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Coping flexibility in young adults: Comparison between subjects with and without schizotypal personality features

Ji-gang Zong [a,b,c], Raymond C.K. Chan [a,b,*], William S. Stone [d,*], Xiaolu Hsi [d,e], Xiao-yan Cao [a,b,c], Qing Zhao [a,b,c], Yan-fang Shi [a,b,c], Yu-na Wang [a,b,c], Ya Wang [a,b]

[a] Neuropsychology and Applied Cognitive Neuroscience Laboratory, Institute of Psychology, Chinese Academy of Sciences, Beijing, China
[b] Key Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences, Beijing, China
[c] Graduate School, Chinese Academy of Sciences, Beijing, China
[d] Department of Psychiatry, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA
[e] Massachusetts Institute of Technology, Cambridge, MA, USA

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ABSTRACT

The current study examined characteristics of coping patterns adopted by college students in mainland China. In particular, it examined the coping strategies adopted by subjects with schizotypal personality (SPD) features compared to those without SPD features, and compared the relative effectiveness of their coping. Four types of coping flexibility were identified among the college sample ($n = 427$), including active-inflexible, passive-inflexible, active-inconsistent, and passive-inconsistent styles. The passive-inconsistent style was related to the worst outcomes. When comparing subjects with SPD features with those without SPD features, subjects with SPD features endorsed significantly more emotion-focused strategies in uncontrollable situations than those without SPD features. The SPD group experienced higher levels of trait anxiety, depression, paranoid ideation and general health problems. The SPD group also generally perceived more, less controllable stress than the non-SPD group and randomly used all four categories of coping strategies.

1. Introduction

Coping is a psychological construct that refers to behaviors that protect people from being harmed by different social experiences. According to Lazarus and Folkman (1984) and to Folkman et al. (1986), coping refers to changing cognitive and behavioral efforts to manage specific demands that are appraised as taxing or exceeding the resources of the person. It involves both cognitive and behavioral components throughout its process. Two major types of coping are identified, including 'emotion-focused' and 'problem-focused' coping. Emotion-focused coping involves the regulation of emotions in response to stressors, whereas problem-focused coping involves the management or practical resolution of problems that cause distress. Despite a relatively large literature on coping, it remains unclear which coping strategy is more effective when encountering stressful life events. Problem-focused coping is more effective in some situations (e.g. Macrodimitris & Endler, 2001; de Ridder & Schreurs, 2001), while emotion-focused coping is more effective in others (Stanton et al., 2000; Zellars & Perrewé, 2001).

Lazarus (2000) emphasized the importance of the fit between the demands of the situation and the coping strategies employed, although multiple coping strategies are likely to be used in most situations (Lazarus, 1993). An important question is how to determine which strategies to use in response to particular stressors, to produce the best outcomes. This goodness of fit hypothesis also includes the

* Corresponding authors. Stone is to be contacted at Harvard Medical School/Beth Israel Deaconess Medical Center, Department of Psychiatry, Second Floor East, 401 Park Drive, Boston, MA 02215, USA. Chan, Institute of Psychology, Chinese Academy of Sciences, 4A Datun Road, Beijing 100101, China.
E-mail addresses: rckchan@psych.ac.cn (R.C.K. Chan), wstone@bidmc.harvard.edu (W.S. Stone).

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view that the extent to which each coping strategy will be effective is influenced by the perceived controllability of these events (Lazarus, 1993). If an event is seen as controllable, problem-focused coping may be a more effective strategy to modify the external situation. On the other hand, if the event is considered to be uncontrollable, then emotion-focused coping may be a more effective strategy to modify negative emotions triggered by unchangeable circumstances. If we use problem-focused coping in uncontrollable conditions or emotion-focused coping in controllable conditions, the outcome might not only be maladaptive but also ineffective, due to the poor fit between the perceived controllability of the events and the particular coping strategy chosen (Lazarus, 1993).

Coping flexibility is thus conceptualized as a measure of the fit between coping strategies that are used and the nature of the circumstances in which they are employed (Cheng, 2001; Cheng, 2003; Gan et al., 2006). Cheng proposed that coping flexibility could be parsed into three dimensions, including: 1) variability in perceived controllability across situations; 2) the 'goodness of fit' between the nature of coping strategies employed and the nature of the stressful situations in which they are employed; and 3) perceived effectiveness of coping behaviors in attaining desired goals. Based on this model of coping, Cheng (2001) employed a cluster analysis to identify five styles of coping flexibility, which she labeled 'flexible', 'active-inflexible', 'passive-inflexible', 'active-inconsistent', and 'passive-inconsistent'. According to Cheng's classification, a flexible style is characterized by a variable pattern of perceived controllability of stressful events and a variable pattern of coping (e.g. adopting either a problem- or emotion-focused strategy). The active-inflexible style is characterized by a more consistent pattern of perceiving stressful events as controllable and a consistent pattern of using problem-focused strategy in reacting to these events. On the other hand, the passive-inflexible style is characterized by a more consistent pattern of perceiving stressful events as uncontrollable, and a consistent pattern of using emotion-focused strategy in coping with these situations. Finally, the passive-inconsistent style is characterized by a more consistent pattern of perceiving stressful events as uncontrollable. However, it is characterized by an inconsistent coping pattern in reacting to stressful events. Cheng (2001) and Gan et al. (2006) reported that the flexible coping was correlated with better psychological outcomes, while the passive-inflexible and passive-inconsistent coping styles were correlated with poorer psychological outcomes (Cheng, 2001, 2003; Gan et al., 2004, 2006). Cheng (2003, 2009) also reported that the cognitive style can affect coping flexibility and its outcome, with more dialectical thinking associated with higher coping flexibility and better psychological outcomes.

An important measure of the functional significance of coping involves its relationships to both psychological health and psychiatric problems, such as depression, anxiety and psychosis. Impairments in related clinical, cognitive, social and/or neurobiological dimensions occur in multiple psychiatric disorders that both reflect and contribute to impaired coping. Among these, disorders in the schizophrenia spectrum are particularly related to impaired abilities to cope with stress and with the demands of the external world. Schizophrenia-related deficits in coping are not limited to individuals with a DSM-IV diagnosis of schizophrenia, but are also present in people with 'milder', non-psychotic conditions in the schizophrenia spectrum, such as schizotypal personality disorder (SPD), or 'schizotypy' (Meehl, 1962, 1990). Many studies show deficits in these individuals, for example, in social function, affective regulation and cognition (Horan et al, 2008; Phillips and Seidman, 2008; Aguirre et al, 2008; Raine, 2006), among other functional dimensions, that are likely to impact coping abilities negatively. Because young adults with these features show elevated risks to develop even more serious disorders, such as schizophrenia (e.g. Tsuang et al., 1999), the development of interventions to reduce functional deficits and improve coping strategies in this group is particularly salient.

In this study, we replicated and extended Cheng's (2001) study in several ways. First, we explored coping patterns of young adults in mainland China using Cheng's model of coping styles. The study of coping is particularly important because Chinese adults, and especially college students, face numerous challenges related to dramatic changes in the socio-economic atmosphere in China. Students have to adjust to these societal developments at the same time they have to cope with personal challenges such as academic performance, job hunting, interpersonal relationships, and tragic events occurring on college campuses (e.g. suicides). A recent epidemiological study showed, for example, that the adjusted 1-month prevalence of any mental disorders was 17.5% in mainland China (Phillips et al., 2009). Moreover, acute life stresses have a more significant role in suicide, and depression a lesser one, in Asia than in west (Chen and Yip, 2008).

We hypothesized that there would be distinct groups characterized by the consistency of their perception of stressful events, and by their corresponding coping patterns. In particular, we hypothesized that individuals who demonstrated more flexible perception of stressful events as controllable and reacted with more variable coping strategies (including both problem- and emotion-focused) would also show better coping effectiveness (manifested in terms of mood status and general health status) than individuals who perceived stressful events as uncontrollable, and reacted with invariable coping patterns. Second, we examined specific coping styles and capabilities in individuals with SPD features. We hypothesized that individuals who showed higher levels of schizotypal features on self-report questionnaires would experience more stressful life events (or would experience the same events as being more stressful) than individuals who showed lower levels of schizotypal features. Similarly, we hypothesized that individuals showing higher levels of schizotypal features would also demonstrate lower levels of coping flexibility, and worse outcomes in terms of depression, anxiety level, and general health status.

2. Materials and methods

2.1. Subjects

A total of 501 first-year college students in Beijing participated in the study. Eighty seven of these students majored in computer science, 145 in engineering, 201 in history and 68 majored in chemistry. Most students came

from Beijing (71%). They were asked to complete a set of questionnaires concerning various stressful life events, coping strategies, general mental health status, and schizotypal personality features, in a group format. Out of the returned questionnaires, 74 questionnaires contained missing data that could not be used for subsequent data analysis, leaving a total of 427 valid questionnaires (232 men, 195 women). The mean age and education levels of the sample were 18.42 years (SD = 0.83) and 12.36 years (SD = 0.81), respectively. Subjects received $10 RMB in return for completing the questionnaires.

Subjects were then classified into high and low schizotypal groups according to their scores on the Schizotypal Personality Questionnaire (SPQ) (Raine, 1991). Raine (1991) classified individuals in the upper and lower 10% of a standardization sample as having high or low levels of DSM-III-R SPD symptoms, respectively. Using this criterion, 48 subjects (26 males and 22 females) were classified in the High-SPD group, which was named the SPD group, and 48 subjects (28 males and 20 females) were classified in the Low-SPD group, which was named the non-SPD group. The SPD group included 8 majors in computer science, 17 in engineering, 19 in history, and 4 majors in chemistry. The non-SPD group included 5 majors in computer science, 16 in engineering, 21 in history and 6 majors in chemistry. The mean age and education levels of the SPD group were 18.44 years (SD = 0.87) and 12.32 years (SD = 0.66), respectively. The mean age and education levels of the non-SPD group were 18.41 years (SD = 0.81) and 12.43 years (SD = 1.14), respectively. There were no significant differences between the two groups in age, education level, or gender.

2.2. Measures

2.2.1. Coping Flexibility Questionnaire (CFQ)

The CFQ was designed specifically to capture people's coping styles when encountering stressful life events (Cheng, 2001). Subjects were instructed to rate the frequency of 40 stressful life events, the extent to which the events affected them, and the amount of control they experienced over the situation. Ratings ranged from 1 to 6, with higher ratings indicating greater perceived impact or controllability. The subjects were then asked to describe the strategies they used to cope with the experience and their primary goal in using these strategies (either problem-focused or emotion-focused). Lastly, subjects rated the effectiveness of each strategy in helping them reach their goals, again using a 6-point scale in which higher ratings demonstrated greater effectiveness.

The current study used the Chinese version of the CFQ (Gan et al., 2004). This version adapted the original version so that the open-ended measure of stressful life events was changed to a list of 40 stressful events instead (e.g. conflicts with other people, difficulties encountered in studies, and quarrels or breakups with girlfriends/boyfriends). Gan et al. (2004) demonstrated that this adaptation was understood more easily by mainland Chinese participants, and they also demonstrated good clinical validity in discriminating students suffering from higher levels of depression from healthy controls in mainland China.

2.2.2. Schizotypal Personality Questionnaire (SPQ)

The SPQ (Raine, 1991) measures symptoms of DSM-III-R schizotypal personality. It consists of a 74-item questionnaire assessing all nine symptoms of SPD, including ideas of reference, excessive social anxiety, odd beliefs or magical thinking, unusual perceptual experiences, odd or eccentric behavior, absence of friends, odd speech, constricted affect, and suspiciousness or paranoid ideation. The total internal reliability of the scale is high (0.91), while the internal reliabilities of the nine SPQ subscales are adequate (Cronbach's alpha ranges from 0.71 to 0.78, with a mean of 0.74). The two-month, test–retest reliability for the scale was 0.82 ($p < 0.0005$; Raine, 1991, 2006; Raine et al., 1994). The current study used the Chinese version of the SPQ (Chen et al., 1997). This version demonstrated good psychometric properties, including high internal consistency of the total SPQ score in both adults (0.90) and adolescents (0.93). Coefficient alpha for the nine subscales of the SPQ ranged from 0.58 to 0.79 in adults and 0.44 to 0.79 in adolescents (Chen et al., 1997).

2.2.3. The General Health Questionnaire (GHQ, 28-item version)

The GHQ is a self-report screening instrument for psychiatric illness, particularly in the general population (Goldberg and Williams, 1988). The GHQ-28 contains somatization, anxiety/insomnia, severe depression, and social dysfunction factors (Goldberg and Williams, 1988). The Chinese version of the 28-item GHQ (GHQ-28; Chan, 1985) showed good reliability (0.92 based on Cronbach's alpha coefficient; Cao et al., 2003).

2.2.4. The T-Anxiety Scale of the State-Trait Anxiety Inventory (STAI, Form Y-2)

The T-Anxiety scale of the STA1, (Form Y-2) (Spielberger et al., 1980) was used to assess general feelings of tension, apprehension, and nervousness. The anxiety scores range from 20 to 80, with a higher score indicating a higher level of trait anxiety. The current study used the Chinese version of the STAI, which has good reliability and validity (Shek, 1988; Cheng, 2001).

2.2.5. Beck Depression Inventory (BDI)

The BDI (Beck et al., 1961) is a 21-item, self-report questionnaire that assesses state depression during the past two weeks. Scores range from 0 to 63, with higher scores indicating higher levels of depression. From a meta-analysis of studies conducted from 1961 to 1986, Beck et al. (1988) reported a mean internal consistency coefficient of 0.86 for psychiatric subjects and 0.81 for nonpsychiatric subjects, and test–retest correlations of 0.48–0.36 for psychiatric subjects and 0.60–0.83 for nonpsychiatric subjects. The Chinese BDI has good reliability and criterion-related validity (Shek, 1990, 1991; Cheng, 2001).

2.2.6. Paranoid Ideation Checklist (PIC)

The PIC was adapted from the Paranoia Checklist (Freeman et al., 2005) to assess paranoid thoughts in the general population. It consists of 15 items that are rated on 5-point scales for frequency, degree of conviction, and distress. Frequency ratings on the 1 to 5 scale include: rarely (1), once a month (2), once a week (3), several times a week (4), and at least once a day (5). Conviction ratings include: do not

believe it, believe it a little, believe it somewhat, believe it a lot, and absolutely believe it. Distress ratings include: not distressing, a little distressing, somewhat distressing, moderately distressing, and very distressing. Freeman et al. (2005) demonstrated excellent internal consistency for each of the three dimensions (Cronbach's alphas>0.9) in community-dwelling individuals. A Chinese version was adopted for the current study (Chan et al., submitted). This Chinese version also demonstrates good internal consistency for the three dimensions in a non-clinical Chinese sample (Cronbach's alphas range from 0.86 to 0.93), and a significant correlation with the item of idea of reference captured by the SPQ (r ranges from 0.33 to 0.43, $p<0.001$).

2.3. Procedures

The questionnaire was administered in a group format. Subjects were asked to come to a lecture theatre to complete the questionnaire. The questionnaire comprised of a series of scales capturing different aspects of personality, coping strategies and mental health status. The scales were administered in the following order: SPQ, GHQ, STAI, BDI, PIC and CFQ. All subjects read and completed an informed consent form prior to the study. The total administration time was about 40 min. The study was approved by the ethics committee of the Institute of Psychology, Chinese Academy of Sciences.

2.4. Data analysis

Data analyses were performed using the Statistical Package for Social Sciences (version 16.0). Concerning the coping patterns adopted by the current young Chinese adults, cluster analysis was performed to identify the naturally occurring sub-groups of individuals adopting different patterns of coping strategies in the whole sample of the current study (Morris & Fletcher, 1988; Cheng, 2001). A 2-stage cluster analysis was used, as suggested by Hair et al. (1995), to 'build up' the clustering solution of the sample. A hierarchical cluster method was used to determine the number of clusters within the current sample and to provide the initial solution for a subsequent non-hierarchical clustering method to fine-tune the final solution. Ward's method of minimum-variance clustering was employed in the initial phase to ensure that the within-cluster differences were minimized, and to avoid chaining of the observations that is found in linkage methods (Hair et al., 1995). Squared Euclidean distances were chosen as the similarity measure among clusters since the variables were metric in nature.

In this study, the construct of coping style was assessed by the flexibility in both cognitive appraisal and coping patterns captured by the CFQ (Cheng, 2001). In the CFQ, flexibility in cognitive appraisal was operationalized as variability in patterns of perceived controllability across situations. Flexibility in coping pattern was operationalized as variability in patterns of problem-focused and emotion-focused coping across situations. The clustering variables used for the cluster analysis included the perceived controllability, problem-focused coping and emotion-focused coping of the CFQ.

Multivariate analysis of variance (MANOVA) was then conducted to examine the validity of the final clustering solution using variables that were not included in the original cluster analyses (Hair et al., 1995). The validating variables included coping effectiveness, variance of controllability, strategy-situation fit, paranoid ideation, general health, depression level, trait anxiety level and schizotypal personality feature. Since demographic variables did not differ between groups, covariates were not utilized in these analyses. Post-hoc LSD tests were used afterwards.

For evaluation of coping styles in individuals with and without SPD symptoms, we assessed SPD vs non-SPD subjects' differences (i.e. main effect and interaction) on GHQ, BDI, STAI, PIC and CFQ measures.

3. Results

3.1. Identification types of coping flexibility in the whole college sample

Table 1 summarizes the characteristics of the 4-cluster solution using the coping flexibility strategies. Subjects ($n=82$) in the first cluster were characterized by the passive-inflexible type of coping strategy. These subjects perceived most stressful events as controllable and used more emotion-focused coping. Subjects in the second cluster ($n=17$) were identified as of having a passive-inconsistent coping pattern. They perceived some stressful events as controllable and other as uncontrollable, but used emotion-focused coping consistently. Subjects in the third cluster ($n=45$) emphasized the active-inconsistent style of coping. They were characterized by their inconsistent perception pattern of stressful events as controllable or uncontrollable, but they demonstrated problem-focused coping consistently. Subjects in the fourth cluster ($n=283$) demonstrated the active-inflexible coping style, in which they perceived stressful events as controllable and showed a consistent pattern of using problem-focused strategy in reacting to these events.

The MANOVA results (Table 1) indicated significant group differences in measures of coping effectiveness, schizotypal symptoms, depression, anxiety, general health status and paranoid ideation. Post-hoc LSD tests showed that the passive-inconsistent group had significantly higher levels of schizotypal symptoms than the active-inflexible ($p<0.0005$) and passive-inflexible groups ($p=0.006$), but not significantly higher levels than the active-inconsistent group ($p=0.171$). The active-inflexible group had the lowest level, ($ps<0.05$). For depression symptoms, the active-inflexible group had the lowest level ($ps<0.05$) and the passive-inconsistent had the highest level ($ps<0.0005$). For trait anxiety, the active-inflexible group had significantly lower levels than the passive-inflexible and passive-inconsistent groups ($ps<0.0005$), but did not differ significantly from the active-inconsistent group ($p=0.065$). The passive-inconsistent group had significantly higher level of symptoms of depression than the other three groups ($ps<0.0005$). For the general health problems, the active-inflexible group had significantly lower levels than the other three groups ($ps<0.05$), and the passive-inconsistent group had the highest level among the four groups ($ps<0.05$). For symptoms of paranoid ideation, the active-inflexible group had the lowest level ($ps<0.05$) and the passive-inconsistent group had the

Table 1
Description of the 4 clustering solutions of the coping pattern and their corresponding coping outcomes.

	Passive-inflexible		Passive-inconsistent		Active-inconsistent		Active-inflexible		*F*	*p*	Pairwise comparisons				LSD	
	N = 82		*N* = 17		*N* = 45		*N* = 283				1vs2	1vs3	1vs4	2vs3	2vs4	3vs4
	M	SD	*M*	SD	*M*	SD	*M*	SD			*p*	*p*	*p*	*p*	*p*	*p*
Control	3.53	0.91	3.2	0.95	3.66	0.99	3.95	1.24	4.86	0.002	0.286	0.532	0.004	0.160	0.009	0.120
p_e	4.22	2.89	4.76	6.04	13.98	5.77	2.61	2.03	182.17	<0.0005	0.500	<0.0005	<0.0005	<0.0005	0.005	<0.0005
e_p	7.44	2.44	23.53	5.32	2.76	2.97	1.55	1.44	678.23	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Frequency	11.45	3.13	28.29	6.51	16.31	6.57	4.3	2.39	423.93	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Impact	3.36	0.98	3.74	0.58	3.36	0.96	2.97	1.06	6.49	<0.0005	0.160	0.987	0.002	0.185	0.003	0.018
v_con	1.58	1.33	1.29	0.92	1.54	1.17	1.26	2.13	0.77	0.513	0.569	0.920	0.182	0.640	0.949	0.354
eff	3.93	0.82	3.54	0.8	4.17	1.18	4.39	1.13	6.8	<0.0005	0.174	0.226	0.001	0.039	0.001	0.188
rfit	0.53	0.25	0.53	0.28	0.58	0.24	0.61	0.37	1.4	0.244	0.927	0.366	0.054	0.615	0.383	0.641
r_c_p	0.18	0.18	0.05	0.07	0.47	0.26	0.38	0.35	16.48	<0.0005	0.108	<0.0005	<0.0005	<0.0005	<0.0005	0.067
r_c_e	0.33	0.26	0.38	0.32	0.06	0.09	0.2	0.31	10.19	<0.0005	0.508	<0.0005	0.001	<0.0005	0.016	0.003
r_u_p	0.14	0.16	0.09	0.13	0.33	0.25	0.17	0.29	6.59	<0.0005	0.463	<0.0005	0.309	0.001	0.196	<0.0005
r_u_e	0.2	0.17	0.22	0.17	0.04	0.07	0.1	0.22	8.85	<0.0005	0.632	<0.0005	<0.0005	0.002	0.013	0.094
rp_e	0.35	0.24	0.15	0.17	0.89	0.28	0.6	0.38	34.4	<0.0005	0.022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
re_p	0.68	0.25	0.85	0.17	0.18	0.31	0.39	0.37	33.06	<0.0005	0.058	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
spq	26.11	8.71	33.24	13.53	29.42	11.92	22.45	9.43	13.16	<0.0005	0.006	0.068	0.003	0.171	<0.0005	<0.0005
pic	83.33	21.82	103.47	32.2	81.53	20.41	74.34	18.03	15.13	<0.0005	<0.0005	0.624	<0.0005	<0.0005	<0.0005	0.024
ghq	21.73	9.4	28.94	13.93	20.09	11.19	16.8	7.74	15.69	<0.0005	0.002	0.314	<0.0005	<0.0005	<0.0005	0.02
bdi	8.6	6.4	16.82	11.74	7.09	7.02	4.9	5.5	25.17	<0.0005	<0.0005	0.190	<0.0005	<0.0005	<0.0005	0.028
stai_t	43.11	7.38	53.47	10.66	41.96	8.66	39.71	7.18	20.55	<0.0005	<0.0005	0.410	<0.0005	<0.0005	<0.0005	0.065

Note: 1 = passive-inflexible; 2 = passive-inconsistent; 3 = active-inconsistent; 4 = active-inflexible frequency : the frequency of experienced stressful life events; control : perceived controllability; v_con : variance of controllability; impact : perceived impact; eff : perceived effectiveness; r_c_p : ratio of problem-focused coping in controllable situations; r_c_e : ratio of emotion-focused coping in controllable situations; r_u_p : ratio of problem-focused coping in uncontrollable situations; r_u_e : ratio of emotion-focused coping in uncontrollable situations; rfit : ratio of fitness of perceived controllability and coping strategies; rp_e : ratio of problem-focused coping; re_p : ratio of emotion-focused coping; spq: total score of the Schizotypal Personality Questionnaire, higher score indicates more schizotypal personality features; ghq : total score of the General Health Questionnaire, higher score indicates worse condition bdi : total score of the Beck Depression Inventory, higher score indicates more severe symptom : stai_t : total score of the Trait Anxiety Inventory, higher score indicates more severe symptom : pic : total score of the Paranoid Ideation Checklist, higher score indicates more severe symptoms.

highest level ($ps<0.0005$). No group difference was found for the strategy-situation fit and variance of perceived controllability (cognitive flexibility), as measured by the CFQ.

A chi-Square test revealed significant differences for number of subjects with SPD features in the four clusters, χ^2 (3) = 43.95, $p = 0.0007$. The passive-inconsistent type group demonstrated the largest number of subjects with SPD features, while the active-inflexible group demonstrated the least. The four clusters did not differ significantly in gender, χ^2 (3) = 1.644, $p = 0.679$.

3.2. Comparison of coping characteristics between subjects with and without SPD features

The MANOVA results showed significant group differences in the outcome measures (see Table 2). Compared to subjects in the SPD group, the non-SPD group showed fewer stressful life events ($F = 87.75$, $p<0.0005$) a significantly lower level of perceived impact ($F = 896.6$, $p<0.0005$), and a significantly higher level of perceived controllability ($F = 9.58$, $p = 0.001$).

The variance of perceived controllability was calculated only for those who had experienced at least three stressful events. The MANOVA showed no significant group difference between perceived controllability ($F = 2.35$, $p = 0.347$), or in the difference of the ratio of strategy-situation fit ($p = 0.652$). The non-SPD group showed greater perceived effectiveness of problem-focused coping ($p = 0.014$), and greater perceived effectiveness of their overall coping strategies ($p<0.0005$).

Although significant group differences were not obtained between the ratio of using problem-focused coping or emotion-focused coping, there was a significant difference in the ratio of problem-coping in perceived controllable situations and emotion-focused coping in perceived uncontrollable situations between the two groups when perceived controllability was taken into consideration. In this circumstance, the non-SPD group had a significantly higher ratio of using problem-focused coping in controllable situations ($p = 0.02$), and a lower ratio of using emotion-focused coping in uncontrollable situations, compared to the SPD group ($p = 0.005$).

Significant group differences were also obtained in general health, depression, anxiety and paranoid ideation, with SPD subjects showing significantly higher scores on general health problems, depression, anxiety and paranoid ideation ($ps<0.0005$). Main effect of gender and all other interaction effects were nonsignificant ($ps>0.05$).

4. Discussion

The current study found that the active-inflexible type of coping flexibility was the dominant strategy used by Chinese college students, which was consistent with previous findings from studies conducted in Hong Kong and mainland China (Cheng, 2001; Gan et al., 2004). The results of the cluster analysis and MANOVAs also provide empirical validation of the four coping styles examined here, and the significant clinical consequences of utilizing certain styles rather than others. We did not find that the flexible type of coping was associated with more problem-focused coping in controllable situations, and more emotion-focused coping in uncontrollable situations, as

Table 2
Comparison of coping outcome and characteristics between individuals with and without SPD features.

	Low ($n=48$)		High ($n=48$)			
	M	SD	*M*	SD	*F*	*p-value*
pic_t	61.85	13.19	100.79	28.00	59.86	<0.0005
pic_frequency	17.42	3.78	30.73	10.92	51.77	<0.0005
pic_conviction	23.69	6.47	36.58	10.31	41.92	<0.0005
pic_distress	20.75	6.19	33.48	10.65	39.61	<0.0005
ghq_t	12.71	6.17	30.02	11.85	64.65	<0.0005
bdi_t	1.83	2.59	14.77	10.30	52.48	<0.0005
stai_t	34.65	5.82	51.25	9.12	98.87	<0.0005
Frequency	5.00	3.76	12.92	10.85	14.52	<0.0005
Impact	2.60	0.84	3.52	0.97	18.29	<0.0005
Control	4.36	1.22	3.49	1.14	9.58	0.001
v_con	0.95	1.18	1.19	1.26	2.35	0.347
eff	4.85	0.86	3.81	1.10	22.74	<0.0005
rfit	0.64	0.37	0.61	0.31	0.19	0.652
r_c_p	0.44	0.38	0.27	0.30	0.96	0.020
r_c_e	0.20	0.32	0.21	0.30	1.75	0.791
r_u_p	0.15	0.26	0.17	0.25	0.28	0.730
r_u_e	0.05	0.11	0.15	0.22	5.14	0.006
rp_e	0.69	0.46	0.52	0.47	0.06	0.089
re_p	0.40	0.50	0.55	0.42	0.41	0.120
p_eff	4.04	1.97	3.00	2.06	5.35	0.014
e_eff	2.78	2.44	2.99	1.68	15.67	0.633

pic : Total score of the Paranoid Ideation Checklist, higher score indicates more severe symptoms. pic_frequency: the frequency of experienced paranoid ideation, higher score indicates more such experience; pic_conviction: the level of confirmation that one had the paranoid ideation, higher score indicates more confirmed; pic_distress: the level of distress that one had, higher score indicates more distressed. ghq_t : total score of the General Health Questionnaire , higher score indicates worse condition; bdi_t : total score of the Beck Depression Inventory , higher score indicates more severe symptom ; stai_t : total score of the Trait Anxiety Inventory , higher score indicates more severe symptom ; stai_t : total score of the Trait Anxiety Inventory , higher score indicates more severe symptom ; High: individuals with schizotypal personality features; Low : individuals without schizotypal personality features; frequency : the frequency of experienced stressful life events; control : perceived controllability; v_con : variance of controllability; impact : perceived impact; eff : perceived effectiveness; r_c_p : ratio of problem-focused coping in controllable situations; r_c_e : ratio of emotion-focused coping in controllable situations; r_u_p : ratio of problem-focused coping in uncontrollable situations; r_u_e : ratio of emotion-focused coping in uncontrollable situations; rfit : ratio of fitness of perceived controllability and coping strategies; rp_e : ratio of problem-focused coping; re_p : ratio of emotion-focused coping. p_eff: effectiveness of problem-focused coping; e_eff: effectiveness of emotion-focused coping.

Cheng found. One explanation may be that the flexible participants might have experienced fewer stressful life events, and in this study, the flexibility of cognition and coping could only be measured when the subjects experienced at least three stressful events.

As importantly, the current study found that the group that consisted of the largest proportion of subjects with SPD features showed a dominant passive-inconsistent style of coping and also showed the worst outcomes in levels of depression, anxiety level, general health status and paranoid ideation. Moreover, subjects in the passive-inconsistent group experienced the highest levels of depression, trait anxiety, paranoid ideation symptoms and general health problems among the four groups. These results are not attributable to group differences in education, gender or age. Overall, the active-inflexible group reported the lowest levels of depression, trait anxiety, paranoid ideation symptoms and general health problem among the four groups, indicating that this coping style was associated with better psychological wellbeing than the other three styles.

When coping styles in the SPD group were examined, they generally did not show this more adaptive coping style. While subjects in the non-SPD group generally perceived stressors as more controllable and used more problem-focused coping (i.e. the active-inflexible type of coping flexibility), subjects in the SPD group endorsed mixed types of coping strategies. They perceived some stressful life events as controllable and some as uncontrollable, but used emotion-focused coping and problem-focused coping inconsistently.

Instead of using particular coping strategies rigidly, it is an essential part of coping flexibility to choose the appropriate coping strategies in accordance with the demands of situations (Cheng, 2001, 2003). In this study, variance of perceived controllability represents the cognitive flexibility and situation-strategy fit. Interestingly, there were no significant statistical differences in variance of perceived controllability and the strategy-situation fit between the subjects in non-SPD and SPD groups. This means that these two groups might have similar discriminative facility when facing stress, but very different capabilities to cope with it.

Coping effectiveness in the SPD subjects was significantly lower than that of the non-SPD subjects. This result suggests that the SPD subjects have lower coping abilities when they are facing stressful events compared to non-SPD individuals, which supports our hypothesis that the SPD group is not as adaptive as the non-SPD group when they are coping with stressful life events. Furthermore, the effectiveness of problem-focused coping in particular was significantly higher in the non-SPD group than it was in the SPD group.

Previous studies have shown that the more stressful events and less control college students experienced, the more emotion-focused coping strategies they used (Arthur, 1998). The subjects in the SPD group did have significantly higher perceived stress and lower perceived controllability. This finding supports our hypothesis that subjects with SPD features would experience more stress than non-SPD subjects. However, there was no significant difference between the two groups on their use of emotion-focused coping across situations, except in uncontrollable situations, indicating that less control was associated with more emotion-focused coping, consistent with Arthur (1998).

As noted above, the SPD group subjects experienced more general health problems, and higher levels of depression, anxiety and paranoid ideation symptoms compared to the non-SPD group. In a previous study, higher levels of emotion-focused coping were associated with higher levels of paranoia (Freeman et al., 2005), consistent with the current findings. Both studies suggest that higher levels of paranoia might be associated with more stress, and more stress produces more emotion-focused coping when subjects appraise circumstances as uncontrollable.

There are several limitations in the current study. First, the relatively small sizes of subject samples means that potential effects of demographic variables such as gender, or interaction effects, were missed. Second, the data were generated from a cross-sectional design. It is not clear whether the coping patterns adopted by the current sample are stable over time. Further study should adopt a longitudinal design and

recruit more subjects in order to address these issues. These limitations notwithstanding, the current findings shed light on differences in coping strategies and abilities in healthy control subjects, and in individuals with SPD features.

More specifically, the current study shows that the passive-inconsistent type of coping flexibility group has the largest proportion of participants with SPD features and general health complaints, and also, higher levels of depression symptoms, anxiety symptoms and paranoid ideation. These findings highlight the importance of taking coping strategies into account when evaluating the impact of SPD on psychological health. This is especially true for individuals who are likely to use different coping strategies in an inconsistent manner. It remains to be determined whether less effective coping strategies, such as those shown by the SPD subjects, are also associated with increased risk of developing other, schizophrenia-related disorders.

Finally, the current findings provide implications for prevention and early intervention for at-risk individuals, in both mainland China and elsewhere. It will be useful, first, to sensitize counselors to the clinical significance of these different coping styles. Demonstrations of different coping strategies in college students who are struggling with general and specific events can then help university counselors and related staff to assess coping styles (including strengths and weaknesses) and to promote the effective utilization of these coping strategies in different situations. As importantly, the identification of subtypes of coping patterns associated with at-risk students (e.g. SPD features or other indications of psychiatric problems or disorders) will be useful in helping counselors to make effective interventions to alleviate stress in these individuals.

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Contributors

Raymond Chan generated the idea, designed the study, and wrote up the first draft of the paper; Jiagang Zong collected and analyzed the data, and wrote up the first draft of the paper; William Stone and Xiaolu Hsi participated in the data analysis and contributed to writing the paper; Xiao-yan Cao, Qing Zhao, Yan-fang Shi, Yu-na Wang, and Ya Wang helped collect the data and participate in the writing. All authors contributed to and approved the final text.

Conflict of interest

None.

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