

Factors influencing cognitive reactivity among young adults at high risk for depression in China: a cross-sectional study

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Abstract

Background

Understanding the factors influencing cognitive reactivity (CR) may help identify individuals at risk for first episode depression and relapse, and facilitate routine access to preventative treatments. However, few studies have examined CR to depression in Asian countries. This study was performed to ascertain the current status of CR among Chinese young adults and explore the factors that influence their CR.

Methods

A national cross-sectional online study using convenience sampling was conducted among 1637 healthy young adults in China (96.29%).

Results

The mean CR score was 1.73 ± 0.64 . Binary logistic regression showed that a low level of CR was associated with the following factors: high self-compassion, high social support, high resilience, high monthly household income, and living in a rural area, with odds ratios (ORs) ranging from 0.14 to 0.70. Young adults in full-time employment, experiencing poor sleep, with high neuroticism, who reported frequent sad mood, and who had a high intensity of negative life events had increased CR to depression, with ORs ranging from 1.18 to 6.66. The prediction probability of these factors was 75.40%. Any causal relationships among the influencing factors and CR cannot be established.

Conclusions

The self-reported CR levels among Chinese young adults were moderate. Enhancing self-compassion, resilience, and social support for young adults and reducing negative life events, neuroticism, and poor sleep may facilitate reducing CR. These findings may help healthcare providers or researchers determine how to cultivate and improve the CR of young adults by establishing documented policies and/or improving intervention efficacies.

1. Background

Depression is one of the most prevalent psychological disorders worldwide and places a significant economic burden on society [1]. It was ranked by the World Health Organization as the single largest contributor to global disability [2]. Historically, depression has been viewed as a condition only affecting older adults [3]. However, many patients experience their first episode early in life. In recent years, young adults aged 18 to 35 years are increasingly recognized as a population group significantly affected by depression [3]. It is estimated that approximately 25% of young adults experience depressive symptoms and 2.5% of these meet the criteria for a major depressive episode [4].

Despite existing evidence-based treatments for major depression, it remains a chronic and recurrent illness with 85% of people who experience a single episode of depression experiencing another episode within 15 years [5]. High rates of depression that remain undetected further enhance its debilitating effects, with over 72.3% of individuals with depression not even being aware of their problem [6]. Young adults are often overlooked, misdiagnosed, or undetected in comparison to older adults, possibly due to the instabilities and uncertainties young people experience in many areas of life being accompanied by irritability and mood fluctuations [4]. Of further concern is that among those who do not meet the diagnostic criteria for major depression, 10–35% are faced with episodes of low mood or sub-threshold depression that significantly impairs their quality of life. These alarming statistics underscore the

importance of identifying any signs of depression in young adults or the young adults at risk of depression, which may provide clinical targets for the prevention and early intervention for depression [3].

The etiology of depression is complex with no single underlying cause. According to Beck's cognitive model, individuals with depression typically experience cognitive distortions and dysfunctional attitudes and beliefs, which tend to decrease but can be reactivated by dysphoric mood. The ease with which such negative cognitions can be (re-)activated by sad mood states is referred to as cognitive reactivity (CR) [7]. In recent years, a promising line of research has highlighted the role of CR in the development, maintenance, and relapse/recurrence of depressive symptoms or clinical depression (e.g., [8–10]). Thus, the relevance of CR to depression should be further explored.

Understanding CR and its influencing factors may help to target individuals at risk for first episode and relapse of depression and enable routine access to preventive treatments, having the impact of decreasing the personal and societal burdens of depressive disorders [5]. Previous studies have shown that CR can be directly and indirectly affected by some socio-demographic and psychosocial factors, including body mass index (BMI) [11], depression status and number of previous episodes [12, 13], neuroticism [14], negative life events [8], and rumination [15]. Interestingly, researchers have mainly concentrated on limited aspects concerning negative psychological outcomes and biological markers of vulnerability to depression [5, 16].

Relatively few studies have examined the association between CR and the positive psychological resources (e.g., resilience) [17] that are considered to protect individuals from depression. Thus, in the current study, we extended this knowledge of the protective factors in depression to include personal factors (e.g., resilience, self-compassion) and interpersonal factors (e.g., social support), and explored the association between these factors and CR.

The majority of studies on CR have been conducted in Western countries and relatively few studies have examined either the current status or related influencing factors (and especially the positive factors) of CR in Asian countries. In line with the “Healthy China 2030” blueprint, proposed by the Chinese government [18], the dual purpose of this nationwide cross-sectional study was to: (a) describe the current status of CR among Chinese young adults who are at high risk for depression; (b) explore which factors influence their CR.

2. Methods

2.1. Participants

Between January 2018 and January 2019, a total of 1700 young adults, aged 18–35 years, were enrolled in the online national survey using a convenience sampling method. A popular online survey platform in China was utilized, that is, Wenjuanxing (<http://www.wjx.cn>). The survey recruitment information was posted to six administrative regions in China, including the northeast, eastern, north, south central, southwest, and northwest areas, and the link for the online survey was provided. Participants with a diagnosis of mental illness, such as major depressive disorder, bipolar disorder, psychotic disorders, and others, were excluded from participating. The sample size was determined by the subject to item ratio of 5–10:1 [19], and the total number of survey items was 166.

2.2. Measures

2.2.1. Cognitive reactivity

The modified Chinese version of the Leiden Index of Depression Sensitivity (LEIDS-RR-CV) is a 26-item self-report measure of cognitive reactivity to sad mood [20]. Participants are asked to imagine the last time they felt a mild

state of dysphoria, and then to indicate the degree to which a list of statements describes their typical cognitions and behaviors in response to a sad mood. The LEIDS-RR-CV contains 26 items from five subscales, including hopelessness/suicidality (HOP), acceptance coping (ACC), aggression (AGG), control/perfectionism (CTR), and avoidant coping (AVC). All of the items are rated using a 5-point Likert-scale (0=*not at all* to 4=*very strongly*). Items are all positively worded for CR, and the total score is obtained by summing the scores of all items. A higher total score indicates stronger CR. In this study, the Cronbach's α coefficient was 0.95 for the overall scale. Huang et al. identified a cut-off score of 60 for LEIDS-RR-CV to screen for healthy individuals at risk for depression in China [20].

2.2.2. Social support

The Multidimensional Scale of Perceived Social Support (MSPSS) is a 12-item self-report scale used to measure perceived social support from family, friends, and significant others [21,22]. The scale employs a 7-point rating scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). The total scores of the scale range from 7–84, with higher scores indicating greater levels of social support. The social support is classified into low, middle, and high support levels according to the cut-off score ranges of the MSPSS, that is, 12–36, 37–60, and 61–84, respectively [22]. In this study, the Cronbach's α coefficient was 0.97 for the overall scale.

2.2.3. Neuroticism

The Neuroticism Subscale of the Chinese Big Five Personality Inventory (NEO-CBF-PI) I is the most comprehensive self-report questionnaire measuring the five dimensions of personality, including neuroticism. The CBF-PI consists of 40 items and has been extensively validated [23]. The 8-item neuroticism subscale of the CBF-PI is rated on a 6-point Likert scale (1–6), with the total score ranging from 8 to 48. Higher scores are indicative of a higher level of neuroticism. Based on previous studies [23], levels of neuroticism are classified into high and low according to the cut-off score of 36 for the CBF-PI. In this study, the Cronbach's α coefficient was 0.87 for the NEO-CBF-PI.

2.2.4. Resilience

The Chinese version of the 14-item Resilience Scale (RS-14) developed by Wagnild and Young is one of the most reliable tools in measuring resilience in various age groups and different conditions [24,25]. It is composed of 14 items representing the "Personal Competence Factor" and "Acceptance of Self and Life Factor." Each item is graded from 1 (*strongly disagree*) to 7 (*strongly agree*). Graded items are summed to provide a total score, in which lower scores indicate less resilience. According to the cut-off value of 74, resilience levels are classified into high and low [25]. The Cronbach's α of the RS-14 was 0.96 in this study.

2.2.5. Self-compassion

The Self-Compassion Scale (SCS) is the most commonly used scale to measure self-compassion at times of perceived difficulty [26]. It is composed of 26 items and six subscales, including self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. Each item rated on a 5-point Likert-type scale for frequency (1=*almost never*, 5=*almost always*). The total score is calculated through the average of the individual subscales, and all negatively scored items are transformed. Levels of self-compassion are classified high and low according to the 75% of total scores of SCS (130*0.75) as based on a previous study [27], that is, a score of 98. In this study, the Cronbach's α of the scale was 0.77.

2.2.6. Life events

The 48-item Life Events Scale (LES) is used to evaluate negative and positive life events that have occurred during the previous year or longer, including family, work or study, social related events [28]. Each of the 48 life event items was anchored to four questions: (i) when it happened, measured by “never,” “in the past 1 month,” “in the past 1 year or longer”; (ii) whether it was positive or negative for the target person; (iii) the impact on the target person’s mental health, measured by a 5-point scale ranging from “no impact” to “very severe impact”; (iv) the duration of the event, measured by a 4-point scale ranging from “3 months,” “6 months,” “≤1 year” to “longer.” The intensity of each life event is calculated by the impact multiplied by the duration and then by the timeframe in which it happened. The total intensities of positive and negative life events are summed by the score of each positive or negative life event. Based on the 75% of this score (Fang et al., 2013), the total intensities of positive and negative life events are further classified into high and low levels. In this study, the Cronbach’s α of the scale was 0.94.

2.2.7. Socio-demographic characteristics

Participants were asked about their residential area and location, age, sex, marital status, educational level, religion, monthly household income (Yuan, RMB), employment status, smoking status, living status, BMI, family history of mental illness, whether they had previously experienced depression, the frequency of sad mood in the past month, and their sleep quality.

2.3. Procedure

All procedures were approved by the ethical committee of Fujian Medical University (NO: FMU2017024), and informed consent was obtained from all participants. The study adhered to the STROBE (Strengthening the Reporting of Observational studies in Epidemiology) statement [29]. All measures were completed via the Wenjuanxing platform. The Questionnaire completion time was approximately 20 min, and the questionnaire could not be effectively submitted when less than half complete or with repeated answers. Participants who completed the survey were remunerated with a RMB 10 gift card.

2.4. Statistical analysis

Data analyses were conducted using SPSS 24.0 (IBM, Armonk, NY, USA). Missing data were replaced using mean value substitution, and $p < 0.05$ was considered statistically significant. The data meet the assumptions of normality as the one sample Kolmogorov-Smirnov tests were not statistically significant. Continuous variables are expressed as means and standard deviations (SDs). Categorical variables are expressed as proportions or percentages.

Young adults with a LEIDS-RR-CV total score < 60 were considered the normal group (NG), while those with a score ≥ 60 were considered the risk for depression group (RDG).

We took three analysis steps to determine the influencing factors of CR. First, univariate analyses were employed; chi-square and independent t-tests were used to compare the differences in socio-demographic variables, self-compassion, resilience, social support, neuroticism, and life events between the two groups. Second, the collinearity of the independent variables was examined by the variance inflation factor (VIF) before conducting binary logistic regression. The VIF of the 11 variables ranged from 0.45–2.63 (which should ideally be < 4.0), suggesting no violations of the regression assumptions [30]. Third, the binary logistic regression with a forward conditional method was conducted to determine the influencing factors associated with CR. The dependent variable was whether the young adults were at risk for depression. The variables shown to be statistically significant in the independent t-test or chi-square test were input as independent variables.

3. Results

A total of 1597 valid questionnaires were returned out of the 1700 questionnaires distributed (response rate, 93.94%). The mean age of young adults was 24.34 years (SD=5.76), and the average BMI was 22.21 kg/m² (SD=6.54). Table 1 shows the socio-demographic characteristics of all participants.

3.1 Cognitive reactivity scores of the young adults

The participants were classified into two groups according to the cut-off score of the LEIDS-RR-CV: Normal and those with high risk for depression. In total, 449 young adults (30.93%) had high levels of CR to depression, and 1103 (69.07%) had low levels of CR. As shown in Table 2, the total mean scores for the LEIDS-RR-CV in Chinese young adults were 51.36±18.97 (range 0–130) overall, and 41.30±11.80 (range 0–59) for the NG and 73.82±11.07 (range 60–130) for the RDG. Considering the differences in the number of items among the five subscales, the average score for each subscale was calculated. The highest mean score was for avoidant coping (2.24±0.86) and the lowest was for hopelessness/suicidality (1.73±0.93) (see Table 2).

3.2 Factors associated with CR of young adults at risk for depression

As shown in Table 1, the differences in residential area and location, monthly household income, employment status, family history of mental illness, frequency of sad mood in the past month, and sleep quality between two groups were all statistically significant ($p<0.05$). Table 1 also shows that young adults in the NG had higher levels of self-compassion, resilience, social support, and had experienced more positive life events than those in the RDG ($p<0.05$). The levels of neuroticism and negative life events for young adults in the RDG were higher compared to individuals in the NG ($p<0.05$).

The predictors of CR as determined using binary logistic regression are shown in Table 3. The young adults indicated that the main predictors influencing CR were high levels of self-compassion, followed by being resident in a rural location, having high social support, resilience, and high monthly household income. For example, participants with high self-compassion were 0.14 times likely to report CR of depression than individuals with low self-compassion (OR=0.14, 95% CI 0.05–0.71).

In contrast, young adults with a high level of neuroticism, followed by those with frequent sad mood in the past month, in full-time employment, having a high intensity of negative life events, and bad sleep quality had higher CR to depression. For example, the risk of CR to depression in young adults with higher neuroticism was 6.66 times higher than for those with lower neuroticism (OR=6.66, 95% CI 1.41–3.33). The overall prediction probability of these factors was 75.40%.

4. Discussion

The psychological well-being of young people is a public health concern worldwide as it is correlated with the quality of health care they will provide in the future [31]. However, this population has been shown to be particularly vulnerable to psychological distress, and in particular, depression. Screening at-risk populations and providing targeted measures are cost-effective strategies for the prevention and treatment of depression.

To our knowledge, this is the first study to explore the significant vulnerability of CR to depression and the associated influencing factors in young adults in China. The results revealed moderate levels of self-reported CR among Chinese young adults. This is higher than mixed clinical/healthy individuals in the Netherlands [32], a Spanish mixed-

population [33], but slightly lower than non-depressed Iranian individuals [34], and recurrently depressed patients in remission in Netherlands [5]. However, these differences could be attributable to the differences in countries, study samples, and measurement tools.

In this study, the CR levels of Chinese young adults were mainly reflected in terms of avoidant coping and control/perfectionism, both of which are closely linked to depression. For example, the highest score for avoidant coping indicates that when young individuals were under stress, they generally applied a maladaptive coping mechanism characterized by cognitive and behavioral efforts to deny, minimize, or avoid dealing with the situation. Although previous research has shown that CR is implicated both in the first episode and relapse of depression, the influencing factors or predictors of CR were unknown. The current study provides the first evidence regarding the factors reducing and increasing CR in Chinese young adults.

4.1 Factors reducing CR

In our study, self-compassion and resilience were negatively associated with CR. Kuyken et al. also found an interaction between CR and self-compassion skills [35]. This may be due to self-compassion and resilience both being important protective factors against depression. Higher levels of self-compassion and resilience are typically related to greater psychological health, demonstrated through lower levels of depression and anxiety [31,36]. In other words, young individuals with higher self-compassion and resilience might be more likely to hold their feelings of suffering with a sense of warmth, connection, and concern, negotiating, managing, and adapting to significant sources of stress and trauma [31].

Many studies have demonstrated an interaction effect between social support and the prevalence of depression. The current study also found that lack of social support is a significant predictor to CR. The support from family members, friends, or other people, is particularly important for those who are undergoing stress [37]. This may explain why the level of CR among young adults with stronger social support was significantly lower than those with weaker social support.

As Zeng and Jian [38] reported, the prevalence of depression can be directly and indirectly affected by socio-economic status and inequality development problems in different residential locations in China. Our study also found relationships between monthly household income, residential location, and CR to depression. Compared with young adults living in rural areas, the level of CR was higher in young adults living in urban areas. Generally, people residing in urban areas often experience higher stresses and challenges, and if they cannot mitigate these, they become more prone to dysfunctional attitudes and depression. Furthermore, a high monthly household income could decrease the level of CR, thus increasing the risk of depression among young adults. This study further confirms the strong link between poor economic conditions and greater depressive symptoms [39].

4.2 Factors increasing CR

In line with other studies [14,40], we also found that neuroticism and poor sleep quality were positively correlated with CR in Chinese young adults. In other words, individuals with higher neuroticism and poorer sleep quality were more likely to respond to mildly negative moods with the reactivation of thoughts relating to hopelessness (or other negative states), which are in turn, related to depression. Furthermore, our analysis revealed that CR among young adults was increased by the frequency of sad mood in the past month. The current study also confirms the interaction effect between negative life events and the prevalence of depression. In other words, when young adults encounter negative life events, they report less happiness and optimism, which leads to poorer mental health [29].

We additionally found that another risk factor for CR is employment status. That is, young adults in full-time employment encountered greater work-related stress or cognitive propensity to depression than students.

As mentioned above, to reduce the prevalence of depression, healthcare providers need to pay attention to the factors reducing and increasing CR, an important predictor of an episode of depression. By being aware of the influencing factors on CR, we can take targeted measures to reduce the levels of CR among young adults by enhancing their self-compassion, resilience, and social support, improving the quality of their sleep, decreasing their neuroticism, and experience of negative life events. We should also pay attention to young adults with high levels of CR, who are resident in urban areas, with low monthly household income, and in full-time employment.

4.3. Limitations

Although this study revealed important findings, the results should be interpreted in light of its limitations. First, the convenience sampling method and recruitment of non-clinical young adults may impact upon the generalization of the findings. Second, the subjectivity associated with the use of self-reported questionnaires may also pose limitations, which should be confirmed by the use of objective measurements in the future, such as the use of clinician administered assessments. Third, the underlying causal relationships and effect mechanisms between the risk factors and CR were not examined. Future longitudinal or intervention research is needed to address this important issue.

5. Conclusions

The self-reported CR levels in Chinese young adults were moderate. Self-compassion, resilience, social support, and high monthly household income were identified as factors reducing CR, while negative life events, neuroticism, and poor sleep quality increasing the levels of CR. Young adults who were resident in urban areas, in full-time employment, and frequently experiencing sad mood were at risk for high levels of CR. These findings may help healthcare providers and/or researchers determine how to cultivate and improve the CR of young adults by establishing documented policies and improving intervention efficacies.

List Of Abbreviations

BMI, body mass index; CI, confidence interval; CR, cognitive reactivity; LEIDS-RR-CV, Leiden Index of Depression Sensitivity; NEO-CBF-PI, Neuroticism Subscale of the Chinese Big Five Personality Inventory; OR, odds ratio; SCS, Self Compassion Scale; VIF, variance inflation factor.

Declarations

Ethics approval and consent to participate

Before survey, all participants were obtained by written informed consent. The research was approved by the Institutional Review Boards of Fujian Medical University in March 2017(NO: FMU2017024).

Consent for publication

Not applicable.

Availability of data and materials

The original data are available on request to the corresponding author, after the manuscript published. Whatever, we also considered to provide the original data in public repositories.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Fei Fei Huang is the correspondence author of this study, responsible for designing, guiding, organizing and planning this study.

Zhi Peng Wen and Qi Li provided feedback, review the manuscript to aid in revisions, and contributed data.

Wen Jie Weng and Bin Chen are responsible for data collection and evaluation.

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Tables

TABLE 1 Socio-demographic comparison of the NG and RDG

Variables		Total%	NG (n=1103) n%	RDG (n=494) n%	c2	p
Residential area	Northeast area	12.52	120 (60.00)	80 (40.00)	17.65	<0.001*
	Eastern area	37.13	460 (77.57)	133 (22.43)		
	North area	14.84	127 (53.59)	110 (46.41)		
	Southcentral area	11.77	118 (62.77)	70 (37.23)		
	Southwest area	10.46	117 (70.06)	50 (29.94)		
	Northwest area	13.27	161 (75.94)	51 (24.06)		
Sex	Male	22.79	241 (66.39)	122 (33.61)	2.43	0.30
	Female	77.21	861 (69.83)	372 (30.17)		
Residential location	Urban	50.22	524 (65.34)	278 (34.66)	12.41	<0.001*
	Suburban	10.90	118 (67.82)	56 (32.18)		
	Rural	38.89	461 (74.24)	160 (25.76)		
Religion	None	83.47	926 (69.47)	407 (30.53)	0.73	0.39
	Had	16.53	177 (67.05)	87 (32.95)		
Education level	Less than high school degree	4.44	50 (70.42)	21 (29.58)	4.51	0.11
	High school degree (including technical training)	10.71	130 (76.02)	41 (23.98)		
Monthly household income (yuan, RMB)	Bachelor's degree or higher	84.85	923 (68.12)	432 (31.88)	14.92	<0.001*
	<1000	24.05	341 (88.80)	43 (11.20)		
	1000-2999	20.16	184 (57.14)	138 (42.86)		
	3000-4999	28.18	310 (68.89)	140 (31.11)		
Employment status	5000+	27.61	268 (60.77)	173 (39.23)	25.44	<0.001*
	Students	41.08	490 (74.70)	166 (25.30)		
	Full-time employment	50.09	513 (64.13)	287 (35.88)		
	Unemployment	0.88	6 (42.86)	8 (57.14)		
	Farmer	0.69	7 (63.64)	4 (36.36)		
Marital status	Other (e.g., retired, homemaker)	7.26	87 (75.00)	29 (25.00)	2.14	0.71
	Married	35.38	382 (67.61)	183 (32.39)		
	Unmarried	63.12	705 (69.94)	303 (30.06)		
Family history of mental illness	Others (e.g., divorced, widowed)	1.5	16 (66.67)	8 (33.33)	25.17	<0.001*
	No	90.61	1034 (70.68)	429 (29.32)		
	Unclear	7.58	65	56		

	Yes	0.81	(53.72) 4 (30.77)	(46.28) 9 (69.23)		
Living status	Living by oneself	17.66	208 (73.76)	74 (26.24)	4.96	0.17
	Living with spouse	13.21	177 (83.89)	34 (16.11)		
	Living with family others	45.96 23.17	507 211 (69.07)	227 159 (30.93)		
Smoking status	Yes	8.14	84 (64.62)	46 (35.38)	1.73	0.42
	No	91.86	1019 (69.46)	448 (30.54)		
The frequency of sad mood in the past month	None	12.46	168 (84.42)	31 (15.58)	111.51	<0.001*
	Occasionally	54.35	639 (73.62)	229 (26.38)		
	Sometimes	22.67	230 (63.54)	132 (36.46)		
	Often	9.20	53 (36.05)	94 (63.94)		
	Always	1.31	13 (61.90)	8 (38.10)		
Sleep condition	Very good	27.80	345 (77.70)	99 (22.30)	65.30	<0.001*
	Good	32.74	381 (72.85)	142 (27.15)		
	General	31.68	323 (68.83)	183 (36.17)		
	Bad	6.95	49 (44.14)	62 (55.86)		
	Very bad	0.69	5 (38.46)	8 (61.54)		
BMI	<18.5 (underweight)	16.22	181 (70.70)	75 (29.30)	2.29	0.32
	18.5-23.9 (normal weight)	64.93	723 (69.72)	314 (30.28)		
	≥24 (overweight)	19.04	199 (65.46)	105 (34.54)		
Self-compassion	Low	90.11	989 (68.73)	450 (31.27)	45.24	<0.001*
	High	10.21	114 (69.94)	49 (30.06)		
Resilience	Low	51.70	560 (67.80)	266 (32.20)	13.70	<0.001*
	High	48.30	587 (76.1)	184 (23.90)		
Social support	Low	12.60	151 (74.80)	51 (25.20)	69.30	<0.001*
	Middle	44.40	433 (61.60)	270 (38.40)		
	High	43.00	563 (81.40)	129 (18.60)		
Neuroticism	Low	94.18	1075 (71.50)	429 (28.50)	70.16	<0.001*
	High	5.82	28 (30.10)	65 (69.90)		
Intensity of positive life events	Low	81.09	944 (72.90)	351 (27.10)	46.99	<0.001*
	High	18.91	159 (52.60)	143 (47.40)		
Intensity of negative life events	Low	68.25	811 (74.40)	279 (25.60)	45.77	<0.001*
	High	31.74	292 (57.60)	215 (42.40)		

Note: * $p < 0.05$

Abbreviations: BMI, body mass index; NG, normal group; RDG, risk for depression group.

TABLE 2 Scores for cognitive reactivity among Chinese young adults (n=1597)

Variables	Total			NG		RDG	
	Total score	Average score	Item number	Total score	Average score	Total score	Average score
ACC	7.92±3.17	1.98±0.79	4	7.02±2.89	1.76±0.72	9.90±2.84	2.48±0.71
CTR	10.32±3.96	2.06±0.79	5	8.46±2.87	1.69±0.57	14.46±2.74	2.89±0.55
AGG	8.78±4.39	1.76±0.88	4	6.67±2.84	1.67±0.57	13.48±3.51	3.37±0.50
AVC	15.69±6.00	2.24±0.86	7	12.75±4.13	1.82±0.59	22.25±4.02	3.18±0.57
HOP	8.66±4.65	1.73±0.93	5	6.39±2.99	1.28±0.60	13.72±3.57	2.74±0.71
Total score	51.36±18.97	1.98±0.73	26	41.30±11.80	1.59±0.45	73.82±11.07	2.84±0.43

Note: Average score=total score/numbers of items

Abbreviations: ACC, acceptance coping; AGG, aggression; AVC, avoidant coping; CTR, control/perfectionism; HOP, hopelessness/suicidality; NG, normal group; RDG, risk for depression group.

TABLE 3 The predictors of cognitive reactivity among Chinese young adults at risk for depression

Variable		OR/Exp(B)	p-value	95% CI
Residential location	Urban	Ref		
	Rural	0.54	0.04	0.34-0.85
Employment status	Students	Ref		
	Full-time employment	2.54	0.00	1.46-4.40
Monthly household income	<1000	Ref		
	5000+	0.70	0.03	0.50-0.97
Frequency of sad mood in the past month	None	Ref		
	Always	4.29	0.04	1.96-9.08
Sleep quality	Very good	Ref		
	Bad	1.18	0.04	1.03-1.92
Social support	Low	Ref		
	High	0.58	0.00	0.43-0.78
Self-compassion	Low	Ref		
	High	0.14	0.00	0.05-0.71
Neuroticism	Low	Ref		
	High	6.66	0.00	1.41-3.33
Resilience	Low	Ref		
	High	0.63	0.00	0.47-0.86
Intensity of negative life events	Low	Ref		
	High	1.49	0.01	1.12-2.00

Note: Abbreviations: CI, confidence interval; OR, odds ratio; Ref, reference.