Posttraumatic stress and dissociative symptoms among adolescents: Prevalence, persistence, and association with depression after one year

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Abstract

Background: Previous studies showed that posttraumatic stress disorder (PTSD) and dissociation are common trauma-related mental health problems. **Aims:** This study examined their prevalence, long-term persistence, and association with depression among adolescents in the general population. **Methods:** We assessed trauma exposure, PTSD, dissociation, and depression in a sample of 1,359 secondary school students in China at two timepoints one year apart. **Results:** Of all participants, 19.0% had either or both probable PTSD and dissociative symptoms at baseline; 52.1% of participants with probable depression presented with co-occurring trauma-related symptoms. The one-year persistence rate for probable PTSD and dissociative symptoms was 47% and 36.1%, respectively. After controlling for demographic variables and baseline depressive symptoms, baseline PTSD symptoms significantly predicted depressive symptoms at follow-up ($\beta = .208$, $p < .001$). **Conclusions:** This study contributes to the limited literature on PTSD and dissociative symptoms in general samples of adolescents, providing important data regarding their prevalence, persistence, and association with depressive symptoms. The results also support the demoralization model. Trauma-related symptoms are prevalent among young people and are associated with more depressive symptoms over time. Early identification of PTSD and dissociation is important.

Keywords: Trauma; PTSD; Dissociation; Depression; Social psychiatry

Posttraumatic and dissociative symptoms among adolescents in China: Prevalence, persistence, and association with depression after one year

Trauma exposure is a major etiological risk factor for subsequent mental health problems (e.g., Lagdon et al., 2014; Longo et al., 2024; Thai et al., 2020). The effects of childhood trauma, in particular, have been increasingly recognized. For example, a recent meta-analysis indicated that childhood maltreatment accounts for 21% to 41% of common mental health problems in Australia (Grummitt et al., 2024). Large-scale community-based studies showed that the prevalence of lifetime trauma exposure among adults was generally above 60% (e.g., Hyland et al., 2021; McLaughlin et al., 2013). In current diagnostic systems (i.e., ICD-11 and DSM-5-TR), posttraumatic stress disorder (PTSD) and dissociation are two major mental health problems associated with trauma exposure.

PTSD was originally believed to be primarily related to war experiences (e.g., known as shell shock), and has been recognized as an official medical condition since 1980 (Herman, 1992). However, research shows that PTSD is also closely related to childhood trauma and interpersonal violence (Paganin & Signorini, 2023; Rameckers et al., 2021). The lifetime prevalence of PTSD was reported to be 8.7% (American Psychiatric Association, 2013).

In addition, dissociation, which refers to failures in the process of integrating one's biopsychosocial experiences (e.g., memories, behaviors, identities), has long been conceptualized as a response to traumatization (Cheung et al., 2023; Dalenberg et al., 2012;

Loewenstein, 2018; Scimeca et al., 2024). The prevalence of dissociative disorders was reported to be 9.4% in the general population (Kate et al., 2020). In the Chinese context, Fung, Wong, et al. (2022) reported that 4.0% of community health service users had clinically significant dissociative symptoms.

Despite the prevalence and significant clinical consequences of PTSD and dissociation, there are two major research gaps in the literature that motivate the present study. First, there is a notable lack of knowledge regarding the prevalence and long-term trajectory of PTSD and dissociative symptoms among young people. While dissociation usually emerges during childhood (Loewenstein, 2018), only two studies have investigated the prevalence of dissociative symptoms in community samples of children and adolescents (Cheng et al., 2022; Fung, Geng, et al., 2023). Although recent investigations have begun to explore the persistence of PTSD and dissociative symptoms among adults over time (Lebois et al., 2022; Po et al., 2023), similar investigations in children and adolescents remain relatively less explored. For example, Wang et al. (2024) tried to explore the relationship between (complex) PTSD and dissociative symptoms, but they only used two items to assess depersonalization and derealization) and it was a cross-sectional study; Cardeña et al. (2022) also conducted a network analysis of the relationship between PTSD and dissociation, but again they also employed a cross-sectional design. Understanding the *long-term* persistence of PTSD and dissociative symptoms in young people is crucial for recognizing the importance of

identifying, preventing, and responding to these conditions as they emerge. Furthermore, it is vital to investigate whether the trajectories of PTSD and dissociative symptoms are comparable at different developmental stages across the lifespan. Therefore, the first goal of this study was to examine the prevalence and trajectories (one-year persistence) of probable PTSD, dissociation, and depression among Chinese adolescents.

Second, the demoralization model posits that trauma-related symptoms are distressing and may lead to other mental health problems (An et al., 2019), while other theories such as the cognitive model (e.g., Lin et al., 2025) also propose that trauma-related distress could lead to depression,. However, few studies have examined the co-occurrence of trauma-related and depressive symptoms, as well as their *longitudinal* relationships. For example, a recent cross-sectional study showed that 62.68% of individuals with depressive symptoms also exhibited PTSD or complex PTSD (Fung, Chien, et al., 2022). Another study of Chinese adolescents with clinical depression found approximately 65% met symptom criteria for PTSD (Ho et al., 2022). While some studies showed that PTSD symptoms could predict subsequent depressive symptoms (e.g., An et al., 2019), the findings are not consistent across studies (Schindel-Allon et al., 2010). The longitudinal associations between dissociation and depressive symptoms also require exploration. Even though the demoralization model suggests that trauma-related symptoms may contribute to depressive symptoms (Schindel-Allon et al., 2010), and although trauma-related subtypes of depression have been proposed (Şar et al.,

2013), the potential long-term associations between trauma-related symptoms on subsequent depressive symptoms among children and adolescents are not yet known. Therefore, this study also examined the co-occurrence of depression and trauma-related symptoms and their cross-sectional and longitudinal relationships.

Taken together, the present study aimed to answer three major research questions. First, we examined the prevalence and one-year persistence of probable PTSD, dissociation, and depression in a large sample of Chinese adolescents. Second, we described the co-occurrence of depression and probable PTSD and dissociative symptoms in this community sample of young people. Third, we tested the hypothesis that baseline trauma exposure, PTSD symptoms, and dissociative symptoms would predict depressive symptoms at one-year follow-up, after controlling for demographic variables and baseline depressive symptoms.

Methods

Participants

We conducted a two-phase survey study in three secondary schools in Nanchang City, China. The first phase was conducted in October to November 2022. Students in the targeted schools were invited to complete a set of standardized self-report questionnaires during class. Written informed consent was obtained from students and their parents. This study obtained ethical approval at Jiangxi Normal University, China. After one year, students were invited to

complete a follow-up survey during class again. Participation in this research was voluntary; no other specific exclusion criteria were applied.

At baseline, 1411 students provided valid responses, among which 1359 also provided complete responses at one-year follow-up. There were no significant differences in most demographic characteristics (location $p = 0.288$, father's education $p = 0.291$, mother's education $p = 0.327$) and clinical symptoms (baseline trauma $p = 0.140$, dissociative symptoms 0.148) between students who provided responses at both timepoints compared with those who were lost to follow-up. However, males ($p = 0.019$) and those with higher depressive symptoms ($p = 0.025$) and PTSD symptoms ($p = 0.006$) at baseline were more likely to drop out. The final sample included 1359 participants who provided complete responses to the questionnaires at baseline and one-year follow-up. Their ages ranged from 11 to 16 ($M = 12.77$; $SD = 0.67$). About half of them were female (47.2%). The demographic backgrounds are reported in Table 1.

Measures

Participants completed a self-report measure of trauma exposure and questions about demographic backgrounds at baseline. In particular, we were able to collect data regarding age, gender, living area (location), and parents' education of the participants. Additionally, they completed standardized self-report measures of depressive symptoms, PTSD symptoms, and dissociative symptoms at baseline and one-year follow-up.

Trauma exposure was assessed using the Life Events Checklist for DSM-5 (LEC-5) (Weathers et al., 2013). The LEC-5 is a 17-item checklist which assesses 17 different types of potentially traumatic events. The Chinese version of the LEC-5 was used in previous studies (Geng et al., 2021) and its face validity was confirmed (Fung et al., 2019). Participants who responded "happened to me," "witnessed it," or "learned about it" were considered as endorsing the traumatic event. We calculated how many potentially traumatic events one endorsed in total (i.e., cumulative trauma).

Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9), which is a commonly-used screening tool for assessing DSM depressive symptoms (Kroenke & Spitzer, 2002). A meta-analysis showed that a cutoff score ranging from 8 to 11 demonstrates acceptable diagnostic properties for detecting major depression, and a cutoff score of 10 is commonly used (Manea et al., 2012). The PHQ-9 has been used in a number of Chinese samples and was reported to have good psychometric properties (Yeung et al., 2008). The PHQ-9 was internally consistent in our sample (baseline $\alpha = .853$, follow-up $\alpha = .898$).

PTSD symptoms were assessed using the PTSD Checklist for DSM-5 (PCL-5) (Bovin et al., 2016). The PCL-5 has 20 items which can be used to assess past-month DSM-5 PTSD symptoms. Participants were instructed to think about the worst event reported on the LEC-5 when answering the question. A systematic review has recommended a cutoff score of 33 to represent probable presence of PTSD (Forkus et al., 2023). The PCL-5 has also been used in

the Chinese context and was reported to have excellent reliability and good validity (Fung et al., 2019). In the present study, a participant was regarded to have a probable PTSD if at least one traumatic event on the LEC-5 and a score of 33 or above on the PCL-5 were reported. The PCL-5 was internally consistent in our sample (baseline $\alpha = .941$, follow-up $\alpha = .960$).

Dissociative symptoms were assessed using the Dissociative Features section of the Self-Report Dissociative Disorders Interview Schedule (SR-DDIS-DF) (Ross & Browning, 2017). The measure, which is part of a well-validated structured diagnostic interview (Ross et al., 1989), has 16 items which can differentiate individuals with and without a dissociative disorder (Ross & Ellason, 2005). The measure has been used to assess dissociative symptoms in both English and Chinese-speaking samples (Fung, Chien, et al., 2023), and a cutoff score of 5 is recommended to identify pathological dissociation (Fung et al., 2018). In a previous study, the SR-DDIS-DF proved to be reliable (ICC =.682 to .752, $p < .001$) among high school students in China too (Fung, Geng, et al., 2023). The SR-DDIS-DF was internally consistent in our sample (baseline $\alpha = .788$, follow-up $\alpha = .817$).

Data analysis

SPSS 27.0 was used for statistical analysis. We first reported the frequency of trauma exposure, probable PTSD (at least one traumatic event plus PCL-5 ≥ 33), and clinically significant dissociative symptoms (SR-DDIS-DF ≥ 5). We then reported the persistence of probable PTSD and dissociative symptoms by calculating the proportion of participants who

screened positive for the condition at baseline and at one-year follow-up – this approach has been used in a number of studies on the persistence of mental health conditions (e.g., Lam et al., 2023; Po et al., 2023). We also reported the co-occurrence of trauma-related symptoms and depression. Pearson correlation analyses were conducted to examine the correlations among the studied variables. Finally, we conducted a hierarchical multiple regression to examine the relationship of baseline trauma exposure and trauma-related symptoms with subsequent depressive symptoms, after controlling for potential demographic covariates and baseline depressive symptoms. In particular, in Step 1, we entered the available demographic variables as well as baseline PHQ-9 scores into the model. In Step 2, we further entered baseline LEC-5, PCL-5, and SR-DDIS-DF scores into the model.

Results

Prevalence and co-occurrence of PTSD, dissociation, and depression at baseline

At baseline, 924 (67.99%) of 1,358 participants reported at least one traumatic event. A total of 100 participants (7.4%) endorsed at least one traumatic event and screened positive for PTSD; 219 (16.1%) reported clinically significant levels of dissociative symptoms. Of all participants, 258 (19.0%) had either or both probable PTSD and dissociation. Additionally, 263 (19.4%) screened positive for depression, among which 137 (52.1%) also reported either or both probable PTSD and dissociation (72 [27.4%] for PTSD and 116 [44.1%] for

dissociative symptoms). Conversely, 72 (72.0%) of those with probable PTSD (n = 100) at baseline and 116 (53.0%) of those with dissociative symptoms (n = 219) at baseline also had depression. The co-occurrence rates are summarized in Table 2.

Persistence of PTSD and dissociation and their association with depression at follow-up

The proportion of participants who reported probable PTSD or dissociation at baseline who also reported the same condition at one-year follow-up were 47% and 36.1%, respectively. The Cohen's kappa agreement between baseline and follow-up results were .404 ($p < .001$) for probable PTSD and .281 ($p < .001$) for dissociation.

Cross-sectional Pearson correlation analyses showed that baseline depressive symptoms were weakly correlated with trauma exposure ($r = .296$, $p < .001$) while moderately correlated with PTSD symptoms ($r = .644$, $p < .001$), and dissociative symptoms ($r = .556$, $p < .001$) reported at baseline.

In addition, baseline trauma exposure ($r = .215$, $p < .001$), PTSD symptoms ($r = .463$, $p < .001$), and dissociative symptoms ($r = .347$, $p < .001$) were also longitudinally correlated with depressive symptoms reported at follow-up, with weak to moderate effects.

We conducted a hierarchical multiple regression to further test the hypothesis that baseline trauma exposure and trauma-related symptoms would predict depressive symptoms at follow up, after accounting for demographic variables and depressive symptoms at baseline. As reported in Table 1, female gender ($\beta = .128$, $p < .001$) and depressive symptoms

($\beta = .488$, $p < .001$) at baseline significantly predicted depressive symptoms at follow-up. Further, baseline PTSD symptoms significantly predicted depressive symptoms at one-year follow-up ($\beta = .208$, $p < .001$), but this relationship was not found between trauma exposure and dissociative symptoms at baseline. Overall, trauma exposure and baseline PTSD and dissociative symptoms contributed an additional 3% variance in explaining depressive symptoms at one-year follow-up, $\Delta F = 17.358$, $p < .001$.

Discussion

This was the first community-based study that examined the prevalence, co-occurrence, and persistence of PTSD and dissociative symptoms, and their long-term associations with depressive symptoms among adolescents. In general, the results provide evidence to support the hypothesis that trauma-related symptoms might be associated with subsequent depressive symptoms, such as proposed by the demoralization model (An et al., 2019), the cognitive model (Lin et al., 2025), and the trauma model of mental illness (Ross, 2007). As hypothesized, PTSD symptoms were found to be a significant predictor of subsequent depressive symptoms in Chinese adolescents.

In a previous study which used the same assessment methods, the prevalence of dissociative symptoms (i.e. SR-DDIS-DF ≥ 5) was 11.2% in a general population sample of high school students in China (Mean age = 15.88) (Fung, Geng, et al., 2023). The prevalence

of dissociation (16.1%) was similar but slightly higher in our present sample. Additionally, 19.0% of our participants had either or both probable PTSD and dissociation. These findings suggest that trauma-related symptoms are prevalent, affecting not only adults but also children and adolescents. It is consistent with the clinical observation that dissociation usually emerges during childhood (Loewenstein, 2018), yet the experience of dissociation among young people remains to need further research (Milkins et al., 2025). The results highlight the urgent need for increased public health attention and intervention strategies in this domain. Screening for PTSD and dissociation among younger people is important too, especially when our results indicate that the vast majority of youths in the community have been exposed to at least one traumatic event.

Additionally, recent studies showed that the persistence rate of ICD-11 PTSD ranged from 36.4% to 44.4% over 6 to 9 months in adults (Lam et al., 2023; Po et al., 2023), while the persistence rate of dissociative symptoms ranged from 63.6% to 64.9% over 9 to 12 months in adults (Fung, Chau, et al., 2023; Fung, Lam, et al., 2023). In our adolescent sample, the one-year persistence rate of probable PTSD (47%) aligns with recent literature. However, the persistence rate of dissociation (36.1%) was notably lower in our sample. One possible explanation is the difference in characteristics between samples – for example, the two adult samples mentioned above were individuals with depressive symptoms and community health service users. However, this discrepancy also suggests that dissociative symptoms might be

less persistent or more transient in youths, highlighting the prospect of altering their trajectory and the importance of early identification and intervention. Given the lack of studies on PTSD and dissociation among children and adolescents, more studies are needed to replicate our findings. In addition, it is also important to investigate what factors could influence the trajectory of trauma-related symptoms among young people.

Another important finding of this study is that 52.1% of participants with probable depression also presented with trauma-related symptoms. The figure is similar to those reported in adult samples (Rytwinski et al., 2013). Furthermore, PTSD symptoms significantly predicted subsequent depressive symptoms. While depression is a major public health concern, it is a heterogeneous condition (Nguyen et al., 2022) and some subtypes might be particularly related to trauma or trauma-related symptoms (Rantala et al., 2018). Our correlation analyses showed that trauma exposure, PTSD symptoms, and dissociative symptoms had a statistically significant cross-sectional and longitudinal correlation with depressive symptoms. The regression analysis further indicated that baseline PTSD symptoms were a significant predictor of subsequent depressive symptoms. Therefore, implementing prevention strategies targeting trauma and trauma-related symptoms should be one of the major focuses in addressing depression in the community. Future studies are required to evaluate whether preventing trauma, PTSD, and dissociation could reduce the long-term risk of developing depression.

This study has the strengths of using a large community-based sample, including longitudinal data, and employing reliable and valid assessment tools. However, there are some limitations. First, we relied on self-report data and did not conduct clinical interviews to confirm the psychiatric diagnoses of the participants. Yet, some scholars have argued that interview data may not be more valid than self-report data in psychiatric studies (Hyland & Shevlin, 2024). Self-report screening could also be valid and have acceptable sensitivity and specificity in psychiatric research (Danböck et al., 2023; Koutsopoulou et al., 2024; Pettrich et al., 2025). Second, although our measures are commonly used and have been validated in Chinese populations, most previous psychometric studies were conducted in adult samples. For example, the PCL-5 cutoff used in the present study was decided by referring to a systematic review (Forkus et al., 2023) rather local norm references. Third, although our sample was sizable, participants were recruited from three schools, and the sample was characterized by a relatively narrow age range concentrated around early adolescence. These limit the generalizability of our findings. Third, due to selective attrition, particularly among males and those with higher baseline depressive and PTSD symptoms, our estimates of symptom persistence may be biased downward, and the magnitudes of regression coefficients might been affected. Fourth, while we investigated the long-term persistence and effects of trauma-related symptoms, we did not ask about whether the participants received mental health services or other potential confounders during the follow-up period. Fifth, we

combined the data from the three schools together and were unable to investigate the data from each school. Potential underestimation of SEs in the regression analysis might also be possible because no clustering adjustment was used. In addition, since we only had data from two time points, future studies should incorporate additional assessment waves to enable cross-lagged panel modeling and thereby rigorously evaluate the bidirectional associations among the key variables.

Concluding remarks

This study contributes to the very limited literature on PTSD and dissociative symptoms in adolescents from the general population. It provides important data regarding their prevalence, persistence, and association with depressive symptoms. The findings suggest that trauma-related symptoms are prevalent among young people and are associated with more depressive symptoms over time. However, we also find that trauma-related symptoms, particularly dissociative symptoms, may exhibit a relatively less persistent course in younger people, presenting an opportunity for early intervention to alter their trajectory. These findings point to the significance of investigating factors that influence this trajectory and the importance of early identification and timely interventions for trauma-related symptoms in children. A trauma-informed approach should be employed to prevent and treat mental health problems including depression among adolescents.

Key Points:

- Trauma-related mental health problems often emerge during childhood, but little is known about their prevalence and persistence among children.
- The one-year persistence rate for probable PTSD and dissociative symptoms was 47% and 36.1%, respectively.
- Dissociative symptoms might be less persistent in young people, highlighting the prospect of altering their trajectory and the importance of early identification and intervention.
- PTSD symptoms significantly predicted subsequent depressive symptoms among children.
- Early identification of PTSD and dissociation among young people is important.

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Table 1. Descriptive statistics at baseline and hierarchical multiple regression predicting depressive symptoms at Time 2

	Descriptive statistics					T2 Depressive symptoms				
	M (SD) / %	B	S.E.	95% CI for B	VIF	β	p	F	ΔR2	ΔF
Step 1								76.483***	.274	76.483***
Gender (Female)	47.2%	1.494	.289	0.927, 2.061	1.030	.128	<.001			
Age	12.77 (0.67)	.240	.216	-0.184, 0.664	1.026	.027	.267			
Location (Rural)	5.2%	-.095	.642	-1.355, 1.165	1.009	-.004	.882			
Father's education (high school or above)	47.8%	.199	.326	-0.441, 0.838	1.311	.017	.543			
Mother's education (high school or above)	41.4%	.159	.331	-0.491, 0.808	1.309	.013	.632			
T1 Depressive symptoms	5.51 (5.11)	.552	.028	0.496, 0.607	1.044	.485	<.001			
Step 2								58.830***	.030	17.358***
T1 Trauma exposure	1.96 (2.25)	.067	.069	-0.068, 0.203	1.230	.026	.327			
T1 PTSD symptoms	11.11 (13.16)	.092	.016	0.061, 0.123	2.212	.208	<.001			
T1 Dissociative symptoms	2.16 (2.65)	.034	.070	-0.104, 0.171	1.801	.015	.632			

Notes
* p < .05 ** p < .01 *** p < .001

Table 2. Co-occurrence of depression, PTSD and dissociative symptoms at baseline

	Participants with depression (n = 263)	Participants with probable PTSD (n = 100)	Participants with dissociative symptoms (n = 219)
Depression	100%	72.0%	53.0%
Probable PTSD	27.4%	100%	27.9%
Dissociative symptoms	44.1%	61.0%	100%