

Relations of SARS-Related Stressors and Coping to Chinese College Students' Psychological Adjustment During the 2003 Beijing SARS Epidemic

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This study examined the main and interactive relations of stressors and coping related to severe acute respiratory syndrome (SARS) with Chinese college students' psychological adjustment (psychological symptoms, perceived general health, and life satisfaction) during the 2003 Beijing SARS epidemic. All the constructs were assessed by self-report in an anonymous survey during the final period of the outbreak. Results showed that the relations of stressors and coping to psychological adjustment varied by domain of adjustment. Regression analyses suggested that the number of stressors and use of avoidant coping strategies positively predicted psychological symptoms. Active coping positively predicted life satisfaction when controlling for stressors. Moreover, all types of coping served as a buffer against the negative impact of stressors on perceived general health. These findings hold implications for university counseling services during times of acute, large-scale stressors. In particular, effective screening procedures should be developed to identify students who experience a large number of stressors and thus are at high risk for developing mental health problems. Intervention efforts that target coping should be adapted to take account of the uncontrollability of stressors and clients' cultural preferences for certain coping strategies. A multidimensional battery of psychological adjustment should be used to monitor clients' psychological adjustment to stressors and evaluate the efficacy of intervention.

Keywords: SARS-related stressors, coping, psychological adjustment

It is well established that stressful events can have a significant impact on individuals' psychological and physical well-being (DeLongis, Folkman, & Lazarus, 1988; Dohrenwend & Dohrenwend, 1974). However, the impact of acute large-scale stressors, such as outbreaks of infectious disease, on psychological adjustment in the general population is understudied, and little is known about how Chinese individuals cope with these types of stressors. The present study examined the main and interactive relations of stressors and coping related to severe acute respiratory syndrome (SARS) with Chinese college students' psychological adjustment during the 2003 SARS outbreak in Beijing. The SARS epidemic constituted a unique case of an acute, large-scale, and uncontrollable stressor, in contrast to common life stressors that have received a great deal of attention in the literature (Gunther, Cohen, & Armeli, 1999; McCubbin, 1980). Given the current worldwide concern over the

spread of the H1N1 virus and other infectious diseases, study of the SARS epidemic holds the promise of informing counselors how to prevent aversive psychological effects of epidemics on the general college student population.

In this paper, we begin with a review of the literature on the relationship between stressors and individuals' psychological well-being and follow this with a review of the roles of coping in the stressors–adjustment associations, as well as potential cultural influences on individuals' coping and adjustment. In particular, we discuss the uniqueness of the SARS outbreak as a special context for examining the above relations. The potential implications of the study for university counseling services during large-scale acute stressors are also discussed.

Relations of Stress to Psychological Adjustment

Lazarus and Folkman (1984) defined stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing” (p. 19). A large research literature links exposure to chronic and acute stress to short- and long-term psychological and physical disorders. Well-documented physiological effects of stress on the body represent one mechanism by which stress can lead to poor health outcomes over time. The human body evolved emotional and motivational systems to deal with acute stressors (Cannon, 1932). When confronted with a

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stressful situation, the body initiates the “fight or flight response,” in which the hypothalamic–pituitary–adrenocortical axis generates an increase in heart rate, breathing rate, and sweating. As a consequence, the parasympathetic responses are diminished in order to devote more energy to dealing with the stressor. Although these processes might have little detrimental effect on the body over a short period, over time, the body may become exhausted, leading to physical and psychological burnout. Psychological burnout occurs when an individual is emotionally exhausted and no longer has the cognitive resources to deal with the stressor (Melamed, Shirom, Toker, & Shapira, 2006).

Relations of Coping to Psychological Adjustment

Based upon the transactional theory (Lazarus & Folkman, 1984), stress is best viewed as an interactive process between the stressors (i.e., the environmental events or chronic conditions that objectively threaten the individual’s well-being; Grant et al., 2003) and the individual’s psychological responses (e.g., appraisal, coping, adjustment). In the present study, we focused on the additive and interactive relations of stressors and coping to adjustment.

Coping is defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). Individuals’ coping strategies are best characterized by a multidimensional system consisting of subdimensions representing various types of coping actions (Skinner, Edge, Altman, & Sherwood, 2003). One type of coping strategy is emotion-focused, passive, or avoidant coping. Individuals often use avoidant coping when they wish to reduce the emotional stress elicited by a problematic situation rather than deal with the stress at its source (Carver, Scheier, & Weintraub, 1989). Examples of avoidant coping include denial, substance use, and seeking social support for emotional as opposed to instrumental reasons. People tend to default to avoidant coping when they believe they have little control over the situation (Folkman & Lazarus, 1980).

A different type of coping strategy is problem-focused or active coping. Active coping involves focusing on the cause of the stress and attempting to do something actively in order to reduce the stress. Examples of active coping include problem solving, planning, and cognitive restructuring (Carver et al., 1989). Individuals tend to use active coping strategies when they believe they have control over a stressful situation.

Active and avoidant coping have been associated with different adjustment outcomes (Arraras, Wright, Jusue, Tejedor, & Calvo, 2002). High levels of avoidant coping have generally been associated with greater psychological distress and depressive symptoms, whereas high active coping has generally been related to lower psychological distress (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Snow-Turek, Norris, & Tan, 1996). A meta-analysis of coping and physical health-related outcomes in nonclinical samples found that, overall, active coping was positively correlated with general health outcomes, whereas avoidant coping was negatively correlated with them (Penley, Tomaka, & Wiebe, 2002). This is perhaps because when individuals engage in avoidant coping, they tend to ignore or avoid the source of stress and thus leave the situation unchanged. Therefore, stress is only temporarily ameliorated, and psychological problems

often emerge or become more complex over time (Tein, Sandler, & Zautra, 2000). In contrast, when individuals engage in active coping, they develop a better understanding of the problem (through cognitive restructuring) and/or engage in problem solving to change the situation, which could effectively reduce stress and promote adjustment. However, the relation between coping and adjustment might depend upon the controllability of stressors. Active coping might be more effective in dealing with controllable stressors, whereas avoidant coping might be more effective in dealing with uncontrollable stressors (Gonzales, Tein, Sandler, & Friedman, 2001).

The third type of coping action, seeking social support coping, includes efforts to seek support from various sources (e.g., family, peers) and for various goals (e.g., instrumental, emotional, and informational support; for a review, see Skinner et al., 2003). The fact that coping is not a solely internal process is becoming increasingly recognized, and research on coping has expanded to reflect a more relational view (Lazarus, 2000; Lyons, Mickelson, Sullivan, & Coyne, 1998; O’Brien & DeLongis, 1996). Although the beneficial role of social support for individuals’ psychological well-being is well established (Caplan, 1981), the relations found between seeking social support in response to stressors and psychological adjustment have not been consistent across studies and samples (see Tein et al., 2000). Some researchers have found a positive association between seeking social support coping and adjustment (Crockett et al., 2007; Runtz & Schallow, 1997; Tao, Dong, Pratt, Hunsberger, & Pancer, 2000), whereas other researchers failed to find such association (Demaray, Malecki, Davidson, Hodgson, & Rebus, 2005; Friedlander, Reid, Shupak, & Cribbie, 2007; Malecki & Demaray, 2003; Reynolds & Perrin, 2004).

Coping as a Moderator in the Relations Between Stressors and Psychological Adjustment

In addition to its main effects on individuals’ adjustment, coping may moderate the relation between stressors and adjustment. For example, Cronkite and Moos (1984) found that the positive relations between stressors and adult couples’ psychological symptoms were stronger among those who used more avoidant coping, suggesting that avoidant coping might be a vulnerability factor. Moreover, Sandler, Tein, and West (1994) found that the positive relation between stressors and children’s conduct problems was weaker for those who used more active coping, suggesting that active coping might be a protective factor.

It is important to note that the majority of research on stress, coping, and adjustment has been conducted with Western samples and has focused on individuals’ coping with common life stressors. According to the transactional theory (Lazarus & Folkman, 1984), the effectiveness of different coping actions is highly context dependent. One context in which there is universal distress among a population is a natural disaster. Following an earthquake in Wenchuan, China, in 2008, Yang et al. (2010) found that emotion-focused coping predicted psychological problems but that perceived social support and problem-focused coping predicted self-efficacy. There is also evidence for more complex relations among stressors, coping, and psychological outcomes following situations of disaster. For example, Benight, Swift, Sanger, Smith, and Zepelin (1999) found that following a hurricane in the United States, coping self-efficacy mediated the relationship between loss of

resources and distress, social support and distress, and trauma and distress. However, it is important to note that this study measured coping self-efficacy as opposed to coping strategies used. Another context in which coping has been found to relate to psychological adjustment is among individuals suffering from chronic illness. One study of Chinese individuals with AIDS found that acceptance/resignation and avoidant coping were positively associated with psychological distress (Sun, Zhang, & Fu, 2007). Thus, in general, similar relations between coping strategies and psychological adjustment have been found between individuals' coping with daily stressors and individuals' coping with natural disaster and chronic disease. Moreover, some cross-cultural similarities were found between Western and Chinese societies with regard to the relations between coping strategies and adjustment, although this conclusion should be made with caution because of the scarcity of studies on coping with non-Western samples. Next, we discuss studies that have examined the relations among stressors, coping, and psychological adjustment in the context of the SARS outbreak in China.

The SARS Outbreak as a Unique Context for Studying Stressors, Coping, and Adjustment

SARS is a viral respiratory disease occurring in humans. An epidemic of SARS occurred in China and other parts of the world between November 2002 and July 2003; it resulted in 8,096 known cases and 774 deaths. The SARS outbreak had a profound impact on the daily life of people living in the affected areas as well as on society as a whole. Major sporting events were canceled, businesses suffered, and use of public transportation dramatically decreased (World Health Organization, 2003). Additionally, the SARS outbreak provided a unique opportunity to study individuals' psychological adjustment under stress for a number of reasons. First, the stressor was prevalent. Unlike other acute traumatic events that occur at an individual level (e.g., the death of a family member), the SARS outbreak affected nearly every member of the society (Gan, Liu, & Zhang, 2004). Second, the stressor threatened both physical health and psychological well-being. Contamination with SARS not only affected the individual's physical health and mortality but also caused disruptions in interpersonal functions (e.g., needing to avoid others to avoid spreading the disease). Third, the stressor was relatively uncontrollable. Although precautionary measures (e.g., wearing face masks, avoiding crowded areas) could somewhat reduce the risk for contamination, individuals could not fully protect themselves from the disease. Indeed, university students rated SARS-related stressors as less controllable than daily stressors (Gan et al., 2004). Fourth, the SARS outbreak occurred primarily in Asian regions, and most of the existing research on stress, coping, and adjustment has been conducted with Western samples. Therefore, studying the psychological responses to SARS-related stressors in Asian samples also allows researchers to examine cultural influences on stress, coping, and adjustment.

A number of studies have been published on individuals' psychological responses to the SARS outbreak in different regions (e.g., Cheng & Tang, 2004). Overall, individuals across samples (from the general public to health care workers) reported significant psychological distress during the outbreak. These included perceiving SARS-related fear, threat, and worry and experiencing

symptoms of psychological disorders (e.g., Cheng & Tang, 2004; Leppin & Aro, 2009; Mihashi et al., 2009). Moreover, these studies reported significant individual differences in psychological responses (e.g., coping) to SARS-related stressors and in susceptibility to mental health problems during the epidemic in the general public (e.g., Cheng & Tang, 2004; Leppin & Aro, 2009; Mihashi et al., 2009). However, among those studies that focused on the general population (excluding SARS survivors, affected families, and front-line health care workers), although researchers have examined the relations of coping to preventive health behaviors and SARS-related fears (e.g., Chang & Sivam, 2004; Lee-Baggley, DeLongis, Voorhoeve, & Greenglass, 2004), the relations between coping and individuals' psychological adjustment during the SARS outbreak have not been thoroughly investigated.

There are reasons to expect that some of the previously found associations between coping and adjustment in dealing with common life stressors might not generalize to coping with SARS-related stressors. Consistent with the perspective that avoidant coping may be more adaptive than active coping in the face of uncontrollable stressors, Gan et al. (2004) found that college students reported using less active (problem-focused) coping strategies and more avoidant (emotion-focused) coping strategies in response to SARS-related stressors (which were rated by participants as less controllable) than to daily stressors during the outbreak. Therefore, avoidant coping with SARS-related stressors may be associated with less psychological distress (especially when the individual is experiencing a large number of stressors), which buffers the negative effect of stressors on adjustment.

The Role of Culture

Cultural Influences on Coping

Because the outbreak occurred in China, the larger social and cultural context must be considered in addition to the situational context of the SARS epidemic (Wong, Wong, & Scott, 2006). An important limitation of existing research on stress and coping is the neglect of cultural contexts in which stressful events and coping occur (Chun, Moos, & Cronkite, 2006). Culture might influence individuals' preferences for specific types of coping strategies. For example, Yeh, Arora, and Wu (2006) theorized that because individualistic cultures (including most Western cultures) value independence and autonomy, coping strategies that involve taking direct action and modifying one's social situations (e.g., active coping) might be considered more effective in alleviating stress. In contrast, because collectivist cultures (including the traditional Chinese culture) value group harmony, individuals may prefer coping strategies that involve adjusting to social situations by changing the self rather than the situation (e.g., passive, avoidant, or emotion-focused coping; Yeh et al., 2006). The preference for passive and avoidant coping might also be associated with the greater sense of an external locus of control for individuals from collective cultures than for those from individualistic cultures (Chun et al., 2006). Consistent with these hypotheses, adults and children from collective cultures were found to be more likely than those from individualistic cultures to use passive, avoidant, or emotion-focused coping, whereas those from individualistic cultures were more likely to use action-oriented and problem-focused coping (for a review, see Chun et al., 2006).

Cultural differences have also been found in individuals' support-seeking behaviors. In particular, Asians and Asian Americans are observed to be more reluctant than European Americans to explicitly ask for support from close others (Kim, Sherman, Ko, & Taylor, 2006), likely because they are more concerned about the potentially negative relational consequences of support seeking (e.g., losing face, burdening others, or disrupting group harmony).

On the basis of abovementioned cultural differences in individuals' preferences for coping strategies, one might hypothesize that the associations of active, avoidant, and social support seeking coping to individuals' adjustment in the Chinese culture might not mirror those obtained in Western cultures. Yet, among the few studies conducted with Chinese high school and college students (e.g., Chan, 1994; Hamid, Yue, & Leung, 2003; Tao et al., 2000), researchers found similarities in both the content and structure of individuals' coping strategies and the relations of coping to psychological adjustment between Chinese and Western cultures. For example, as in studies in Western cultures, avoidant coping (wishful thinking and distancing) was positively related to and active coping (problem solving) was negatively related to Chinese young adults' psychological symptoms (Chan, 1994; Tao et al., 2000). It is important to note that in the last three decades, the rapid economic development and social and political reforms in mainland China have led to dramatic changes in sociocultural values and individuals' lifestyles (Chen, Cen, Li, & He, 2005). Thus, the hypothesized "cultural" differences in relations of coping to adjustment might not be observed in Chinese college students.

Cultural Influences on Adjustment

In addition to its influence on individuals' preferences for how to cope with stressors, culture might shape how individuals experience and express distress, as well as how they experience and display health and well-being (Chun et al., 2006). Previous research has consistently shown that compared with depressed individuals from Western cultures, depressed individuals from Asian cultures tend to report more somatic symptoms than psychological symptoms (Ryder et al., 2008). This is likely associated with the greater cultural emphasis on restraint of emotion expression, the holistic view of mind and body, and a tendency toward externally oriented thinking in Asian cultures (Chun et al., 2006; Ryder et al., 2008). Moreover, somatic symptoms but not depressive symptoms were associated with stressors in an epidemiological sample of Chinese American adults (Takeuchi, Chun, Gong, & Shen, 2002), suggesting that measures of somatic symptoms might be more sensitive than measures of psychological symptoms to detecting the effect of stressors on Asian individuals. Furthermore, emotional expression was positively associated with life satisfaction among European Americans but was unrelated to life satisfaction among Asians, suggesting that emotions might play a different role in one's overall evaluation of life across cultures (Kang, Shaver, Sue, Min, & Jing, 2003). Therefore, in studies of stress and coping in the Chinese culture, it is important to assess a multidimensional set of adjustment outcomes to understand the full impact of stressors on individuals' psychological well-being. In addition, because the present study includes a nonclinical sample, we believe it is important to focus on positive adjustment (e.g., life satisfaction) as well as maladjustment (e.g., psychological symptoms). The concept of resilience is salient in the context of coping with stressors

(Masten, 2001), and resilience indicates the ability to maintain positive well-being (not merely lack of psychopathology) during despite exposure to stressors. Understanding how individual difference factors (e.g., coping) contribute to resilience is an important focus of counseling during stressful times.

Sex Differences in Coping

There has been a substantial body of literature demonstrating sex differences in the use of coping strategies, with men more likely to use active coping strategies and women more likely to use avoidant coping strategies (see Rosario, Shinn, M[s]wsl0]orch, & Huckabee, 1988). Moreover, women used more social support than did men even when social roles were held constant (Rosario et al., 1988). Shek (2005) found that among Chinese, men were more likely than women to use internal coping strategies (e.g., avoidant, mobilization of personal resources), whereas women were more likely than men to use external coping strategies (e.g., seeking social support). This was consistent with findings for Western samples. However, despite the sex differences in how often men and women use different coping strategies, it is unclear whether the relations among coping strategies, stressors, and adjustment are moderated by sex. Thus, in the present study, we tested both sex differences in the means of stressors, coping, and adjustment and whether sex moderated the relationships among these constructs.

The Present Study

Our primary aim in the study was to examine the additive and interactive relations of SARS-related stressors and coping strategies with Chinese college students' psychological adjustment (psychological symptoms, life satisfaction, and perceived general health) during the 2003 Beijing SARS outbreak. Because students in Chinese universities typically live in concentrated on-campus dormitory buildings, they are considered a "high-risk" population for infectious diseases (Pang et al., 2003). Moreover, as part of the control measures implemented by the government during the outbreak, 22 (32%) universities in Beijing closed or canceled classes, some universities stopped the entry of all visitors, and a massive quarantine was instituted at two universities (Pang et al., 2003). Thus, college students in Beijing were exposed to a significant amount of SARS-related stressful events during the outbreak, including disruptions in academic study, entertainment, family, and social life. This situation made them an ideal target for this study. We hypothesized, based on the literature review, that (a) active coping and seeking social support coping would be associated with positive adjustment (fewer psychological symptoms, higher perceived general health and life satisfaction), whereas avoidant coping would be associated with negative adjustment, and (b) coping would interact with the number of stressors such that the use of active coping and seeking social support coping would buffer the negative effects of SARS-related stressors on adjustment, whereas the use of avoidant coping might exacerbate the negative effects of stressors on adjustment. In addition, on the basis of previous research on potential sex differences in coping and its relations to adjustment, we tested whether sex moderated the relations of stressors and coping to adjustment.

Method

Participants

Participants were 381 undergraduate students (42.5% male, age range = 17–24 years, mean age = 20.16 years, $SD = 1.46$ years) recruited from two public universities in Beijing. There were 238 first-year students (60.8%), 63 sophomores (16.1%), 47 juniors (12%), and 43 seniors (11%). Among those sampled, 27.4% came from Beijing and 69.8% came from other parts of China. First-year students were overrepresented in our sample because recruitment was conducted in classes in which first-year students are typically overrepresented.

Procedure

All constructs were assessed with participants' self-reports in an anonymous survey. Both participant recruitment and survey administration were conducted in classrooms. With the permission of the instructor, two research assistants made an announcement about the study at the end of several large undergraduate lecture classes. After the announcement, research assistants handed out an introductory letter and a set of questionnaires to all the students in the classroom. Students were informed that the purpose of this anonymous survey was to understand the impact of the SARS epidemic on college students' mental health. Participants were instructed to read the informed consent, sign it prior to beginning the survey, and return it to research assistants on completion. Students who were willing to participate stayed in the classroom, completed the questionnaires (which took about 15 minutes), and returned them to the research assistants. Students who were unwilling to participate were allowed to leave the classroom. Students received extra credit from their instructors for participating. All participants were treated in accordance with American Psychological Association ethical guidelines, and the study protocol was approved by the Arizona State University Institutional Review Board. The 2003 SARS outbreak began in March 5, 2003, and peaked in late April. Our survey was conducted between June 15 and June 30, 2003, which was considered the end period of the SARS epidemic. Therefore, participants were asked to recall their past experience of SARS-related stressors and coping strategies.

Measures

Measures that, to our knowledge, had not been used in a Chinese population in previous studies were forward- and back-translated by Chinese speakers who were fluent in Chinese and in English. Translators received assistance from native English-speaking researchers for clarifications regarding items that were difficult to translate. Discrepancies between the original and the back-translated versions were thoroughly discussed and resolved by joint agreement.

SARS-related stressors. We developed a checklist measure to assess participants' experience of SARS-related stressful events (stressors). These events were grouped into six categories: (a) family-related events (6 items, e.g., "A member of your family was suspected of having SARS"); (b) friend-related events (6 items, e.g., "A close friend of yours was diagnosed with SARS and received treatment"); (c) acquaintance-related events (6 items, e.g.,

"Someone you know [not including your family or a close friend] had SARS-like symptoms [e.g., fever, coughing, headache, diarrhea]"); (d) self-related events (4 items, e.g., "You were quarantined"); (e) information-related events (2 items, e.g., "You heard others talking about the severity and contagiousness of SARS"); (f) other SARS-related stressful events (8 items, e.g., "You had to cancel your trip or vacation because of the SARS epidemic"). Participants indicated whether each event occurred during the past month. The total number of events endorsed across all categories was computed.

Coping strategies. Nine subscales from the Coping Inventory (Carver et al., 1989) were used to measure the frequency of participants' use of coping strategies to deal with SARS-related stressful events in the last month. The nine subscales are (a) Active Coping (4 items, $\alpha = .70$ in the present sample); (b) Planning (4 items, $\alpha = .77$); (c) Restraint Coping (4 items, $\alpha = .70$); (d) Seeking Social Support for Instrumental Reasons (4 items, $\alpha = .75$); (e) Seeking Social Support for Emotional Reasons (4 items, $\alpha = .73$); (f) Positive Reinterpretation and Growth (4 items, $\alpha = .79$); (g) Denying (4 items, $\alpha = .60$); (h) Mental Disengagement (4 items, $\alpha = .55$); and (i) Acceptance (4 items, $\alpha = .70$). Participants responded to the items on a 5-point scale (1 = *I had never used it* to 5 = *I always used it*). These nine subscales were selected because previous confirmatory factor analyses of the Coping Inventory using these subscales suggested a three-factor model in a North American sample (Tein et al., 2000; Zautra, Sheets, & Sandler, 1996). The model includes active coping (Active Coping, Restraint Coping, Planning, Positive Reinterpretation and Growth, and Acceptance Coping), avoidant coping (Denying and Mental Disengagement Coping), and seeking social support coping (Seeking Social Support for Instrumental Reasons and Seeking Social Support for Emotional Reasons).

To test whether the three-factor model suggested by Zautra and colleagues (Tein et al., 2000; Zautra et al., 1996) could be replicated in our Chinese sample, we performed a confirmatory factor analysis on the nine subscale scores from the present sample using Mplus 5.2 (Muthén & Muthén, 1998–2006). The three-factor model fit the data well, $\chi^2(20, N = 381) = 42.70, p < .01$, comparative fit index = .99, root-mean-square error of approximation = .055, standardized root-mean-square residual = .025. All the model-estimated loadings for observed variables were significant and positive (standardized loadings ranged from .40 to .94), suggesting that the subscales converged on their designated latent factors. Based on these results, composite scores of active coping (20 items, $\alpha = .92$ in the present sample), avoidant coping (8 items, $\alpha = .67$), and seeking social support coping (8 items, $\alpha = .84$) were created by averaging the corresponding subscale scores.

Psychological symptoms. Four subscales from a Chinese version of the 90-item Symptom Checklist (SCL-90; Derogatis, 1977) were used to measure participants' experience of psychological symptoms in the past week: (a) Somatization (12 items, $\alpha = .89$); (b) Obsessive-Compulsive Symptoms (7 items, $\alpha = .86$); (c) Depressive Symptoms (13 items, $\alpha = .91$); and (d) Phobic/Anxiety Symptoms (5 items, $\alpha = .76$). Rating was a 5-point scale (1 = *Not at all* to 5 = *Extremely*). The four symptom subscales were moderately to highly correlated with each other in the present sample ($r_s = .50-.81, d_f_s = 370-381$). Thus, a composite score was created by averaging the items across the four subscales (37 items, $\alpha = .95$).

Perceived general health. A single-item self-rating of perceived health (“Overall, your health status is _____”) was used. Participants responded on a 5-point scale of *poor* (0), *fair* (1), *good* (2), *very good* (3), and *excellent* (4). Single-item measures of self-rated health are widely used in health psychology, epidemiology, and public health research. Similar single-item self-ratings of health have been shown to be stable from age 23 to 33 and were related (at age 23) to specific health problems (respiratory problems, obesity, backache, and migraines), general reports of long-standing illness, infirmity that limits daily activities, health-related behavior (smoking), and psychological distress (Manor, Matthews, & Power, 2001). Moreover, poor self-rated general health, even among 16- to 24-year-olds, predicts early mortality (Burstrom & Fredlund, 2001). In one study of elderly Canadians, self-ratings of health were better predictors of 7-year survival than were medical records (Mossey & Shapiro, 1982). This may be because self-report of perceived health takes into account psychosocial influences on health, such as depression, social isolation, and stress (Kaplan & Camacho, 1983).

Life satisfaction. The 5-item Life Satisfaction Scale (Diener, Emmons, Larsen, & Griffin, 1985) was used to measure subjective well-being (e.g., “In most ways my life is close to my ideal”; $\alpha = .85$). Participants rated the items on a 7-point scale (1 = *completely disagree* to 7 = *completely agree*).

Results

First, a multivariate analysis of variance was conducted to examine sex differences in study variables. Second, zero-order correlations among study variables were reported for the full sample and by sex. Third, hierarchical regression analyses were conducted to test our study hypotheses.

Preliminary Analyses

The means, standard deviations, skewness, and kurtosis for the study variables are presented in Table 1. The variables were screened for normality and univariate outliers. No variables exceeded the cutoffs of 2 and 7 for high skewness and kurtosis values (West, Finch, & Curran, 1995), and no univariate outliers were detected in scatter plots. With the exception of perceived general health (on which 33% of cases had a missing response), the study variables had minimum missing data (<1%). We compared the participants who had missing data on perceived general health with

those who were missing data on demographic variables (sex, age, family of origin) and other study variables (SARS-related stressors, coping strategies, psychological symptoms, and life satisfaction). There was no difference between the two groups on any measured variable, suggesting that the data might be missing completely at random (MCAR; see Schlomer, Bauman, & Card, 2010). Listwise deletion was used to handle missing data in regression analyses because this approach provides unbiased parameter estimates under MCAR (Graham, 2009; Schlomer et al., 2010).

Analyses of Sex Differences

To examine sex differences in college students' coping and adjustment, we conducted multivariate analyses of variance on the following groups of variables: (a) active, avoidant, and seeking social support coping and (b) psychological symptoms, perceived general health, and life satisfaction. For coping strategies, the multivariate effect of sex was significant, $F(3, 377) = 11.67, p < .001$. The univariate tests revealed that there were significant sex differences in seeking social support coping, $F(1, 379) = 12.27, p < .01$, and avoidant coping, $F(1, 379) = 4.92, p < .03$. Women reported higher seeking social support coping and lower avoidant coping than did men. For adjustment, the multivariate effect of sex was significant, $F(3, 329) = 3.77, p < .05$. The univariate tests indicated that sex difference was significant only for life satisfaction, $F(1, 331) = 6.16, p < .05$, with women reporting significantly higher life satisfaction than did men. Finally, a univariate analysis of variance indicated that men and women did not differ in the number of SARS-related events endorsed.

Zero-order correlations (for the full sample and for women and men separately) are presented in Table 2. Fisher's z tests were computed to test whether the correlations differed significantly between men and women. Among the 36 pairs of correlations compared, only two pairs of correlations differed significantly by sex. The first was the correlation between SARS-related stressors and active coping (Fisher's $z = 2.55, p < .05$). SARS-related stressors were positively correlated with active coping for women but were uncorrelated with active coping for men. The second was the correlation between participant's family residence (in Beijing vs. not in Beijing) and the number of SARS-related stressors (Fisher's $z = 2.66, p < .05$). Men whose family of origin was in Beijing reported more SARS-related stressors than did men whose

Table 1
Means, Standard Deviations (SDs), Skewness, and Kurtosis of Major Variables

Variable	N	Full sample				Men	Women
		M	SD	Skewness	Kurtosis	M (SD)	M (SD)
SARS-related stressors	381	3.21	2.16	1.63	4.23	3.36 (2.42)	3.09 (1.95)
Active coping	381	3.16	0.78	-0.33	0.16	3.18 (0.81)	3.15 (0.76)
Avoidant coping	381	2.39	0.49	0.44	1.23	2.45 (0.54)	2.33 (0.45)
Seeking social support coping	381	2.70	0.81	0.05	-0.16	2.53 (0.79)	2.82 (0.80)
Perceived general health	333	2.45	1.03	-0.22	-0.80	2.54 (1.01)	2.38 (1.04)
Life satisfaction	381	3.89	1.44	0.05	-0.74	3.67 (1.47)	4.05 (1.39)
Psychological symptoms	381	5.97	2.08	1.71	3.59	5.99 (2.34)	5.96 (1.95)

Note. For means by sex, bolded means indicate significant sex difference. SARS = severe acute respiratory syndrome.

Table 2
Zero-Order Correlations Between Study Variables for the Full Sample and by Sex

Variable	1	2	3	4	5	6	7	8
1. SARS-related stressors	—							
2. Active coping	.09 (M = -.05 ; F = .22^{***})	—						
3. Avoidant coping	.11* (M = .02; F = .18 ^{ns})	.48 ^{***} (M = .46 ^{***} ; F = .51 ^{***})	—					
4. Seeking social support	.08 (M = .05; F = .14 [†])	.62 ^{***} (M = .63 ^{***} ; F = .64 ^{***})	.43 ^{***} (M = .47 ^{***} ; F = .45 ^{***})	—				
5. Perceived general health	-.05 (M = -.15 [†] ; F = .01)	.12* (M = .09; F = .14 [†])	.12* (M = .10; F = .12 [†])	.02 (M = -.05; F = .09)	—			
6. Life satisfaction	-.03 (M = -.04; F = .01)	.17 ^{***} (M = .16*; F = .18 ^{**})	.01 (M = .01; F = .03)	.11* (M = .18*; F = .03)	.25 ^{***} (M = .22**; F = .30 ^{***})	—		
7. Psychological symptoms	.12* (M = .18*; F = .06)	-.02 (M = -.01; F = -.03)	.22 ^{***} (M = .21 ^{***} ; F = .23 ^{***})	.15 ^{**} (M = .21 ^{**} ; F = .12 [†])	-.46 ^{***} (M = -.55 ^{***} ; F = -.39 ^{***})	-.31 ^{***} (M = -.23 ^{**} ; F = -.39 ^{***})	—	
8. Age	-.12* (M = -.10 ; F = -.16[†])	-.14* (M = -.08; F = -.20 ^{**})	-.02 (M = .02; F = -.08)	-.12* (M = .00; F = -.18 ^{ns})	-.09 (M = -.13; F = -.08)	-.11* (M = -.12; F = -.07)	.04 (M = .06; F = .02)	—
9. Family-of-origin (1 = in Beijing, 0 = in other parts of China)	.12* (M = .28 ^{***} ; F = .01)	-.01 (M = .04; F = -.04)	-.07 (M = -.06; F = -.07)	.02 (M = .06; F = -.03)	.03 (M = .03; F = .04)	.13* (M = .08; F = .15 [†])	-.11* (M = -.13; F = -.11)	-.21 ^{***} (M = -.26^{***} ; F = -.16[†])

Note. In each cell, the first correlation is for the full sample (Ns = 333–381), the second correlation (M) is for men (Ns = 138–162), and the third correlation (F) is for women (Ns = 195–219). Bolded coefficients suggest the correlations differed significantly by sex according to Fisher's z test.

† p ≤ .10. * p ≤ .05. ** p ≤ .01. *** p ≤ .001.

family of origin was not in Beijing, whereas the correlation between family residence and SARS-related stressors was nonsignificant among women. Because the rest of the correlations did not differ by sex, correlations for the full sample are summarized below.

Zero-Order Correlations Between Study Variables

In the full sample, the three types of coping were positively correlated with each other. The three indicators of adjustment were also correlated with each other. Perceived general health was positively correlated with life satisfaction, and both perceived general health and life satisfaction were negatively correlated with psychological symptoms. SARS-related stressors were positively correlated with avoidant coping and psychological symptoms. Several significant correlations were found between coping and adjustment. In particular, active coping was positively correlated with perceived general health and life satisfaction. Avoidant coping was positively correlated with perceived general health and psychological symptoms. Seeking social support coping was positively correlated with life satisfaction and psychological symptoms.

In the full sample, participants' age was negatively correlated with SARS-related stressors, active coping, seeking social support coping, and life satisfaction. Family residence (1 = in Beijing, 0 = not in Beijing) was significantly correlated with SARS-related stressors, life satisfaction, and psychological symptoms. Participants whose family of origin lived in Beijing reported a greater number of SARS-related stressors but greater life satisfaction and lower psychological symptoms than did those whose family of origin lived elsewhere. Based on these results, age, family resi-

dence, and sex were included as covariates in the regression analyses.

Testing the Additive and Interactive Relations of SARS-Related Stressors and Coping to Psychological Adjustment: Multiple Regression Analyses

In total, nine multiple regressions were tested (three for each adjustment outcome; see Table 3). The analyses were performed with SPSS 18.0. In all models, the participant's age, sex, and family-of-origin residence (Beijing vs. not in Beijing) were included as the covariates. The predictors were (a) the two main effects (i.e., SARS-related stressors and coping) and (b) the Stressors \times Coping interaction term. All the predictors and covariates were mean centered, as suggested by Aiken and West (1991). Preliminary analyses tested sex as a moderator by entering the two-way Sex \times Stressors and Sex \times Coping interactions and the three-way Sex \times Stressors \times Coping interaction. None of the interaction terms involving sex was significant, further suggesting that sex did not moderate the relations of stressors and coping to psychological adjustment. Therefore, interaction terms with sex were dropped from the models, and final regression analyses were performed for the full sample rather than separately for men and women.

In regression analyses, the presence of multivariate outliers and influential cases was assessed with DFBETAS and DFFITS statistics (Bollen & Jackman, 1990), and no cases were identified as outliers when using the cutoff of 1.0 (Cohen, Cohen, West, & Aiken, 2003). In addition, multicollinearity among predictors was assessed with the variance inflation factor. The variance inflation

Table 3
Multiple Regressions Predicting Psychological Adjustment From Stressors and Coping

Variable	DV: Psychological symptoms		DV: Life satisfaction		DV: Perceived general health	
	β	ΔR^2	β	ΔR^2	β	ΔR^2
Regressions using active coping as a predictor						
Age	.02	.01	-.08	.04**	-.10	.02
Sex	-.01		-.11*		.09	
Family residence	.11*		-.10*		-.01	
Stressors	.14*	.02*	-.05	.03**	-.09	.02
AC	-.03		.16**		.11	
Stress \times AC	-.08	.00	.00	.00	.11*	.01*
Regressions using avoidant coping as a predictor						
Stressors	.12*	.07***	-.04	.00	-.09	.01
AV	.24***		-.01		.07	
Stress \times AV	.01	.00	.03	.00	.12*	.01*
Regressions using support seeking as a predictor						
Stressors	.14**	.04***	-.05	.01	-.08	.01
Support seeking	.14**		.09		.05	
Stress \times SS	-.08	.01	-.02	.00	.15**	.02**

Note. All the predictors and covariates were mean centered before entering into the equation. In all regression equations, the covariates (age, sex, and residence of family origin) were controlled. β = standardized regression coefficient; DV = dependent variable; AC = active coping; AV = avoidant coping; SS = seeking social support.

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

factors for all terms in the models did not exceed the cutoff of 7 (Neter, Wasserman, & Kutner, 1989). Thus, multicollinearity was not considered a problem. Listwise deletion was used to handle missing data in regression analyses because this approach provides unbiased parameter estimates under MCAR (Graham, 2009; Schlomer et al., 2010).

As presented in Table 3, among the covariates, sex was a significant predictor of life satisfaction. Women reported higher life satisfaction than did men. Residence of family of origin was a significant predictor of life satisfaction and psychological symptoms. Students who were from Beijing reported higher life of satisfaction and lower psychological symptoms than did those students who were from other parts of the country.

In the three regressions predicting psychological symptoms, the main effect of SARS-related stressors was positive and statistically significant. Moreover, avoidant coping and seeking social support coping positively predicted psychological symptoms when we controlled for SARS-related stressors and the covariates. None of the Stressor \times Coping interactions were significant in predicting psychological symptoms.

In the three regressions predicting life satisfaction, neither the main effect of SARS-related stressors nor the Stressor \times Coping interaction was significant. Active coping had a significant and positive main effect on life satisfaction, controlling for stressors and covariates.

Finally, in the three regressions predicting perceived general health, neither SARS-related stressors nor coping had significant main effects. However, the three interaction effects (i.e., Stressors \times Active Coping, Stressors \times Avoidant Coping, and Stressors \times Seeking Social Support Coping) were significant. Following Aiken and West (1991), we conducted simple slope analyses to probe significant interactions. Figures 1–3 shows the simple regression lines of perceived general health on SARS-related stressors at high (1 *SD* above the mean), mean, and low (1 *SD* below the mean) levels of coping. SARS-related stressors were negatively related to perceived general health at low levels of active coping (simple slope $\beta = -.12$, $p < .05$; see Figure 1). By

contrast, at mean or high levels of active coping, SARS-related stressors were unrelated to perceived general health. A similar pattern was found for avoidant (see Figure 2) and social support seeking coping (see Figure 3), in which SARS-related stressors were negatively related to perceived general health at low levels of avoidant coping or seeking social support coping. At mean and high levels of coping, stressors were unrelated to perceived general health. These interaction patterns are consistent with the notion of the “stress-buffering” effect of coping.

Discussion

Our main goal in this study was to examine the main and interactive relations of SARS-related stressors and coping with Chinese college students’ psychological adjustment during the SARS epidemic. Consistent with our hypothesis, experience of SARS-related stressors was positively associated with psychological symptoms for Chinese college students during the outbreak. In analyses controlling for the number of stressors and demographic variables, college students’ use of active coping positively predicted life satisfaction, whereas avoidant and seeking social support coping positively predicted psychological symptoms. Moreover, significant Coping \times Stressors interactions were found in predicting perceived general health for all three coping strategies. Regardless of the type of coping, the number of SARS-related stressors was positively associated with perceived general health at low (but not mean or high) levels of coping, indicating the stress-buffering effect of coping.

Main Effects of SARS-Related Stressors and Coping on Psychological Adjustment

The positive relation found between the number of SARS-related stressors and psychological symptoms is consistent with previous findings on individual adjustment during the SARS epidemic in general public samples (Cheng & Tang, 2004; Leppin & Aro, 2009; Mihashi et al., 2009). Thus, during an acute large-scale

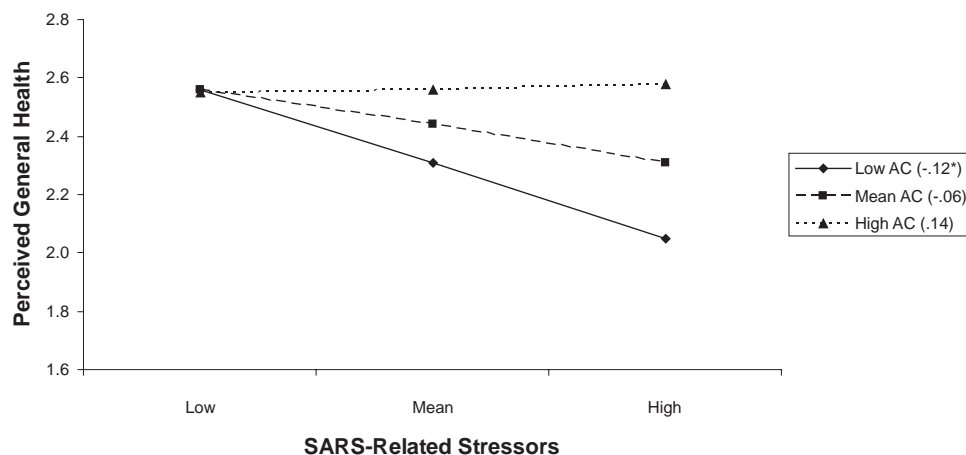


Figure 1. Graph of the Active Coping \times Stressors interaction in predicting perceived general health. The graph shows the simple regressions of perceived general health on stress at high (1 standard deviation above the mean), mean, and low (1 standard deviation below the mean) levels of coping. The numbers in parentheses are unstandardized simple slopes. AC = active coping. * $p \leq .05$.

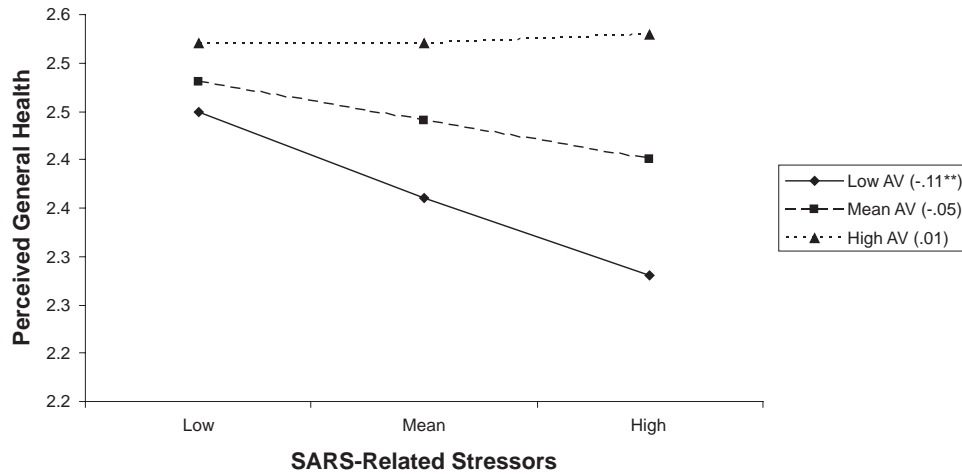


Figure 2. Graph of the Avoidant Coping × Stressors interaction in predicting perceived general health. The graph shows the simple regressions of perceived general health on stress at high (1 standard deviation above the mean), mean, and low (1 standard deviation below the mean) levels of coping. The numbers in parentheses are unstandardized simple slopes. AV = avoidant coping. ** $p \leq .01$.

epidemic such as the SARS epidemic, even among individuals who were not directly contaminated with the disease, the psychological impact of the outbreak on the general population was significant.

Although active coping was unrelated to psychological symptoms, it was positively related to life satisfaction after controlling for stressors. It is likely that the use of active or engagement coping strategies promotes individuals' sense of efficacy in coping with stressors, which in turn contributes to individuals' perceived life satisfaction. The lack of relation between active coping and psychological symptoms might be associated with the high uncertainty and uncontrollability of SARS-related stressors (Gan et al., 2004), which may limit the effectiveness of active coping in reducing psychological distress (Gonzales et al., 2001).

Our findings on the role of avoidant coping in Chinese college students' adjustment during the outbreak are mixed. On one hand, avoidant coping was positively associated with perceived general health. On the other hand, avoidant coping was positively associated with psychological symptoms controlling for stressors, which is consistent with previous studies using Western samples (e.g., Snow-Turek et al., 1996; Tein et al., 2000) and Chinese samples (Hwang, Scherer, Wu, Hwang, & Li, 2002; Tao et al., 2000). The mixed findings suggest there is some ambiguity in the adaptive functions of avoidant coping in Chinese culture, which might be associated with the cultural preferences for passive/avoidant or emotion-focused coping over active coping in collective cultures (Chun et al., 2006; Yeh et al., 2006). The mixed results might also be partly associated

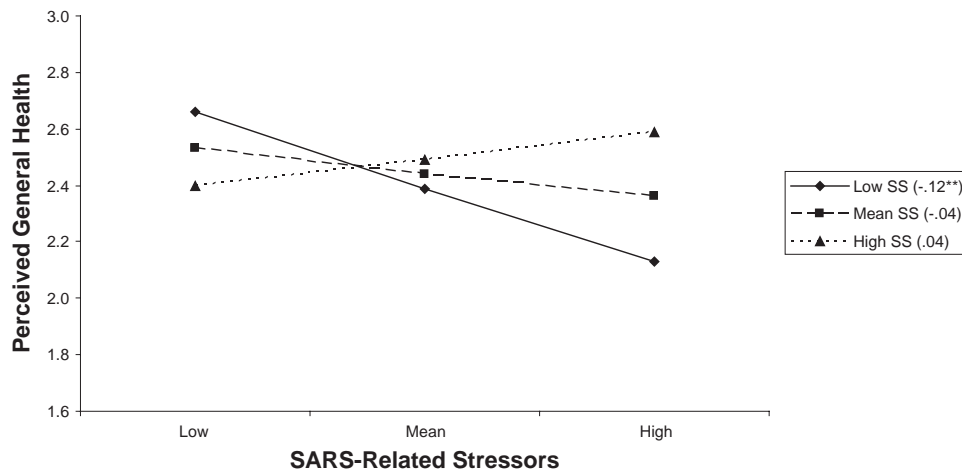


Figure 3. Graph of the Social Support Seeking Coping × Stressors interactions in predicting perceived general health. The graph shows the simple regressions of perceived general health on stress at high (1 standard deviation above the mean), mean, and low (1 standard deviation below the mean) levels of coping. The numbers in parentheses are unstandardized simple slopes. SS = seeking social support coping. ** $p \leq .01$.

with differences in Chinese individuals' expression of somatic versus psychological symptoms of distress.

Similarly, there were mixed findings for seeking social support coping. Chinese college students' seeking social support coping was positively correlated with life satisfaction (although it did not uniquely predict life satisfaction, controlling for stressors). However, contrary to our hypothesis, seeking social support coping was positively related to participants' psychological symptoms. Because a cross-sectional design was used in the present study, the direction of the relations between coping and adjustment could not be determined. It is possible that those individuals who experienced more psychological symptoms during the epidemic were more actively seeking social support than were those with fewer symptoms, resulting in a positive relation between social support seeking coping and psychological symptoms. A longitudinal design would provide greater insight into the directionality of the relations among stressors, coping, and adjustment.

Interactions Between Stress and Coping Style in Predicting Adjustment

SARS-related stressors and coping interacted with one another in predicting perceived general health but not psychological symptoms or life satisfaction. Regardless of the type of coping (active, avoidant, and social support seeking coping), the number of SARS-related stressors was negatively related to perceived general health at low (but not mean or high) levels of coping, suggesting that coping served as a buffer against SARS-related stressors. Although avoidant coping has been associated with maladjustment in research on coping with common life stressors (e.g., Arraras et al., 2002; Lewis & Kleiwer, 1996; Snow-Turek et al., 1996; Tein et al., 2000), the present finding suggests that avoidant coping might be adaptive in the context of coping with a relatively large number of SARS-related stressors. It is possible that in times of acute, uncontrollable, and large-scale stressors, any type of coping is helpful in reducing distress. In addition, there has been some speculation that avoidant coping might be more culturally adaptive in Asian cultures than in Western cultures (Chun et al., 2006; Yeh et al., 2006). Because the present study was based on a Chinese sample, it is possible that these Stressors \times Coping interactions might not generalize to Western populations. A future direction would be to test culture as a moderator of the relation between coping and adjustment using cross-cultural comparative samples.

It is important to note that although the three indicators of adjustment (psychological symptoms, perceived general health, and life satisfaction) were moderately correlated with each other in the present sample, they showed differential relations to stressors and coping. Because Chinese individuals tend to somaticize psychological distress more than do European Americans (e.g., Chun et al., 2006; Ryder et al., 2008), classic measures of psychological symptoms might not fully capture the impact of stressors on Chinese individuals' psychological distress. Moreover, in the context of coping with the risk of contaminating with a life-threatening disease (SARS), worries about one's physical health might be a more common manifestation of distress than other psychological symptoms. Indeed, in the present study, the Stressors \times Coping interactions were significant only for perceived general health and not psychological symptoms or life satisfaction, suggesting that perceived general health might be a more culturally

sensitive indicator of psychological adjustment in the context of coping with SARS-related stressors. In summary, given potential cultural differences in individuals' expression or manifestation of distress, it is important to adopt a multidimension or multidomain approach to assessing psychological adjustment in Chinese populations.

Sex and Demographic Differences

Consistent with previous research conducted with Western (Rosario et al., 1988) and Chinese samples (Shek, 2005), women reported more social support seeking coping and greater life satisfaction than did men. However, unlike in previous studies (Rosario et al., 1988; Shek, 2005), women reported lower passive coping than did men. The difference in findings might be associated with the differences in the context of stressors (common life stressors vs. SARS-related stressors). No sex differences were found on the number of SARS-related stressors, psychological symptoms, or perceived general health, suggesting that men and women were equally affected by the SARS epidemic. Despite sex differences in the means of coping and life satisfaction, the associations among stressors, coping, and adjustment were largely invariant across sex (as indicated by the Fisher's z tests and by tests of moderation by sex in multiple regressions). Therefore, although men and women may differ somewhat in their preferences for certain coping strategies, the adaptive functions of coping seem to be similar for men and women. With regard to other demographic variables, college students whose family of origin was in Beijing (the same city as their university) reported higher life satisfaction and lower psychological symptoms than did their peers whose family of origin was in another area, although they experienced a greater number of SARS-related stressors (likely because their immediate families and friends lived within the epidemic-affected region). Because of the Chinese cultural emphasis on family and kinship support (Tao et al., 2000), college students whose immediate families are nearby often have more frequent contact with their family members and thus receive stronger social support than those students who have to travel long distance to visit their families (typically only during the winter and summer breaks).

Limitations

The study has several limitations. First, the cross-sectional design does not allow the investigation of changes in individuals' psychological adjustment across different periods of the SARS epidemic, which could provide a fuller picture of the psychological impact of the outbreak. Second, because all the constructs were assessed by self-report, the estimated relations among stressors, coping, and adjustment might be biased by reporter effect. Future research should use a multi-informant and multimethod approach to assessment. Third, we used a measure designed for use with Western samples to assess Chinese students' coping strategies; it might not have fully captured the culturally unique coping strategies in Chinese culture, such as forbearance and social assurance (Yeh et al., 2006). More culturally sensitive measures should be used, such as Wong's Inventory of Coping Schemas (Peacock & Wong, 1996). Future studies on stress and coping in Chinese samples should assess both universal and culturally specific types

of coping. Fifth, because the survey was conducted during the end stage of the epidemic (Pang et al., 2003), college students' experience of SARS-related stressors and their psychological distress may have been lessened in comparison to the peak of the epidemic. Moreover, participants were instructed to recall their experience of SARS-related stressors in the past month (which is a typical approach to assessing stressful life events), which may not fully capture their actual experience during the epidemic. However, despite the time lag between the occurrence of stressors and the survey, significant associations were found between the number of stressors and participants' adjustment, indicating the lasting psychological impact of the SARS epidemic. Sixth, because participants' cultural orientations, values, and practices were not assessed, we could not directly examine the relations of "culture" to individuals' coping and adjustment to stressors. Future studies should measure specific aspects of culture (e.g., religion, traditional cultural values) and investigate their links to coping and adjustment. Moreover, although our sample size had sufficient statistical power to detect medium ($r = .30-.50$) and large ($r \geq .50$) correlations, the sample had limited statistical power to detect small correlations ($r \leq .10$ or smaller; Cohen, 1988). In addition, due to the relatively large number of statistical tests conducted in regression analyses, there might have been an inflation of Type I error. However, we did not make any adjustment on Type I error rate because the tests were conducted based on a priori hypothesis.

Implications of the Study for University Counseling Services

As one of the few studies on the experience of stressors, coping, and adjustment among college students during the 2003 SARS epidemic, this study has important implications for university counseling services in preventing, identifying, and treating mental health problems among students during acute, large-scale stressors, such as an infectious disease outbreak or a natural disaster. First, given the study finding that even students who were not directly affected by SARS reported significant numbers of SARS-related stressors and psychological symptoms during the epidemic, it is crucial that university campuses develop and implement effective screening procedures to closely monitor students' exposure to stressors and mental health adjustment. The National Volunteer Organizations Active in Disaster found that early psychological intervention is invaluable in the context of a natural disaster (Everly, Hamilton, Tyiska, & Ellers, 2008), and identifying risk and resilience factors (e.g., proneness to stress and coping strategies) informs the nature of these intervention strategies (Yang et al., 2010).

The checklist measure for SARS-related stressful events developed in the present study can be modified to monitor students' exposure to disaster-related stressors, and students who were exposed to a large number of stressors should be identified to receive some prevention service. Second, as the present study suggests that how students cope with stressors plays a crucial role in their psychological adjustment during the outbreak, prevention or treatment efforts should target students' appraisals and coping strategies. However, when working with students coping with relatively uncontrollable stressors (e.g., a close friend or family member is suspected of being contaminated with the disease), counselors should be aware of the limitation of active, problem-solving cop-

ing strategies. Moreover, when working with students of Asian cultural backgrounds, counselors should respect clients' cultural preferences for passive coping and reservation or hesitation about seeking social support coping. Although it is beneficial to encourage the use of active coping strategies (as this was positively associated with students' life satisfaction in the present study), it is also necessary to normalize the client's use of other coping strategies (such as passive/avoidant coping and seeking social support coping). As shown by the Stressor \times Coping interaction findings, at high levels of stressors, coping (regardless of the type) buffered the negative effect of stressors on adjustment. Thus, it seems advantageous to encourage the client to use a variety of coping strategies rather than rely exclusively on one type of coping. Third, when one is monitoring the client's psychological adjustment or evaluating the efficacy of intervention, it is important to use a multidimensional battery of psychological adjustment, including psychological symptoms, somatic symptoms or perceived general health (especially for clients of Asian cultural backgrounds), and positive adjustment (e.g., life satisfaction and self-efficacy).

Future research on the roles of stressors and coping in individuals' coping with acute, large-scale stressors should consider a longitudinal design; use a multimethod and multiinformant approach to assess coping, stressors, and adjustment; and investigate the relations of coping and adjustment to specific features of the cultural context in which the stressors occur.

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