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A diathesis-stress model of engagement in risky behaviors in Chinese adolescents

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Abstract

The current study examined whether the association between the occurrence of negative events and increased engagement in risky behavior is moderated by maladaptive and/or adaptive coping strategies. At time 1, 411 adolescents (ages 14–19) from Yue Yang, Hunan, completed self-report measures assessing coping strategies, engagement in risky behaviors, and the occurrence of negative events. Once a month for the subsequent 6 months, adolescents completed measures assessing engagement in risky behaviors and the occurrence of negative events. In line with our hypotheses, results of hierarchical linear modeling analyses indicated that adolescents possessing high levels of maladaptive coping strategies reported greater engagement in risky behaviors following the occurrence of negative events than adolescents possessing low levels. In contrast to our hypotheses, the association between the occurrence of negative events and increased engagement in risky behavior was not moderated by adaptive coping strategies.

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Keywords: Chinese adolescents; Negative events; Coping; Risky behaviors

Introduction

To date, the vast majority of research examining adolescent models of problem behaviors has been conducted in Western populations (Alsaker & Flammer, 1999). As theoretical models developed within Western cultures cannot automatically be extended to non-Western cultures, researchers have begun to examine the applicability of such models to diverse populations.

One country where models of problem behaviors are currently being researched is the People's Republic of China. China is a country that dramatically differs from Western countries in its approach to social, political, and economic policies (Jessor et al., 2003), and at present it is in the midst of rapid modernization and social change (Wong & Mok, 1995). One widespread consequence has been the emergence of a youth culture that is rejecting long-standing traditions and authoritative cultural values while at the same time emphasizing

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personal autonomy (Unger et al., 2002). This newfound autonomy coupled with China's rapid growth has been exerting an influence on adolescent behaviors including engagement in risky behaviors (e.g., Greenberger, Chen, Beam, Whang, & Dong, 2000; Zhang, Wang, Zhao, & Vartiainen, 2000). Risky behaviors include but are not limited to (1) unsafe sexual practices, (2) aggressive and/or violent behaviors, (3) rule breaking, (4) dangerous, destructive, and/or illegal behaviors, (5) self-injurious behaviors, and (6) alcohol and/or drug use. Studies examining the frequency of engagement in risky behaviors among Chinese youth have shown marked increases in delinquent-type behavior (Greenberg et al., 2000), cigarette smoking (Hesketh, Ding, & Tomkins, 2001), excessive alcohol use (Johnston, O'Malley, & Bachman, 2001), and marijuana use (Johnston et al., 2001; Zhimin et al., 2001). In light of these findings, researchers have placed increased emphasis on examining potential vulnerability and protective factors that may affect adolescents' reported engagement in risky behaviors (Jessor et al., 2003).

Negative life events

One factor that has been found to play a role in increased engagement in risky behaviors in Western samples is the occurrence of negative events. For example, in prospective studies conducted by Windle (1992) and Nash and colleagues (2005), they found that negative events predicted subsequent risky behaviors. Youngblade and colleagues (2006) expanded upon such research by examining whether characteristics such as age, gender, social capital, and community-level risky behavior rates as well as negative events predicted adolescent engagement in such behaviors. Results suggested that individuals, irrespective of gender and age, who lived in chronic stress environments (i.e., low income residences) where crime and violence occurred with great regularity engaged in a greater number of risky behaviors than other individuals. Thus, negative events represent a contributory cause of engagement in risky behaviors. At the same time, although a large proportion of individuals who engage in risky behaviors do so following the occurrence of negative events, the vast majority of individuals who experience such events do not engage in risky behaviors (Jessor, Donovan, & Costa, 1996). Consequently, researchers have begun to search for factors that may affect the strength of the relationship (i.e., moderate) between negative events and engagement in risky behaviors (Baron & Kenny, 1986; Holmbeck, 1997). One such factor that has received recent attention is coping (Langrock, Compas, Keller, Merchant, & Copeland, 2002).

Coping

Coping is the capacity to "monitor, evaluate, and modify" one's emotional responses in order to achieve a goal (Thompson, 1994), and it encompasses a broad range of cognitive, behavioral, emotional, and physiological processes (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000; Monat & Lazarus, 1991). Research suggests that emotions are biologically based reactions that arise as an individual attempts to mitigate challenges and opportunities across ever-changing environments (Gross & Muñoz, 1995). While emotions stem from biological underpinnings, individuals exert influence on how, when, and the manner in which emotions are expressed (Connor-Smith et al., 2000).

Cicchetti, Ackerman, and Izard (1995) posit that adaptive coping is central to well-being and successful functioning and is necessary for initiating, motivating, and organizing adaptive behaviors following negative events. Adaptive coping, including cognitive restructuring and problem solving, has been found to be associated with better emotional adjustment and physical health (Connor-Smith et al., 2000; Zeidner & Saklofske, 1996) and to serve as a protective factor against engagement in risky behaviors (Langrock et al., 2002) and the development of psychopathology (e.g., depression and anxiety) (Chaplin & Cole, 2005). Maladaptive coping strategies such as catastrophizing and rumination, in contrast, have been found to be associated with a wide range of negative outcomes including elevated depressive and/or anxious symptoms as well as increased engagement in risky behaviors (e.g., Garnefski, Kraaij, & Spinhoven, 2001; Langrock et al., 2002).

In contrast to individuals in Western cultures who typically endorse individualistic coping strategies, Chinese individuals have historically relied on collectivistic coping strategies (Singelis, Triandis, Bhawuk, & Gelfand, 1995; Yeh, Arora, & Wu, 2006). The use of such strategies is consistent with the importance of

interconnectedness within Chinese culture and the central role the extended family plays in the individual's life. As this type of sociocultural environment fosters the development of an interdependent sense of self, members from collectivistic cultures have been found to use social support-seeking behaviors as a primary means of coping (Yeh & Inose, 2002; Yeh & Wang, 2000). As China has undergone rapid social change in recent years, however, the role of the extended family has begun to be downplayed (Jessor et al., 2003), and younger generations have begun to embrace more individualistic values (Wang, 2006). Consequently, Chinese adolescents have likely begun to utilize more individualistic coping strategies, making models of coping developed within the Western cultural context increasingly relevant to the Chinese cultural context.

Risky behavior engagement

To date, the vast majority of research examining adolescent engagement in risky behaviors in mainland China has been cross-sectional in nature (e.g., Chen, Greenberger, Lester, Dong, & Guo, 1998; Jessor et al., 2003). Of the prospective studies that have been conducted, many have examined engagement in specific behaviors such as smoking (e.g., Hesketh et al., 2001), alcohol consumption (e.g., Li, Fang, Stanton, Feigelman, & Dong, 1996), and drug use (e.g., Zhimin et al., 2001) rather than engagement in risky behaviors in general. Many pathways are likely to lead to the engagement in any given type of risky behavior (e.g., substance use or destructive behavior). Some vulnerability factors may only predict the engagement in one specific type of risky behavior. For example, positive alcohol expectancies are likely to predict higher levels of alcohol use (Schafer & Leigh, 1996) but not higher levels of destructive behavior. At the same time, other vulnerability factors may predict a broad array of risky behaviors. An individual who lacks effective coping skills may choose any type of risky behavior to help regulate his or her emotions, and thus coping deficits are likely to predict engagement in a broad array of risky behaviors rather than one specific type.

Jessor et al. (1996) posit that the types of risky behaviors adolescents engage in are shaped by a number of developmental and environmental factors, including age, toxic family environments, negative peer groups, availability, and financial means. Consequently, adolescents often engage in an inconsistent array of such behaviors rather than in just behaviors that fall into one particular category (Jessor, 1993). Further, the utilization of any given type of risky behavior increases the likelihood of engaging in other types of risky behaviors (e.g., Cooper, 2002; Graber & Brooks-Gunn, 1995). The co-occurrence of multiple types of risky behaviors is particularly worrisome as it increases the likelihood of negative long-term consequences (e.g., drug dependency, legal troubles, and unplanned pregnancy) as well as predicts poorer psychosocial functioning throughout adulthood (Bardone, Moffit, Caspi, & Dickson, 1996; Markey, Markey, & Tinsley, 2003). Thus, as the current study examined vulnerability/protective factors that are likely to predict a broad array of risky behaviors and utilized a sample that is likely to engage in an inconsistent range of risky behaviors, in line with past research, the current study examined broad-based engagement in risky behaviors (e.g., Cooper, Agocha, & Sheldon, 2000; Markey et al., 2003; Youngblade, Curry, Novak, Vogel, & Shenkman, 2006).

Current study

The primary goal of the current study is to examine whether the association between the occurrence of negative events and engagement in risky behavior is moderated by coping. The procedure involved an initial assessment in which participants completed measures assessing engagement in risky behaviors, negative events, and coping strategies. The procedure also involved a series of follow-up assessments, every month for the next 6 months, in which participants completed measures assessing engagement in risky behaviors and negative events. In order to provide a powerful test of our hypotheses, we used a multi-wave, longitudinal design and an idiographic approach to analysis (Abela, Zuroff, Ho, Adams, & Hankin, 2006). More specifically, we examined whether the slope of the relationship between engagement in risky behaviors and negative events *within* participants varied *across* participants as a function of high levels of adaptive and/or maladaptive coping strategies. We hypothesized that (1) individuals possessing high levels of *adaptive coping strategies* would report lesser increases in risky behavior following increases in negative events than individuals possessing low levels and (2) individuals possessing higher levels of *maladaptive coping strategies* would report greater increases in risky behavior following increases in negative events than individuals possessing low levels.

Method

Participants

Participants in the current study were recruited from an urban high school in Yue Yang, Hunan (China). The final sample consisted of 411 high school students (49.8% male and 50.2% females) whose ages ranged from 14 to 19 (mean = 16.18; SD = 0.95). The sample was 97.1% Han. With regard to family composition, participants reported the following: 89.3% nuclear families, 6.1% divorced families, 2.2% remarried families, and 1.2% single-parent families.

Procedure

Prior to the initial assessment, letters of informed consent were sent home with adolescents detailing the aim of the present study. After the consent forms were collected, researchers went to each school to meet with participating students. Written consent was obtained from each adolescent at the start of the assessment. No student who received parental consent chose not to give personal consent. Consent was greater than 95% for all classes. During the initial assessment, which occurred during class time on school grounds, students completed a demographics form and the following questionnaires: (1) Risky Behavior Questionnaire for Adolescents (RBQ-A; Auerbach & Abela, 2006a, 2006b), (2) Adolescent Life Events Questionnaire (ALEQ; Hankin & Abramson, 2002), and (3) Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000). Follow-up assessments occurred once a month for 6 months (times 2–7). At each follow-up, participants completed the following questionnaires: (1) RBQ-A and (2) ALEQ.

Measures

The Chinese version of all self-report measures was developed using the back-translation method. First, the original version was translated into Chinese by a bilingual translator from the psychology department at Central South University (Changsha, Hunan). Next, the Chinese version was back-translated into English by another bilingual translator from the psychology department at McGill University. If discrepancies arose in the back-translation, translators worked cooperatively to make corrections to the Chinese version.

RBQ-A (Auerbach & Abela, 2006a, 2006b): The RBQ-A is a 20-item self-report measure that was created to assess frequency of engagement in the following types of risky behaviors in the past month: (1) unsafe sexual practices, (2) aggressive and/or violent behaviors, (3) rule breaking, (4) dangerous, destructive, and/or illegal behaviors, (5) self-injurious behaviors, and (6) alcohol and/or drug use. Examples of questions include “Have you had unsafe sex,” “Have you destroyed property (other than your own),” and “Have you used illegal drugs.” Respondents reported the frequency of their engagement using the following scale: never, 1 time per month, 2–4 times per month, 2–3 times per week, and 4 times or more per week. Research examining the reliability and validity of the RBQ-A has found (1) strong internal consistency (Cronbach’s $\alpha = 0.95$), (2) strong correlations between self- and peer-report ($r = 0.85$, $p < 0.01$), and (3) significant positive correlations with measures of impulsivity ($r = 0.39$, $p < 0.01$), alcohol use ($r = 0.48$, $p < 0.01$), and negative consequences of alcohol use ($r = 0.33$, $p < 0.01$) (Auerbach & Abela, 2006a, 2006b). In the current study, the Cronbach’s α ranged from 0.81 to 0.85 across administrations, indicating strong internal consistency.

ALEQ (Hankin & Abramson, 2002): The ALEQ is a self-report questionnaire that was developed to assess a broad range of negative life events (e.g., school/achievement problems, friendship and romantic problems, and family problems) occurring in the past month. Examples of questions include “you fought with your parents over your personal goals, desires, or choice of friends,” “you did poorly on or failed a test or class project,” and “you had an argument with a close friend.” Participants were asked to indicate how often such events occurred on a Likert scale ranging from never to always, with higher scores reflecting a greater number of negative life events. Past research has found that the ALEQ is both reliable and valid (Hankin & Abramson, 2002). In the current study, the Cronbach’s α ranged from 0.92 to 0.96 across administrations, indicating high internal consistency.

RSQ Connor-Smith et al., 2000): The RSQ was designed to measure specific voluntary/controlled and involuntary/automatic coping strategies. Theoretically, the RSQ contains five distinct subscales and each subscale is composed of no less than three unique coping strategies: (1) primary control engagement coping (problem solving, emotion regulation, and emotional expressiveness), (2) secondary control engagement coping (positive thinking, cognitive restructuring, acceptance, and distraction), (3) disengagement coping (avoidance, denial, and wishful thinking), (4) involuntary engagement coping (rumination, intrusive thoughts, physical arousal, emotional arousal, and impulsive action), and (5) involuntary disengagement coping (emotional numbing, cognitive interference, inaction, and escape).

Whereas primary and secondary control engagement coping are thought to be adaptive coping strategies, disengagement coping, involuntary engagement coping, and involuntary disengagement coping are viewed as maladaptive coping strategies. Item scores on the RSQ range from 1 (not at all) to 4 (a lot), with higher scores on subscales indicating a greater propensity to employ a strategy and/or strategies in response to negative life events. Examples of adaptive coping items include “I ask other people for help or for ideas about how to make the problem better,” “I get sympathy, understanding, and support from someone,” “I think about the things I’m learning from the situation, or something good that will come from it,” “I think about ways to laugh about it so that it won’t be so bad,” and “I imagine something funny or exciting happening in my life.” In contrast, maladaptive coping items include “I wish that I were stronger, smarter or more popular so that things would be different,” “When problems with other kids happen, I can’t always control what I do,” “When I have problems with other kids, I can’t stop thinking about what I did or said.” “When I’m having a problem with other kids, sometimes I act without thinking,” and “I try to believe it never happened.”

An adaptive subscale (RSQ Adaptive) was created by summing the primary and secondary control engagement coping. A maladaptive subscale (RSQ Maladaptive) was created by summing disengagement coping, involuntary engagement coping, and involuntary disengagement coping. In the present study, the Cronbach’s α for RSQ Adaptive and RSQ Maladaptive was 0.83 and 0.91, respectively, indicating high internal consistency.

Results

Descriptive data

Means, standard deviations, and intercorrelations between all time 1 measures are included in Table 1. Several findings warrant attention. First, higher levels of risky behaviors were associated with higher levels of negative events and maladaptive coping strategies and lower levels of adaptive coping strategies. Second, while higher levels of adaptive coping strategies were associated with lower levels of negative events, the association between maladaptive coping strategies and the occurrence of negative events was not significant. Last, higher levels of maladaptive coping strategies were associated with lower levels of adaptive coping strategies.

Overview of statistical analysis for diathesis-stress model: RSQ Maladaptive

To test our hypothesis that individuals possessing higher levels of maladaptive coping strategies would report greater increases in risky behavior following increases in negative events than individuals possessing low levels, we utilized multilevel modeling. Analyses were carried out using the SAS (version 9.1) MIXED

Table 1

Means, standard deviations, and intercorrelations between initial risky behavior scores, maladaptive RSQ, adaptive RSQ, and initial negative life events

Measures	1	2	3	4
Initial risky behavior score	9.06 (6.42)			
Initial negative event score	0.45***	104.21 (21.62)		
Adaptive RSQ	−0.21***	−0.47***	77.76 (15.38)	
Maladaptive RSQ	0.10*	−0.05	−0.33***	50.48 (8.92)

Note: Means and standard deviations (in parentheses) are on the diagonal; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

procedure and maximum likelihood estimation. Our dependent variable was within-subject fluctuations in risky behaviors during the follow-up interval (i.e., times 2–7). As follow-up risky behavior (RBQ-A) scores are a within-subject variable, RBQ-A scores were centered at each participant's mean such that scores reflect upward or downward fluctuations in an individual's level of engagement of risky behaviors compared with his or her mean level of engagement. Our primary predictors of the follow-up RBQ-A scores were RSQ Maladaptive and fluctuations in negative events (ALEQ) during the follow-up interval (i.e., times 2–7). Prior to analyses, the RSQ Maladaptive scores, a between-subject variable, were standardized. As follow-up ALEQ scores are a within-subject predictor, scores were centered at each participant's mean prior to analyses such that scores reflect upward or downward fluctuations in an individual's reported number of negative events as compared with his or her mean number of negative events. Preliminary analyses indicated that none of the reported associations were moderated by either age or gender, and thus analyses are presented for the entire sample as a whole.

When fitting hierarchical linear models, one must specify appropriate mean and covariance structures. It is important to note that mean and covariance structures are not independent of one another. Rather, an appropriate covariance structure is essential in order to obtain valid inferences for the parameters in the mean structure. Overparametrization of the covariance structure can lead to inefficient estimation and poor assessment of standard errors (Altham, 1984). On the other hand, too much restriction of the covariance structure can lead to invalid inferences when the assumed structure does not hold (Altham, 1984).

In our first set of analyses, we were interested in examining the effects of the RSQ Maladaptive scores and follow-up ALEQ scores on an individual's RBQ-A scores during the follow-up interval. Consequently, in line with Diggle, Liang, and Zeger's (1994) recommendation that one use a "saturated" model for the mean structure while searching for an appropriate covariance structure, we chose a mean structure that included the RSQ Maladaptive and ALEQ scores. Three additional effects were also included in this initial mean structure. First, in order to control for individual differences in baseline levels of RBQ-A and ALEQ scores, a participant's initial RBQ-A scores and ALEQ scores were included in the model. Second, in order to account for individual variability in the average level of RBQ-A scores at his or her mean level of RBQ-A scores, a random effect for intercept was included in the model. Last, given that follow-up ALEQ scores are a within-subject predictor whose effect is expected to vary from participant to participant, a random effect for slope was included in the model.

Commonly used covariance structures in studies in which multiple responses are obtained from the same individual over time (and consequently within-subject residuals over time are likely to be correlated) include heterogeneous autoregressive, autoregressive, banded Toeplitz, and compound symmetry. In order to select one of these covariance structures for our analyses, we fitted models utilizing each structure and chose the best fit based on the Akaike information criterion (AIC and AICC) and Schwarz Bayesian criterion (BIC). The best fit was an autoregressive (AR) structure.

After choosing the covariance structure, we next examined the random-effects component of our model. Non-significant random effects were deleted from the model prior to examining the fixed-effects component. The random slope ($r = 0.01$, $p < 0.001$) was significant and thus was retained in the model. The random intercept was not significant and thus was removed from the model prior to re-estimation. The AR parameter was significant ($r = -0.22$, $p < 0.001$) and thus was retained in the model.

When examining the fixed-effects component of the hypothesized model, a significant two-way, cross-level interaction emerged between the RSQ Maladaptive \times ALEQ ($b = 0.02$; $t(1860) = 2.49$, $p < 0.05$). Predicted risky behavior scores for individuals with low or high maladaptive coping strategies (plus or minus 1.5 between-subject standard deviation) who experienced the occurrence of a low or high level of negative events (plus or minus 1.5 within-subject standard deviation) were estimated. Analyses were conducted for each RSQ Maladaptive condition examining whether the slope of the relationship between engagement in risky behaviors and RSQ Maladaptive significantly differed from 0. Although increases in negative events were associated with increases in risky behaviors for individuals possessing both high ($b = 0.20$; $t(1860) = 14.52$, $p < 0.001$) and low ($b = 0.14$; $t(1860) = 9.57$, $p < 0.001$) levels of maladaptive coping strategies, the slope of this relationship was 1.4 times greater in individuals possessing high levels of maladaptive coping strategies. Further, the slope for these two groups significantly differed ($b = 0.06$; $t(1860) = 2.49$, $p < 0.05$). (Table 2).

Table 2

Fluctuations in follow-up risky behavior: estimates for the fixed-effects component of the final model with RSQ Maladaptive

Predictor	Parameter estimate (<i>b</i>)	Standard error	<i>t</i> -Value	Degrees of freedom
Initial risky behavior score	−0.06	0.05	−1.05	397
Initial negative life event score	0.00	0.00	0.54	397
Follow-up negative life event score	0.17	0.01	22.38***	1860
RSQ Maladaptive	0.00	0.05	−0.13	397
Follow-up negative life event score × RSQ Maladaptive	0.02	0.01	2.49*	1860

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 3

Fluctuations in follow-up risky behavior: estimates for the fixed-effects component of the final model with RSQ Adaptive

Predictor	Parameter estimate (<i>b</i>)	Standard error	<i>t</i> -Value	Degrees of freedom
Initial risky behavior score	−0.06	0.05	−1.04	397
Initial negative event score	0.00	0.00	0.53	397
Follow-up negative event score	0.17	0.01	22.49***	1860
RSQ Adaptive	0.01	0.05	0.12	397
Follow-up negative event score × RSQ Adaptive	0.00	0.01	−0.13	1860

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Overview of statistical analysis: negative events in response to risky behaviors

As risky behaviors and negative events were assessed contemporaneously, the above analyses cannot ascertain with certainty the direction of the effect. More specifically, they cannot determine whether high levels of maladaptive coping strategies interacted with negative events to predict engagement in risky behaviors or whether high levels of maladaptive coping strategies interacted with risky behaviors to predict elevations in negative events. Given this interpretational ambiguity, we conducted additional analyses examining the reverse model using the same data analytic approach used in our first set of analyses.

When examining the effects of RSQ Maladaptive and follow-up RBQ-A scores, on an individual's ALEQ scores during the follow-up interval, the autoregressive parameter was not significant ($r = 0.01$, ns); however, it was retained in order to provide a more stringent test of the model. The random slope ($p < 0.05$) was significant and retained in the model. The random intercept, however, was not significant and thus was removed from the model prior to re-estimation. When examining the fixed effects component of the reverse model, the two-way, cross-level interaction between RSQ Maladaptive × follow-up RBQ-A was not significant ($b = -0.02$, $SE = 0.12$; $t(1860) = -0.16$, ns).

Overview of statistical analysis for diathesis-stress model: RSQ adaptive

When examining the effects of RSQ Adaptive and follow-up ALEQ scores on an individual's engagement in RBQ-A scores during the follow-up interval, the same data analytic approach used to test our first hypothesis was utilized. The random slope ($r = 0.01$, $p < 0.001$) was significant and thus retained in the model. The random intercept, however, was not significant and was deleted from the model prior to re-estimation. The AR parameter was significant ($r = -0.22$, $p < 0.001$) and thus was retained in the model. The final results with respect to the fixed-effects component of the model are presented in Table 3. Contrary to our hypothesis, the RSQ Adaptive × follow-up negative events interaction was not a significant predictor of engagement in risky behavior during the follow-up interval ($b = 0.00$; $t(1860) = -0.13$, ns).

Discussion

The results of the current study provide partial support for our hypothesis that coping strategies moderate the association between the occurrence of negative events and engagement in risky behaviors. In line with our

hypotheses, results of hierarchical linear modeling analyses indicated that adolescents possessing higher levels of maladaptive coping strategies reported greater increases in risky behaviors following increases in negative events than adolescents possessing low levels. In contrast to our hypotheses, adaptive coping strategies did not moderate the association between the occurrence of negative events and engagement in risky behaviors.

Several findings warrant additional attention. First, the current study prospectively examined factors that moderate the association between the occurrence of negative events and the engagement in risky behavior. The results indicate that high levels of maladaptive coping strategies predict greater engagement in risky behaviors following the occurrence of negative events than do low levels of such strategies. Although adolescents possessing both high and low maladaptive coping strategies reported increased engagement in risky behaviors following the occurrence of negative events, the slope of this relationship was 1.4 times greater in adolescents possessing high levels of such strategies. At the same time, as adolescents possessing low levels still reported increased engagement in risky behaviors following negative events, it is likely that other factors also serve as moderators of this relationship. Future research should examine intrapersonal and interpersonal factors that may serve as additional moderators such as neuroticism, social support, and sensation seeking.

Second, results indicated that individuals possessing high levels of adaptive coping strategies did not report lesser engagement in risky behaviors following the occurrence of negative events than individuals with low levels. Although we did not find support for our hypothesis, this is the first study to examine this relationship and the null findings should be replicated. Alternatively, while adaptive strategies may not moderate the relationship between negative events and risky behaviors, they may still play a role in reducing engagement in risky behaviors. More specifically, multiple contributory factors likely lead to increased or decreased engagement in risky behaviors, and whereas one pathway may be through moderating the strength of the association between the occurrence of negative events and risky behaviors, another pathway may be by exerting a main effect on negative events. In the present study, adaptive coping strategies did not serve as a protective factor prospectively; however, higher levels of adaptive coping strategies were cross-sectionally associated with both lesser engagement in risky behaviors ($r = -0.21, p < 0.001$) and fewer negative events ($r = -0.47, p < 0.001$). As individuals possessing adaptive coping strategies generate less negative events in their lives (Hammen, 1991; Rudolph & Hammen, 1999), this may decrease the likelihood of opportunities where they desire to engage in risky behaviors. At the same time, future research is needed to examine this alternative model.

Last, China is a country that is culturally collectivistic, economically capitalistic, and politically communistic. Such a unique composition likely exerts an overarching impact on adolescent development, and thus models of psychopathology derived from Western societies cannot automatically be extended to China. In the past two decades, adolescent mental health in China has been in a state of rapid decline (Fong, 2006). More specifically, nearly 20% of youth in China suffer from various forms of psychopathology (i.e., depression and anxiety disorders), and, consequently, researchers have begun to examine models of psychopathology that are specific to Chinese adolescents. One pathway that researchers believe is influencing such high rates of psychopathology has been high levels of stress, particularly school-related stress (Fong, 2006; Zhenghua, 2004). One response to increased levels of stress has been increased engagement in a multitude of risky behaviors (e.g., alcohol consumption and unsafe sex) (Jessor, Van Des Bos, Vanderryn, Costa, & Turbin, 1995; Zhuqing, 2005); however, despite marked increases, researchers have only recently begun to understand factors that predict engagement in such behaviors. As research regarding engagement in risky behaviors among Chinese adolescents is in its infancy stages, future research needs to better examine the types of stressors that are most likely to trigger engagement in risky behaviors as well as the types of maladaptive coping strategies most frequently used. In doing so, researchers and clinicians can work cooperatively to develop potential intervention and treatment strategies that will better equip adolescents with the skills to utilize safer and more effective means to address specific and/or re-occurring stress in their lives. Finally, future research should examine how social context influences the availability and types of risky behaviors Chinese youth engage in (e.g., what role does culture play in the types of risky behaviors available to youth).

Several limitations of the current study should be noted. First, the current study utilized self-report measures to assess coping strategies, negative events, and risky behaviors. Given that self-report measures may be prone to participant response bias, future research would benefit from utilizing more sophisticated assessment techniques such as life event interviews, peer or parent ratings, and direct behavioral assessments.

Second, the current study used an urban, adolescent sample from Yue Yang, China. The homogeneity of this sample in terms of education level and social environment may limit the generalizability of our results to other populations. Future research should utilize community-based samples, both within mainland China and internationally, in order to examine the generalizability of the current findings. Last, the present study did not examine factors that mediate the relationship between the occurrence of negative events and the engagement in risky behaviors. Future research should aim to identify such mediating factors (i.e., depressive and/or anxious symptoms) in order to better understand mechanisms underlying adolescent engagement in risky behaviors.

In conclusion, the results of the present study provide a deeper understanding of the relationship between negative events, coping strategies, and engagement in risky behavior in Chinese adolescents. As adolescence is the “peak period” for the occurrence of stressful life events (Newcomb, Huba, & Bentler, 1981; Windle, 1992) and stress levels are rising for adolescents living in mainland China (Fong, 2006), clinicians and researchers must better identify youth at risk for engaging in such behaviors as a means of responding to negative events. By identifying adolescents at risk for engaging in risky behaviors as a means of alleviating stress, clinicians can better target intervention and treatment programs aimed at modifying such risk factors. In addition to learning more adaptive coping strategies, clinicians can help adolescents more effectively manage and reduce general environmental stress. Further, clinicians can help adolescents understand what role they play in the generation of their own stress, which may subsequently reduce their likelihood of experiencing negative affect. Effective intervention and treatment of such youth is essential to prevent individuals from entering a vicious cycle involving stress, risky behaviors, and negative short- and/or long-term consequences.

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