

## SITUATION-RELATED CHANGES OF CAUSAL STRUCTURES AND THE STRESS MODEL IN JAPANESE COLLEGE STUDENTS

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Structural equation modeling was used to examine changes in the structural relationships between personality traits, social contexts, cognitive appraisals, and coping strategies in four different stressful situations. Five hundred and sixty-three Japanese college students completed questionnaires related to four stressful situations, two less controllable (feeling sick condition; human relationship problem) and two more controllable (obtaining one's goal; social evaluation). Different causal structures were found between the two situations that had lower levels of controllability and the two situations that had higher levels of controllability. The results confirm that personality determines a fundamental type of coping style, which is modified according to the social context. Our finding offers one explanation of how these factors associate across different situations.

*Keywords:* coping strategies, personality, social support, stressful situation, structural equation modeling.

People use different behavioral styles to cope with stressful events according to the situation. Mischel (1968) stated that (1) trait theories do not predict behavior well, and (2) people do not behave consistently across diverse situations. The association between personality traits and situations must be considered to understand human behavior (Mischel). An individual's behavior in a particular situation depends on the complicated association among personality traits, social context, the situation, and the individual's cognitive evaluation of the situation.

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The importance of internal factors (personality traits) and external factors (situations) has been suggested to influence behavioral methods of coping. Lazarus and Folkman (1984) discussed the relationship between coping behavior and stress from the perspective of cognitive evaluation. They proposed a systematic *Stress model*. This model states that *when people confront a stressful situation they try to cope with that situation and also try to adapt and manage that situation in order to maintain their mental health. This model treats psychological stress and coping as parts of a continuous process contributing to psychological adjustment: "Stressor → cognitive evaluation → coping → stress response and psychological adjustment"*. *Cognitive evaluation* refers to *evaluating the situation in terms of how threatened the individual feels. Coping* refers to *personal cognitive and behavioral efforts to manage internal and/or external demands in the stressful situation.*

Several previous studies have focused on the causal structures of the stress model with regard to personality traits and social contexts using structural equation modeling. Bolger (1990) tested the proposition that coping is "personality in action" in research involving a stressful medical school entrance examination, and found that neuroticism predicts increases in coping efforts and increases in daily anxiety under stress. Bolger and Zuckerman (1995), in a study of personality in the stress process, found that high neurotic participants had greater exposure and reactivity to conflicts, and low neurotic participants differed from high neurotic participants in their choice of coping efforts and in the effectiveness of those efforts. Magnus, Diener, Fujita, and Pavot (1993) examined the causal pathways between personality and life events and found that extraversion predisposed participants to experience more positive life events, whereas neuroticism predisposed participants to experience more negative events. Personality characteristics (self-confidence and an easygoing manner) and contextual factors (negative life events and family support) made significant incremental contributions to predicting active and avoidance coping (Holahan & Moos, 1987). Cozzarelli (1993) found that optimism, perceptions of personal control, high self-esteem, and self-efficacy were related to better psychological adjustment. Optimism, psychological control, and self-esteem in cognitive adaptation theory were beneficial for adjustment as shown in a longitudinal investigation of college students (Aspinwall & Taylor, 1992). Holahan and Moos (1991) investigated the relationship among life stressors, personal and social resources, and depression. They demonstrated that the pattern of predictive relations differs under high and low stressors. Under higher levels of stressors, personal and social resources relate indirectly to future psychological health through the use of more adaptive coping strategies. Under lower levels of stressors, these resources relate directly to psychological health.

Regarding social context, Holahan and Moos (1987) suggested that individuals who had more personal and environmental resources were more likely to rely on active coping and less likely to use avoidance coping. In another study, they found that coping strategies functioned as a mechanism through which both social support and social stressors related to subsequent depressive symptoms (Holahan, Moos, Holahan, & Brennan, 1997). Positive and negative aspects of social relationships made essentially unique contributions in predicting subsequent coping efforts. Other researchers have suggested that initial parental support is associated with subsequent changes in psychological adjustment both directly and indirectly through adaptive coping strategies (Valentner, Holahan, & Moos, 1994). For controllable events, family support predicted adaptive coping, and coping predicted changes in adjustment. For uncontrollable events, family support related directly to changes in adjustment.

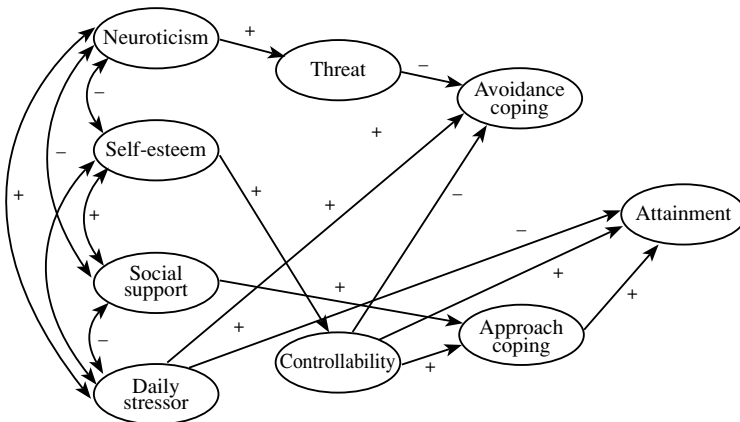
These previous studies have proposed intriguing findings about the causal structures of the stress model. However, most studies have used only one stressful situation. There have been few studies on the causal structures of the stress-model using different situations in order to investigate the association between personality traits, social contexts, and different situations. The purpose of the present study was to examine how the structural stress model among personal traits, social contexts, cognitive appraisals, and coping strategies changes as a function of four different stressful situations (two less controllable and two more controllable conditions) by using structural equation modeling. Based on the previous research (Bolger & Zuckerman, 1995; Cozzarelli, 1993; Holahan & Moos, 1987), we adopted neuroticism and self-esteem as personality traits, and social support and daily stressors as social contexts. Controllability of stressful events is also an important factor to orient our coping strategies. We hypothesized two dimensions of cognitive appraisals in the causal model, one was a primary appraisal (threat) and the other was a secondary appraisal (controllability). These are parts of Lazarus' theory of cognitive appraisal. The primary stage of appraisal of a phenomenon in the external world involves judging the relevance of the situation to one's own well-being. The subsequent secondary stage of appraisal of a phenomenon in the external world involves judging what resources one has available to deal with it. Coping strategies were divided into two major types based on responses that have been identified as either approach or avoidance oriented in earlier conceptual work on coping (Folkman & Lazarus, 1980). *Approach coping* generally refers to a person's tendency to attend to a stressor by seeking information or closely monitoring the stressor, whereas *avoidance coping* represses, ignores, or diverts attention away from the stressor.

For the coping strategy, the concept of coping flexibility has been focused on as an important factor to determine behavior under a stressful situation. Cheng (2001) conceptualized coping flexibility using a multimethod approach including

a laboratory and real-life setting in assessing this construct. Individual differences exist in patterns of coping flexibility across different real-life stressful events. Individuals with high coping flexibility reported more variable coping patterns and greater effectiveness in the use of this strategy. Cheng (2003) also reported that individuals who were more motivated to seek alternative coping strategies tended to encode stressful situations in a more differentiated way. These results show that individuals who use a greater variety of coping strategies tend to adapt to different situational demands and were better adjusted. In a controllable situation, individuals are less likely to use avoidance coping.

Finally, individuals' behavior is determined by their own attainment and the degree of attainment is influenced by the patterns of cognitive appraisal and coping strategies. In this study, *attainment* refers to *feeling success in overcoming a stressful situation and reaching a particular level of self-esteem*. The adaptiveness of attainment has been widely discussed in the coping literature (Lazarus & Folkman, 1984; Nushi, 1995). Coping outcomes rely on the individuals' own appraisal of attainment and their subjective evaluation of effectiveness attainment promotes subsequent psychological adjustment.

Based on the previous studies, the following seven hypotheses (H1 – H7) were assumed in a basic model (Figure 1). H1: In stressful situations, individuals with high neuroticism tend to feel greater threat than those with low neuroticism; H2: In stressful situations, individuals with high self-esteem tend to experience greater levels of controllability than those with low self-esteem; H3: Individuals who have many social supports tend to have greater levels of controllability and tend to take an approach coping style relative to those who have few social



**Figure 1.** Hypothesized structural equation models. Latent constructs are shown in ellipses. Double-headed arrows represent correlations; single-headed arrows represent path coefficients. A positive sign means positive effects or correlations; a negative sign means negative effects or correlations.

supports; H4: Individuals who have higher levels of daily stress tend to use an avoidance coping style and to feel low attainment relative to those who have lower levels of daily stress; H5: Individuals feeling higher levels of threat and higher levels of controllability tend to take an approach coping style and tend not to use an avoidance coping style; H6: Individuals feeling higher levels of controllability tend to take an approach coping style and tend not to use an avoidance coping style; H7: Taking an approach coping style facilitates attainment.

## METHOD

### PROCEDURE

Collection of data occurred at the beginning of the class in the first semester. Before data were collected, the general research question was explained and informed consent was obtained from all students. No difficulties answering the questionnaires were reported.

### PARTICIPANTS

The questionnaire was administered to 740 Japanese undergraduate students. Data of 177 students were excluded from the final analysis because they did not answer all items completely. The data from the remaining 563 participants were used in this study (490 males, 73 females; mean age = 19.8 years,  $SD = 0.94$ ). We selected randomly 73 males (the equivalent number of females) and ran one-way ANOVAs to investigate gender difference of the dependent variables. There was no statistically significant difference between selected males and females. The gender difference was not taken into account in this study. The samples were combined in order to increase the statistical power of the analysis.

### MEASURES

**Neuroticism** Neuroticism was measured by ten items of the Chiba University Personality Inventory (CUPI; Yanai, Kashiwagi, & Kokufu, 1987). Adequate reliability (validity) was obtained for this scale in a previous study (Yanai et al.). In Japan, this scale is well established to measure personality traits from the point of view of the construct validity and its high test-retest reliability, which has been reported as 0.883 (Yanai et al.). Participants were asked to answer each question according to the following instruction: "How much do the following items describe you?" for example, 1. I am a worrier; 2. I am curious about trivial things. Respondents were requested to rate their endorsement of each item on a 4-point scale (1, *disagree* – 4, *agree*). An adequate reliability was obtained for this scale ( $\alpha = 0.868$ ). The total score was used as a variable in the structural equation model.

**Self-esteem** Self-esteem was assessed by using six items from the Self-Esteem Scale by Buss (Buss, 1986). Respondents ranked their endorsement of each

item on a 4-point scale (1, *disagree* – 4, *agree*). The Buss Scale was used as an alternative to the Rosenberg Self-Esteem Scale (Rosenberg, 1965) because this scale highly correlates with the Rosenberg Self-Esteem Scale ( $r = 0.88$ ) (Cheek & Buss, 1981). An advantage of the Buss Scale was its ease of use because it is shorter than the Rosenberg Self-Esteem Scale. The Cronbach's alpha of this scale indicated an adequate reliability ( $\alpha = 0.772$ ). The total score was used in the analysis.

**Social support** Social support was measured using ten items related to social support from the Stress Self-Rating Scale (SSRS; Ozeki, Haraguchi, & Tsuda, 1994). This scale is widely used to measure the degree of social support in Japan because of its reliability. Participants were asked to answer each question according to the following instruction: "How much do the following items correspond to you?", for example, 1. I have friends and relatives who often come and go; 2. I have people with whom I can share a jolly time; 3. I have people I can contact in an emergency to take care of my mail and my pet. Respondents rated each item on a 5-point scale (1, *none* – 5, *many*). An adequate reliability was found for this scale ( $\alpha = 0.868$ ). The total score was used in the model.

**Daily stressor** Daily stressor was measured with 20 items selected and modified from two psychological stress scales (Hisada & Niwa, 1987; Nushi, 1993; Ozeki et al., 1994). Participants were asked to answer each question according to the following instruction: "How much do the following items correspond to you recently (about 3 months)?" for example, 1. I tend to keep irregular hours; 2. I lost interest in my major; 3. I lost all my money. Respondents rated each item on a 4-point scale (1, *disagree* – 4, *agree*). An adequate reliability was demonstrated for this scale ( $\alpha = 0.756$ ). The total score was used in the structural equation model.

**Cognitive appraisal** Cognitive appraisal was assessed using six items derived from the cognitive appraisal scales used in a previous study (Okayasu, 1992). Three items measured primary appraisal (threat) and the other three items measured secondary appraisal (controllability). Participants were requested to answer each item according to the following instruction: "If you came up against this situation, how would you feel?" for example, primary appraisal (threat): 1. I think it would threaten my life; 2. I think it would be painful and hurtful to me. Secondary appraisal (controllability): 1. I have some resources to cope with this situation; 2. I know how to cope with this situation. Respondents endorsed each item on a 4-point scale (1, *disagree* – 4, *agree*). Explanatory and confirmatory factor analyses were carried out to confirm the validity (all factor loadings were more than 0.40). An adequate reliability was demonstrated for this scale (primary appraisal [threat]:  $\alpha = 0.775$ ; secondary appraisal [controllability]:  $\alpha = 0.802$ ).

**Coping strategies** Coping strategies were measured by using five items modified from the coping scales used in previous studies (Kamimura, 1996; Nushi, 1993;

Okayasu, 1992; Osako, 1994; Ozeki, Haraguchi, & Tsuda, 1991; Ozeki et al., 1994). Coping strategies represent what a person did or what attitude he or she took when confronting a stressful situation. Coping strategies adopted for this study were divided into two types: approach coping and avoidance coping. Three items assessed approach coping and two items assessed avoidance coping. Participants were asked to answer each question according to the following instruction: "If you came up against this situation, how would you cope with it?", for example, approach coping: 1. I will try to improve this situation; 2. I will ask someone to change this situation. Avoidance coping: 1. I will not think deeply about the future; 2. I will give up if I cannot solve this problem. Respondents endorsed each item on a 4-point scale (1, *disagree* – 4, *agree*). Explanatory and confirmatory factor analyses were carried out to confirm the validity (all factor loadings were more than 0.40). An adequate reliability was demonstrated for this scale (approach coping:  $\alpha = 0.686$ ; avoidance coping:  $\alpha = 0.721$ ).

**Attainment** Attainment was measured by two items using a self-rating scale ranging from 0 to 100%. Participants were requested to answer the following instruction: "Please reassess the behavior you selected for this situation. Q1. Did that behavior satisfy you? (0 - 100%); Q2. Was that behavior desirable for you compared to an ideal behavior that you can think of? (0 - 100%)"

### STRESSFUL SITUATIONS

Forty-four students were asked in a pilot study what kind of situation was stressful in their life. Finally, four different situations that undergraduate students feel are very stressful in their lives were developed based on the pilot research and previous studies (Kamimura, 1996; Okayasu, 1992). These were: Situation 1: feeling sick condition; Situation 2: human relationship troubles; Situation 3: to obtain one's goal; Situation 4: social evaluation. Participants were asked to imagine each situation and answer the questionnaires measuring cognitive appraisal, coping strategies, and attainment. For each situation the causal structures, which were constructed by structural equation modeling, and the changes of the structures depending on each situation, were examined. The four situations were divided into two types according to the controllability: two of them were less controllable situations and two of them were more controllable.

**Situation 1: feeling sick condition (less controllable)** "You have recently not felt well physically. You feel as though you may be suffering from some type of serious illness. Although you think a trip to the doctor is necessary, you have not gone because you are afraid of the results."

**Situation 2: human relationship troubles (less controllable)** "You have been on bad terms with one of your close friends recently. Although you have thought of doing something to correct the situation, you are not sure of what to do. This relationship may get worse if you do not do anything."

**Situation 3: to obtain one's goal (more controllable)** "You are on the verge of either accomplishing or not accomplishing a specific goal. For example, you will soon be taking a final examination, an entrance examination to an undergraduate/graduate school, a company entrance examination, or competing in an important game."

**Situation 4: social evaluation (more controllable)** "You have to express your opinion in front of a large audience. For example, you will have to give a self-introduction, a seminar presentation or take an oral examination. You want to make as favorable an impression as possible."

## STATISTICS

The statistical analyses were conducted using SPSS 7.5.1 (SPSS Inc., 1996). The covariance matrices of the samples were subjected to structural equation modeling with the Windows program Amos 3.6 (Arbuckle, 1997). The following indices provided by Amos were examined to determine the fit of the overall model: the  $\chi^2$  statistic, the goodness-of-fit index (GFI), the adjusted GFI (AGFI), Akaike's information criterion (AIC), the root mean square residual (RMR), and the root mean square error of approximation (RMSEA). The  $\chi^2$  is too sensitive to sample size. With large enough samples, as in this study, substantively trivial discrepancies can lead to rejection of an otherwise highly satisfactory model (Loehlin, 1998). Because the  $p$ -value of all  $\chi^2$  statistics was highly significant, the other GFI index on a scale of 0 to 1 was used in order to investigate the goodness-of-fit of each model. Apart from evaluating the overall fit of the model, individual parameters were examined using  $t$  values and standardized residuals to ensure that estimates were all within the range of permissible values (Bollen, 1989).

One-way repeated ANOVAs were carried out to investigate the effects of situations (situation 1 - 4) in situation-related variables; cognitive appraisals (threat and controllability), coping strategies (approach and avoidance), and attainment.

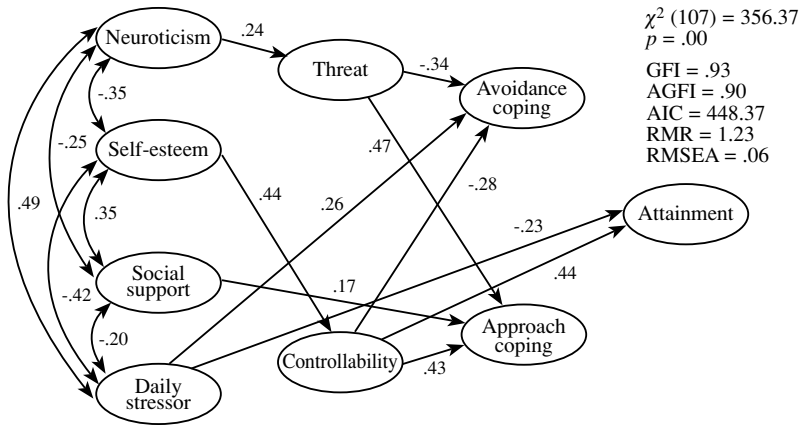
## RESULTS

### SITUATION 1: FEELING SICK CONDITION

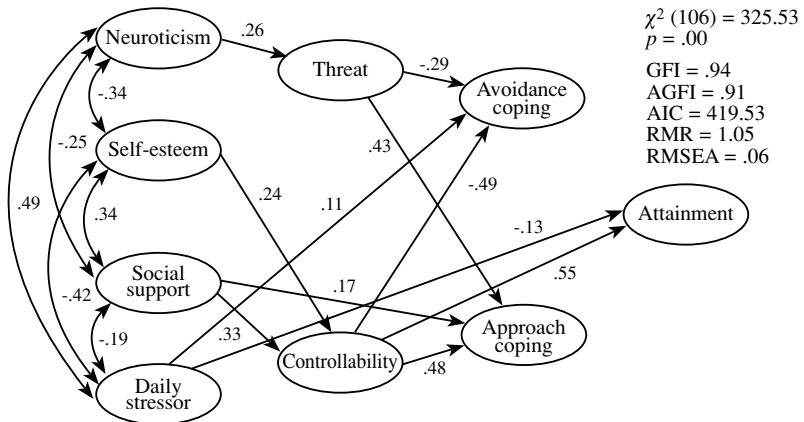
The final model accepted is shown in Figure 2. Overall fit indices for this model are as follows:  $\chi^2 (107) = 356.37$  ( $p = 0.00$ ), GFI = 0.93, AGFI = 0.90, AIC = 448.37, RMR = 1.23 and RMSEA = 0.06. Judging from all path coefficients that showed more than 0.40 and were significant ( $t > 1.96$ ), it was found that there were appropriate associations among the latent variables and observed variables in this model. Hypotheses from H1 to H6 were supported in this situation.

**SITUATION 2: HUMAN RELATIONSHIP TROUBLES**

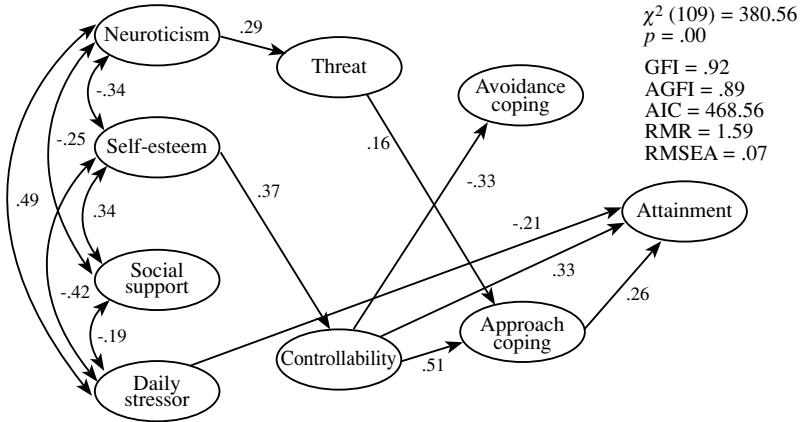
The structural equation model demonstrates a very good fit (Figure 3:  $\chi^2$  (106) = 325.53 ( $p = 0.00$ ), GFI = 0.94, AGFI = 0.91, AIC = 419.53, RMR = 1.05 and RMSEA = 0.06). All path coefficients showed more than 0.40 ( $t > 1.96$ ). Appropriate associations among the latent variables and observed variables were obtained in this model. All hypotheses (H1-7) were supported in this situation.



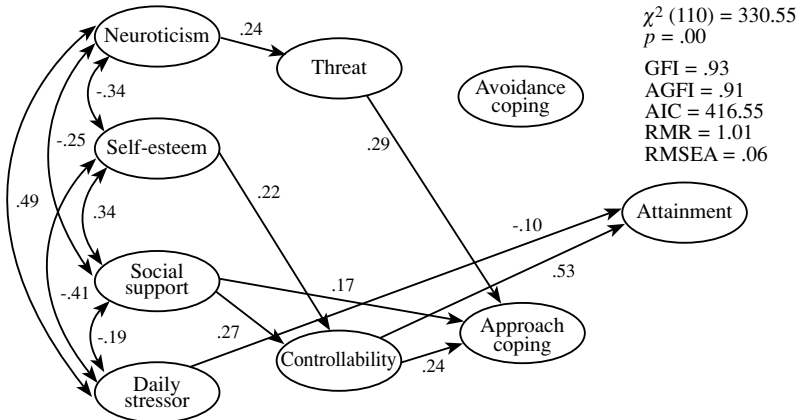
**Figure 2:** Results of the causal structural model with standardized estimates of parameters in Situation 1 (feeling sick condition). All parameter estimates are statistically significant ( $p < .01$ ). The following goodness of fit indices are reported: the  $\chi^2$  statistic, the goodness-of-fit index (GFI), the adjusted GFI (AGFI), Akaike’s information criterion (AIC), the root mean square residual (RMR), and the root mean square error of approximation (RMSEA).



**Figure 3:** Results of the causal structural model with standardized estimates of parameters in Situation 2 (human relations troubles). All parameter estimates are statistically significant ( $p < .01$ ). The abbreviations are described in Figure 2.



**Figure 4:** Results of the causal structural model with standardized estimates of parameters in Situation 3 (to obtain one’s goal). All parameter estimates are statistically significant ( $p < .01$ ). The abbreviations are described in Figure 2.



**Figure 5:** Results of the causal structural model with standardized estimates of parameters in Situation 4 (social evaluation). All parameter estimates are statistically significant ( $p < .01$ ). The abbreviations are described in Figure 2.

**SITUATION 3: TO OBTAIN ONE’S GOAL**

The measurement model yielded good fit indices (Figure 4:  $\chi^2 (109) = 380.56$  ( $p = 0.00$ ), GFI = 0.92, AGFI = 0.89, AIC = 468.56, RMR = 1.59 and RMSEA = 0.07). Path coefficients showed more than 0.40 ( $t > 1.96$ ). Associations among the latent variables and observed variables in this model were acceptable. All hypotheses, except for H3 were supported in this situation.

**SITUATION 4: SOCIAL EVALUATION**

The obtained model shown in Figure 5 has a very good fit ( $\chi^2(110) = 330.55$  ( $p = 0.00$ ), GFI = 0.93, AGFI = 0.91, AIC = 416.55, RMR = 1.01 and RMSEA = 0.06). All path coefficients showed more than 0.40 and were significant ( $t > 1.96$ ). There were appropriate associations among the latent variables and observed variables in this model. Hypotheses from H1 to H6 were supported in this situation.

**COMPARISONS OF COGNITIVE APPRAISALS, COPING STRATEGIES, AND ATTAINMENT ACROSS THE FOUR SITUATIONS**

Table 1 shows mean total scores and standard deviations of cognitive appraisals, coping strategies, and attainment in each condition. The effects of situation in threat and controllability were significant at  $p < 0.01$  ( $F(3, 1686) = 149.05$ ;  $F(3, 1686) = 64.77$ , respectively). The scores of threat in Situations 1 and 2 were higher than those in Situations 3 and 4 ( $MSE = 3.98$ ,  $p < 0.05$ ). The score of controllability in Situation 3 was higher than in Situation 1, 2, and 4 ( $MSE = 3.06$ ,  $p < 0.05$ ). The effects of coping strategies (approach and avoidance) were also significant ( $F(3, 1686) = 108.42$ ,  $p < 0.01$ ;  $F(3, 1686) = 33.57$ ,  $p < 0.01$ , respectively). The score of approach coping in Situation 3 was higher than in Situation 1, 2, and 4, while that in Situation 2 was lower than those in other situations ( $MSE = 2.39$ ,  $p < 0.05$ ). The scores of avoidance coping in Situations 2 and 4 tended to be higher than in Situations 1 and 3, while the score in Situation 3 was lower than those in other situations ( $MSE = 1.60$ ,  $p < 0.05$ ). There was also a significant effect of situation on attainment ( $F(3, 1686) = 72.16$ ,  $p < 0.01$ ). Attainment in Situation 3 was higher than in other situations, while the score in Situation 2 was lower than those in Situations 1 and 3 ( $MSE = 1627.12$ ,  $p < 0.05$ ).

**TABLE 1**  
MEAN TOTAL SCORES AND STANDARD DEVIATIONS OF COGNITIVE APPRAISALS, COPING STRATEGIES, AND ATTAINMENT IN EACH CONDITION

Situation	Cognitive Appraisals				Coping Strategies				Attainment	
	Threat		Controllability		Approach		Avoidance		M	SD
	M	SD	M	SD	M	SD	M	SD		
1	8.66	2.13	7.67	2.14	8.39	1.97	4.45	1.54	109.39	47.60
2	8.79	2.29	7.57	2.15	7.54	1.99	4.69	1.70	101.87	50.29
3	7.38	2.40	8.82	2.00	9.19	1.74	4.10	1.55	134.69	45.85
4	6.66	2.33	7.67	2.08	8.56	1.88	4.79	1.65	108.52	45.68

## DISCUSSION

The aim of this study was to examine how the structure of the stress model with regard to personality traits, social contexts, cognitive appraisals, and coping strategies would change related to the four different stressful situations. Different causal structures were found between the two situations which had low controllability (Situations 1, 2) and the two situations which had high controllability (Situations 3, 4). The following sections discuss the causal structures in each situation based on the seven hypotheses (H1 – H7) assumed in the introduction (see also Figure 1).

### SITUATION 1: FEELING SICK CONDITION

Almost the same causal structure as the hypothesized model was obtained in Situation 1. The results support Hypotheses 1 to 6. When faced with a feeling sick condition, a person with high neuroticism tended to feel high threat and to use approach coping not avoidance coping. Because neuroticism is apt to yield impatience and a sense of urgency, the person tends to take an excessively active coping style. Contrary to predictions, a path from approach coping to attainment was not identified. If a person with high neuroticism employed active problem solving, that person would not immediately feel sufficient attainment. In contrast, if a person with high self-esteem felt high controllability and used approach coping, that person was likely to feel high attainment. Approach coping did not affect attainment directly. Coping strategies may not be a significant predictor of high attainment in this situation. Highly neurotic people are apt to use avoidance coping strategies, while people with high self-esteem are likely to use approach coping.

Social support affected approach coping directly. In a feeling sick situation, there are many problems that are difficult to solve alone. Social support helps a person use active coping strategies. This notion is in accord with a previous study that showed that individuals who had more personal and environmental resources were also more likely to rely on active coping and less likely to use avoidance coping (Holahan & Moos, 1987). A person with a high amount of daily stressors is apt to use avoidance coping and his/her attainment would be low. This suggests that stressors in daily life may promote negative attitudes and behavior.

### SITUATION 2: HUMAN RELATIONSHIP TROUBLES

In Situation 2, human relationship troubles, the obtained model was similar to the hypothesized model in Situation 1 judging from their path directions. Hypotheses 1 through 7 were supported. As in Situation 1, a person with high neuroticism is likely to feel high threat and uses approach coping. However,

approach coping does not have a direct effect on attainment. A person with high self-esteem is apt to feel high controllability and to choose approach coping. High controllability directly leads to attainment.

Social support affects controllability and approach coping directly. In troubled human relationship situations, individuals may not be able to solve the problem by themselves. Social support from a third person, like a friend or family member, would promote taking problem focused management. A person who feels stress in daily life is apt to use avoidance coping and as a result, cannot obtain sufficient attainments. In this situation, social support has a positive influence and daily stressor has a negative influence on psychological adjustment.

### **SITUATION 3: TO OBTAIN ONE'S GOAL**

The empirically obtained model differs from the hypothesized model in Situation 3. However, the obtained model had very good fit indices, and Hypotheses 1, 2 and 4 through 7 were confirmed. In the situation to obtain one's goal, a person with high neuroticism feels high threat and selects approach coping. A person with high self-esteem feels high controllability and chooses approach coping, and feeling high controllability produces high attainment. Especially in this situation, approach coping directly yields attainment. This effect was different from those in Situations 1 and 2. Although a person with high self-esteem and high controllability can feel high attainment, a person with high neuroticism who feels high threat has an opportunity to feel high attainment if they use approach coping. In this situation, although self-esteem has a positive effect on psychological adjustment as in other situations, neuroticism does not necessarily affect psychological adjustment negatively.

Social support does not have a direct influence on approach coping; support from family and friends does not promote an active coping style in this situation. The results suggest that success depends on the person's own efforts in this situation to obtain his/her goal. Daily stress generates negative thoughts and attitudes. A person with high daily stressors feels low attainment. Taken together, in Situation 3, social support does not effectively promote the attainment of psychological adjustment, and daily stress has a negative effect on psychological adjustment.

### **SITUATION 4: SOCIAL EVALUATION**

The obtained model did yield adequate goodness of fit indices. Hypotheses 1 through 6 were supported with minor exceptions. A person with high neuroticism is apt to feel high threat and to use approach coping. In contrast, a person with high self-esteem has high controllability and chooses approach coping. Feeling high controllability produces attainment. Cognitive appraisal is important to induce attainment.

Social support directly influenced controllability and approach coping. In situations involving social evaluation, like interviews and presentations, advice and encouragement from a mentor or colleagues would be helpful. As in the other situations, daily stressors had a negative influence on attainment.

### COMPARISONS ACROSS THE FOUR SITUATIONS

The four causal models were compared in order to estimate the differences among the situations. The same causal models were very similar to the hypothesized models in Situations 1 and 2. Compared to the hypothesized model, the path from approach coping to attainment and that from social support to controllability were not found in the Situation 1 model, while approach coping did not affect attainment in Situation 2. In Situations 3 and 4, the obtained causal models differed from the hypothesized models. In Situation 3, threat and daily stressor did not influence avoidance coping, and social support did not affect controllability and approach coping. In Situation 4, threat, stressor, and controllability did not predict avoidance coping. Also there were no causal relations between approach coping and attainment. Except for the effect of social support, the obtained models in Situations 3 and 4 had similar causal structures.

Neuroticism promotes feeling threat and self-esteem promotes feeling higher controllability generally in all situations. Neuroticism and self-esteem are considered appropriate personality factors to orient subsequent cognitive appraisals (Bolger & Zuckerman, 1995; Cozzarelli, 1993; Holahan & Moos, 1987). Neuroticism has a negative, and self-esteem a positive, effect consistently on stress models of every situation; while the efficacy of social support differed across the four situations. This finding is supported by previous research (Valentner et al., 1994). In Situation 3, social support affects the coping strategy directly. This is due to the situational specific effect, which was reflected in the causal model. Daily stressors affected avoidance coping and attainment in all situations. It is noted that daily stressors are critical factors that orient behavior pattern and/or thought.

Individuals who confronted Situations 1 and 2 showed higher threat and lower controllability scores, while showing lower threat and higher controllability in Situations 3 and 4. In high threat situations (Situations 1 and 2), the values of the paths toward approach coping and toward avoidance coping were larger than in low threat situations (Situations 3 and 4). The results showed that threat was an important factor in orienting coping strategies. Controllability affected approach and avoidance coping in all situations. This result is consistent with previous research (Aspinwall & Taylor, 1992). Gaining controllability promotes psychological adjustment in many situations.

Approach coping was more likely to be used in Situation 3 and was not likely to be used in Situation 2. People are more likely to use avoidance coping

in Situations 2 and 4 compared to the other two situations. Because Situation 3 is based on the person's internal motivation, there is the possibility of accomplishing the goal according to the person's own effort. In such a situation, the person can feel low threat and have high controllability and as a result can use approach coping. In contrast, because Situation 2 depends on the relationship between people, an individual may not be able to solve the trouble alone. In such a situation, the person may feel high threat and have low controllability, and the use of avoidance coping may be promoted.

Approach coping influenced attainment directly only in Situation 3 in which people are likely to use approach coping. In other situations, the direct effect from approach coping toward attainment was not obtained. Attainment in Situation 3 was the highest among all situations. Although choosing approach coping is thought to promote psychological adjustment, the results demonstrated that approach coping does not necessarily bring good adjustment in every situation. The results suggest that the efficacy of approach coping is situation specific.

Conversely, avoidance coping did not effect attainment in all situations. Although avoidance coping does not promote psychological adjustment in these four situations, avoidance coping also does not suppress adjustment. Using an avoidance coping strategy does not influence achieving the attainment itself. Cognitive appraisal may be the link to using an avoidance coping strategy. Specifically, avoidance coping may promote adjustment in cases when individuals are not able to solve problems easily on their own. These results suggest that individuals are less likely to use an avoidant coping strategy in response to stressful situations that are more controllable. This is consistent with a recent body of literature on coping flexibility (Cheng, 2001, 2003). Cheng (2001) conceptualized coping flexibility as (a) variability in perceptual and behavioral pattern across situations, (b) a good fit between the nature of coping strategies and the characteristics of stressful situations, and (c) perceived effectiveness in attaining one's goal. Cheng (2001) also suggests that the situation-appropriate aspect of coping flexibility is reflected by both strategy-situation fit and goal attainment. In the present study, social support did not directly affect taking an avoidance coping measure. The results of the present study suggest that selecting an avoidance coping strategy to achieve sufficient attainment depends on the controllability of the stressful situation irrespective of an individual's social support. The advantage of using avoidance coping for attainment should be a feature of future research.

One important limitation in this study is the cross-sectional design. The participants were asked to answer the same questionnaires repeatedly across four different stressful situations. This reduces the strength of the described interaction between internal factors (personality traits) and external factors (situations). However, this approach still has an advantage in order to investigate

an effect of within-behavioral changes related to each stressful situation. It is necessary to build a more sophisticated design for subsequent research.

Taken together, the personality traits (neuroticism and self-esteem) orient the basic direction for cognitive appraisals, and the cognitive appraisal (threat and controllability) determines the final coping strategy to be used in the situation. The diversity of causal structures across the situations observed in this study depended basically on the individual cognitive appraisal strategy for each situation. The results suggest that how a person understands a stressful situation exerts a large influence on the subsequent behavioral patterns in the causal structure of the stress model. This conclusion supports the hypothesis proposed by Lazarus & Folkman (1984).

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