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Effects of effort and distress coping processes on psychophysiological and psychological stress responses

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Abstract

The purpose of this study was to investigate the effects of coping processes on psychophysiological and psychological responses in stressful settings. In particular, we focused on the effects of a combination of active and avoidant coping processes. Subjects were 40 healthy undergraduate male students (mean = 19.80, S.D. = 0.97) who were randomly divided into four groups: (a) an effort coping group in which a subject faced a controllable stressor mobilizing an effortful and active coping behavior for a reward; (b) a distress coping group in which a subject faced a distressful stressor mobilizing an avoidant coping behavior for threat of punishment; (c) an effort–distress coping group in which a subject faced an ambivalent stressor mobilizing active coping behavior for a reward and avoidant coping behavior for threat of punishment; and (d) a control group. Initially, the effects of effort coping, distress coping, and effort–distress coping on psychophysiological and psychological responses were investigated. It was found that effort coping and effort–distress coping intensified cardiovascular responses, particularly blood pressure, and that distress coping and effort–distress coping intensified skin conductance level (SCL). Secondly, the relationships between effort coping process, distress coping process, psychophysiological responses, and psychological responses were investigated. As a result of cluster analysis, the changes of heart rate and blood pressure were correlated to the change of the effort score, and the changes of SCL and psychological responses were correlated to the change of the distress score. These findings suggest that active coping processes and avoidant coping processes independently affect different response systems.

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1. Introduction

Coping behavior in stressful settings is thought to be one of the major determinants of individual

differences in psychophysiological and psychological stress responses (Lazarus and Folkman, 1984; Steptoe and Appels, 1989; Aldwin, 1994). In previous studies, various types of coping behavior have been placed in a single dimension such as active vs. passive (Obrist, 1976), problem-focused

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vs. emotion-focused (Lazarus and Folkman, 1984), and repressor vs. sensitizer (Byrne, 1961). Studies investigating the effects of coping behavior on psychophysiological responses have suggested that active coping is associated with cardiovascular responses (Obrist, 1976, 1981), and that avoidant coping is associated with electrodermal activity (Evans et al., 1984; Tomaka et al., 1993). Additional studies investigating coping effects on psychological responses (Endler and Parker, 1990; Folkman and Lazarus, 1988) have suggested that, while problem-focused coping has a negative correlation with psychological stress responses, avoidant or emotion-focused coping has a positive correlation. However, Mattlin et al. (1990) suggested the importance of understanding the characteristics of coping patterns based on various combinations of different coping behavior. For instance, we can actively tackle problem solving and avoid thinking of a failure at the same time, which is a combination of problem-focused and emotion-focused coping. However, the combined effects of different kinds of coping behavior have been investigated insufficiently.

On the other hand, Fowles (1980) suggested that the difference of stress responses according to adopted coping was not brought about by the coping itself but by the emotional systems controlling coping based on Gray's two factor theory (Gray, 1975). There are different emotional systems corresponding to different coping behavior, and the behavior activation system increased cardiovascular responses while the behavior inhibition system increased electrodermal activity. Moreover, Lazarus and Folkman (1984) conceptualized coping processes to be cognitive behavioral processes exercised in a series of stressful settings. The processes include cognitive appraisals and coping behavior and it has been clarified that their interaction determines stress responses. It means that if cognitive appraisals are changed even without the change of coping behavior, the coping process may induce different stress responses. Furthermore, MacCaret (1984) pointed out the presence of cognitive stress coping such as patience, denial, distraction, and positive thinking besides behavioral one and the diversity of human coping processes

that could not be investigated by experiments on animals.

Lundberg and Frankenhaeuser (1980) and Frankenhaeuser (1982, 1986) proposed a unique model that indicated the close relationship between cognitive behavioral processes and endocrine responses in stressful settings. In this model, cognitive behavioral states in stressful settings are composed of two major components: effort and distress. Effort is a state of high degree of personal control with active coping behavior, and distress is a state of losing control with avoidant coping behavior, and it was found that effort and distress were differentially associated with catecholamine and cortisol release. Frankenhaeuser (1982, 1986) pointed out that effort and distress might be experienced either one at a time or they might occur together in one and the same situation, and the psychoendocrine relationships were conceptualized as follows. Effort without distress is illustrated by a state of actively engaging in one's hobbies and jobs without interruption, and it is accompanied by catecholamine secretion. Distress without effort is illustrated by a state of unwillingly engaging in one's tasks hard to accomplish, and it is generally accompanied by cortisol secretion. Effort with distress is the state typical of high demand for performance and low latitude over ways of doing jobs such as engaging in repetitious, machine-paced jobs on the assembly line or in highly routinized work as at a computer terminal, and it tends to be accompanied by an increase of both catecholamine and cortisol secretion.

On the other hand, Suzuki and Sakano (1998) tried to apply Frankenhaeuser's effort–distress model in the context of Lazarus's cognitive stress model, in which the relationship between cognitive appraisals and coping behavior in stressful settings were investigated by exploratory factor analysis and structuring equation modeling. As a result, stress coping processes including cognitive appraisals and coping behavior could be well formulated by two dimensions as Frankenhaeuser had pointed out. The first dimension represented high degree of commitment to tasks as cognitive appraisals and active involvement in situations as coping behavior, which could correspond to Frankenhaeuser's effort state. The second dimension

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