Abstract

The negative effects of post-traumatic stress on individuals have been widely studied, but its positive effects have gradually been paid attention to in recent years. Recent studies indicate that post-traumatic stress may increase social cohesion. This study aims further to verify the relationship between post-traumatic stress and patriotism and test whether social support is a potential mediating variable. We conducted a questionnaire survey of 81 participants in Zhengzhou, China. The results show that post-traumatic stress is not significantly related to patriotism and social support. Still, patriotism and social support have significantly related limitations, and prospects are being discussed.

**Disaster makes us more patriotic: A pilot study for role of support in relationship
between post-traumatic stress and patriotism.**

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When we think of disasters, we can recall scenes of tragedies; pain, loss, and wailing. Although they seem distant with us, disasters are commonly happened; Galea et al. (2005) mention that “In the National Comorbidity Survey, 18.9 percent of men and 15.2 percent of women reported a lifetime experience of a natural disaster”. Because of its universality and its severe negative consequences, disasters have been extensively studied by social scientists. More and more social scientists have defined *disasters* as a social phenomenon (e.g., Perry, 2007; Quarantelli et al., 2007). Contrasting with the emphasis on consequences in past studies, such as human death, physical loss, and unexpected events, studies increasingly emphasize disturbances in social systems and social structures (Perry, 2018). These changes in the conceptualization of disaster shifts researcher’s attention to the consequences of the disaster.

Consequence of disaster

Intuitively, we might consider disaster only leads to negative impacts, such as physical disturbance to people’s daily life. However, researchers increasingly discover the positive impact of disaster (Schulenberg, 2020). These positive effects are usually the individual successfully coping with the psychological symptoms caused by the disaster, such as symptoms of *Post-traumatic stress disorder* (PTSD).

PTSD is a maladaptive phenomenon that includes depression, anxiety, stress, somatization, and other symptoms when an individual has experienced a catastrophic event (Boudewyns, 1996). In DSM-5, PTSD is also defined as “a psychiatric disorder that may occur in people who have experienced or witnessed a traumatic event such as a natural disaster, a serious accident, a terrorist act, war/combat, or rape or who have been threatened with death, sexual violence or serious injury” (Diagnostic, 2013). Past studies have emphasized that PTSD has a high prevalence after disasters. In a study that tracked the incidence of PTSD in natural disaster survivors six years later, the researchers found that the incidence of PTSD was 11.3% (Arnberg et al., 2013). A random sample symptomology survey 18 months after the October 8, 2005 earthquake found that 55.2% of women and 33.4% of men had PTSD (Naeem et al., 2011). This evidence points to the prevalence of PTSD after disasters, and it also means that cope with PTSD has become a vital thing for individuals. To a large extent, an excellent response to PTSD will also benefit individuals, which is the positive consequence of PTSD.

Post-traumatic Growth and Related Theories

In previous studies on the positive effects of disasters, *post-traumatic Growth* (PTG) has been frequently mentioned. PTG refers to the positive changes individuals make after experiencing a painful and struggling life (Tedeschi & Calhoun, 2004). The phenomena of PTG is universally reported (Riffle et al., 2020), and several theories have provided an explanation for it.

One of the most important framework is Meaning making model (Park, 2010). The model differentiates two types of meaning: *global* (individual's general belief about the world) and *situational* (individual's belief about a specific event); when the two belief conflicting, individual will feel distress, and then try to make meaning (change their belief) to alleviate their distress (Park, 2010). In the case of PTG, when disaster happened, individual's worldviews may significantly change due to the disturbance of disaster to their sense of control, safety, meaningful existence (Riffle et al., 2020). The adaptation of new worldviews is probably an explanation for individual's post-traumatic growth.

Post-traumatic Growth and Social Cohesion

Past research mainly focused on the changes of the individual itself, such as changes in personality (Jayawickreme & Blackie, 2014; Jayawickreme et al., 2021). However, in the past, PTG is rarely studied on the collective level. Considering that disasters have been regarded as a social phenomenon in recent years, disasters also act on the collective dimension. In recent years, psychologists have gradually begun to attach importance to PTG at the collective level (Riffle et al., 2020). Riffle et al. (2020) points out that disaster is a significant opportunity to connect people. This opportunity for everyone to face the suffering together has also greatly affected the individual's perception of the group, thereby further improving the relationship. Recent empirical studies have also demonstrated the existence of this phenomenon. Agin-Liebes et al. (2021) found that trauma can help improve social cohesion, security, trust, and belonging after receiving post-treatment. Waterman

(2020) lists the possible impact of trauma on social identity, including identity threat, identity loss, identity alteration, etc.; however, these ideas have not been supported by empirical research. Berman et al. (2020) hinted at the potentially reciprocal relationship between social identity and trauma. After these ideas were put forward, recent researchers conducted an empirical study. Truskauskaite-Kuneviciene et al. (2020) conducted a questionnaire survey for 1614 first-year students to measure the relationship between their trauma exposure level and identity formation; however, it was found that there was no statistically significant and clear evidence between trauma and individual trauma levels. Although this study does not support the hypothesis that trauma is the formation of social identity because the researchers surveyed by the researchers did not experience severe disasters before the investigation, this result does not deny the potential impact of trauma on social identity. Similarly, whether this phenomenon has cross-cultural differences is also worth thinking about. Riffle et al. (2020) mentioned that the cultural and worldview differences between Eastern culture and Western culture make a huge difference in the experience of individuals after facing trauma. The cultural difference also implies that individual's national identity to ward their nation may more likely to shift collectivism culture. Therefore, the studies conducted in Eastern culture context may more likely to explain the potential relationship between national identity and post-traumatic growth.

Current Study

In recent years, due to China's economic level, China has dramatically improved its national collectivism and patriotic sentiment (Jin et al., 2018). Behind this social background, on July 21, 2021, a severe flood disaster occurred in Zhengzhou, China. The average precipitation of more than 7.8 feet fell into Zhengzhou within a few days, equivalent to the amount of precipitation in an average year. The disaster was quickly alleviated through the coordination of the Chinese government. However, for Zhengzhou, a city with more than 12 million people, many people have experienced the tragic consequences of the disaster. Past reports have pointed out that PTSD symptoms caused by flood disasters are prevalent (Bokszczanin, 2007; Norris et al., 2004).

Since this tragedy occurred in China, a country with strong social norms and collectivism, it also made the relationship between PTG and social identity easier to discover. Based on the above review, current research has following hypothesis:

Hypothesis 1: People with higher level post-traumatic stress will have higher perceived social support than people with lower-level post-traumatic stress

Hypothesis 2: People with higher level perceived social support will have higher patriotism level than people with lower-level perceived social support.

Hypothesis 3: People with higher level post-traumatic stress will have higher patriotism level than people with lower-level post-traumatic stress

Method

Sample and Procedure

The original sample comprised 110 participants from Mainland China. However, since current study focus on the post-traumatic stress, the data from participants who are not live in Henan where the disaster happened are deleted. The modified sample comprised 81 participants from Henan China (64.2% women; age ranged from 14 to 50, $M = 23.16$, $SD = 5.70$). The data was collected through a sample service provided by Tencent Survey platform. All participants were paid for two yuan to complete the online survey. The original data and modified data can be found through open science framework: osf.io/au6qe/.

Measure

Post-traumatic stress

Post-traumatic stress was measured by PTSD Checklist for DSM-5 (Blanchard et al., 1996; Weathers et al., 1993). The scale consists with 17-items on a 5-point scale (e.g., In the past month, how much were you been bothered by: "Repeated, disturbing, and unwanted memories of the stressful experience?"), from totally disagree (1) to totally agree (5). Previous study shows strong reliability of PTSD Checklist for DSM-5 in measuring post-traumatic symptomology (Forbes et al., 2001). It also shows strong reliability in Chinese context (Li et al., 2010). For current study, the scale shows strong reliability. Cronbach's α was 0.906 for the scale.

Perceived social support

Perceived social support was measured by Multidimensional Scale of Perceived

Social Support (MSPSS, Kazarian & McCabe, 1991). The scale consists with 12-items on a 7-point scale (e.g., I can share my happiness and sadness with my friends and family) , from totally disagree (1) to totally agree (7). Previous study shows strong reliability of MSPSS measuring perceived social support in disaster context (Laksmi et al., 2020). For current study, the scale shows strong reliability. Cronbach's α was 0.881 for the scale.

Patriotism

The patriotism is measured by adapted scale based on Huddy and Khatib (2007) (e.g. There is too much criticism of the China in the world, and we as its citizens should not criticize it. I believe that Chinese policies are almost always the morally correct ones. The scale consists with 6-items on a 7-point scale, from totally disagree (1) to totally agree (7). For current study, the scale shows strong reliability. Cronbach's α was 0.802 for the scale.

Data Analysis

The statistical analyses were conducted by Statistical Package for Social Sciences (SPSS, version 26.0). Descriptive and correlation analysis are conducted as the first step for current study to investigate the association between variables. Then the significance test for mediation effect are performed by PROCESS v.3.4.1 (Hayes, 2017). Specifically, a bootstrapping analysis was conducted using Process Model 4 (with Post-traumatic stress as independent variable, perceived social support as mediator, and patriotism as outcome variable) with 10000 bootstraps to calculate 95% confidence interval. All the variables are standardized before testing.

Results

Descriptive and Correlation Analysis

Table 1 shows perceived social support is positively correlates with patriotism ($r = 0.481, p < 0.001$), which supports **Hypothesis 2**. However, post-traumatic stress is not statically significant with other variables, meaning that the data has not support both Hypothesis 1 and Hypothesis 3. Therefore, mediation analysis is not able to conduct.

Table 1 Mean, Standard Deviation, and Correlation

	M	SD	1	2	3
1. Post-traumatic Stress	2.146	0.758	—		
2. Perceived Social Support	4.749	1.316	0.102	—	
3. Patriotism	5.164	1.293	0.166	0.481***	—

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

The results of the survey support our second hypothesis that the perceived social support helps to promote individual patriotism. However, since post-traumatic stress is not related to individual perceived social support or patriotism, this result makes us have no evidence to support Hypothesis 1 and 3 that whether post-traumatic stress will increase people's perceived social support and patriotism.

This result is beyond expectations, and current study notices that this result may have two potential reasons related with the weaknesses of current study. First, the

floor effect may explain why post-traumatic stress to be uncorrelated with the other two variables. Floor effect is the phenomena that many participants scored at or near the lower limit of the scale ("The SAGE Encyclopedia of Social Science Research Methods," 2004). Based on descriptive analysis, current study notices that the mean value for post-traumatic stress is 2.146 and standard deviation is 0.758, meaning that most of the participants score low post-traumatic stress in current study. There are two potential explanations for this low score. One is that their exposure to the disaster has not been severe enough to cause post-traumatic stress, and the other is that they have successfully coped the post-traumatic stress. This also means that the degree of exposure to disaster may be a potential control variable and antecedent variable. This variable may require more attention and control in future research.

Although there is a statistically significant positive correlation between social support and patriotism. However, at present, based on the evidence of cross-sectional research, we cannot infer the directionality of this relationship: whether the patriotism enhances the perceived social support or social support enhances patriotism. Future research can focus on the mechanism behind this phenomenon to better help us understand the relationship between social support and patriotism and help the government and related agencies better assist individuals in coping with disasters.

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