Impulsivity Mediates the Association Between Parenting Styles and Self-harm in Chinese Adolescents

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Research article

Keywords: Impulsivity, Parenting styles, Self-harm, Mediation, Path analysis

DOI: https://doi.org/10.21203/rs.3.rs-76962/v1

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Abstract

**Background:** Parenting styles were positively associated with self-harm (SH) in adolescents. Nevertheless, little is known concerning the mechanism behind this association. This study primarily aims to evaluate the potential mediation of impulsivity in the association between parenting styles and SH in Chinese adolescents.

**Methods:** A population-based sample of 3146 adolescents in southwest China were surveyed by using self-administered questionnaires. Logistic regression analyses were used to measure the association between parenting styles and SH. Path model further examined mediation of impulsivity in this association.

**Results:** The prevalence of SH was 47.0% (95% CI: 36.3%-58.0%). Impulsivity and mother’s over-protection were significantly associated with SH. Impulsivity showed a salient mediation, accounting for 23.4% of the total association. Parenting styles of father and mother showed disparate roles in the hypothesized path model.

**Conclusions:** Our major findings suggested that, for Chinese adolescents with harsher maternal parenting style, impulsivity-centered intervention measures might be effective in reducing parenting style related SH.

1. **Background**

Self-harm (SH), which refers to direct and deliberate destruction of one’s own body regardless of the intention [1], embraces behaviors such as scratching or piercing skin, self-hitting, burning, etc. Involvement in SH is associated with elevated risk of various mental health problems and suicidal behaviors [2, 3]. Comparing with adulthood, adolescence is a period with more common SH behaviors, as a matter of fact, most researches that centered on influencing factors which contributing to occurrence, repetition and severity of SH are done in adolescents [4]. Recently, a meta-analysis reported an overall SH prevalence of 22.4% among Chinese teenagers [5]. Build on a cornucopia of existing studies, individual and family negative life events, psychiatric and psychological abnormalities, sociodemographic factors significantly increase the risk of SH in adolescents [6].

Parenting styles are a series of psychological constructs representing standard strategies that parents use in their child rearing, which generally includes dimensions of rejection, emotional warmth, and over-protection [7]. Parenting styles are extremely influential in the development of child. Adverse parenting can result in severe consequences, for instance, increase the risk of children's mental health issues (such as depression, anxiety, and hostility) and addictive behaviors [8, 9]. Similarly, some studies revealed that negative parenting styles were significantly related to SH or suicidal behaviors in youngsters [10, 11]. With this regard, understanding the path through which the association between parenting styles and SH develops is of important secular significance for devising intervention measures of parenting styles related SH.
Impulsivity can be reflected by a multitude of behaviors or personality traits, including poor planning skills and persistence, predisposition to act abruptly, especially in the presence of negative emotions [12]. Impulsivity has been linked to many risk behaviors among adolescents, like substance and alcohol use, gambling, unsafe sexual behaviors [13, 14]. Also, impulsivity is regarded as a possible phenotype of SH [15]. Abundant studies had been published regarding to the positive connection between SH and impulsivity, they generally concluded that individuals with higher level of impulsivity were found more likely to report SH behaviors [16]. Being viewed as a personality trait, impulsivity is associated with parenting styles [17]. Furthermore, some studies disclosed that the association between childhood adverse experiences and SH can be mediated by impulsivity [18, 19]. Therefore, as negative parenting styles in essence a particular form of childhood adverse experience, it is reasonable to suspect that impulsivity may play as a mediator in its association with SH. However, to our best knowledge, this hypothesis has not been thoroughly investigated.

In the present study, we aimed to discuss the link between parenting styles and SH in a large population-representative sample of Chinese adolescents, we put an emphasis on examining the suspected mediation via impulsivity in this association. Our major hypotheses are: 1) Parenting styles are significantly associated with SH in Chinese adolescents; 2) Impulsivity significantly mediates this association; 3) Parenting styles of father and mother were discordantly associated with SH of adolescents.

2. Material And Method

2.1 Study design

The present study was implemented in Lingcang city of southwestern China Yunnan province from December 1 to December 13, 2019. In consideration of the representativeness of the sample, we applied a three-stage random cluster sampling strategy: in stage one, Linxiang district was randomly chosen from all 8 districts and counties within Lincang; in stage two, 5 primary schools, 5 junior middle high schools and 4 senior middle high schools were randomly chosen; finally, 3–4 classes were randomly selected within each chosen school. Students within the chosen classes were excluded if they were: 1) Illiterate; 2) Having severe psychological problem(s); 3) With physical disorder; 4) With acoustic or communication dysfunction; 5) Refused to participate. Meanwhile, due to the fact that we also measured suicidal ideation and behaviors of the study subjects, and existing literature suggested that children can fully understand the notion of suicide until age 10 or above [20], the following inclusive criteria were further applied: 1) Aged above 10 and below 18 years; 2) Residents in the survey area for at least six months per year. Ethical approval of the study protocol was obtained from the Ethics Review Board of Kunming Medical University prior to the survey. Written informed consents from both legal guardians and the participants were obtained prior to the survey.

2.2 Measurements
Data were collected using a self-administered questionnaire from all participants. After providing informed consent, all participants filled the questionnaire within about 40 minutes. In order to improve survey quality, each questionnaire was carefully reviewed by pre-trained personnel at site immediately after finished, who were either undergraduates recruited in a local university or postgraduates with a background of psychiatry or public health from Kunming Medical University. The structured questionnaire contains several parts, which measured general characteristics, parenting styles, SH behaviors, impulsivity, mobile phone use, suicidal ideation and behavior, etc. Other details of this questionnaire can be referred to in our previous publication [21].

**SH behaviors.** Self-harm behaviors were collected by the Modified version of Adolescents Self-Harm Scale (MASHS) developed by [22]. The participants were asked to complete 18 questions about the most commonly reported SH behaviors among Chinese adolescents to evaluate lifetime frequency and severity of SH.

**Parenting styles.** The Short-Egna Minnen Barndoms Uppfostran-Chinese (S-EMBU-C) was administered to assess parenting styles during childhood phase [23]. This scale measures father’s and mother’s parenting styles separately by using a uniform 21-item questionnaire. All items can be categorized into 3 dimensions: rejection, over-protection and emotional warmth. The answer to each item was coded by a 4-point scale from “never” (1 point) to “very often” (4 points). A higher combined score indicates a parenting style that was more frequently used. For our analytical sample, the Cronbach’s α was 0.827 (Bootstrap 95% CI: 0.816–0.836).

**Impulsivity.** Barratt Impulsiveness Scale (BIS) was adopted to evaluate impulsivity of the participants. BIS contains 30 items and three subscales, which assessing impulsive planning, motor impulsiveness, and cognitive impulsiveness [24]. Each item can be scored from 1 to 5 based on a 5-point scale. The total weighted score for BIS ranges from 0 to 100, with a higher score indicates stronger impulsivity. For our analytical sample, the Cronbach’s α was 0.919 (Bootstrap 95% CI: 0.915–0.923).

### 2.3 statistical analysis

Descriptive analyses were used to delineate distributional characteristics of the participants. Based on univariate analysis, multivariate Logistic regression models were used to measure the independent association between parenting styles, impulsivity and SH. The possible mediation via impulsivity was evaluated by path analysis. All statistical analyses were performed using R software (Version 3.6.2, The R Foundation for Statistical Computing, Vienna, Austria). In survey studies, especially for cluster sampling design, intercorrelation between the participants may exist, therefore we used survey packages to control for this possible unequal sampling probability throughout. The significance level was set as a two-tailed p-value less than 0.05, only with the exception for univariate analysis, in which a less stringent p-value of 0.10 was used.

### 3. Results
3.1. General features of study subjects

Initially, we identified a total of 3241 adolescents in the 14 chosen school, 88 were further excluded since they did not meet the age inclusion criterion of this study, 7 failed quality check because of missing information in critical items, leaving 3146 eligible adolescents included into the final analysis, with an effective response rate of 97.1%. Table 1 presented summary statistics for the analytical sample: the mean of age was 13.3 years; 54.3% of the participants were girls; 1480 adolescents reported SH behaviors, accounted for 47.0% (95% CI: 36.3%-58.0%); the median of the BIS was 41.67 (inter-quartiles range, IQR: 10.84); the medians for father’s parenting styles were 7 (rejection, IQR:3), 15 (emotional warmth, IQR:8) and 16 (over-protection, IQR:4), whereas for mother’s parenting styles they were 8 (rejection, IQR:3), 14 (emotional warmth, IQR:7) and 17 (over-protection, IQR:4).
| Features                      | N (%)              | Mean (SE) / Median (IQR) |
|-------------------------------|--------------------|--------------------------|
| **Demographic**               |                    |                          |
| Sex                           |                    |                          |
| Boys                          | 1437 (45.7)        |                          |
| Girls                         | 1709 (54.3)        |                          |
| Age (Mean (SE))               | 13.32 (0.60)       |                          |
| Ethnicity (%)                 |                    |                          |
| Han                           | 2112 (67.1)        |                          |
| Other                         | 1034 (32.9)        |                          |
| **Grade**                     |                    |                          |
| Primary school                | 1132 (36.0)        |                          |
| Junior high school            | 1069 (34.0)        |                          |
| Senior high school            | 945 (30.0)         |                          |
| **Socioeconomic**             |                    |                          |
| Father’s age (Mean (SE))      | 42.27 (0.51)       |                          |
| Mother’s age (Mean (SE))      | 39.49 (0.50)       |                          |
| **Father’s education level**  |                    |                          |
| Elementary school and below   | 885 (28.1)         |                          |
| Junior high school and above  | 1932 (61.4)        |                          |
| Missing or unknowns           | 329 (10.5)         |                          |
| **Mother’s education level**  |                    |                          |
| Elementary school and below   | 1077 (34.2)        |                          |
| Junior high school and above  | 1816 (57.7)        |                          |
| Missing or Unknowns           | 253 (8.1)          |                          |
| **Self-harm behavior**        |                    |                          |
| Yes                           | 1480 (47.0)        |                          |
| No                            | 1666 (53.0)        |                          |
| **Impulsiveness (Median (IQR))** |               |                          |
### Features | N (%) | Mean (SE) / Median (IQR)
---|---|---
Combined score | 41.67(10.84) |
Motor impulsiveness (Dimension 1) | 30(25) |
Assessing impulsive planning (Dimension 2) | 47.5(30) |
Cognitive impulsiveness (Dimension 3) | 45(15) |
Degree of Impulsivity |
Low (Combined score < 41.67) | 1644(52.25) |
High (Combined score >= 41.67) | 1445(45.93) |
Missing | 57(1.82) |
Parental rearing style (Median (IQR))
Father |
Rejection | 7 (3) |
Over-protection | 16 (4) |
Emotional Warmth | 15 (8) |
Mother |
Rejection | 8 (3) |
Over-protection | 17 (5) |
Emotional Warmth | 14 (7) |

### 3.2. SH behaviors, parenting styles and impulsivity

For a better understanding of the results, we reversed the score of emotional warmth, therefore after reversion, a higher score indicates an emotional warmth parenting style that had less frequently been used, the median of impulsivity (39.17) was used as the cut-off. After controlled for possible covariates, impulsivity was significantly associated with increased occurrence of SH (OR = 2.07, 95% CI 1.75–2.44). Medians were used to dichotomize parenting styles of both parents, and the results of multivariate Logistic regression models revealed that: only mother’s over-protection was significantly associated with SH (OR = 1.53, 95% CI 1.21–1.95) (Table 2).
Table 2
Univariate and multivariable Logistic regression models fitting results for SH

| Covariates                          | Univariate  | Multivariable1 | Multivariable2 | Multivariable3 |
|-------------------------------------|-------------|----------------|----------------|----------------|
|                                     | OR (90%CI)  | OR (95%CI)     | OR (95%CI)     | OR (95%CI)     |
| Age(+ 1 year)                       | 1.27 (1.19, 1.35) | 1.09 (0.90, 1.32) | 1.12 (0.94, 1.33) | 1.10 (0.91, 1.33) |
| Sex: Girls (Ref: Boys)              | 1.38 (1.26, 1.52) | 1.44 (1.17, 1.78) | 1.40 (1.13, 1.74) | 1.42 (1.14, 1.76) |
| Grade (Ref: Primary school)         |             |                |                |                |
| Junior high school                  | 2.38 (1.45, 3.92) | 1.94 (0.86, 4.37) | 1.90 (0.90, 4.02) | 2.01 (0.88, 4.59) |
| Senior high school                  | 3.47 (2.38, 5.07) | 2.48 (0.94, 6.57) | 2.27 (0.95, 5.42) | 1.11 (1.00, 1.23) |
| Ethnicity (Ref: Other)              | 1.03 (0.84, 1.27) |                |                |                |
| Father's education level (Ref: Elementary and below) |             |                |                |                |
| Junior high school above            | 0.79 (0.61, 1.02) |                |                |                |
| Mother's education level (Ref: Elementary and below) |             |                |                |                |
| Junior high school above            | 0.70 (0.57, 0.87) | 1.09 (0.97, 1.22) | 1.10 (0.98, 1.23) | 1.11 (1.00, 1.23) |
| Father's age (+ 5 years)            | 1.18 (1.12, 1.24) | 0.96 (0.87, 1.07) | 0.95 (0.85, 1.06) | 0.96 (0.86, 1.06) |
| Mother's age (+ 5 years)            | 1.21 (1.11, 1.31) | 1.07 (0.94, 1.22) | 1.07 (0.93, 1.23) | 1.09 (0.95, 1.26) |
| Impulsivity (Ref: Combined score < 39.17) |             |                |                |                |
| High (Combined score ≥ 39.17)       | 3.34 (2.911– 3.823) | 2.16 (1.82, 2.55) | 2.16 (1.82, 2.56) | 2.07 (1.75, 2.44) |
| Parenting style (Ref: < Median)     |             |                |                |                |
| Father's Rejection (Combined score ≥ Median: 7) | 1.98 (1.68– 1.23) | 1.52 (1.22, 1.90) | 1.26 (1.00, 1.59) |                |
| Father's Emotional Warmth (Combined score ≥ Median: 15) | 1.81 (1.62– 2.34) | 1.36 (1.07, 1.73) | 1.20 (0.90, 1.60) |                |
### 3.3. Path analysis

Based on the results of multivariate Logistic regression models, we constructed an initial hypothesized path framework for father's and mother's parenting styles. This path model achieved ideal fitting: root mean square error of approximation (RMSEA) was 0.001, goodness-of-fit index (GFI) was 0.998. As we expected, impulsivity played a mediation role as suggested by the model, somehow only two paths (mother's rejection and over-protection) were statistically significant. Based on the standardized correlation coefficients provided in Fig. 1: direct association between parenting styles and SH was 0.218, indirect association mediated via impulsivity was 0.067, accounting for 23.43% of the total association (Fig. 1). We further discussed the mediation of impulsivity in parenting styles associated SH repetition and severity, however, only insignificant associations presented (Fig. 2).

### 4. Discussion

In the current study, based on the results from a large population-based sample of Chinese adolescents, we found that parenting styles were significantly associated with SH behaviors. Moreover, part of this association could be mediated by impulsivity. Further analysis indicated that, for parenting styles of mother and father, only mother’s over-protection was positively associated with SH. This conclusion was in line with two previous studies, which suggested adverse parenting styles were risk factors of SH and suicidal behaviors among a representative sample of 3653 Chinese adolescents [11, 25].

After controlling for potential confounding factors, the hypothesized path model achieved ideal compatibility with our data, and it suggested that impulsivity was a meaningful mediator in the association between parenting styles and SH. Impulsivity is widely associated with many adolescent risk behaviors, especially SH [13]. Existing studies showed that adolescents who had engaged in SH generally reported a higher impulsivity level [26]. A longitudinal study revealed that the association between impulsivity and SH may be reciprocal: a higher level of impulsivity may lead to increased risk of SH, meanwhile, more frequent SH would aggravate impulsivity [13]. Some established models of impulsivity, like UPPS-P model and Barratt model, suggested that individuals who reported SH were more inclined to act impulsively when experiencing negative emotions or events [13, 27–29]. Another possible theory is
that, impulsivity may increase the possibility of SH by promoting the process of SH ideation or thoughts [30, 31].

Impulsivity, as a personality trait, has a close relationship with parenting styles [17]. Parenting styles influence child development in the forms of behaviors and personalities. Adverse parenting styles may lead to early maladaptive schemas (EMS), which is taking form in early childhood, with the long-lasting impairing effect stretches into the whole adulthood, can induce affection and personality disorders [32–35]. Given all above, it is plausible to identify significant mediation via impulsivity in the association between parenting styles and SH. This likely mediation also suggests that, in order to prevent parenting styles related SH in adolescents, except for direct intervention which aiming at cultivating positive parents rearing style, impulsivity-centered intervention measures can also be designed and applied. In fact, some promising behavior management procedures, like the Good Behavior Game (GBG), could be incorporated into coping strategies of impulsivity or other disruptive behaviors [36]. Nevertheless, the performance of GBG should be meticulously evaluated before implementation.

Another important finding is that, parenting styles of father and mother played different roles in the hypothesized path model. Although the development of child is influenced by multiple domestic and foreign determinants, the interaction of family climate and parenting styles was deemed the most critical. It has also been acknowledged that the unique role of parents should be equally noticed in the process of child growth [37]. Attachment theory suggested that closeness with the caregivers in the early age of children will profoundly influence their cognitive and emotional development in the subsequent phase of growth, father and mother showed different roles in this process [38]. Hence, as the primary guardian of children, mother’s parenting styles may present stronger influence.

Parental over-protection reflects stricter attitude and a higher level of control, has been found negative effect on confidence and independence of children, which may in turn lead to mental health issues [39]. For instance, a higher level of parental control could predict depression and anxiety among adolescents [40, 41]. Because of cultural differences, Chinese parenting styles are distinct from which in western countries: Chinese parents, especially mothers, are more inclined to adopt over-protection parenting styles, which derived from traditional ideology, like Confucianism [42]. A classic model of harsh maternal parenting in China is tiger mother, which is normally described as excessive control and harsh discipline on children [43]. A longitudinal Study by Kim disclosed that tiger parenting is associated with high academic pressure, depression and sense of alienation[44], all are identified contributors to SH in youngsters. As the mediation of impulsivity in SH has only been found for mother’s over-protection, it is reasonable to suspect that, for adolescents who reported an experience of harsh maternal parenting style, intervention measures in reducing impulsivity may achieve better effect in SH prevention and control.

Some limitations of the current study should be further addressed. First, because of the cross-sectional design, causal inference is prevented. We can only put forward a hypothetical model in illustrating the possible mediation of impulsivity in the association between parenting styles and SH, therefore stronger evidence (such as prospective study) is warranted. Besides, the subjects of this study were sampled from
a district in southwest China, therefore generalization of study results to the general Chinese adolescent population should be dissuaded. Studies with expanded populations should be conducted. Finally, we relied on self-report method to collect information, thus there is a chance that information bias may occur. Studies which adopt multiple reporting sources (such as parents and relatives) should be considered.

Despite all the limitations, our study is a novel attempt in investigating the mediation role of impulsivity in the association between parenting styles and SH among Chinese adolescents. Our major findings can provide valuable information in understanding the complicated connection between parenting styles and SH. Future studies with prospective design are needed to corroborate the mediation of impulsivity that we found.

5. Conclusion

In this population-based study of cross-sectional design, parenting styles, especially mother's over-protection was significantly associated with SH, and impulsivity emerged as a significant mediator in the association between parenting styles and SH. Our major findings suggested that, for Chinese adolescents with harsher maternal parenting style, impulsivity-centered intervention measures might be effective in reducing parenting style related SH.

Abbreviations

SH
Self-harm; MASHS: the Modified version of Adolescents Self-Harm Scale; S-EMBU-C: the short-Egna Minnen Barndoms Uppfostran-Chinse; BIS: Barratt Impulsiveness; CI: confidence interval; SE: standard error; IQR: interquartile range; OR: odds ratio; RMSEA: root mean square error of approximation; GFI: goodness-of-fit index.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Review Board of Kunming Medical University. In addition, a written consent was obtained from either the parent or legal guardian or teacher of the participant.

Consent for publication

All participants consented to the publication of the anonymous results obtained by this survey.

Availability of data and materials

The datasets analyzed during the current study are available from the corresponding author on reasonable request.
Competing interests

The authors declare that they have no competing interests.

Funding

The study is supported by Yunnan Applied Basic Research Projects-Kunming Medical University Union Foundation [No. 2018FE001(-132)], Top Young Talents of Yunnan Ten Thousand Talents Plan [No. YNWR-QNBJ-2018-286], Innovative Research Team of Yunnan Province [No. K1322111], Scientific Research Fund Project of Yunnan Provincial Department of Education [No. 2018JS198], NHC Key Laboratory of Drug Addiction Medicine [No. 2020DAMARA-006], Scientific Research Fund Project of Yunnan Provincial Department of Education [No. 2020Y116]

Authors’ contributions

YX and JL designed the study. DF, DAR, RW, YC, XH, TW and XX, carried out data collection, HR and YX performed data analysis, HR prepared the draft manuscript, YX critically revised the manuscript. All authors provided critical revision of the manuscript for important intellectual content.

Acknowledgments

None

References

1. Hawton K, Hall S, Simkin S, Bale L, Bond A, Codd S, Stewart A. Deliberate self-harm in adolescents: a study of characteristics and trends in Oxford, 1990–2000. J Child Psychol Psychiatry. 2003;44(8):1191–8.
2. Xiao Y, He L, Chang W, Zhang S, Wang R, Chen X, Li X, Wang Z, Risch HA. Self-harm behaviors, suicidal ideation, and associated factors among rural left-behind children in west China. Ann Epidemiol. 2020;42:42–9.
3. Xiao Y, Chen Y, Meng Q, Tian X, He L, Yu Z, Wang Y. Suicide ideation and suicide plan in Chinese left-behind children: Prevalence and associated factors. J Affect Disord. 2019;257:662–8.
4. Swannell SV, Martin GE, Page A, Hasking P, St John NJ. Prevalence of Nonsuicidal Self-Injury in Nonclinical Samples: Systematic Review, Meta-Analysis and Meta-Regression. Suicide Life-Threat Behav. 2014;44(3):273–303.
5. Lockwood J, Townsend E, Daley D, Sayal K. Impulsivity as a predictor of self-harm onset and maintenance in young adolescents: a longitudinal prospective study. J Affect Disord. 2020;274:583–92.
6. Hawton K, Saunders KEA, O’Connor RC. Self-harm and suicide in adolescents. Lancet. 2012;379(9834):2373–82.
7. Darling N, Steinberg L. Parenting Style as Context: An Integrative Model. Psychol Bull. 1993;113:487–96.
8. Leung CL, Kwok SY, Ling CC. An Integrated Model of Suicidal Ideation in Transcultural Populations of Chinese Adolescents. Community Ment Health J. 2016;52(5):574–81.
9. Huang XQ, Zhang HM, Li MC, Wang JA, Zhang Y, Tao R. Mental Health, Personality, and Parental Rearing Styles of Adolescents with Internet Addiction Disorder. Cyberpsychology Behav Soc Netw. 2010;13(4):401–6.
10. Martin J, Bureau JF, Yurkowski K, Lafontaine MF, Cloutier P. Heterogeneity of Relational Backgrounds is Associated With Variation in Non-Suicidal Self-Injurious Behavior. J Abnorm Child Psychol. 2016;44(3):511–22.
11. Donath C, Graessel E, Baier D, Bleich S, Hillemacher T. Is parenting style a predictor of suicide attempts in a representative sample of adolescents? BMC Pediatr. 2014;14:13.
12. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. Am J Psychiat. 2001;158(11):1783–93.
13. Hamza CA, Willoughby T. Impulsivity and nonsuicidal self-injury. A longitudinal examination among emerging adults. J Adolesc. 2019;75:37–46.
14. Curry I, Luk JW, Trim RS, Hopfer CJ, Hewitt JK, Stallings MC, Brown SA, Wall TL. Impulsivity Dimensions and Risky Sex Behaviors in an At-Risk Young Adult Sample. Arch Sex Behav. 2018;47(2):529–36.
15. Mann JJ, Arango VA, Avenevoli S, Brent DA, Champagne FA, Clayton P, Currier D, Dougherty DM, Haghighi F, Hodge SE, et al. Candidate Endophenotypes for Genetic Studies of Suicidal Behavior. Biol Psychiatry. 2009;65(7):556–63.
16. McHugh CM, Lee RSC, Hermens DF, Corderoy A, Large M, Hickie IB. Impulsivity in the self-harm and suicidal behavior of young people: A systematic review and meta-analysis. J Psychiatr Res. 2019;116:51–60.
17. Shu E, Deng Y, Yuan H, Guan B. The relationship of impulsive personality and parental rearing patterns in junior middle school students. Chinese Journal of Behavioral Medicine Brain Science. 2011;20(06):552–4.
18. Somer E, Ginzburg K, Kramer L. The role of impulsivity in the association between childhood trauma and dissociative psychopathology: Mediation versus moderation. Psychiatry Res. 2012;196(1):133–7.
19. Arens AM, Gaher RM, Simons JS. Child Maltreatment and Deliberate Self-Harm Among College Students: Testing Mediation and Moderation Models for Impulsivity. Am J Orthopsychiatr. 2012;82(3):328–37.
20. Mishara BL. Conceptions of death and suicide in children ages 6–12 and their implications for suicide prevention. Suicide Life Threat Behav. 1999;29(2):105–18.
21. Ran H, Cai L, He X, Jiang L, Wang T, Yang R, Xu X, Lu J, Xiao Y. Resilience mediates the association between school bullying victimization and self-harm in Chinese adolescents. J Affect Disord.
22. Yu F. The relation of adolescents’ self-harm behaviors, Individual Emotion Characteristics and Family Environment Factor. master. Central China Norm Univ; 2008. (In Chinese).

23. Jiang j. The preliminary revision of Short-Egna Minnen Barndoms Uppfostran-Chinese. Psychological Development and Education. 2010(01):97–102.

24. Li X, Fei L, Xu D, Zhang Y, Yang S, Tong Y, Wang Z, Niu Y. Reliability and validity of an adapted Chinese version of Barratt Impulsiveness Scale. Chinese Mental Health Journal. 2011;25(8):610–5. (In Chinese).

25. Chen Z, Wang Y, Chen L, Wang J, Jing Y, Yao J. Self-injurious behavior among college students and its association with parental rearing styles. Chinese Journal of school health. 2019;40(4):546–9. (In Chinese).

26. Mo J, Wang C, Niu X, Jia X, Liu T, Lin L. The relationship between impulsivity and self-injury in Chinese undergraduates: The chain mediating role of stressful life events and negative affect. J Affect Disord. 2019;256:259–66.

27. Maxfield BL, Pepper CM. Impulsivity and Response Latency in Non-Suicidal Self-Injury: The Role of Negative Urgency in Emotion Regulation. Psychiatr Q. 2018;89(2):417–26.

28. Taylor J, Peterson CM, Fischer S. Motivations for self-injury, affect, and impulsivity: a comparison of individuals with current self-injury to individuals with a history of self-injury. Suicide Life Threat Behav. 2012;42(6):602–13.

29. Glenn CR, Klonsky ED. A multimethod analysis of impulsivity in nonsuicidal self-injury. Personal Disord. 2010;1(1):67–75.

30. O’Connor RC, Kirtley OJ. The integrated motivational-volitional model of suicidal behaviour. Philos Trans R Soc Lond B Biol Sci. 2018; 373(1754).

31. Lockwood J, Daley D, Townsend E, Sayal K. Impulsivity and self-harm in adolescence: a systematic review. Eur Child Adolesc Psych. 2017;26(4):387–402.

32. Shute R, Maud M, McLachlan A. The relationship of recalled adverse parenting styles with maladaptive schemas, trait anger, and symptoms of depression and anxiety. J Affect Disord. 2019;259:337–48.

33. Basso LA, Fortes AB, Maia CPE, Steinhorst E, Wainer R. The effects of parental rearing styles and early maladaptive schemas in the development of personality: a systematic review. Trends Psychiatr Psychother. 2019;41(3):301–13.

34. Young JE, Weinberger AD, Beck AT. Cognitive therapy for depression. In: Barlow DH, editor. Clinical Handbook of Psychological disorders: A step-By-Step Treatment Manual. New York: Guilford; 2001. pp. 264–308.

35. Young J: Cognitive Therapy For Personality disorders: A schema Focused Approach. Professional Resource Press/Professional Resource Exchange; 1990.
36. Musci RJ, Bradshaw CP, Maher B, Uhl GR, Kellam SG, Ialongo NS. Reducing aggression and impulsivity through school-based prevention programs: a gene by intervention interaction. Prev Sci. 2014;15(6):831–40.

37. Kiff CJ, Lengua LJ, Zalewski M. Nature and Nurturing: Parenting in the Context of Child Temperament. Clin Child Fam Psychol Rev. 2011;14(3):251–301.

38. Bowlby J. Attachment and Loss (Vol.3). New York: Basic Books; 1980.

39. Bai Y, Cui D, Zheng H, Xu Y, Zhu J, Wu Y, Shen H, Du Y. The correlation study between adolescent bipolar disorder and parental rearing pattern. China Journal of Health Psychology. 2020. (Online) (In Chinese).

40. Barber BK, Olsen JE, Shagle SC. Associations between parental psychological and behavioral control and youth internalized and externalized behaviors. Child Dev. 1994;65(4):1120–36.

41. Sun L, Tian W, Bian Y. Effect of Adolescent Depression and Anxiety on the Development Tendency of Parental Psychological Control: A 3 Years Follow-Up Study. Chinese Journal of Clinical Psychology. 2018;26(4):730–5.

42. Zhang W, Wei X, Ji L, Chen L, Deater-Deckard K. Reconsidering Parenting in Chinese Culture: Subtypes, Stability, and Change of Maternal Parenting Style During Early Adolescence. J Youth Adolesc. 2017;46(5):1117–36.

43. Chua A. Battle hymn of the tiger mother: Bloomsbury Publishing; 2011.

44. Kim SY, Wang Y, Orozco-Lapray D, Shen Y, Murtuza M. Does "Tiger Parenting" Exist? Parenting Profiles of Chinese Americans and Adolescent Developmental Outcomes. Asian Am J Psychol. 2013;4(1):7–18.