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# Is childhood maltreatment associated with murderous ideation and behaviors in adolescents in China?

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ABSTRACT

Previous research has revealed associations between childhood maltreatment (CM) and adverse health behaviors. However, little is known about the relationship between CM and adolescent murderous ideation and behaviors. A total of 5726 middle and high school students completed the Childhood Trauma Questionnaire-Short Form and the Murderous Ideation and Behaviors Questionnaire. The findings revealed that the prevalence rates for murderous ideation, plans, preparation, and attempts were 9.9%, 2.8%, 1.3%, and 0.6%, respectively. The results of multinomial logistic regression models indicated that adolescents who experienced CM were more likely to exhibit murderous ideation and behaviors, with adjusted odds ratios (AORs) ranging from 2.55 to 22.31. Additionally, a significant dose-response relationship was found between the number of CM types experienced and murderous ideation and behaviors (AORs ranging from 1.52 to 2.45). The odds of participants who had experienced three or five types of CM were significantly associated with murderous ideation and behaviors, with AORs ranging from 4.55 to 28.30 and from 5.26 to 85.45, respectively. The findings highlighted that adolescents who engaged in murderous ideation and behaviors were more likely to have a personal history of CM and revealed a dose-response relationship between the number of CM types and murderous ideation and behaviors.

## 1. Introduction

Childhood maltreatment (CM), including emotional abuse (EA), physical abuse (PA), and sexual abuse (SA), emotional neglect (EN) and physical neglect (PN), remains a major public health and social welfare problem. In high-income countries, it has been reported that approximately 4–10% of children are physically abused and that one in ten is psychologically abused (Gilbert et al., 2009). In China, a systematic review estimated that among various types of abuse, PA was the most prevalent (reported to be 26.6%), followed by neglect (26.0%), EA (19.6%), and SA (8.7%) (Fang et al., 2015). A report from Italy on middle-tier young adults (aged 18–24 years) indicated that males reported more childhood PA, while females reported more exposure to childhood SA and EA (Prino et al., 2018). Previous research has indicated that each type of CM is associated with multiple adolescent health risks (Hussey et al., 2006). Increasing evidence suggests that CM exposure not only increases the risk of adverse health consequences, such as substance use (Abajobir et al., 2017a), obesity (Mason et al., 2018), internalizing/externalizing behaviors (Hecker et al., 2018; Pears et al., 2008), depression (Chapman et al., 2004), self-harm (Han et al., 2018), and suicide ideation and attempts (Bruwer et al., 2014), but also has long-term adverse effects on health and disease by influencing the biological patterns associated with energy metabolism, inflammation, and oxidative stress (Koenig et al., 2018).

Recently, researchers have increasingly focused on homicide in adolescence, which is the most extreme consequence of interpersonal violence. In 2012, the WHO reported that 475,000 people worldwide were victims of homicide per year. Moreover, homicide is the fourth leading cause of death, approximately 43% of homicides occur among youth aged 10–29 years each year, and 4 out of 5 are male (World Health Organization, 2014). A diagnosis of schizophrenia or psychotic disorder is associated with homicide and homicide ideation in female offenders compared to females in the general population (Fazel et al., 2010; Wang et al., 2017). In an examination of a population of federal supervised release clients, DeLisi et al., (2017) revealed that homicidal ideation was associated with a criminal career, severe psychopathology, and the extremes of offending. The motives for index offenses have been classified into six categories, including revenge,

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argument, financial gain, sexual, sadistic, or filicide, and in case of murder as an index offense, the motives are often mixed and complicated (Hachtel et al., 2018). Therefore, homicide has a serious, often lifelong, impact on the perpetrator's physical, psychological and social functioning, and it greatly increases the costs of health, welfare and criminal justice services, reduces productivity, and decreases the value of property (World Health Organization, 2016).

A substantial number of studies have found that CM is associated with aggressive behaviors, including violent and antisocial behavior (Debowska et al., 2018; McGuigan et al., 2018), repeated victimization (Strøm et al., 2017), and even neurodevelopmental deficits (Painter and Scannapieco, 2013). Recently, some studies have shown that CM is associated with an increased risk for homicide and rearrest (Baglivio et al., 2015; DeLisi and Beauregard, 2018; Wolff et al., 2017). It has been noted that 90% of juvenile offenders have been exposed to at least one form of childhood trauma (Dierkhising et al., 2013), and over half (60%) of young offenders have reported experiencing child abuse or neglect (Moore et al., 2013), in comparison to 9.1–45.4% of the general population (Chandraratne et al., 2018). Additionally, there is a significant interaction effect of genetic and environmental adversities on aggression and antisocial behaviors (Ouellet-Morin et al., 2016; Tielbeek et al., 2016; Zhang et al., 2017). For instance, previous studies have provided evidence of interactive effects of oxytocin receptor (OXTR) genetic polymorphism and childhood PA on aggression risk in adolescents (Zhang et al., 2018).

In brief, increasing evidence has been found in offense databases of associations between CM and homicidal behaviors; however, there is still a lack of research on the relationships between CM and murder in general population samples. Notably, legal differences (e.g., gun laws) may influence the severity and lethality of murder in different countries. A previous study (Crifasi et al., 2018) indicated that laws related to the sale, use, and carrying of firearms are associated with increases in firearm homicide. In China, carrying guns is illegal in the general population, but it is legal behavior in several developed countries, which could increase the risk of shooting and the lethality of murder in those countries. Previous studies have considered suicide to be a series of processes (Bruwer et al., 2014; Law and Shek, 2016), including suicide ideation/thoughts, suicide plans, and suicide attempts. Additionally, a previous study defined homicidality as the thoughts, intent and plans to physically harm another human being (Schwartz et al., 2005). Therefore, in this study, we considered murderous ideation and behaviors to be the extent to which a person manifests current ideation, plans, preparation, and attempts related to ending someone's life.

We hypothesized that CM could increase the risk of murderous ideation and behaviors not only in an offender sample but also in the general adolescents population. To precisely estimate the effect of CM exposure on potential murderous ideation and behaviors, we examined the relationship between CM and murderous ideation and behaviors in adolescents in a cross-sectional study in China involving 5726 general adolescents.

## 2. Methods

### 2.1. Participants

The data for this study was part of the research project “Adolescent Health and Risk Behaviors in Anhui Province”. The study methods have been described previously (Han et al., 2018; Wang et al., 2016). A 3-stage, random, cluster sampling approach was employed to select participants in Anhui province in the center of China. Three cities, including Tongling, Chuzhou, and Fuyang, were randomly selected in the first stage. Tongling, Chuzhou, and Fuyang are located in southern, middle and northern Anhui, respectively. In the second stage, one regular middle school and one regular high school were randomly selected from each city. Then, eight target classrooms within each school were randomly selected.

A total of 6032 students were invited to take part in this study. Of these students, 205 refused to participate in the study and 67 were absent from school at the time of the survey. Thus, the questionnaire was completed by 5760 (95.5%) students. Finally, the sample consisted of 5726 adolescents (2848 males, 2878 females) from three different cities in China. The mean, median, and interquartile range (IQR) of their ages were as follows: 14.81, 15.1, and 3.9 years, respectively (SD = 1.96; ranging from 12 to 18 years).

### 2.2. Procedure

Each student sat at a separate table. In the absence of any teachers, an anonymous questionnaire was administered by trained interviewers to protect every student's privacy. All the students were asked to complete the questionnaire within 25 min. The data were collected in December 2013.

The study received approval from the Biomedicine Ethical Committee of Anhui Medical University. All of the participants were fully informed about the purpose of this investigation and were invited to participate voluntarily. Additionally, written informed consent was obtained from the targeted school, each participating student and one of the student's parents.

### 2.3. Measures

#### 2.3.1. Childhood maltreatment

In general, CM includes any form of PA, EA, SA, PN, and EN of a child that harms or endangers the safety, survival, health, dignity, or development of the child by a parent, caregiver, or other person who has the role of custodian (e.g., teacher, school officials). In this study, the items assessing childhood PA, EA, SA, PN, and EN were based on the Childhood Trauma Questionnaire-Short Form (CTQ-SF) (Buckingham and Daniolos, 2013). Each type of CM on the CTQ-SF is assessed via five items asking about experiences in childhood and are rated on a 5-point Likert-type scale with response options ranging from never to very often (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = very often). The score for each type of maltreatment ranges from 5 to 25. The instrument was validated by Zhao et al., (2005), and the Chinese version of the CTQ-SF showed great reliability in Chinese adolescent groups. In this study, the CTQ-SF was pretested with 156 students to ensure the appropriateness of its content and language for the study population. The kappa values ranged from 0.79 to 0.88. The questionnaire also showed suitable consistency reliability (Cronbach's alphas from 0.78 to 0.90). In this study, the CTQ-SF cut-off scores were as follows: PA $\geq$ 8, SA $\geq$ 6, EA $\geq$ 9, PN $\geq$ 8, and EN $\geq$ 10 (Bernstein and Fink, 1998). A study with a US nonclinical sample found that the reported sensitivity and specificity for these cut-off scores reached 89% and 97%, respectively (Bernstein and Fink, 1998).

#### 2.3.2. Murderous ideation and behaviors questionnaire

Based on the suicide attempts questionnaire (Bruwer et al., 2014; Law and Shek, 2016), which assesses suicidal ideation/thoughts, suicide plans, and suicide attempts. Additionally, a previous study defined homicidality as the thoughts, intent and plans to physically harm another human being (Schwartz et al., 2005). Therefore, in this study, we considered murderous ideation and behaviors as the extent to which a person manifests current ideation, plans, preparation, and attempts related to ending someone's life. Therefore, the dependent variables consisted of murderous ideation and behaviors (i.e., ideation, plans, preparation, and attempts) in the past six months: murderous ideation—“Have you ever thought about to ending someone's life in the past six months (i.e., have thoughts about taking someone's life)?”, murderous plans—“Have you ever planned to end someone's life in the past six months (i.e., carefully thought about some specific way or steps to take someone's life)?”, murderous preparation—“Have you ever prepared to end someone's life in the past six months (i.e., have prepared