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Coping and post-traumatic stress disorder symptoms among Chinese youth in the peak and remission periods of COVID-19

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ABSTRACT

The COVID-19 pandemic has exposed emergent vulnerability to adolescents’ mental health. This longitudinal study investigated the association between coping at the peak of the COVID outbreak (T1) and Post-Traumatic Stress Disorder (PTSD) symptoms concurrently, and at the remission periods of COVID in China three months (T2) and six months (T3) later in a sample of 6th to 12th-grade students (N = 782). The results showed that forward-focus coping was negatively associated with PTSD symptoms across all three timepoints and predicted reduced risk for more PTSD symptoms at T2, and trauma-focus coping was positively associated with PTSD symptoms across all three timepoints and predicted higher risk of PTSD symptoms both at T2 and T3. There was an interaction effect of trauma-focus coping and T1 symptoms on later symptoms (T3) — trauma-focus coping was more detrimental for those who had more initial symptoms. The results showed the beneficial effects of future-oriented coping and harmful effects of trauma-focus coping for Chinese youth during the epidemic. Clinical implications of the results were discussed.

1. Introduction

Shortly after the first outbreak of the novel coronavirus disease (COVID-19) in China in January 2020, the entire country has taken unprecedented procedures in response to the epidemic, including prolonged nationwide lockdowns and business and school closures. The drastic social changes and exponential spread of the virus influenced billions of people in China. In the rapid changing situation, not only adults, but children were also exposed to high levels of stress (Dalton et al., 2020). If intervened early and supported accordingly, youth under the exposure of stressors from COVID-19 could be better shielded from adverse mental health outcomes, such as post-traumatic stress disorder (PTSD), which could last for a lifetime (Phelps & Sperry, 2020). It is therefore essential for practitioners to identify youth’s mental health needs early and deliver timely and culturally appropriate interventions in their sensitive periods of development (Centers for Disease Control and Prevention, 2020). The present study aimed to advance longitudinal understanding of how coping predicted PTSD outcomes among Chinese adolescents during COVID-19. Specifically, the study investigated the relationship between stress coping styles, namely forward-focus coping and trauma-focus coping, and PTSD symptoms, at the peak of the COVID outbreak (T1), and three months (T2) and six months (T3) later, when the epidemic was largely under control in China.

1.1. Post-traumatic stress response and COVID-19

The coronavirus began to widely and rapidly spread in China in early 2020. In response to the epidemic, the Chinese government established a series of strict guidelines prohibiting all forms of social gathering, including business and school closures, travel bans, and curfews (Fu et al., 2020). The increasing number of patients and suspected cases has also elicited widespread worry and fear about the virus, all of which imposed eminent stress on the public (Bao et al., 2020).

Although the COVID-19 epidemic on its own does seem to fit into prevailing PTSD models, or diagnostic criteria, yet the anticipatory fear, indirect exposure to trauma (e.g., media coverage), and consequences of anti-epidemic measures (e.g., unemployment, loss of social interaction),
inherent in the epidemic, fit well with the pathogenic event memory model of trauma (Rubin, Boals, & Bersten, 2008), which suggest that traumatic stress could occur in response to future and/or imagined events, as in COVID. Indeed, emerging research has shown traumatic stress symptoms in the public as a result of this stressor (Bridgland et al., 2021; Rutherford et al., 2021; Song et al., 2021). In the U.S., it was reported that 26 % of adults showed symptoms of trauma or stress-related disorder as early as June 2020 (Czeisler et al., 2020). Similar reports could also be found in Europe (Rossi et al., 2020), Africa (Lombard et al., 2022), Oceania (Iddell et al., 2021), and other places around the world (e.g., Li et al., 2021). In China, large-scaled surveys revealed that the rate of PTSD rose from 4.6 % pre-pandemic level to 7 % following the COVID outbreak, although it might not be specific to the epidemic (Liu et al., 2020; Sun et al., 2021). Research also showed that 3.16 % of children met the diagnostic criteria for clinical PTSD (Yue et al., 2020) and up to one-third adolescents surveyed reported significant PTSD symptoms in months after the outbreak (Liang et al., 2020; Zhou et al., 2020).

1.2. Coping and PTSD symptoms

According to the bioecological model of response to high stress exposure (Weems, 2015), a range of individual and environmental risk factors could predict PTSD occurrence. During the initial COVID outbreak in China, panic over the unknown and potentially deadly virus coupled with abrupt and prolonged nationwide suspension of nearly all nonessential social activities, created tremendous challenge to the public, especially those who had poor pre-existing functioning. How individuals cope with high stress, or traumatic events, thus plays a significant role in their psychological adjustment (Lazarus & Folkman, 1984; Xu & He, 2012), which may augment or dampen the effects of pre-event functioning and level of risk exposure (Weems & Graham, 2014).

Coping is defined as an individual’s use of behavioral and cognitive strategies to modify adverse aspects of their environment, or to minimize or escape internal threats induced by stress or trauma (Lazarus & Folkman, 1984; Weinberg et al., 2014). There are many categorizations of coping strategies, depending on orientation (e.g., problem-focus vs emotion-focus, Lazarus, 1988; Lazarus & Folkman, 1984) or motivation (e.g., active vs avoidant coping; Suls & Fletcher, 1985; Billings & Moos, 1981), as well as more comprehensive models that integrate multiple dimensions of coping (e.g., the circumplex model, Stanislawski, 2019).

One model developed specifically to understand coping with traumatic events is the flexibility approach (Bonanno et al., 2011; Cheng, 2003). The flexibility model emphasizes the dynamic interplay of personal and situational factors in trauma response and outcome, and posits that the effectiveness of coping is not static, unidimensional, but instead depends on the changing demands and opportunities of the traumatic situation over time (Bonanno, et al., 2011). Regarding coping, the model captures two sets of seemingly contradictory coping strategies and emotional regulation behaviors in trauma processing, namely forward-focus coping and trauma-focus coping, and argues that both types of coping could be beneficial or detrimental, depending on specific individual and situational factors.

Forward-focus coping is defined as a set of strategies and behaviors of optimistic thinking, altruism, goal-setting, maintaining composure, and moving forward in life with optimism in the aftermath of a traumatic event. On the contrary, trauma-focus coping is a set of behaviors and strategies to remain focused on the traumatic event, such as fully experiencing emotions and cognitions of the traumatic event, realistic thinking, and meaning searching.

Classic trauma theories have long emphasized the key components of trauma-focus coping, and posits full processing, reconstructing, and revisiting of traumatic experiences to be the only pathway to recover from trauma (e.g., Horowitz, 1986). The assumption behind the theories is that when normal activities and obligations are suspended due to trauma, survivors need to devote their time and energy in processing their trauma towards recovery (Bonanno et al., 2011). Clinical techniques with a focus on the traumatic event, such as exposure treatments (e.g., Foa & Rothbaum, 1998), have been widely endorsed by clinicians to treat PTSD. However, trauma-focused treatments do not always lead to optimal results. Part of the reason might be that the treatment is time- and resource-overwhelming (Brewin, 2003), and requires a trusting therapeutic and professional relationship to promote willingness to process painful experiences, which might set high thresholds for successful outcome (Brewin, 2003).

Research has shown mixed effects of trauma-focus coping. One study showed that actively coping with difficulties, such as focus on positive aspects of the event, and support seeking, was associated with lower risk of emotional problems among high school students (Liu et al., 2004). Another study conducted in the 2003 Beijing SARS epidemic showed that directly coping with problems associated with the epidemic positively predicted life satisfaction, whereas avoiding concerns around the epidemic positively predicted psychological symptoms (Main et al., 2011). Other research, however, found negative impacts of trauma-focus coping on adjustment. For example, one study found that when adolescents focused on traumatic events and experienced their emotional difficulties and traumatic memories, they developed more depression and anxiety symptoms over time (Roelofs et al., 2009).

Some research showed inconsistent effects of trauma-focus coping on mental health during national or global crises. For example, Zhou et al. (2020a) found that trauma-focus coping was positively associated with depression at Wave 1 but no longer at Wave 3 during April and May of 2020 under the COVID-19 pandemic in the U.S. It was suggested that the effect of trauma-focus coping was likely to change over time.

On the other hand, emerging research on coping with trauma proposed that adjustment to adversity can be facilitated by distraction, avoidance, and moving forward from the traumatic event (Bonanno, 2004; Westphal et al., 2008). Forward-focus coping might benefit adjustment through emphasizing the importance of maintaining one’s daily activities and goal commitment despite the impact of traumatic experiences, could thus promote adaptive functioning (Bonanno et al., 2011). Minimizing or even suppressing negative emotions from trauma is also likely to help limit accessibility to distressing memories, helping victims to hold positive expectations about their future (Depue et al., 2006; Driediger et al., 2006). Consistently with this hypothesis, one study showed that forward-focus coping was negatively correlated with depression and anxiety symptoms among Chinese adults during COVID-19 (Author et al., 2021). Longitudinal research during COVID-19 and lockdowns also found forward-focus coping to be a protective factor against depression, stress, and promoted post-traumatic growth among Americans (Zhou et al., 2020a), and against anxiety and depressive symptoms among Spanish adults (Fullana et al., 2020).

Nevertheless, other studies showed negative impact of forward-focus coping on psychological outcomes following stressful events. One study found that avoidant coping, one aspect of forward-focus, exacerbated the negative effects of stress and increased the risk of internationalizing and externalizing problems among high school students (Liu et al., 2004). Similar results has also been found under the context of COVID-19. A recent study suggested that youth who utilized avoidant strategies to cope with stress from COVID-19 reported more PTSD symptoms (Liang et al., 2020).

Similar to trauma-focus coping, some research revealed mixed results of forward-focus coping on health and mental health outcomes. For example, among Chinese undergraduate students, Main et al. (2011) found that avoidant coping predicted more psychological symptoms. However, they also found a positive association between avoidant coping and perceived general health, suggesting some ambiguity in the adaptive functions of avoidant coping.

Both the flexibility approach (Bonanno et al., 2011) and the biocological model (Weems, 2015) of response to trauma suggest that the effectiveness of specific coping methods depends on the dynamic exchange of a myriad of individual and environmental variables. Thus, the
effects of coping need to be examined over time in the context of other significant factors in the traumatic situation, rather than static and in isolation. In particular, level of exposure, pre-existing functioning and initial trauma response, are proposed to play critical roles in determining the effect of coping on later outcome (e.g., Weems & Graham, 2014). For example, the negative effects of avoidant coping on post-traumatic stress symptoms were only found among participants with high exposure to natural disasters but not those with low exposures (Weems & Graham, 2014). Similarly, altruistic behaviors during bereavement were found to increase distress, but only for those who experienced a high level of initial distress, but not those who experienced low initial distress (Pfeffer & Bonanno, 2020).

1.3. The present investigation

The present study investigated the role of early trauma-focus and forward-focus coping played on PTSD outcome, among Chinese adolescents during COVID-19, as well as whether effects of coping on later adjustment were dependent on levels of initial symptoms. Data were first collected in the surging period of the epidemic in China (T1: March 10, 2020), when the virus was still spreading and the whole country was experiencing a prolonged and strict national lockdown, and then three months (T2) and six months (T3) later, when the epidemic entered into a long period of remission and social life was largely restored. The two reassessment timepoints were chosen for the purpose of early detection of PTSD as symptoms typically start to emerge within three months of the traumatic incident (American Psychiatric Association, 2013), as well as obtaining preliminary information of clinical PTSD at the six-month mark (American Psychiatric Association, 2013). Fig. 1 illustrates the COVID situation in China during the study period. Although previous studies showed mixed findings on the effects of trauma-focus and forward-focus coping, considering the wide acceptance of exposure therapy (Foa & Rothbaum, 1998) as the top treatment choice for PTSD and results of positive effects of forward-focus coping in reducing PTSD symptoms from longitudinal studies (Zhou et al., 2020a), it was hypothesized that trauma-focus and forward-focus coping would independently predict lower PTSD symptom levels over time. It was also hypothesized that the beneficial effects of both coping styles would be more pronounced for those who had lower initial distress, that is, there would be an interaction effect of coping and initial symptom level.

2. Method

2.1. Participants

Data were collected in three schools in Shanghai, China, as part of the schools’ screening procedure. Time 1 data were collected on March 10th, 2020, in the middle of the initial nationwide lockdown, and Time 2 data were collected after three months on June 10th, 2020, when there were very few daily new cases and almost all business and schools reopened. Time 3 data were collected six months from Time 1 on September 25th, 2020, when the remission of the epidemic continued. Data were first screened by response times. Students who completed the survey less than 20 min at T1, 5 min at T2 and T3 were excluded from the study, resulting in a final sample of 782 students (61.1 % females) at T1 and T2, and 504 student at T3 (62.7 % females; 35.2 % attrition rate). The average age of participants was 14.90 (SD = 2.02). Details of participants’ demographic information are presented in Table 1.

2.2. Procedure

Students completed the surveys through email-links sent from each school, and the survey link was open for a total of 2 weeks, during which the students were encouraged to complete the survey as soon as they received the email-link. The survey was self-administered and took approximately 10 min to complete. Students were assured that their responses would be kept confidential and that their participation was voluntary. The study was approved by the institutional review board of the university.

Table 1

Participants’ Demographic Characteristics.

| Characteristics | N | %   |
|-----------------|---|-----|
| Sex             |   |     |
| Gender          | 304 | 38.9 % |
| Female          | 478 | 61.1 % |
| Grade           |   |     |
| Middle School   |   |     |
| 6th             | 145 | 18.5 % |
| 7th             | 128 | 16.4 % |
| 8th             | 96  | 12.3 % |
| 9th             | 90  | 11.5 % |
| High School     |   |     |
| 10th            | 120 | 15.3 % |
| 11th            | 77  | 9.8 % |
| 12th            | 489 | 11.4 % |
| Subjective appraisal of impact of COVID-19 |   |     |
| 1. not at all   | 155 | 19.8 % |
| 2. mildly       | 280 | 35.8 % |
| 3. moderately   | 237 | 30.3 % |
| 4. mostly       | 88  | 11.3 % |
| 5. severely     | 22  | 2.8 % |

Fig. 1. Daily number of new cases of COVID-19 in China during the study period (based on World Health Organization reports).
Children and Youth Services Review 143 (2022) 106690

C. Chen et al.

school’s administration office. Parents indicated passive consent for their child to be included in the study and students indicated their assent to participate before beginning the survey. The first survey included measures regarding students’ demographic information, mental health status and COVID-related questions, including the coping style questionnaire (Bonanno et al., 2011), and the second and third surveys contained only mental-health related measures.

2.3. Measures

2.3.1. Demographic questions

Participants were asked to report their sex, age, and grade.

2.3.2. Levels of exposure to COVID-19

Both objective and subjective measures of the impact of the epidemic were assessed. The objective measure included seven questions regarding whether being contracted or having close contact with COVID patients, as well as three questions of travel history to Wuhan (i.e., the city where first COVID cases were reported). Only two students reported close contact with patients, and none reported history of traveling to the city where first COVID cases were reported). Only two students reported

ever; 7 (always). The reliability of the measure was satisfactory (α = 0.86 for forward-focus; α = 0.61 for trauma-focus).

2.3.3. Coping style

The Perceived Ability to Cope with Trauma (PACT) scale (Bonanno et al., 2011) was adapted to assess coping strategies students adopted since the beginning of the epidemic. The PACT is a 20-item self-report questionnaire (Bonanno et al., 2011), and the second and third surveys comprised 17 items assessing three clusters of symptoms, namely re-experiencing, avoidance, and arousal. Items pertaining the traumatic event was rephrased to refer the epidemic (e.g., “I feel upset when seeing/hearing news about the COVID epidemic”) and was rated on a 7-point scale (1 = never; 7 = always). The reliability of the measure was satisfactory (α = 0.86 for forward-focus; α = 0.61 for trauma-focus).

2.3.4. PTSD symptoms

The Child PTSD Symptom Scale (CPSS, Foa et al., 2001) is a self-report measure developed to assess severity of posttraumatic stress symptoms in children and adolescents ages 8 to 18 exposed to trauma. The scale comprises 17 items assessing three clusters of symptoms, namely re-experiencing, avoidance, and arousal. Items pertaining the traumatic event was rephrased to refer the epidemic (e.g., “I feel upset when seeing/hearing news about the COVID epidemic”). Each item was scored on a 4-point scale (i.e., 0 = not at all, 1 = once a week or less, 2 = 2 to 4 times a week, 3 = 5 or more times a week). The Cronbach’s alphas of the scale were 0.93 at T1, 0.94 at T2, and 0.94 at T3, respectively.

2.4. Statistical analyses

Correlational analyses were conducted to analyze effects of the two sets of coping strategies (i.e., forward-focus and trauma-focus) on PTSD symptoms across time. A series of hierarchical multiple regressions were conducted to investigate the incremental effects of coping styles on later PTSD symptoms after controlling for significant demographic variables, subjective measure of impact and initial symptoms, as well as the interaction effects of coping and initial symptoms on later symptoms.

3. Results

3.1. PTSD symptoms across three timepoints

Descriptive statistic and zero-order correlations are presented in Table 2. The mean PTSD symptom scores were relatively low across time, M = 7.99, SD = 8.91 at T1, M = 7.95, SD = 8.63 at T2, and M = 7.73, SD = 8.77 at T3. It is also noted that the distributions of the scores were all right skewed, suggesting that the majority of the students had very few PTSD symptoms across all three timepoints. Paired sample t-test showed that no significant changes in PTSD symptoms across T1, T2, and T3 (T1 to T2: t_{511} = 0.14, p > .05; T2 to T3: t_{505} = 0.85, p = .40; T1 to T3: t_{505} = 0.63, p = .53).

As presented in Table 2, older students reported more PTSD symptoms than younger students at T1, r = 0.13, p < .01, and T2, r = 0.19, p < .01. Girls had more PTSD symptoms at T2, r = 0.11, p < .01. The subjective appraisal of impact of COVID was positively associated with PTSD symptoms at T1, r = 0.26, p < .01, at T2, r = 0.20, p < .01, and at T3, r = 0.14, p < .01. These variables were all controlled in the subsequent regression analyses.

3.2. Coping and PTSD symptoms

As shown in Table 2, trauma-focus coping was positively correlated with PTSD symptoms at T1 (r = 0.19, p < .01), and even at T2 (r = 0.18, p < .01) and at T3 (r = 0.14, p < .01). The detrimental effects of trauma coping did not change over time, contrary to our prediction. The effects of forward-focus coping were consistent with our prediction, with forward-focus coping being inversely correlated with PTSD symptoms at all three timepoints, T1: r = −0.17, p < .01, T2: r = −0.11, p < .01, and T3: r = −0.11p < .05.

Regression analyses were then conducted to investigate incremental effects of the two coping styles on PTSD symptoms after controlling for demographic variables and the subjective influence score (see Table 3). It can be seen that the relationship between each coping style and T1 symptoms still held true even after controlling for the other coping score (β = −0.30, p < .001 for forward-focus coping and β = 0.24, p < .001 for trauma-focus coping). At T2, again, forward-focus coping independently predicted fewer symptoms, β = −0.10, p < .05, and trauma-focus coping independently predicted more symptoms, β = 0.12, p < .05, even after controlling for T1 symptoms. At T3, trauma-focus coping continued to increase symptoms, β = 0.13, p < .05, but the effect of forward-focus coping did not further predict symptoms when other significant variables were controlled, β = 0.05, p > .05.

3.3. Interaction effects of coping and PTSD symptoms at T1 on PTSD symptoms at T2 and T3

Table 4 presented results of regression models investigating interaction effects of the two coping styles and initial PTSD symptoms on later symptoms. Forward-focus coping did not show interaction effects with initial symptoms, ps > 0.05, suggesting that forward-focus coping was generally salutary, regardless of symptom level. On the contrary, there was an interaction between trauma-focus coping and initial distress on PTSD symptoms at T3, that is, the harmful effect of trauma-focus coping was more pronounced for those who had higher initial symptoms, β = 0.01, p < 0.05. Fig. 2 depicts this interaction effect.

4. Discussion

In the present study, we investigated concurrent and longitudinal associations between coping and PTSD symptoms in response to the outbreak of COVID-19 among Chinese adolescents. Overall, most student did not show elevated PTSD symptom levels from the initial outbreak to three and six months later. More importantly, we found that adopting a forward-focus coping style led to fewer PTSD symptoms,
whereas using trauma-focus coping increased PTSD symptoms, both cross-sectionally and longitudinally. Furthermore, higher levels of PTSD symptoms at T1 intensified the harmful effect of trauma-focus coping, leading to worsened adjustment six months later. The variabilities in the effects of trauma-focus coping across individuals with different initial distress levels are consistent with both the flexibility model (Bonanno et al., 2011) and the biocological approach (Weems, 2015) of trauma response, suggesting that reaction to traumatic events is not an unidimensional, fixed process, but instead, a dynamic exchange between the person and the environment over time.

Consistent with previous studies conducted in the context of COVID-19 (Zhou et al., 2020a, 2020b), forward-focus strategies were significantly negatively related with PTSD symptoms across time. The current results also showed that forward-focus coping reduced the likelihood of developing more PTSD symptoms in short time (T2), but not in the long-run (T3). Forward-focus coping entails strategies and emotion regulation behaviors that are goal-directed and future-oriented, that is, the ability to distract oneself from unpleasant experiences and commit to one’s responsibilities and obligations. During the onset of the COVID-19 epidemic in China, extensive rumors on the Internet about the virus and disease could be highly emotionally jarring to youth people. It is conceivable that avoiding COVID-19 related information and not to thinking about the uncertain situation, but instead continuing to maintain a regular schedule and engaging in daily duties during school closure and quarantine could be a strong protective factor from emotional distress. Nevertheless, the preventive effect of forward-focus appeared less robust in the long-run when other factors were considered (i.e., it was no longer significant when put simultaneously with other predicting variables in the model for T3 symptoms). Because the overall symptom levels in the sample were comparatively low, the finding could be a result of a ceiling effect. Additionally, the students had experienced more than four-months of back-to-normal-life (business and schools reopened in early May 2020) at the time of the latest assessment, early future-oriented activities might no longer be as relevant to the situation, compared to the initial stressful time. It is important for future research to delineate the extent to which forward-focus coping impacts PTSD-related outcomes in the context of trauma.

Trauma-focus coping was found positively associated with initial PTSD symptoms, as well as predicted higher levels of symptoms three and six months later, contrary to our prediction. The results were consistent with that from previous studies among Chinese adult samples (e.g., Author et al., 2021). At the initial stage of the epidemic, the nature of the virus was unknown, and potential cure or vaccine seemed remote, if likely. Thus it is conceivable that overly involving in processing an uncontrollable event might actually lead to senses of pessimism and defeat, and consequentially more distress (Lazarus, 1988). We did not find evidence supporting the idea that the effects of trauma processing would dampen over time as in studies conducted in the U.S. (e.g., Zhou et al., 2020a). The lack of salutary effects of trauma-focus coping even in the long run might be related to cultural norms for emotional processes.
in China (Chentsova-Dutton et al., 2007). Historically, emotional experiences and expressions are less emphasized in the Chinese culture and less taught in schools (Wang, 2003). Thus when Chinese adolescents ruminated over their negative mood states, they might not feel validated by their parents or peers; further, they might not be equipped with adequate social-emotional skills to recognize and process emotions, resulting in the development and maintenance of stress-related symptoms.

The different effects of forward-focus coping versus trauma-focus coping on mental health in Chinese adolescents suggest the adaptive function of avoidant coping in the Chinese culture, which might be associated with preferences for passive/avoidant coping or positive reappraisal over direct processing of painful experiences in collectivist cultures (Chun et al., 2006; Yeh et al., 2006). Avoidant coping methods are common among Asians and found to be effective across a range of stress situations (Kuo, 2011; Breznitz, 1983). On the contrary, aspects of trauma-focus coping (e.g., repeatedly thinking about and emerging in negative experiences) seem incompatible with Eastern cultural values that emphasize relational harmony and social emotional inhibition (Consedine et al., 2002; Markus & Kitayama, 1991). Focusing excessively on traumatic thoughts and emotions may lead to negative expressivity and emotional burden, that incur additional social and psychological costs.

Finally, the harmful effects of trauma-focus coping were found to be more pronounced among those who had higher levels of initial distress. The result highlights the risk factor of pre-existing or early functioning/distress on the development of psychopathology following traumatic exposure (e.g., Weems, 2015; Pfeffer & Bonanno, 2020), as well as calls for caution in implementing trauma-focus interventions for young people at the early stage of traumatic experiences.

4.1. Limitations and future directions

The study began at the peak of the COVID outbreak in China, and followed up at three and six months later, when potential post-traumatic stress reaction was supposed to emerge, and clinical PTSD might develop (American Psychiatric Association, 2013), respectively. Unfortunately, we were unable to obtain information of participants’ pre-trauma adjustment levels. Although initial distress levels significantly predicted later distress, as well as differentiated the effects of coping styles, it was not possible to determine whether initial high distress was reactions solely to the epidemic or tied in pre-existing vulnerabilities (Weems, 2015). Given the crucial role pre-event functioning plays in trauma response proposed by both theory and research (e.g., Bonanno, 2004, 2005; Weems, 2015), prospective studies are called for in order to gain more comprehensive understanding of trajectories of trauma reactions among youth.

Although the present study consistently showed that trauma-focus coping was harmful in relation to adjustment in the aftermath of COVID, the results should be interpreted with several caveats. First, processing traumatic information might require longer time than the study period for its beneficial effects to emerge. For example, given time, meaning making, a central component of trauma-focus coping, might eventually foster adjustment and lead to post-traumatic growth (Park, 2010). Second, the results were based on assessments of self-employed strategies and behaviors, they do not preclude the benefits of trauma processing conducted under a safe and structured therapeutic setting. Third, despite that the results from the present study and previous research appear to gravitate toward a cultural account that directly facing trauma might not be beneficial for people from Eastern cultures, as compared to people from Western cultures (e.g., Chun et al., 2006; Yeh et al., 2006; Zhu & Zhao, 2021), the data could be confounded with other factors, such as individual differences in values and beliefs on coping with challenges (see Mauss et al., 2010), while not culture per se. More cross-cultural study is required to delineate this difference.

Exposure to trauma is one of the strongest predictors for PTSD development (e.g., Bonanno et al., 2011; Weems & Overstreet, 2008; Pfefferbam et al., 2013), but unfortunately the present assessments of exposure focused exclusively on COVID contact, and failed to include other stress related to the epidemic, such as media exposure (Weems et al., 2012), and family employment and economical changes. The restrictive measure led to unanimous reports of low levels of exposure from the participants that precluded any meaningful analyses on this important variable. Additionally, the participants were from Shanghai, an urban city in China, where the most direct impact of COVID was low at the time of the initial assessment (there were very few local cases), thus, the results need to be interpreted with caution when applying to youth from other populations. Studies with samples from other geographical and social areas and cultures are strongly encouraged to further capture individual differences in youth’s response to COVID.

Finally, it is worth emphasizing that the present study focused on understanding participants’ PTSD symptoms, instead of PTSD diagnosis.

Fig. 2. Moderating effects of PTSD symptoms at T1 in the relationship between trauma-focus coping and PTSD symptoms at T3.
Although symptoms at three and six months could be indicative of clinically significant psychopathology (American Psychiatric Association, 2013), structured clinical interviews are required to reach formal diagnoses. Further, post-traumatic symptoms can emerge much later, sometimes years following trauma exposure, it is therefore essential to continue assessment for a longer period of time.

4.2. Clinical implications

The present study investigated the association of coping and PTSD symptoms among Chinese adolescents across three timepoints starting from the onset of the COVID-19 outbreak. The results provided useful information for understanding youth coping and its impact on trauma response, and could inform interventions aiming to promote youth psychological adjustment in COVID. Forward-focus coping skills were found both preventative and protective from developing adverse mental health outcomes under the stress from COVID-19. Therefore, implementing prevention programs on fostering coping skills to move beyond the impact of negative circumstances can be a possible option to facilitate adjustment. Meanwhile, when working with students who are adversely impacted by COVID-19, practitioners are advised to gather information on early symptom levels and experiences, since they can vastly impact later distress manifestation. Practitioners could also consider incorporating active distracting activities. For example, they can facilitate youth’s ability to establish a regular schedule, maintain goals and plans, and generate positive thoughts and self-calming techniques, and to stay away from distressing information.

Furthermore, the present study found consistent evidence on the detrimental effects of early trauma-focus coping and PTSD development, which might partly be related to cultural norms on emotion and emotion regulation (Chentsova-Dutton, et al., 2007). Thus, it is not recommended to encourage intensive trauma processing for adolescents from Eastern cultures, at least at the early stage of trauma. Even when trauma processing/reprocessing is clinically indicated, treatments need to be carried out with caution—they might inadvertently cause adverse consequences, and/or meet with resistance as results of cultural prescriptions for avoiding coping and/or lack of skills for emotional processes (e.g., Wang, 2003).

4.3. Concluding note

Given that the initial COVID epidemic in China has evolved into a prolonged global pandemic (WHO, 2020), and that many cities in China, including Shanghai, have re-suffered serious consequences as a result of new rounds of virus contraction and related lockdowns since late 2021, adolescents are still a particularly vulnerable group who have to face complex challenges in the difficult times. Researchers and mental health practitioners should continue to work collaboratively to understand factors related to youth trauma response under the pandemic, and design and implement individualized prevention and intervention programs to promote optimal outcomes.

5. Public Significance Statement

The study examined how Chinese adolescents’ trauma-focus and forward-focus coping impacted PTSD symptoms amidst the peak and remission periods of COVID-19. We found that forward-focus coping strategies were both preventative and protective for reducing risk of adverse mental health outcomes, whereas trauma-focus coping increased risk. The findings provided empirical support on fostering forward-focus coping skills, while minimizing trauma-oriented coping for Chinese youth in preventing negative outcomes under COVID-19.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The present study is funded by Science and Technology Innovation Fund of Shanghai Jiaotong University on Coronavirus Prevention and Control 2020RK61.

References

Author et al., 2021.
American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (Vol. 5). Washington, DC: American Psychiatric Association.
Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: Address mental health care to empower society. The Lancet, 395(10224), e37–e38. https://doi.org/10.1016/S0140-6736(20)30309-3
Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4(2), 139–157.
Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? American Psychologist, 59, 20–28. https://doi.org/10.1037/0003-066X.59.1.20
Bonanno, G. A. (2005). Resilience in the face of potential trauma. Current Directions of Psychological Science, 14, 135–138.
Bonanno, G. A., Pat-Horenczyk, R., & Noll, J. (2011). Coping flexibility and trauma: The perceived ability to cope with trauma (PACT) Scale. Psychological Trauma: Theory, Research, Practice, and Policy, 3, 117–129. https://doi.org/10.1037/a0020921
Bonanno, G. A. (2006). Posttraumatic stress disorder: Malady or myth? Yale University Press, Breznitz, S. (1983). The denial of stress. In R. S. Lazarus (Ed.), The costs and benefits of denial. New York: International Universities Press,
Bridgland, V. M., Moeck, E. K., Green, D. M., Swain, T. L., Nayda, D. M., Matson, L. A., ... Takarangi, M. K. (2021). Why the COVID-19 pandemic is a traumatic stressor. PLoS one, 16(1), e0240146.
Centers for Disease Control and Prevention (2020). Data and statistics on children’s mental health. Retrieved from https://www.cdc.gov/childrensmentalhealth/data.html.
Cowan, M. E., Lane, R. I., Petrovsky, E., et al. (2020). Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic – United States, June 24–30, 2020. MMWR Morbidity and Mortality Weekly Report, 69, 1049–1057. https://doi.org/10.15585/mmwr.mm6919a3
Cheng, C. (2003). Cognitive and motivational processes underlying coping flexibility: A dual-process model. Journal of Personality and Social Psychology, 84(2), 425–438. https://doi.org/10.1037/0022-3514.84.2.425
Chentsova-Dutton, Y. E., Chu, J. P., Tsai, J. L., Rottenberg, J., Gross, J. J., & Gotlib, I. H. (2007). Depression and emotional reactivity: Variation among Asian Americans of East Asian descent and European Americans. Journal of Abnormal Psychology, 116, 776–785.
Chen, C. A., Moos, R. H., & Cronkite, R. C. (2006). Culture: A fundamental context for the stress and coping paradigm. In P. T. P. Wong, & L. C. J. Wong (Eds.), Handbook of multicultural perspectives on stress and coping (pp. 29–53). New York, NY: Springer.
Consedine, N. S., Magai, C., & Bonanno, G. A. (2002). Moderators of the Emotion Inhibition-Health Relationship: A Review and Research Agenda. Review of General Psychology, 6, 204–228. https://doi.org/10.1037/1089-2680.6.2.204
Dalton, L., Rapa, E., & Stein, A. (2020). Protecting the psychological health of children through effective communication about COVID-19. The Lancet Child & Adolescent Health, 4(5), 346–347. https://doi.org/10.1016/S2357-4622(20)30097-3
Depue, B. E., Banich, M. T., & Curran, T. (2006). Suppression of emotional and nonemotional content in memory: Effects of repetition on cognitive control. Psychological Science, 17(5), 441–447. https://doi.org/10.1111/j.1467-9280.2006.01725.x
Driediger, M., Hall, C., & Callow, N. (2006). Imagery use by injured athletes: A qualitative analysis. Journal of Sports Sciences, 24, 261–271. https://doi.org/10.1080/02640410600128221
Foai, E. B., & Rothbaum, B. O. (1994). Treating the trauma of rape: Cognitive–behavioral therapy for PTSD. New York: Guilford Press.
Foai, E. B., Johnson, K. M., Fenny, N. C., & Treadwell, K. R. (2001). The Child PTSD Symptom Scale: A preliminary examination of its psychometric properties. Journal of Clinical Child Psychology, 30(3), 376–384. https://doi.org/10.1207/S15374424JC3003_9
Fu, W., Wang, C., Zou, L., Guo, Y., Lu, Z., Yan, S., & Mao, J. (2020). Psychological health, sleep quality, and coping styles to stress facing the COVID-19 in Wuhan, China. Journal of Affective Disorders, 275, 105526. https://doi.org/10.1016/j.jad.2020.105526
Fullana, M. A., Hidalgo-Mazzei, D., Véia, E., & Radua, J. (2020). Coping behaviors associated with decreased anxiety and depressive symptoms during the COVID-19 epidemic and lockdown. Journal of Affective Disorders, 275, 80–81. https://doi.org/10.1016/j.jad.2020.06.027
Kuo, B. C. H. (2011). Culture’s consequences on coping: Theories, evidences, and dimensionalities. Journal of Cross-Cultural Psychology, 42, 1084–1100. https://doi.org/10.1177/0022022110392572
Horowitz, M. J. (1986). Stress response syndromes (2nd ed.). Northvale, NJ: Jason Aronson. Janoff-Bulman, R. (1992). Shattered assumptions: Towards a new psychology of trauma. New York: The Free Press.
Lazarus, R. S. (1988). Coping as a mediator of emotion. Journal of Personality and Social Psychology, 54(3), 466–475.
Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal and coping. New York: Springer-Verlag.
Li, Y., Scherer, N., Felix, L., & Kuper, H. (2021). Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta-analysis. PLoS One, 16(3), e0246454.
