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Executive Function and Resilience as Mediators of Adolescents' Perceived Stressful Life Events and School Adjustment

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This study investigated psychological mechanisms underlying the relationship between stressful life events and school adjustment in Chinese adolescents. The Adolescent Self-rating Life Events Checklist, the Adolescent Executive Function Scale, the Chinese version of the Resilience Scale, and the School-adjustment Scale were administered to 1101 Chinese adolescents (465 males, 636 females), aged 11–19 years, from three secondary schools. Results from serial mediation analysis revealed that perceived stressful life events could affect school adjustment through the mediation of executive function and resilience. The mediation effect contained three paths, the separate mediation effect of executive function, the separate mediation effect of resilience, and the serial mediation effect of executive function and resilience. These findings provide valuable insights into the effect of perceived stressful life events on school adjustment of Chinese adolescents, and suggest that, the researchers and educators could enhance school adjustment in vulnerable groups by improving their executive function and resilience.

Keywords: stressful life events, school adjustment, executive function, resilience, adolescents

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INTRODUCTION

We will encounter various stressful events in our daily life. Indeed, stressors begin to affect individuals from birth (Kramer et al., 2009), and occur in the daily life of virtually every individual (Compas et al., 1993). Stressful life events refer to life experiences that result in changes in an individual's life and those that necessitate coping and adjustment strategies (Compas, 1987). Adolescence is an important transition in academic, cognitive, social, physiological, and physical change (Arnett, 1999), and is a fragile developmental stage characterized by exposure to stressful life events and their debilitating mental health effects (Byrne et al., 2007). The stressful life events among adolescents have attracted the attention of many researchers (Dupéré et al., 2018; Han et al., 2018; Humphreys et al., 2018). Furthermore, a large amount of studies showed that stressful life events can exert profound influence on an individual's maladjustment (Sandler et al., 1994; Rod et al., 2009), and stressful life events in adolescence are correlated with many negative outcomes, such as decreased well-being, impaired mental health, anxiety and depression (Troy and Mauss, 2011). Other studies further pointed that the stressful life events played a role in

triggering high school dropout (Dupéré et al., 2018), and higher levels of perceived stress were associated with decreased hippocampal volume in adolescent (Piccolo and Noble, 2017). Thus, the stressful life events have negative effects on the physical and mental health of adolescents. Adolescence period is in school-age, and the adolescents spend most of their time in school activities. Thus, school adjustment of adolescents is an important problem that the whole society need pay special attention to (Maclean et al., 2016; Chen et al., 2019). However, the mediating processes that account for the association between perceived stressful life events and school adjustment are still being identified. Therefore, it is urgent to explore the association between perceived stressful life events and school adjustment and the psychological mechanisms behind this association among adolescence.

Perceived Stressful Life Events, Executive Function, and School Adjustment

Executive function refers to a family of top-down mental processes that are essential for tasks requiring concentration and attention, performed in such instances when relying on instinct or intuition would be ill advised or insufficient. Core executive functions include inhibition control, working memory, and cognitive flexibility (Diamond, 2013). Prior studies provide indirect support for the prediction that stressful life events impair executive function in adolescence. For example, many studies showed that early life stress exposure was associated with poorer adult cognitive function in memory domains and executive function in healthy and psychopathology populations (Navalta et al., 2006), and individuals who reporting predictive early life stress exhibited poorer processing speed and working memory performance (Saleh et al., 2017). In addition, Pukay-Martin et al. (2003) found that, for HIV-positive subjects, stressful life events were related to poor performance on measures of executive function, attention, and processing speed, while positive life events were related to better performance. In addition to behavioral evidence, evidence from neuroimaging study also suggested that, greater activation in brain regions responsible for executive functions accounted for the association between exposure to chronic stress and less use of adaptive coping among adolescents (Reising et al., 2018). It's not hard to come to conclusion that, stressful life events may have a negative effect on executive function, the more stressful life events the individuals perceived, the individuals may show worse executive function performance. In general, impaired executive function is viewed as maladjusted cognitive activity and has been shown to be related to anxiety and depression (Brosschot et al., 2006; Greenaway and Howlin, 2010). In addition, other studies pointed to the effects of executive function on children's academic performance, specifically in reading, mathematics, and interpersonal relationships (Clark et al., 2002; Blair and Razza, 2007; Fitzpatrick et al., 2014), as well as late adolescents' academic performance (Baars et al., 2015). More importantly, the prevailing argument is that impairments in executive function can lead to significant and lasting adjustment difficulties (Biederman et al., 2004; Ellis et al., 2004). Consistent with this argument, several longitudinal studies suggested that executive function was a predictor of children's school adjustment (Jacobson et al., 2011; Masten and Tellegen, 2012) and was regard as a determinant of academic performance in late adolescents university students (Baars et al., 2015). Accordingly, perceived more stressful life events may lead to impairments in execution function, which in turn may affect the school adjustment of the adolescents. However, most of studies in the domain of executive function were conducted by experimental paradigm. Laboratory studies on executive function have been developed comprehensively, but executive function are less measured by self-reported questionnaires (Gioia et al., 2000; Baars et al., 2015). Furthermore, because of its practicality and flexibility, the self-reported executive function scale can get more observable and self-insight data than laboratory tests (Barkley and Murphy, 2011; Baars et al., 2015). Self-reported executive function scale provides practitioners a reliable and effective assessment tool to assess the level of executive function. Accordingly, executive function, being measured by questionnaires and being considered as a fundamental human cognitive factor, might play a significant role in the influence between perceived stressful life events and school adjustment among adolescents.

Perceived Stressful Life Events, Resilience and School Adjustment

Resilience can be broadly defined as the potential or manifested capacity of a dynamic system to adjust successfully to disturbances that threaten the function, survival, or development of the system (Masten, 2015). As Masten (2015) has suggested, the research in the domain of resilience mainly focuses on adjustment under challenging circumstances. Although everyone will encounter various life stresses, not everyone will show negative outcomes in the face of stress, and some exhibit resilience even in the face of high levels of stress exposure. Many studies found the negative association between stressful life events and resilience. For example, Cole et al. (2015) found a negative relationship between stress of academic performance and ego resilience, which provides preliminary evidence for this relationship; other study showed that the resilience level of Sichuan earthquake survivors was lower than that of those who didn't experience the earthquake (Ni et al., 2015). More importantly, many recent studies from adolescent population also indicated that, the stressful life events were negatively associated with resilience (Anyan and Hjemdal, 2016). Thus, stress may have an adverse impact on an individual's resilience.

In addition, a large scale of studies showed that, resilience was positively relate to people's mental health (Catalano et al., 2011; Li et al., 2012) and quality of life (Migerode et al., 2012), while was negatively associated with depression or anxiety (Anyan and Hjemdal, 2016). As an important stress coping resource, resilience also contributes to psychological and behavioral adjustment. For example, Luthar et al. (2000) found that, resilience was particularly important in forming psychosocial

adjustment (e.g., at-risk children who appeared resilient, based on high academic grades, also showed positive adjustment based on persevering classroom behaviors as perceived by others). Other studies further found that, resilience had a predictive role in school adjustment among elementary school students (Lee et al., 2014) and middle school students (Zhu et al., 2012). More importantly, a recent study found resilience played a mediator role of the association between academic stress and school life adjustment among adolescent (Kim et al., 2018), which provides more direct evidence for the possible mediating role of resilience on the association between perceived stressful life events and school adjustment in adolescents. Thus, stressful life events affect resilience, and resilience has an influence on school adjustment, it is reasonable to predict that, resilience plays a mediator in the relationship between perceived stressful life events and school adjustment in adolescents.

Perceived Stressful Life Events, Executive Function, Resilience and School Adjustment

Although perceived stress has a detrimental effect on resilience, Masten and Tellegen (2012) argued that, executive function provided much of the capacity for resilience in humans. Benight and Cieslak (2011) argued that, the cognitive determinants played important role in successful adjustment, and proposed a self-efficacy based model of resilience. According to the self-efficacy based model of resilience, the focus on cognitive factors could easily apply in theoretical models to enhance our understanding of resilience. Due to executive function's effect on goal-oriented behavior, having effective executive function may enhance individuals' sense of self-efficacy, or the feeling that one has abilities to accomplish tasks. For example, executive function had been found to be related to self-efficacy beliefs regarding exercise (McAuley et al., 2011) in older adults, and driving ability (Rike et al., 2015) in individuals with brain injury. As a part of broader motivational system, the self-efficacy may be a key component of resilience (Masten, 2014). These studies provide preliminary evidence for the relationship between executive function and resilience from theoretical and empirical aspects. Additionally, Greenberg (2006) suggested that the interventions aimed at improving children's executive function could promote resilience, implying the important role of executive function ability in resilience. More importantly, executive function was found to be associated with resilience in adolescents with depressed mothers (Davidovich et al., 2016), as well as in first-year undergraduate students (McKee, 2017). Thus, the concrete theoretical and empirical bases support the close association between executive function and resilience. Further, as discussed previously, stressful life events may lead to impaired executive function and resilience may contribute to better school adjustment in adolescence. Therefore, it is reasonable to predict that, the less stressful life events the adolescents perceived may be associated with better executive function, executive function has positive effect on adolescents' resilience, and resilience may contribute to better school adjustment in adolescence.

The Current Study

In sum, the purpose of this study is to examine the influence of stressful life events on the school adjustment of adolescents and the potential mediators (e.g., execution function and resilience) behind this association. Adolescence is a fragile developmental stage characterized by exposure to stressful life events and the adolescents' school adjustment is an important problem that the whole society need pay special attention to (Lan et al., 2019), exploring the potential psychology mechanisms behind the association between stressful life events and school adjustment in adolescence may contribute to reduce the negative impact of stressful life events on their school adjustment, thus having important theoretical and practical significance (Benight and Cieslak, 2011). Based on the literature review, we hypothesized that:

H1: Executive function would mediate the impact of stressful life events on school adjustment.
H2: Resilience would mediate the impact of stressful life events on school adjustment.
H3: Executive function and resilience would serially mediate the impact of stressful life events and school adjustment. This mediation model contains three paths.

MATERIALS AND METHODS

Participants

Participants were 1175 adolescents randomly recruited from three secondary schools in the southwest of China. Because the invalid questionnaires of some participants, a total of 74 adolescents were excluded from analyses. Thus, data from 1101 adolescents were used after data screening procedures (465 males, 636 females, aged 11–19 years, M = 14.77). All of adolescents and their parents had provided written informed consent before data collection, and then all of adolescents filled out all the paper questionnaires in pen. This study was carried out in accordance with the recommendations of the Human Ethics Committee of the Southwest University. All the adolescents gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the Human Ethics Committee of the Southwest University.

Measures

Perceived Stress

The Adolescent Self-rating Life Events Checklist (ASLEC; Xin and Yao, 2015) was originally used to assess the severity of recent negative life events during the past 6 months. The respondents rated the impact of each negative life event on a 5-point Likert scale (1 = *not at all* to 5 = *extremely severe*). This measure incorporates 26 items, including five dimensions: being punished, loss, relationship pressure, learning pressure, and adaptation problems (Xin and Yao, 2015). The higher the score, the more stressful life events were perceived. This scale has been found to be reliable and valid among Chinese adolescents (Xin et al., 2016). In current study, the Cronbach's alpha was 0.934, the composite

reliability was 0.896, the average variance extracted was 0.633 and the MacDonald's omega was 0.855, 95% CI = 0.837 to 0.869.

Executive Function

The Adolescent Executive Function Scale (Huang et al., 2014) was originally used to assess executive function status in adolescents. This scale contains 21 items that consist of three factors, namely, inhibition control, cognitive flexibility, and working memory. The respondents rated how often the specific behaviors happen in the past 6 months on a 3-point Likert scale (1 = *not at all* to 3 = *often*). Higher scores on this metric typically indicate worse executive function performance. However, in the current study, all items were reverse-scored so that high scores indicated better executive function performance. The Cronbach's alpha in the current study was 0.852, the composite reliability was 0.793, the average variance extracted was 0.561, and the MacDonald's omega was 0.850, 95% CI = 0.832 to 0.864.

Resilience

Resilience was originally assessed with the Chinese version of the Resilience Scale (RS; Wagnild and Young, 1993), which has been widely used in China and has been shown to be a reliable and valid measure in Chinese adolescents (Zheng et al., 2011). This scale consists of 25 items arranged in two subscales: personal competence and acceptance of the self and life. The higher the score, the higher the resilience level of the respondents. Participants rated the extent to which each item reflected them on a 7 - point Likert scale (1 = *disagree* to 7 = *agree*). In this study, the Cronbach's alpha reliability coefficient was 0.880, the composite reliability was 0.908, the average variance extracted was 0.831, and the MacDonald's omega was 0.855, 95% CI = 0.841 to 0.869.

School Adjustment

School adjustment was originally assessed with the School-adjustment Scale (Sung et al., 2014) and contains 21 statements. The questionnaire includes three dimensions: teacher-student relationships, peer relationships, and self-adjustment. A 6-point Likert scale (1 = *strongly disagree* to 6 *strongly agree*) was used to indicate the agreement level of each statement with regard to school adjustment. The higher the score, the higher the school adjustment level of the respondents. In the current study, the Cronbach's alpha value is 0.852, the composite reliability was 0.837, the average variance extracted was 0.631, and the MacDonald's omega was 0.855, 95% CI = 0.838–0.869.

Analytic Strategy

Our analytic approach involved two steps. Prior to the examination of the hypothesized mediational model regarding the mediating effects of execution function and resilience on the relation between perceived stressful life events and school adjustment, descriptive statistics and correlations were conducted with for all variables in the total sample by SPSS 21.0. Then, a two-step procedure was applied to analyze the mediation effect (Anderson and Gerbing, 1988; Zhang et al., 2016). Firstly, the measurement model, which involved four latent variables, was tested to assess the goodness of fit represented by its explicit indicators. Secondly, if the index of measurement model met the requirements, the maximum likelihood estimation examined the structural equation modeling (SEM). Mplus 7.4 was used to evaluate the hypothetical model's data fit (Muthén and Muthén, 1998/2012). According to previous studies (Schafer and Graham, 2002; Graham, 2009; Curtis et al., 2016), missing data were handled using the full information maximum likelihood (FIML) procedure. SEM was performed using the robust maximum likelihood (MLR) estimator to account for identified data non-normality. Indirect effects were tested using bootstrapping procedures (Preacher and Hayes, 2008).

We used the following indices to evaluate the model's data fit: the confirmatory fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the self-reunion multiple regression (SRMR). According to previous study, values >0.90 for the CFI and TLI, and <0.6 and <0.8 for the RMSEA and SRMR, respectively, were considered to indicate good model fit (Hu and Bentler, 1999).

RESULTS

Descriptive Statistics and Correlations of Variables

Table 1 presents the descriptive statistics, including means, standard deviations, and Pearson's bivariate correlations for all observed variables. Executive function was positively correlated with resilience, and resilience was positively correlated with school adjustment. Although other variables are statistically significantly interrelated ($p < 0.01$), their correlation coefficients were less than 0.30, which cannot be considered as a significative correlation.

Measurement Model

Confirmatory factor analysis (CFA) was conducted to test the measurement model comprising the four interrelated latent variables: stressful life events, executive function, resilience, and school adjustment. The latent stressful life events variables were described as a being punished factor, loss factor, relationship pressure factor, learning pressure factor, and adaptation problem factor. The latent executive function variables were described by inhibitory control, working memory, and cognitive flexibility. The resilience latent variable was described by personal competence, and acceptance of self and life. The school adjustment variable was described by teacher-student relationships, peer relationships, and self-adjustment. The measurement model fit the observed data well: $\chi^2 = 420.324$, df = 59, $\chi^2/df = 7.124$, CFI = 0.925, TLI = 0.901, SRMR = 0.051, and RMSEA = 0.075.

Structural Model

The model examined the associations between stressful life events, executive function, resilience, and school adjustment. Results showed acceptable data fit, $\chi^2 = 420.324$, df = 59, $\chi^2/df = 7.124$, CFI = 0.925, TLI = 0.901, SRMR = 0.051, and RMSEA = 0.075. Specifically, the results provided support for H1 [i.e., executive function mediates the impact of stressful life

TABLE 1 | Descriptive statistics and intercorrelations between observed variables.

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Being punished factor	2.05	1.12	-												
2. Loss factor	2.22	1.17	0.56**	-											
3. Relationship pressure factor	3.23	1.05	0.48**	0.34**	-										
4. Learning pressure factor	3.32	1.04	0.46**	0.44**	0.47**	-									
5. Adaption pressure factor	2.41	0.96	0.51**	0.53**	0.51**	0.51**	-								
6. Inhibitory control	2.23	0.46	−0.15**	−0.14**	−0.31**	−0.26**	−0.22**	-							
7. Cognitive flexibility	2.21	0.40	−0.14**	−0.18**	−0.27**	−0.34**	−0.31**	0.33**	-						
8. Working memory	2.23	0.51	−0.18**	−0.21**	−0.25**	−0.23**	−0.22**	0.40**	0.30**	-					
9. Personal competence	4.58	0.84	−0.11**	−0.08**	−0.19**	−0.17**	−0.21**	0.33**	0.39**	0.32**	-				
10. Acceptance of self and life	4.58	0.84	−0.15**	−0.11**	−0.20**	−0.20**	−0.23**	0.22**	0.24**	0.20**	0.67**	-			
11. Peer relationship	4.22	0.75	−0.11**	−0.12**	−0.25**	−0.25**	−0.21**	0.38**	0.34**	0.29**	0.50**	0.41**	-		
12. Teacher−student relationship	2.96	0.76	−0.10**	−0.12**	−0.19**	−0.19**	−0.33**	0.28**	0.28**	0.18**	0.39**	0.32**	0.40**	-	
13. Self−adjustment	4.00	0.85	−0.10**	−0.10**	−0.28**	−0.28**	−0.30**	0.31**	0.39**	0.24**	0.57**	0.53**	0.54**	0.46**	-

**$p < 0.01$.

events on school adjustment (β = −0.200, *SE* = 0.041, $p < 0.001$)], H2 [i.e., resilience mediates the impact of stressful life events on school adjustment (β = 0.065, *SE* = 0.029, $p = 0.025$)], and H3 [i.e., stressful life events exert a non-significant indirect effect on adolescent's school adjustment through the three-path mediation effect of executive function and resilience (β = −0.055, *SE* = 0.042, $p = 0.191$)] (see **Figure 1**). We subsequently used Mplus' model constraint command to create auxiliary variables and used bootstrapping in order to compare the mediation effects (Muthén and Muthén, 1998/2012; Preacher and Hayes, 2008). Executive function affected school adjustment more strongly than resilience (β = −0.265, *SE* = 0.054, $p < 0.001$, CI = −0.207 to −0.073; **Table 2**).

DISCUSSION

The purpose of present study was to explore the role of executive function and resilience in the relationship between perceived stressful life events and school adjustment among adolescents. Consistent with our hypotheses, perceived stressful life events affected school adjustment through the mediation of executive function and resilience. The mediation effect contained three paths: the separate mediation effect of executive function, the separate mediation effect of resilience, and the serial mediation effect of executive function and resilience. The serial mediation model indicated that, the experience of multiple stressful life events impeded the development of executive function, adversely affected the formation of resilience, and led to poor school adjustment among adolescents, which is consistent with results reported in prior studies (Best et al., 2009; Duckworth et al., 2012).

TABLE 2 | Standardized indirect effects from stressful life events to school adjustment.

Indirect effect	β (standardized indirect effect)	*SE*	*p*	95% CI standardized indirect effect
From stressful life events to school adjustment via executive functions	−0.200	0.041	<0.001	−0.259, −0.103
via resilience	0.065	0.029	0.025	−0.013, −0.008
via executive functions and resilience	−0.219	0.030	<0.001	−0.231, −0.118

The findings from the current study revealed the mediating effect of executive function on the association between perceived stressful life events and school adjustment among adolescents. The result is consistent with previous studies regarding the negative link between stressful life events and executive function (Pukay-Martin et al., 2003; Saleh et al., 2017), the positive link between executive function and school adjustment (Jacobson et al., 2011; Masten and Tellegen, 2012; Fitzpatrick et al., 2014), and the close link between stressful life events and negative outcomes during adolescence (Nishikawa et al., 2018). A large scale of studies indicated that, executive function contributed to successful adjustment to school during childhood (e.g., school readiness and subsequent academic achievement) (Espy et al., 2004; Bull et al., 2008; Clark et al., 2010; Welsh et al., 2010; Hughes and Ensor, 2011; Neuenschwander et al., 2012), and academic success during early adolescence (Lafavor, 2018). More importantly, other study revealed the mediating role of executive function on the association between poverty and academic delays (Nesbitt et al., 2013). Obviously, poverty could be regarded as stressful life event. The current study confirms previous findings in children and adults are also applicable to the adolescent, and further show that perceived stressful life events have a negative influence on school adjustment of the adolescents via affecting executive function. Thus, the findings from the current study suggest that, the more stressful life events the adolescents perceived, may lead to worse executive function performance, which, in turn, have negative effects on the school adjustment.

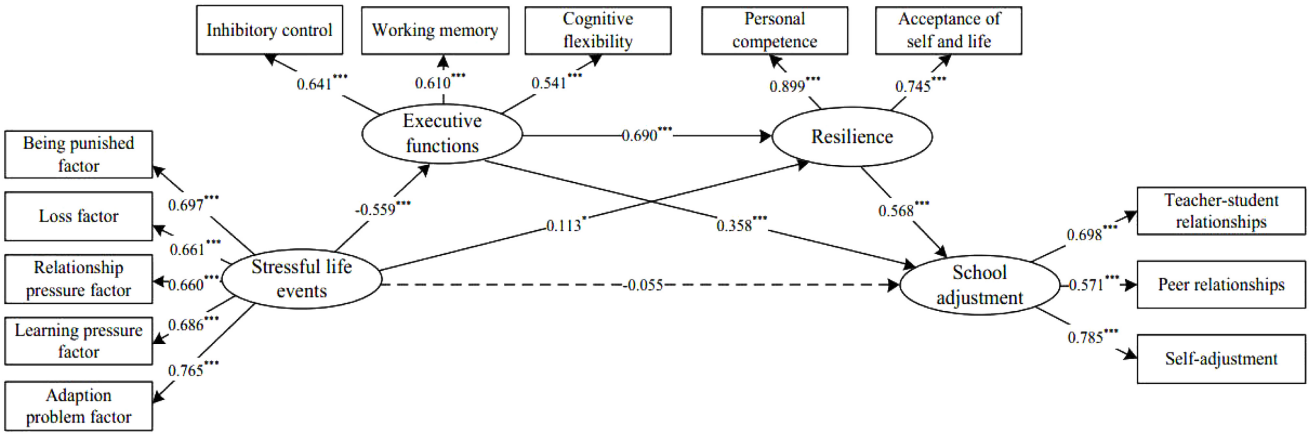

FIGURE 1 | Standardized parameter estimates of the final model. ***$p < 0.001$, *$p < 0.05$.

The findings from the current study also indicate the mediating effect of resilience on the association between perceived stressful life events and school adjustment among adolescents. Some previous studies found that, the more stressful life events could lead to poorer resilience (Anyan and Hjemdal, 2016). Contrary to previous studies, the findings from current study show that, stressful life events could positively predict resilience among adolescents. Inconsistency in findings may be due to differences in measuring tools for variables and heterogeneity of participants with regard to age. In general, the stressful life events that individuals perceived in daily life belong to appropriate stress, and these appropriate stresses may help to develop adolescents' resilience to stress. According to the challenge model of resilience, when appropriately exposed to risk that can be overcome, the individual, could learn to deploy resources to overcome future stress (Fergus and Zimmerman, 2004), which implies the special significance of appropriate stress on developing individuals' resilience. The findings from present study seem to support the challenge model of resilience. Indeed, recent adversity may negatively affect individuals in the short term, while prior experience may yield a greater propensity for resilience over a prolonged period (Seery, 2011). In addition, previous research found a mediator role of resilience in the association between academic stress on school life adjustment among adolescent (Kim et al., 2018), and a moderating role of resilience on the relationship between perceived stress and binge eating symptoms among young adult women (Thurston et al., 2018). These studies demonstrate the important role of resilience on the relationship between stress and mental health. The current study confirms previous findings, and shows that, resilience is another intervening variable between perceived stress and school adjustment.

More interestingly, the current study suggests that, the perceived stressful life events may affect school adjustment of adolescents via the serial mediation effect of executive function and resilience, which emphasizes the serial effect of executive function and resilience on the association between stressful life events and school adjustment. The finding that executive function predicts resilience is consistent with previous research (Davidovich et al., 2016; McKee, 2017), and further supports the notion that the poor executive function may represent a risk factor that leads individuals to be less resilient to life stresses, which can have a negative impact on school adjustment. Additionally, previous work demonstrated that stressful life events could predict poorer executive function (Pukay-Martin et al., 2003), had influence on an individual's maladjustment (Sandler et al., 1994; Rod et al., 2009), and were correlated with many negative outcomes (e.g., anxiety and depression) (Troy and Mauss, 2011). Furthermore, other study suggested that the association between stressful life events and teenage students' social adjustment can be explained in part by social problem-solving skill (Yang et al., 2012), implying that stressful life events may have negative effect on cognitive ability. More importantly, many previous researches found the important effect of executive function on resilience (Davidovich et al., 2016; McKee, 2017), and the important role of resilience on the association between perceived stress and mental health (García-Izquierdo et al., 2018; Thurston et al., 2018). The present study extends previous works by demonstrating that, stressful life events are associated with poorer executive function, which in turn predicts resilience and school adjustment in adolescents. Overall, these findings increase our understanding of how stressful life events might be associated with school adjustment among adolescents.

The current study is not without limitations, which also implies suggestions for future research. First, since the study was cross-sectional, it precluded deriving any causal relationship between the variables. To address this issue and facilitate a better understanding of causal mechanisms, future research should conduct longitudinal, experimental or intervention studies. Second, the present study is one of the few studies to utilize a self-reported executive function scale among adolescents. In order to achieve a better understanding of the role of executive function in the relationship between perceived stressful life events and school adjustment among adolescents, future research should compare the differences between experimental and self-report methods in adolescent population. Third, in the present study,

participants completed the questionnaires with pen and paper, questionnaire survey was conducted in a physical way may have some limitations, that is, lack of control of the time dedicated to each response and some data encoding errors, etc.,. Some online questionnaire survey App (e.g., SurveyMonkey) could overcome these limitations. In order to obtain more scientific and rigorous research data, online questionnaire survey App should be used more often in the future. Forth, the present study was conducted in the background of Chinese population, the findings cannot provide differences between Chinese population and the population of the West in the psychological mechanisms underlying the relationship between stressful life events and school adjustment. Therefore, cross-cultural studies should be conducted to compare the differences between eastern and western population in the future.

CONCLUSION

In conclusion, to the best of our knowledge, the current study represents a new attempt to explore executive function and resilience as the underlying mechanisms in the relationship between perceived stressful life events and school adjustment among adolescents. Furthermore, as the significant indirect effects of perceived stressful life events on school adjustment separately via executive function or resilience, and a serial mediation effect of executive function and resilience were found, the current study also sheds light on how adolescents who perceived more stressful life events achieve worse school adjustment. The findings from the current study are significantly meaningful for conducting effective measures to break the cyclical relationship between stressful life events and school adjustment, thus having some practical implications.

AUTHOR CONTRIBUTIONS

YZ and CG collected the data together. YZ, XZ, and CG analyzed the results and wrote the manuscript. LZ participated in the revision of the manuscript.

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