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Expressive suppression in the 2019 anti-government social unrest in Hong Kong: its association with psychological distress

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Hong Kong experienced a large-scale anti-government social unrest in 2019. High levels of violence and severe vandalism were common during the unrest, which have seriously affected the psychological wellbeing of Hong Kong people. Research has shown that, during the unrest, Hong Kong people exhibited an elevated level of psychological and mental disturbances, and these disturbances are still observed after the unrest has subsided. To further illuminate how large-scale social unrests affect people's psychological functioning, in this study we examined the association of expressive suppression, which is defined as consciously hiding and withholding one's emotions, with psychological distress in the context of the unrest in Hong Kong. The mediating role of rumination was also explored. The study was conducted in early 2021. A sample of 84 participants who had experienced the unrest in 2019 were recruited. They completed an online questionnaire for this study. Results from path analyses revealed that expressive suppression related to the unrest was positively associated with anxiety, stress, and depressed mood, and these associations were significantly mediated by rumination. Our findings suggest expressive suppression may play an important role in accounting for the effect of socio-political turmoil on psychological disturbances, and future research should pay more attention to this variable for understanding how large-scale political and social unrests, especially those that involve serious political divides, leave their marks on civilians.

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The 2019 anti-government social unrest in Hong Kong (abbreviated as “the Unrest” below) has been the largest unrest in the city in recent decades. It began after the Government of the Hong Kong Special Administrative Region (HKSAR) announced the plan to introduce the Fugitive Offenders and Mutual Legal Assistance in Criminal Matters Legislation (Amendment) Bill 2019 (HKSAR Legislative Council, 2019). The plan met with huge objections from the public. Large-scale demonstrations and protests began in June 2019 and continued until February 2020 when the coronavirus (COVID-19) pandemic became serious and the Unrest hence subsided. The Unrest was so intense that it drew significant international attention and made the headlines of international news. What set it apart from previous upheavals in the city are (1) its long duration, (2) the large number of protestors involved, (3) the serious conflicts between the protestors and the police, and (4) severe vandalism by the protestors (Shek, 2020). For more than half a year, people in Hong Kong were exposed to an extremely high level of physical violence and conflicts either in person or on the media. The mental health consequences of the Unrest are far-reaching. Studies have shown that civilians in the city experienced heightened levels of psychological disturbances including more depressive symptoms, post-traumatic stress disorders, and suicidal ideations (e.g., Hou et al., 2021; Ni et al., 2020) during the Unrest, and these consequences can still be observed after the Unrest has subsided (Tao et al., 2022).

Although the Unrest occurred in a small city in Asia, it provides a valuable avenue for researchers to examine the psychological consequences of large-scale socio-political upheavals. Previous studies on social unrests have mainly focused on how exposure to violence during unrests may affect individuals’ wellbeing, adjustment, and mental health (Cummings et al., 2011; McAloney et al., 2009; Saltzman et al., 2022). However, political and social unrests can pose adverse effects on individuals via other mechanisms, and expressive suppression may be one of these mechanisms that is particularly relevant to the Unrest in Hong Kong. During the Unrest, people in Hong Kong were highly divided regarding their political stances and opinions. Conflicts within the family and with friends, peers, and even strangers were very common, and many people had to hide and suppress their feelings or emotions in order to maintain interpersonal harmony (Law, 2019; Tam, 2019). Given the well-documented negative effects of expressive suppression on wellbeing and adjustment (Dryman and Heimberg, 2018; Gross and John, 2003), it is possible that suppressing the expression of negative feelings and emotions associated with the Unrest could have contributed to the increased level of psychological disturbances experienced by Hong Kong people. Considering this, this study aimed at shedding light on how expressive suppression associated with socio-political upheavals is linked to psychological distress by examining the case of Hong Kong. We also tested the mediating role of rumination to elucidate potential cognitive mechanisms that can account for this linkage.

Expressive suppression during the unrest

Political division and polarization among Hong Kong people had in fact taken place even before the Unrest. Hong Kong experienced the Umbrella Movement (also known as Occupy Central) in 2014, which was sparked by the 2014–2015 Hong Kong electoral reform (Cheung and Nip, 2014). Public opinions regarding the movement were highly polarized (Centre for Communication and Public Opinion Survey, CUHK, 2014). Disputes and debates were commonly observed on the street and on social media, and conflicts also occurred within close relationships. With the

outbreak of the Unrest in 2019, people in Hong Kong became even more polarized regarding their political stances. The division is clearly seen in the formation of two opposing camps: the “yellow camp” which was against the HKSAR Government and the “blue camp” which was supportive of the Government (Shek, 2020). The serious political division caused intense debates and conflicts within the family, among friends and colleagues, and even with strangers (Tam, 2019). Of note is the significant intergenerational difference in political stances and opinions regarding the Unrest. Young people tended to hold an unsupportive attitude towards the Government (“yellow camp”), while the older generations were more supportive of the Government (“blue camp”). Therefore, quarrels due to political division frequently occurred between young people and their parents which broke many families apart (Law, 2019).

To avoid conflicts and maintain peace with one another, many Hong Kong people adopted a rather passive and avoidance approach, which is hiding and suppressing their thoughts, feelings, and emotions concerning the Unrest. AFP News Agency (2019) described vivid cases of how the suppression occurred. For example, people refused to share their thoughts or feelings with their colleagues because of mistrust, and families ate in silence or intentionally avoided any discussion about the Unrest to prevent “wars at the dinner table”. In addition, people might worry that openly expressing their thoughts and feelings about the Unrest could have legal consequences (e.g., some comments may be regarded as incitation). Hence, expressive suppression was considered by many Hong Kong people as a way to deal with what was going on at that time, and many chose not to disclose to anyone how they felt.

In psychology, expressive suppression (abbreviated as ES below) has been widely studied as an emotion regulation strategy. It is defined as the process of consciously inhibiting emotional expressions while being emotionally aroused (Butler et al., 2003). For example, a person is engaging in ES when he or she feels sad or angry about the Unrest but deliberately chooses to withhold these emotions from others. In the short run, ES can be adaptive because in some situations it may not be socially appropriate to freely express one’s feelings and emotions (Gross and Cassidy, 2019). However, in the long run and when used habitually, this emotion regulation strategy can predispose individuals to psychological disturbances and maladjustment. The process model of emotion regulation by Gross (2002) provides a theoretical framework for understanding how ES may adversely affect individuals’ mental health. ES is considered a “response-focused” emotion regulation. It occurs after an emotion has arisen and focuses on downregulating the behaviors of expressing the emotion. Therefore, it is not expected to reduce the experience of the emotion because the emotion itself is not the target of regulation. Furthermore, the discrepancy between how one feels (e.g., feeling sad) and what one does (e.g., suppressing the sad feeling) can disrupt emotional and psychological functioning.

Consistent with these theoretical speculations, several studies have shown that suppressing the expression of negative emotions does not help reduce the intensity of these emotions (Gross, 1998; Harris, 2001). In fact, such an emotion regulation strategy is likely to increase negative feelings and psychological distress. The review by Gross and Cassidy (2019) shows that ES is related to a wide array of negative psychological outcomes including emotional dysregulation, internalizing problems, and clinical symptoms such as post-traumatic stress. Several meta-analyses have also found that ES is linked to worse mental health indicators (Hu et al., 2014), less positive affect (Fernandes and Tone, 2021), and more post-traumatic stress symptoms (Seligowski et al., 2015). Based on the above empirical evidence, it can be concluded that ES can compromise one’s wellbeing and psychological

functioning. Given this, when people withheld their negative emotions and feelings about the Unrest in an attempt to maintain peace and harmony, they were likely to experience higher levels of psychological symptoms and disturbances. Therefore, we hypothesized that a higher level of Unrest-related ES would be associated with more psychological symptoms including higher levels of stress, anxiety, and depressed mood.

Although the negative effect of ES has been well-established, to the best of our knowledge no study so far has directly applied this construct to understand the mental health consequences of large-scale socio-political upheavals. As the case of the Unrest in Hong Kong has demonstrated, during serious political and social turmoil that involves intense political divides, it is likely that people hold diverging views and stances about the events. ES may be adopted by people as a strategy to avoid quarrels and maintain peace with one another. When people engage in ES and suppress their feelings and emotions associated with the unrests, their wellbeing is likely compromised. ES may therefore explain the adverse impacts of socio-political turmoil on one's mental health. Hence, investigations into the link between ES and psychological distress in the case of the Unrest in Hong Kong would illuminate an understudied mechanism behind the effect of socio-political turmoil on civilians. If this link is supported, practitioners and therapists may need to pay more attention to civilians' emotion regulation, particularly the tendency of ES, to help them cope and adjust during social unrests.

Rumination as a mediator

In addition to studying the link between Unrest-related ES and psychological disturbances, we also examined rumination as a mediator to better understand how ES associated with the Unrest might have exerted its negative impacts on mental health. Rumination is defined as the process in which individuals repetitively focus on the symptoms of distress and their possible causes and consequences without any active efforts in changing the circumstances (Nolen-Hoeksema et al., 2008). It has been shown to be a mediator between ES and stress-related symptoms (Moore et al., 2008). Hence, it is likely to be a significant mediator between ES and psychological disturbances in the context of the Unrest as well. In the following sections, we will explain the theoretical and empirical rationales for rumination as a mediator.

According to the response styles theory, people who ruminate tend to fixate on the problem and their feelings of distress without doing anything to improve the situation (Nolen-Hoeksema, 1991). This thinking process is related to increased psychological symptoms through three mechanisms: (1) people who ruminate are more likely to use the negative thoughts, emotions, and memories activated to understand their current situations, (2) rumination can compromise problem-solving by making people more pessimistic and fatalistic, and (3) rumination interferes with instrumental behaviors and increases the likelihood of stressful situations. A number of recent meta-analyses have provided solid empirical evidence that rumination is a risk factor for psychological distress and disturbances including major depressive and bipolar disorders (Kovacs et al., 2020), eating disorders (Palmieri et al., 2021; Smith et al., 2018), non-suicidal self-injury (Coleman et al., 2022; Nagy et al., 2022), post-traumatic stress symptoms (Szabo et al., 2017), and suicidal ideation and attempt (Rogers and Joiner, 2017).

On the other hand, ES has been shown to increase rumination by making the suppressed and withheld emotions and feelings more accessible to the person. Based on the ironic processes of mental control (Wegner, 1994), suppression involves two components: (1) an operating process to intentionally suppress and withhold thoughts and emotions, and (2) a monitoring process to

detect the occurrence of thoughts and emotions that are meant to be suppressed, to assess if further operating processes are needed. Under some circumstances such as reduced cognitive capacities, the monitoring process can become more salient than the operating process, resulting in a greater tendency to search for thoughts and emotions that are to be suppressed or withheld and thereby making these thoughts and emotions more conscious and accessible to the person. Because of this, ES can paradoxically increase the intensity and accessibility of thoughts and emotions that one wants to hide and suppress (Chang and Lee, 2022; Quartana and Burns, 2010; Wang et al., 2020). This can make the person focus on these thoughts and emotions more and hence engage in more ruminative thinking (Wenzlaff and Luxton, 2003; Wenzlaff and Wegner, 2000).

Putting these together, ES is likely to increase the occurrence of thoughts and emotions that one wants to suppress and prompt one to focus on and ruminate over them more. Consequently, the person's mental health is compromised. This ES-rumination-psychological disturbances link has been empirically tested and supported by Moore et al. (2008). Although this link has not been directly tested in the context of socio-political upheavals, we believe rumination would be a significant mediator between ES and psychological symptoms in the context of the Unrest given the documented linkages among ES, rumination, and psychological disturbances reviewed above. In addition, rumination related to the Unrest has been commonly observed among Hong Kong people and it is closely linked to worse mental conditions (Wong et al., 2021; Wong et al., 2022). Therefore, we hypothesized that, when people had to hide and withhold their emotions related to the Unrest for various reasons, they were likely to ruminate over these emotions more and subsequently experienced more psychological symptoms. This research question has significant theoretical and practical implications. In terms of theoretical implications, it can test the applicability of the ES-rumination-psychological disturbances link in understanding the effect of the Unrest and other similar socio-political turmoil. It can also provide insight into the underlying cognitive mechanisms that account for the effect of unrest-related ES on individuals' wellbeing. In terms of practical implications, if the mediating role of rumination is supported, more attention should be given to this negative cognitive process to mitigate the effect of unrest-related ES during major socio-political turmoil.

The current study

In sum, to explore how ES may explain the effect of socio-political upheavals on individuals' mental health and adjustment, we examined the association between ES in the Unrest in Hong Kong and civilians' psychological distress and the mediation effect of rumination. We hypothesized that (1) ES related to the Unrest would be positively associated with psychological distress including stress, anxiety, and depressed mood, (2) ES related to the Unrest would be positively associated with rumination, (3) rumination would be positively associated with psychological distress, and (4) rumination would be a significant mediator between ES related to the Unrest and psychological distress.

Methods

Participants. The study was conducted between mid-February and early April 2021, which is a year after the Unrest had subsided. A correlational and cross-sectional design was adopted. A total of 84 participants were recruited. All of them were residing in Hong Kong and had experienced the Unrest in 2019. Their ages ranged from 18 to 28 years ($M = 22.24$, $SD = 1.68$). Around 66% were female. All participants had post-secondary education and were competent in Chinese. None of them had any history of

mental disorders. The median family monthly income was between HKD\$30,000 to \$50,000. Based on two questions that tapped into attitudes towards the HKSAR Government during the Unrest, the participants mainly represented those who were not supportive of the Government ($M = 1.27$, $SD = 0.50$; the range is from 1 to 3; see Measures for more detail).

We noted that the sample size was rather small. When planning the study, we expected paths a and b in the hypothesized mediation model to have medium effect sizes ($\beta = 0.39$). According to Fritz and MacKinnon (2007), a sample of at least 71 participants is needed to achieve 80% statistical power for detecting the expected mediation effects using biased-corrected bootstrapping. Our sample therefore had adequate statistical power to test the expected mediation effects. We acknowledge that the small sample size could have led to other problems such as those related to the generalizability of findings. However, it was difficult to recruit participants due to the sensitive nature of this study. We considered extending the data collection period, but it might not be feasible because the later the study was completed the less relevant the effect of the Unrest might become. Given these considerations, we decided to base the study on the 84 participants we recruited during the planned data collection period.

Measures

Demographic background. Participants answered several questions about their demographic background, including their age, gender, education level, and family monthly income. They also responded to two items that gauged their attitudes towards the HKSAR Government during the Unrest. The two items were rated on a five-point scale from “very unsupportive (1)” to “very supportive (5)”. The average of the two items was used to represent each participant’s overall attitude, and a higher average denoted that the participant was more supportive of the Government. The Cronbach’s alpha of these two items is 0.82.

Expressive suppression related to the unrest. ES related to the Unrest was measured by the Emotion Experience and Expressive Suppression Scale (Bedwell et al., 2019). Since we were mainly interested in the effect of suppressing negative emotions, only items pertaining to negative emotions were used. Participants were asked to indicate how frequently they had experienced each of the following emotions during the Unrest: fear, hostile, guilt, sad, and helplessness, on a seven-point scale from “Almost never (1)” to “Nearly all the time (7)”. They also indicated how often they had shown or hidden these emotions, on a seven-point scale from “I always show it (1)” to “I always hide it (7)”. Following Bedwell et al., a “frequency of suppression” score was calculated for each participant to operationalize the level of expressive suppression related to the Unrest. First, we multiplied the frequency score with the suppression score to get a cross-product for each emotion. Then, we took the average of the cross-products across all emotions. A higher “frequency of suppression” score indicated more frequent experience and suppression of negative emotions related to the Unrest. The Cronbach’s alpha is 0.80.

Rumination. The Ruminative Response Scale (Nolen-Hoeksema and Morrow, 1991) was used to assess participants’ levels of rumination related to the Unrest. A sample item is “During the unrest, you thought about how lonely you were”. The items were rated on a four-point scale from “Never (1)” to “Always (4)”. A higher average denoted a greater level of rumination associated with the Unrest. The Cronbach’s alpha is 0.92.

Psychological distress. Participants’ levels of psychological distress were measured by the Depression Anxiety and Stress Scale 21

(DASS 21; Henry and Crawford, 2005). The scale consists of three subscales, namely depression (e.g., “I couldn’t seem to experience any positive feeling at all”), anxiety (e.g., “I experienced trembling (e.g., in the hands)”), and stress (e.g., “I found it hard to wind down”). The items were rated on a four-point scale from “Did not apply to me at all (0)” to “Applied to me very much or most of the time (3)”. Averages of the three subscales were calculated separately, and a higher average denoted more distress experienced in the respective domain. The Cronbach’s alphas are 0.90 (depression), 0.77 (anxiety), and 0.86 (stress).

General expressive suppression tendency. We also measured participants’ general and dispositional ES tendencies as a covariate for this study. The expressive suppression subscale from the Emotion Regulation Questionnaire (Gross and John, 2003) was used for this purpose. A sample item is “I keep my emotions to myself.”. The items were rated on a seven-point scale, from “Strongly disagree (1)” to “Strongly agree (7)”. A higher average denoted a stronger dispositional tendency to suppress emotions. The Cronbach’s alpha is 0.81.

Procedure. We obtained ethics approval from the second author’s institution before data collection. All scales and items were translated into traditional Chinese using the back-translation procedure, and only the Chinese version was used in this study. Data collection was conducted from mid-February to early April 2021. The study was promoted on various social media platforms and through the bulk email system of a local university. Interested and eligible participants were invited to complete an online survey in Chinese on Qualtrics. The eligibility criteria included: (1) aged 18 years or above, (2) were residing in Hong Kong and had experienced the Unrest in 2019, and (3) could comprehend Chinese. In the online survey, participants first completed an informed consent form and then filled out a set of questionnaires comprising the measures described above. Considering the sensitive nature of this study, participants were assured that their responses would remain strictly anonymous and no personal information including IP address was collected. Upon completion of the questionnaires, a debriefing note was shown to participants to explain the details of the study. All participants provided complete data.

Data analyses. The first step of data analyses involved testing whether the main variables of the study, namely ES related to the Unrest, rumination, and psychological distress met the normality assumption. Shapiro-Wilk tests were conducted for this purpose. If the normality assumption was not met, bootstrapping (based on 1000 bootstrapped samples, using the bias-corrected and accelerated 95% confidence interval (BCa 95% CI)) was adopted for assessing statistical significance in all subsequent analyses. Descriptive statistics and correlations of the main variables were then calculated. Relationships of the main variables with participants’ demographic background and general ES were also assessed to determine which variables had to be statistically controlled for in the main analyses (for demographic background, participants’ education level was not analyzed because all participants had post-secondary education and education level hence had a restricted range). Variables that were significantly associated with at least one of the main variables were entered as covariates in the main analyses. The main analyses involved path analyses with ES related to the Unrest as the predictor, rumination as the mediator, and psychological distress including stress, anxiety, and depression as outcomes. The maximum likelihood estimator was used. Path analyses were conducted using the “lavaan” package on R (Rosseel, 2012). All other analyses were

conducted using the Statistical Package for the Social Sciences Version 26.

Results

Preliminary analyses. Results from the Shapiro-Wilk tests indicated that some of the main variables did not meet the normality assumption (ES related to the Unrest: $p < 0.001$; anxiety: $p = 0.002$; depression: $p < 0.001$). Bootstrapping was therefore adopted for testing statistical significance in all subsequent analyses. Descriptive statistics and correlations of the main variables can be found in Table 1. ES related to the Unrest ranged from 2.6 to 36, showing that there were significant inter-individual variabilities in this variable for observing how it was related to variabilities in other variables. Concerning the correlations, ES related to the Unrest was significantly and positively associated with rumination, stress, anxiety, and depression. Rumination was also significantly and positively related to stress, anxiety, and depression.

Relationships of the main variables with participants' demographic background and general ES can be found in Table 2. As shown in the table, participants' age, attitudes towards the Government, and general ES were significantly associated with at least one of the main variables. They were therefore entered as covariates in the mediation analyses. Note that the correlation between ES related to the Unrest and general ES was moderately weak, $r = 0.23$, BCa 95% CI [-0.04, 0.47]. This suggests suppressing the expression of negative emotions related to the Unrest may not simply stem from the disposition to hide and withhold emotions.

Mediation analyses. To test the association between ES related to the Unrest and psychological distress and the mediating role of

rumination, path analyses (with covariates) were conducted. The models that we tested are just-identified and so model fit indexes are not reported. A total-effect model was first tested to examine the hypothesized effect of ES related to the Unrest on psychological distress¹. The results revealed that ES was significantly and positively associated with the levels of stress ($B = 0.03$, $\beta = 0.23$, BCa 95% CI [0.003, 0.062]), anxiety ($B = 0.02$, $\beta = 0.21$, BCa 95% CI [0.001, 0.04]), and depression ($B = 0.04$, $\beta = 0.26$, BCa 95% CI [0.01, 0.08]). These supported our first hypothesis regarding the association between ES related to the Unrest and psychological distress. The model explained 17.9%, 18.9%, and 18.6% of the variance of stress, anxiety, and depression, respectively.

Next, we tested a partial-mediation model, in which the hypothesized effect of ES related to the Unrest on psychological distress was partially through rumination. The path diagram of the model can be found in Fig. 1. ES was significantly and positively associated with rumination (BCa 95% CI [0.03, 0.07]), which supported our second hypothesis. On the other hand, rumination was significantly and positively associated with stress (BCa 95% CI [0.35, 0.94]), anxiety (BCa 95% CI [0.06, 0.61]), and depression (BCa 95% CI [0.15, 0.93]). These corroborated our third hypothesis concerning the relationship between rumination and psychological distress. The model explained 29.5%, 24.8%, and 25.5% of the variance of stress, anxiety, and depression, respectively.

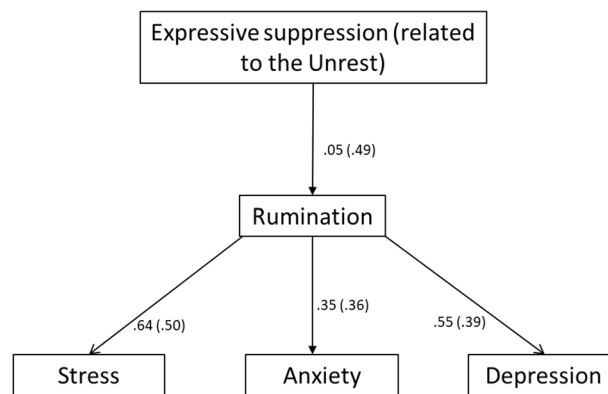


Fig. 1 A path diagram of the mediation model in which expressive suppression related to the Unrest is associated with psychological distress through rumination. In the diagram, numerical values in parentheses are standardized path coefficients, and those not in parentheses are unstandardized path coefficients. For simplicity, covariates, direct effects of expressive suppression on psychological distress, and correlations among the dependent variables are not displayed. All path coefficients are statistically significant at $p < 0.05$ based on bootstrapping.

Table 1 Descriptive statistics and correlations of the main variables.

	1	2	3	4	5
1. Expressive suppression related to the Unrest	-				
2. Rumination	0.58*	-			
3. Stress	0.30*	0.51*	-		
4. Anxiety	0.28*	0.45*	0.78*	-	
5. Depression	0.33*	0.48*	0.75*	0.63*	-
M	12.82	2.10	1.12	0.72	0.96
SD	5.49	0.52	0.67	0.52	0.75
Range	2.6-36	1-3.5	0-2.86	0-2.14	0-2.71

* $p < 0.05$ (two-tailed) based on bootstrapping.

Table 2 Correlations of the main variables with participants' demographic background and general expressive suppression.

	Gender ^a	Age ^b	Family income ^c	Attitudes towards Government ^b	General expressive suppression ^b
Expressive suppression related to the Unrest	0.12	-0.02	0.17	-0.16	0.23
Rumination	0.15	-0.29*	-0.03	-0.30*	0.35*
Stress	0.13	-0.16	-0.10	-0.06	0.32*
Anxiety	0.03	-0.20	-0.08	-0.06	0.33*
Depression	0.08	-0.14	-0.03	-0.11	0.31*

For "Gender", the reference group is male.
^a $p < 0.05$ (two-tailed) based on bootstrapping.
^bPoint-biserial correlation.
^cPearson's correlation.
^dSpearman's correlation.

Concerning the mediation effects, rumination significantly mediated the associations of ES related to the Unrest with stress ($B = 0.03$, $\beta = 0.24$, BCa 95% CI [0.01, 0.05]), anxiety ($B = 0.02$, $\beta = 0.17$, BCa 95% CI [0.004, 0.04]), and depression ($B = 0.03$, $\beta = 0.19$, BCa 95% CI [0.01, 0.05]), suggesting that a higher level of ES related to the Unrest was associated with more rumination, which in turn was related to higher levels of stress, anxiety, and depression. Hence, our fourth hypothesis regarding the mediation effects of rumination was supported. After accounting for the mediation effects, the direct effects of ES on stress ($B = -0.002$, $\beta = -0.01$, BCa 95% CI [-0.03, 0.03]), anxiety ($B = 0.003$, $\beta = 0.03$, BCa 95% CI [-0.03, 0.02]), and depression ($B = 0.01$, $\beta = 0.07$, BCa 95% CI [-0.03, 0.06]) were not significant.

Discussion

The results from the statistical analyses supported our hypotheses. In terms of total effects, higher ES related to the Unrest was associated with more symptoms of stress, anxiety, and depression. This is consistent with our first hypothesis and the notion that hiding and suppressing one's negative emotions can predispose individuals to psychological disturbances (Gross, 2002; Gross and Cassidy, 2019). In addition, our results demonstrated that the linkage between ES and psychological disturbances can be generalized to the context of social unrests. In terms of mediation effects, rumination was found to be a statistically significant mediator between ES related to the Unrest and psychological distress. Higher ES related to the Unrest was linked to more rumination, which in turn was associated with more anxiety, stress, and depressive symptoms. These corroborated our second, third, and fourth hypotheses, and imply rumination is a possible mechanism to explain the effect of Unrest-related ES on psychological symptoms. These are in line with the theory of ironic processes of mental control which suggests ES can lead to more rumination (Chang and Lee, 2022; Quartana and Burns, 2010; Wang et al., 2020; Wegner, 1994), and the response styles theory which postulates that rumination can result in more psychological distress (Nolen-Hoeksema, 1991; Nolen-Hoeksema et al., 2008).

Note that these results were significant even when participants' general ES tendency was statistically controlled. This implies ES related to the Unrest may play a unique role in affecting mental health above and beyond the general and dispositional ES tendency. In fact, considering the moderately weak correlation between Unrest-related ES and general ES, it is possible that the engagement in ES to cope with what was going on during the Unrest was driven more by contextual factors and reasons specific to the Unrest than by one's dispositional tendency to suppress emotions. That said, these remain speculative as we did not systematically measure and study possible Unrest-related factors that may explain individuals' engagement in ES related to the Unrest. Overall, our findings suggest the effect of unrest-related ES is not merely a reflection of the influence of the dispositional tendency to suppress emotions. It is due to suppressing the expression of emotions specifically associated with the unrests. This supports the utility of examining unrest-related ES as a factor to account for the mental health consequences of political and social turmoil.

Theoretical and practical implications. To our knowledge, this study is the first to examine the role of ES within the context of large-scale socio-political upheavals. It is also the first to apply the ES-rumination-psychological disturbances link to understand the effect of such upheavals. Our findings echo existing literature regarding the negative effects of ES and the mediating role of rumination. Adopting ES as a coping strategy and suppressing the

expression of negative emotions caused by the upheavals would increase ruminative thoughts and in turn result in detrimental effects on one's psychological adjustment and functioning. As mentioned in the introduction section, research on political and social unrests has mostly focused on exposure to violence as a cause of psychological disturbances. With our study and findings demonstrating that ES can be another potential mechanism behind the effect of political and social unrests, future research can attend more to this variable for understanding how individuals' psychological and mental health is affected by socio-political turmoil.

Considering the possible negative influence of unrest-related ES, it would be important to help people manage their emotional expression in times of political and social unrests. During unrests, particularly those that involve serious political divides, withholding emotions from others may be unavoidable in some situations because, as the case of Hong Kong has demonstrated, this strategy is to some extent useful in minimizing quarrels and maintaining peace. Therefore, it is crucial to find appropriate ways for people to release their emotions and vent their feelings. A study in Hong Kong has looked into the possible therapeutic efficacy of clay art therapy in helping adolescents regulate their emotions during the Unrest (Nan and Wong, 2021). The results revealed that clay art therapy is useful in helping adolescents release physical and psychological tension and diverting them from disturbing emotions. Similar therapeutic approaches can be developed and adopted by practitioners to help people release the stress built up by unrest-related ES. In light of the significant mediation effect of rumination, interventions can also work on reducing ruminative thoughts to minimize or negate the potential effect of unrest-related ES. For example, mindfulness-based interventions and loving-kindness meditation have been demonstrated to effectively reduce rumination by enabling individuals to better control their emotional states and cultivate kindness and compassion for themselves (Perestelo-Perez et al. (2017); Wang et al., 2021). These interventions can be administered to people who are distressed by unrest-related ES and rumination to help them adjust during serious socio-political upheavals.

Limitations and future research directions. Despite the contributions, this study has several caveats that warrant attention. First, the sample size was small. This was likely due to the sensitive nature of the study and many people therefore did not want to participate. As mentioned in the methods section, although our study had enough statistical power in detecting mediation effects with medium-sized paths *a* and *b*, the small sample size could have led to other problems such as issues with generalization of the findings. Therefore, our findings and their implications should be interpreted as preliminary and with caution. Further studies on similar socio-political unrests with a larger sample size are needed to replicate the findings and verify our claims. Second, the sample was biased towards young adults who had received post-secondary education and mostly held an unsupportive attitude towards the HKSAR Government during the Unrest. Some studies (e.g., Li et al., 2021) have shown that youths (those aged below 25) were particularly vulnerable to the adverse impacts of the Unrest and so it may make sense to focus on this age group in our study. Despite this, we acknowledge this as a limitation in relation to the generalizability of our findings. Future studies on similar topics should adopt ways to recruit a larger sample of participants with a more diverse range of backgrounds to enhance external validity. Third, because of the cross-sectional design, it remains unclear whether ES related to social unrests can temporally predict rumination and psychological distress. Longitudinal studies should be conducted to better test the direction of

influences among variables. Fourth, this study was conducted in a Chinese context. Previous research has shown that the effect of ES varies across cultures, with people growing up in western cultures (e.g., Caucasian) being more negatively affected by ES (Hu et al., 2014; Soto et al., 2011). Therefore, studies similar to ours should be conducted in the west to understand how westerners may be affected by unrest-related ES during major socio-political upheavals.

Lastly, we did not ask participants to report the reasons for suppressing their emotions related to the Unrest. Throughout this article, we focused on social motives, such as maintaining interpersonal harmony and avoiding conflicts with other people, as the main reasons behind people's engagement in expressive suppression. However, there are other possible reasons for engaging in expressive suppression, such as how people perceived the political environment during the Unrest. The effect of expressive suppression may differ depending on the reasons that motivate people to engage in it. We had considered including questions tapping into why participants suppressed their emotions associated with the Unrest. However, after some deliberation, we decided not to include such questions because they might make the study even more sensitive and in turn would further lower the response rate. It was difficult to strike a balance between theoretical completeness and feasibility when conducting this study. Future research, wherever possible, should take consideration of this variable when examining the effect of expressive suppression during similar social unrests, especially those that involve intense political divides.

Data availability

Data associated with this study is not publicly available because we did not obtain consent from participants for such dissemination of their data.

Code availability

Data associated with this study is not publicly available because we did not obtain consent from participants for such dissemination of their data.

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Note

1 Considering that ES can be a result of psychological distress (Larsen et al., 2013), we conducted another analysis to test the possible effect of psychological distress on ES related to the Unrest while statistically controlling for the same covariates. In this analysis, stress, anxiety, and depression were used to predict ES related to the Unrest (with covariates). Results indicated that none of the three variables had a significant total effect on ES related to the Unrest when the covariates were statistically controlled (β s ranged from 0.05 to 0.20, $ps > 0.05$).

References

- AFP News Agency. (2019). War at the dinner table: Hong Kong families divided over protests. Retrieved from <https://hongkongfp.com/2019/09/17/war-dinner-table-hong-kong-families-divided-protests/>
- Bedwell JS, Cohen AS, Spencer CC, Simpson SD (2019) Emotion experience and expressive suppression scale: psychometric properties and relationships with depression and schizotypy. *Personal Individ Differ* 142:145–152. <https://doi.org/10.1016/j.paid.2019.02.001>
- Butler EA, Egloff B, Wilhelm FH, Smith NC, Erickson EA, Gross JJ (2003) The social consequences of expressive suppression. *Emotion* 3:48–67. <https://doi.org/10.1037/1528-3542.3.1.48>
- Centre for Communication and Public Opinion Survey, CUHK. (2014). Public opinion & political development in Hong Kong: Survey results. Retrieved

- from http://www.com.cuhk.edu.hk/ccpos/images/news/TaskForce_PressRelease_141218_English.pdf
- Chang C-C, Lee Y (2022) Effects of thought suppression on automatic retrieval of memory: the role of monitoring and cognitive load. *J Cogn Psychol* 34:375–386. <https://doi.org/10.1080/20445911.2021.1982952>
- Cheung, T, & Nip, A (2014). Hong Kong poised for political showdown on 2017 election; Jimmy Lai to join Occupy. Retrieved from <https://www.scmp.com/news/hong-kong/article/1582080/hong-kong-poised-political-showdown-2017-election>
- Coleman SE, Dunlop BJ, Hartley S, Taylor PJ (2022) The relationship between rumination and NSSI: a systematic review and meta-analysis. *Br J Clin Psychol* 61:405–443. <https://doi.org/10.1111/bjc.12350>
- Cummings EM, Merrilees CE, Schermerhorn AC, Goeke-Morey MC, Shirlow P, Cairns E (2011) Longitudinal pathways between political violence and child adjustment: the role of emotional security about the community in Northern Ireland. *J Abnorm Child Psychol* 39:213–224. <https://doi.org/10.1007/s10802-010-9457-3>
- Dryman MT, Heimberg RG (2018) Emotion regulation in social anxiety and depression: a systematic review of expressive suppression and cognitive reappraisal. *Clin Psychol Rev* 65:17–42. <https://doi.org/10.1016/j.cpr.2018.07.004>
- Fernandes MA, Tone EB (2021) A systematic review and meta-analysis of the association between expressive suppression and positive affect. *Clin Psychol Rev* 88:102068. <https://doi.org/10.1016/j.cpr.2021.102068>
- Fritz MS, MacKinnon DP (2007) Required sample size to detect the mediated effect. *Psychol Sci* 18:233–239. <https://doi.org/10.1111/j.1467-9280.2007.01882.x>
- Gross JJ (1998) Antecedent- and response-focused emotion regulation: divergent consequences for experience, expression, and physiology. *J Personal Soc Psychol* 74:224–237. <https://doi.org/10.1037/0022-3514.74.1.224>
- Gross JJ (2002) Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39:281–291. <https://doi.org/10.1017/S0048577201393198>
- Gross JT, Cassidy J (2019) Expressive suppression of negative emotions in children and adolescents: theory, data, and a guide for future research. *Dev Psychol* 55:1938–1950. <https://doi.org/10.1037/dev0000722>
- Gross JJ, John OP (2003) Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J Personal Soc Psychol* 85:348–362. <https://doi.org/10.1037/0022-3514.85.2.348>
- Harris CR (2001) Cardiovascular responses of embarrassment and effects of emotional suppression in a social setting. *J Personal Soc Psychol* 81:886–897. <https://doi.org/10.1037/0022-3514.81.5.886>
- Henry JD, Crawford JR (2005) The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample. *Br J Clin Psychol* 44:227–239
- HKSAR Legislative Council. (2019). Fugitive offenders and mutual legal assistance in criminal matters legislation (Amendment) Bill 2019. Retrieved from <https://www.legco.gov.hk/yr18-19/english/bills/b201903291.pdf>
- Hou WK, Hall BJ, Liang L, Li TW, Liu H, Galea S (2021) Probable depression and suicidal ideation in Hong Kong amid massive civil unrest. *Ann Epidemiol* 54:45–51. <https://doi.org/10.1016/j.annepidem.2020.09.006>
- Hu T, Zhang D, Wang J, Mistry R, Ran G, Wang X (2014) Relation between emotion regulation and mental health: a meta-analysis review. *Psychol Rep.* 114:341–362. <https://doi.org/10.2466/03.20.PR0.114k22w4>
- Kovacs LN, Takacs ZK, Toth Z, Simon E, Schmelowszky A, Kokonyei G (2020) Rumination in major depressive and bipolar disorder – a meta-analysis. *J Affect Disord* 276:1131–1141. <https://doi.org/10.1016/j.jad.2020.07.131>
- Larsen JK, Vermulst AA, Geenen R, Middendorp HV, English T, Gross JJ, Ha T, Evers C, Engels RCME (2013) Emotion regulation in adolescence: a prospective study of expressive suppression and depressive symptoms. *J Adolesc* 33:184–200. <https://doi.org/10.1177/0272431611432712>
- Law, V (2019). Family politics: How Hong Kong protests affect the home dynamic. Retrieved from <https://www.aljazeera.com/features/2019/9/2/family-politics-how-hong-kong-protests-affect-the-home-dynamic>
- Li AWY, Chak WH, Yuen KSL (2021) Snapshot of a social movement: mental health and protest classes in Hong Kong. *J Affect Disord* 291:883–892. <https://doi.org/10.1016/j.jad.2021.08.111>
- McAloney K, McCrystal P, Percy A, McCartan C (2009) Damaged youth: prevalence of community violence exposure and implications for adolescent well-being in post-conflict Northern Ireland. *J Community Psychol* 37:635–648. <https://doi.org/10.1002/jcop.20322>
- Moore SA, Zoellner LA, Mollenholt N (2008) Are expressive suppression and cognitive reappraisal associated with stress-related symptoms? *Behav Res Ther* 46:993–1000. <https://doi.org/10.1016/j.brat.2008.05.001>
- Nagy LM, Shanahan ML & Seaford SP (2022). Nonsuicidal self-injury and rumination: a meta-analysis. *J Clin Psychol*, Advance online publication. <https://doi.org/10.1002/jclp.23394>
- Nan JKM, Wong WWT (2021) A qualitative analysis of a clay art therapy project in enhancing emotion regulation among secondary school youth in the context

- of socio-political unrest. *J Clin Dev Psychol* 3:27–44. <https://doi.org/10.6092/2612-4033/0110-2590>
- Ni MY, Yao XIY, Leung KSM, Yau C, Leung CMC, Lun P, Flores FP, Chang WC, Cowling BJ, Leung GM (2020) Depression and post-traumatic stress during major social unrest in Hong Kong: a 10-year prospective cohort study. *Lancet* 395(10220):273–284. [https://doi.org/10.1016/S0140-6736\(19\)33160-5](https://doi.org/10.1016/S0140-6736(19)33160-5)
- Nolen-Hoeksema S (1991) Responses to depression and their effects on the duration of depressive episodes. *J Abnorm Psychol* 100:569–582. <https://doi.org/10.1037/0021-843x.100.4.569>
- Nolen-Hoeksema S, Morrow J (1991) A prospective study of depression and posttraumatic stress symptoms after a natural disaster: the 1989 Loma Prieta earthquake. *J Personal Soc Psychol* 61:115–121. <https://doi.org/10.1037/0022-3514.61.1.115>
- Nolen-Hoeksema S, Wisco BE, Lyubomirsky S (2008) Rethinking rumination. *Perspect Psychol Sci* 3:400–424. <https://doi.org/10.1111/j.1745-6924.2008.00088.x>
- Palmieri S, Mansueto G, Scaini S, Caselli G, Sapuppo W, Spada MM, Sassaroli S, Ruggiero GM (2021) Repetitive negative thinking and eating disorders: a meta-analysis of the role of worry and rumination. *J Clin Med* 10:2448. <https://doi.org/10.3390/jcm10112448>
- Perestelo-Perez L, Barraca J, Penate W, Rivero-Santana A, Alvarez-Perez Y (2017) Mindfulness-based interventions for the treatment of depressive rumination: Systematic review and meta-analysis. *Int J Clin Health Psychol* 17:282–295. <https://doi.org/10.1016/j.ijchp.2017.07.004>
- Quartana PJ, Burns JW (2010) Emotion suppression affects cardiovascular responses to initial and subsequent laboratory stressors. *Br J Health Psychol* 15:511–528. <https://doi.org/10.1348/135910709X474613>
- Rogers ML, Joiner TE (2017) Rumination, suicidal ideation, and suicide attempts: a meta-analytic review. *Rev Gen Psychol* 21:132–142. <https://doi.org/10.1037/gpr0000101>
- Rosseel Y (2012) lavaan: an R package for structural equation modeling. *J Stat Softw* 48(2):1–36. <https://doi.org/10.18637/jss.v048.i02>
- Saltzman LY, Canetti D, Hobfoll SE, Hall BJ (2022) The impact of political violence on posttraumatic stress symptomatology: a longitudinal analysis. *Anxiety, Stress Coping* 35:219–231. <https://doi.org/10.1080/10615806.2021.1950694>
- Seligowski AV, Lee DJ, Bardeen JR, Orcutt HK (2015) Emotion regulation and posttraumatic stress symptoms: a meta-analysis. *Cogn Behav Ther* 44:87–102. <https://doi.org/10.1080/16506073.2014.980753>
- Shek DTL (2020) Protests in Hong Kong (2019–2020): a perspective based on quality of life and well-being. *Appl Res Qual Life* 15:619–635. <https://doi.org/10.1007/s11482-020-09825-2>
- Smith KE, Mason TB, Lavender JM (2018) Rumination and eating disorder psychopathology: a meta-analysis. *Clin Psychol Rev* 61:9–23. <https://doi.org/10.1016/j.cpr.2018.03.004>
- Soto JA, Perez CR, Kim Y-H, Lee EA, Minnick MR (2011) Is expressive suppression always associated with poorer psychological functioning? A cross-cultural comparison between European Americans and Hong Kong Chinese. *Emotion* 11:1450–1455. <https://doi.org/10.1037/a0023340>
- Szabo YZ, Warnecke AJ, Newton TL, Valentine JC (2017) Rumination and post-traumatic stress symptoms in trauma-exposed adults: a systematic review and meta-analysis. *Anxiety Stress Coping* 30:396–414. <https://doi.org/10.1080/10615806.2017.1313835>
- Tam L (2019). Why Hong Kong protests are driving families apart and how to discuss the issues without anger. Retrieved from <https://www.scmp.com/lifestyle/family-relationships/article/3032514/why-hong-kong-protests-are-driving-families-apart>
- Tao TJ, Li TW, Yim SSW, & Hou WK (2022). The relation of unrest-related distress with probable depression during and after widespread civil unrest. *Glob Ment Health*, advance online publication. <https://doi.org/10.1017/gmh.2022.27>
- Wang Y, Fu C, Liu Y, Li D, Wang C, Sun R, Song Y (2021) A study on the effects of mindfulness-based cognitive therapy and loving-kindness meditation on depression, rumination, and mindfulness level and quality of life in depressed patients. *Am J Transl Res* 13:4666–4675
- Wang D, Hagger MS, Chatzisarantis NLD (2020) Ironic effects of thought suppression: a meta-analysis. *Perspect Psychol Sci* 15:778–793. <https://doi.org/10.1177/1745691619898795>
- Wegner DM (1994) Ironic processes of mental control. *Psychol Rev* 101:34–52. <https://doi.org/10.1037/0033-295x.101.1.34>
- Wenzlaff RM, Luxton DD (2003) The role of thought suppression in depressive rumination. *Cogn Ther Res* 27:293–308. <https://doi.org/10.1023/A:1023966400540>
- Wenzlaff RM, Wegner DM (2000) Thought suppression. *Annu Rev Psychol* 51:59–91. <https://doi.org/10.1146/annurev.psych.51.1.59>
- Wong SMY, Hui CLM, Wong CSM, Suen YN, Chan SKW, Lee EHM, Chang WC, Chen EYH (2021) Mental health risks after repeated exposure to multiple stressful events during ongoing social unrest and pandemic in Hong Kong: the role of rumination. *Can J Psychiatry* 66:577–585. <https://doi.org/10.1177/0706743720979920>
- Wong SMY, Hui CLM, Suen YN, Wong CSM, Chan SKW, Lee EHM, Chang WC, Chen EYH (2022) The impact of social unrest and pandemic on mental health of young people in Hong Kong: the transdiagnostic role of event-based rumination. *Aust NZ J Psychiatry* 56:376–384. <https://doi.org/10.1177/00048674211025710>

Author contributions

C.A.T. designed the study, reviewed literature, collected the data, and prepared the manuscript. W.L.W. designed the study, reviewed literature, conducted the data analyses, and prepared and revised the manuscript. All authors have contributed to and have approved the final manuscript.

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Competing interests

The authors declare no competing interests.

Ethics approval

The study obtained ethics approval from the Department of Psychology, the University of Hong Kong. All procedures performed in this study involving human participants were in accordance with the ethical standards of the Department of Psychology, the University of Hong Kong, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Consent for publication

Consent for publication was obtained from all individual participants included in the study.

Additional information

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