing social attention, there are not many researches about the preceding variables for Japanese subjects. The purpose of the present study was to analyze stress related variables for Japanese subjects. The analyses were conducted to examin the relationship between coping, Type A behavior pattern, hardiness, social support, social interest, hassles, and symptoms, and to explore how intervening variables and stressors influence health and adaptational outcomes.

**Method**

**Subjects**

Subjects were 66 men and 48 women, ranging in age from 32 to 63 ($M=39.1$, $SD=5.75$) who completed all questionnaires. They were not under medical treatment and had at least an adequate income. One hundred and seventy people were randomly selected from the alumni book of a public high school in a middle-class residential area in Tokyo and were asked to answer a set of questionnaires and mail it back. Among them, 128 persons responded (75.3%) and 14 sets of questionnaires were not complete. Final subjects were 64 company employees, 29 public officers, 14 house wives, three medical doctors, one company owner, one writer, and two others.

**Measures**

**Coping responses.** The items probing how to deal with a personal crisis or stressful life event (Billings & Moos, 1981) were used to assess coping. The items were grouped into the three categories of coping method: active-cognitive (6 items), active-behavioral coping (6 items), avoidance (7 items). They were also classified into two categories of coping focus: problem-focused (7 items) and emotion-focused coping (12 items). A reasonable degree of
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independence between the method and the focus of coping indices, and adequate internal consistency and independence for both the method and focus of coping categories have been demonstrated (Billings & Moos, 1981).

Type A behavior pattern and hardiness. The Jenkins Activity Survey (JAS; Jenkins, Zyzanski, & Rosenman, 1979) was employed to measure Type A behavior pattern. Original 57 items of the JAS were used, since there was no standardized Japanese version of the JAS. Hardiness was measured by three factors of the Sixteen Personality Factor Questionnaire (16PF; Cattell, Eber, & Tatsuoka, 1970), and Japanese version was available (Izawa, Yamaguchi, Tatsuoka, Motegi, Uchiyama, & Ueno, 1982). Three factors (E, M, Q2) of the 16PF indicating assertive, imaginative, and self-sufficient personality, are major primary components of the dependence/independence factor, which consists with Kobasa's concept of hardiness (Howard et al., 1986).

Social support. The Traditional Social Support Index (TSSI) was the measure of social support (Holahan & Moos, 1981). The TSSI provides a quantitative index of initial levels of social resources in the areas of family and relatives, friends, job, and community involvements.

Social interest. The Social Interest Scale (SIS) was used (Crandall, 1984). The SIS consists of 15 pairs of items, and each pair includes one trait related to social interest and the other not related, with both matched for social desirability. Subjects were required to choose a trait which they consider to be of more value or importance in each of 15 pairs. The validity and reliability of the scale have been provided.

Hassles. The Hassles Scale (Kanner et al., 1981) consists of a list of 117 hassles. Subjects were asked to suggest hassles that they experienced during the previous month. They also rated each suggested hassles for severity on 3-point subscales: 1 = somewhat severe; 2 = moderately severe; and 3 = extremely severe. Cumulated severity, the sum of the 3-point severity ratings, was used in the analyses.

Health and adaptational status. Two indicators of psychological and physical distress adapted from the work by Langner (1962) were depression and physical symptoms. Depression was measured by an index of seven symptoms, and physical symptoms were measured by an index of 12 symptoms, experienced fairly often over the previous 12 months (Billings & Moos, 1981).

Each scales was translated into Japanese by two bilinguals, and better expressions were employed for the questionnaires of the study. All analyses were conducted on raw scores of each scale.

Results

Summary Statistics and Relations among Variables

The means and standard deviations for the scale scores of coping (active-cognitive, active-behavioral, avoidance, problem-focused, emotion-focused coping), Type A behavior pattern, hardiness, social support, social interest, hassles, and symptoms are presented in Table 1. The Pearson's correlation coefficients between the foregoing intervening variables, hassles, and symptoms are also shown in Table 1.

Among five coping scale scores, avoidance was highly correlated with psychological/physical symptoms and emotion-focused coping. There was a highly significant correlation between Type A behavior and symptoms. Hardiness was highly correlated with symptoms. The social support scores had a moderate correlation with symptoms. There also was a significant correlation between the Hassles Scale scores and symptoms (see, Table 1).

Multivariate Analysis of Variance

A multivariate analysis of variance was conducted on two groups: high symptoms group and low symptoms group. Subjects
Table 1
Means, standard deviations, and Pearson correlations to symptoms

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active cognitive</td>
<td>4.64</td>
<td>1.24</td>
<td>.04</td>
</tr>
<tr>
<td>Active behavioral</td>
<td>3.96</td>
<td>1.51</td>
<td>-.11</td>
</tr>
<tr>
<td>Avoidance</td>
<td>2.13</td>
<td>1.23</td>
<td>.36***</td>
</tr>
<tr>
<td>Problem focused</td>
<td>5.49</td>
<td>1.65</td>
<td>-.04</td>
</tr>
<tr>
<td>Emotion focused</td>
<td>5.17</td>
<td>1.81</td>
<td>.22*</td>
</tr>
<tr>
<td>Type A</td>
<td>29.14</td>
<td>8.32</td>
<td>.37***</td>
</tr>
<tr>
<td>Hardiness</td>
<td>15.95</td>
<td>3.58</td>
<td>.30***</td>
</tr>
<tr>
<td>Social support</td>
<td>31.83</td>
<td>26.07</td>
<td>-.16*</td>
</tr>
<tr>
<td>Social interest</td>
<td>11.18</td>
<td>9.26</td>
<td>-.07</td>
</tr>
<tr>
<td>Hassles</td>
<td>21.25</td>
<td>19.78</td>
<td>.67***</td>
</tr>
<tr>
<td>Symptoms</td>
<td>5.29</td>
<td>3.21</td>
<td>—</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001.

were classified into two groups based on the scores of depression and physical symptoms. The scores of depression and physical symptoms were split into high- and low-scoring groups on the basis of the median. The median score was five.

Dependent variables were hassles and nine intervening variables: five coping strategies, Type A behavior pattern, hardiness, social support, and social interest. The results of the multivariate analysis of variance between high symptoms and low symptoms group are presented in Table 2. The test of Wilks' lambda by Rao's approximate $F$ was significant, indicating that the high symptom group was different from the low symptom group, $F(8/104) = 7.97, p < .001$.

Table 2 indicates that the two groups were different from each other on 8 of the 10 dependent variables in the direction of high symptoms. The discriminative function coefficients indicate that high hassles, low problem-focused coping, and high Type A behavior had the greatest discriminating power, and low active-behavioral coping and low social support had the least power (Table 2).

Discussion

The primary purpose of the study was to examine whether the relationship between stress-related variables and psychological/physical symptoms of American studies also appears in the Japanese subjects. Avoidance and emotion-focused coping were reported to be positively related to symptoms (Billings & Moos, 1981). The Japanese subjects also showed the positive correlations between them. The negative correlation between active-cognitive coping and symptoms (Billings & Moos, 1981), however, was not significant in the Japanese subjects. Type A behavior was considered to be a maladaptive coping strategy against stress for Japanese as well as Americans, since it had the strong relationship with symptoms. Although hardiness was found to moderate the negative effects of stressors (Kobasa, 1979), the results of this study did not confirm the findings. Hardiness was strongly related to symptoms. The three subscales ($E$, $M$, $Q^2$) of the 16PF might not be the proper measure of hardy personality.

A lot of studies reported the negative correlations between psychological/physical symptoms and the social support measures (Bruhn & Philips, 1984). The results of this study also showed social support had the significant negative correlations with symptoms. It is indicated that decreases in social support in environments might be related to increases in maladjustment for Japanese middle-aged subjects.

The relations between hassles and health and adaptational status that Kanner et al. (1981) reported apply to Japanese subjects. The results of the study supported that the Hassles Scale could predict health and adaptational status for Japanese, as did Nakano (1988). It is indicated that the stress-related measures seem to be useful in urban society, even in different culture. Intervening variables against the adverse effects of stressors might be culture-free variables.
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The secondary purpose of this study was to explore which intervening variable has the most stress-mediating effect. Given that the most of the stress related variables were correlated with psychological/physical symptoms as expected, the relative importance of each in mediating the effects of stressors was possible to find.

The results of the multivariate analysis of variance indicate that individuals with psychological/physical symptoms have more stressors and tend not to use problem-focused coping. They also use less active-behavioral coping and use more avoidance and active-cognitive coping. Tangible coping seems effective in moderating the aversive qualities of stressors. Emotional coping does not seem to moderate the stressful situations. Type A behavior also had influences on symptoms. There were more Type A individuals in the high symptoms group. Since Type A behavior is considered to be a persistent coping style, coping styles against stressors seem to be the main variables of producing the group differences. It might be concluded that modifying one's coping styles leads to reductions in psychological/physical symptoms and to health.

A limitation of this study is that the data were obtained through the translated scales. The scales selected for the present study were also the shortest scales available, in order to make a set of questionnaires with reasonable length and thereby increase the rate of voluntary returns. As a result, the number of questions for each scale had wide range, and each variable was measured by only one scale. This study, however, suggested that it would be useful to do more research on the intervening variables employed in this study and how they relate to psychological/physical symptoms in Japanese samples.

References


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