

Child maltreatment in Zhejiang Province of China: role of parental aggressive tendency and history of maltreatment in childhood

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Abstract

This study aimed to explore the role of parental aggression and parental childhood maltreatment experience in the maltreatment of children in Zhejiang Province, Eastern China. The study sites were two urban and two rural schools. Children aged 10-16 years and their parents completed separate questionnaires, which included: parental childhood maltreatment; parental aggressive tendency; and maltreatment of children. Questionnaires were completed by 611 parents and 821 children. Fifty-eight per cent of parents reported maltreatment of their children. Higher parental aggression scores were associated with increased risk of all types of child maltreatment (ORs ranged from 1.06-1.07 for each point higher on the aggression scale). Parental childhood maltreatment was significantly associated with increased risk of moderate/severe physical maltreatment of children (OR=1.80[1.08, 3.00]); parental aggression was an explanatory factor of this association. Parental childhood maltreatment was positively associated with emotional maltreatment of children (OR=1.89[1.27, 2.83]). This was partly explained by parental aggression. In conclusion, high levels of child maltreatment were admitted by parents in China, suggesting the need for parenting education. Parents with higher aggressive tendency were more likely to maltreat children. Parental aggressive tendency was an explanatory factor for the intergenerational transmission of maltreatment, indicating the possibility of identifying parents' aggressive tendencies for early prevention.

Key Practitioner Messages

- Child maltreatment of all types is common in China. Especially striking is the finding that nearly a fifth of parents admitted to moderate/severe maltreatment of their children.
- Parents with higher aggressive tendency were more likely to use all types of maltreatment with their children.
- Parental aggression was an explanatory factor for the intergenerational transmission of moderate/severe physical maltreatment and emotional maltreatment.

Keywords Child maltreatment, Parental aggressive tendency, Parental history of childhood maltreatment, China

Introduction

Child maltreatment is now recognised as a global health issue. Fifty-one countries have banned the use of all forms of corporal punishment against children, including in the home setting (Global Initiative to End All Corporal Punishment of Children, 2017) though enforcement is naturally virtually impossible. In China the approach to legislation has been more cautious: in December 2015 the Anti-Domestic Violence Law specified legal protection for some severe forms of maltreatment, including beating, binding, injuring, physical constraints, and frequent verbal abuse and intimidation (Ni, 2016). However, no formal child protection system exists to facilitate enforcement of such laws (Fang *et al.*, 2015), and it is unclear if such legislation has any impact.

The reasons why parents maltreat their children are complex, multifactorial in nature and culturally determined (Belsky, 1980). In this paper we will explore two of the factors, and the relationship between them: measured aggressive tendency in parents; and parents' personal history of child maltreatment. Parental aggressive tendencies in the context of child maltreatment have been explored in a few western studies. A meta-analysis of these studies, which were nearly all small case-control studies, found a positive association between measured aggressive tendencies in parents and physical abuse of children (Stith *et al.*, 2009). These studies focused on more severe forms of physical maltreatment. There has been a paucity of research on minor forms of physical maltreatment and other types of maltreatment (e.g., emotional maltreatment), and this issue has not been examined in a large general population. However, in China, there has been limited research on aggression and aggressive tendency, and evidence has been mixed on the levels of

aggression in the Chinese population. Several studies reported lower levels of anger and aggression in Chinese cultures than in western cultures, with the most common explanation that the Chinese tend to suppress extreme emotions (Maxwell, 2007). Nevertheless, some research from mainland China does not support this. For instance, Liu and Chen (2014) and Luo (2008) reported higher levels of anger and hostility in Chinese college students than American students, and higher physical and verbal aggression in Chinese female students than American females (Luo, 2008, Liu and Chen, 2014). Importantly, no studies have examined the relationship between parents' tendency to aggression and child maltreatment in China.

Parental personal experience of childhood maltreatment was until recently widely believed to be a strong predictor of child maltreatment, the so-called intergenerational hypothesis (Thornberry *et al.*, 2012). This effect is frequently explained by the social learning model which suggests that harsh parenting influences the next generation through modelling of parents' behaviours (Muller *et al.*, 1995). However, the evidence has been challenged by a number of scholars, largely on methodological grounds, for instance, retrospective study design, non-representative samples, or inconsistent definitions of maltreatment (Thornberry *et al.*, 2012). With the possibility now of long term follow-up, evidence is emerging which refutes the intergenerational hypothesis. For instance, a recent large prospective 30-year follow-up study in the USA used data from multiple sources (e.g., child protection service, parents, nonparents and offspring) and found no evidence for intergenerational transmission of physical abuse (Widom *et al.*, 2015). In addition, the intergenerational transmission literature has focused on physical maltreatment, largely ignoring the role of childhood emotional maltreatment or other

types of maltreatment in intergenerational continuity. In China, there has been very limited research on this issue.

Our study is also concerned with the relationship between aggressive tendency and intergenerational patterns of maltreatment: does experience of maltreatment lead to aggressive tendency leading in turn to child maltreatment? Simons *et al.* (1991) proposed that harsh discipline during childhood would produce a ‘hostile’ personality, which in turn, would lead to harsh parenting of the next generation. Likewise, Muller *et al.* (1995) supported the pathway of aggression in the intergenerational transmission of physical maltreatment. In China, no research has explored the role of parental aggressive personality in intergenerational continuity.

Our aims therefore were to explore the role of parental aggressive tendency, and history of maltreatment in childhood, in the occurrence of different types of child maltreatment in Zhejiang Province, mainland China. We examined the following hypotheses: (1) parents with higher aggression scores are more likely to maltreat their own children; and (2) parents with a history of maltreatment in childhood are more likely to maltreat their own children. We also aimed to explore the relationship between parental aggressive tendency and history of childhood maltreatment in the aetiology of child maltreatment.

Methods

Participants

We conducted a cross-sectional survey among school children and their parents in

Zhejiang Province, from November 2014 to July 2015. Zhejiang is a relatively wealthy eastern province with a population of around 58 million. This study was part of a larger project which aimed to explore multiple aspects of maltreatment among Chinese children. It collected data from children and either parent of each child in the same household and allowed us to investigate maltreatment of children from different perspectives.

Two urban schools (one primary and one secondary) in Binjiang District, Hangzhou City and two rural schools (one primary and one secondary) in Xinfeng Town, Jiaying City, were recruited to the study. Three classes from each of Grade 5-6 in primary schools and Grade 7-8 in secondary schools (children aged 10-16) were randomly selected to participate, resulting in a total of 24 classes. Questionnaires were completed by 366 rural parents, and 245 urban parents (overall response rate 74.2%). Of these 44 were excluded because of missing key variables, leaving a total of 576 parents. Questionnaires were completed by 821 children. The overall response rate of the children was 99.8 per cent which can be attributed largely to the support and encouragement of teachers.

Procedure

School authorities gave permission for the study to be conducted after being provided with detailed information about the study aims and methods. Parents were informed prior to the survey.

Separate questionnaires were designed for the children and for the parents, although the specific types of maltreatment were identical. We used information obtained from the

completed parental questionnaires, and validated this using the children's own responses. In the rural schools researchers placed both versions of the questionnaire in an envelope along with an invitation letter describing the study details and a consent form for the parents. Each pair of questionnaires were given the same identification number in order to match the parent's and child's questionnaires within the same household. The researchers then explained to the children the reason for the study, and what it was about. Children were told that participation was not compulsory, that everything they wrote was confidential and anonymous, and that they could stop at any time for any reason. Researchers stressed the point that it was not a test, and there were no right or wrong answers, and that they should be honest and open in their responses. Children were required to complete and return their questionnaires in the classroom. The researchers were present throughout to provide help with understanding the questionnaire if necessary. All child participants gave consent. Children were asked to take the envelope containing the parental questionnaire, study information and consent form home with them, and to ask either parent to complete it, and to bring it back. In urban areas, we followed the same classroom procedure, but the envelopes which were taken home to the parents contained information about the study, the consent form, and the method to complete the survey online (Chinese version of Survey Monkey).

Our contact details were provided in the invitation letter, so that parents would be able to contact us if they had encountered any difficulties with the completion of questionnaires, or if they had other concerns. The parent information sheet clearly stated that confidentiality and anonymity were ensured.

The study was approved by the University College London Research Ethics Committee and the Zhejiang University Ethics Board. All participants were told they could discuss any difficult issues with a counsellor and a phone number was provided. However, none of them availed themselves of this service.

Measures

Parental aggressive tendency. Parental aggression was assessed with the shortened version of the Buss-Perry Aggression Questionnaire (AQ) (Buss and Perry, 1992) developed by Bryant and Smith (2001). It is a 12-item scale that measures anger, hostility, physical aggression, and verbal aggression. Anger involves physiological arousal and preparation for aggression, and represents the emotional component of behaviour; hostility refers to negative attitudes, and represents the cognitive component of behaviour; aggression is regarded as the behavioural manifestation of anger and hostility, and involves hurting or harming others (Buss and Perry, 1992). Bryant and Smith's (2001) short AQ has been demonstrated to be psychometrically superior (Bryant and Smith, 2001). A Chinese version was available and showed good construct validity and adequate internal reliability (Maxwell, 2007). The Cronbach α for our sample was 0.84. Each AQ item was rated on a five-point scale from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). Responses were summed to generate subscale scores (each ranging from 3-15) and a total scale score (ranging from 12-60).

Parental history of childhood maltreatment. Two questions were asked to measure parental history of childhood maltreatment: 'when you were less than 18 years old did you experience physical maltreatment (such as being hit by hand or with implements,

kicking or being forced to stand or kneel)?’ and ‘did you ever experience emotional maltreatment (such as being severely criticised, insulted, cursed, physically threatened or threatened with abandonment)?’. Example items provided in each question were derived from the Chinese literature and a validated instrument: the International Society for the Prevention of Child Abuse and Neglect (ISPCAN) Child Abuse Screening Tools Retrospective version (ICAST-R) (Dunne *et al.*, 2009). Parents who answered ‘yes’ to any one of these two questions were classified as having experienced maltreatment in childhood.

Children's experience of maltreatment. The items drew extensively on three existing commonly-used validated tools in many countries: ISPCAN Child Abuse Screening Tool Children's Version (ICAST-C), Parents' Version (ICAST-P) and the Conflict Tactics Scale-Parent Child (CTSPC) (Straus *et al.*, 1998; Runyan *et al.*, 2009; Zolotor *et al.*, 2009). The Chinese versions were available (Chang *et al.*, 2013; Chan, 2005). Thirty-eight forms of disciplinary acts were used to measure child maltreatment, including 21 physical, 12 emotional and five non-contact, for example, withholding a meal. Because the physical maltreatment items differ greatly in their severity, subscales indicating minor, moderate, and severe maltreatment were used according to those defined in the CTSPC. Parents were asked about their use of such acts in the previous year, and children were asked about their experiences of these also in the previous year, in the following categories: never; once or twice; 3-5 times; 6-12 times; 13-50 times; or more than 50 times. Responses were summed to generate frequency scores for each type of maltreatment. However, in this sample, there were 75-95 per cent with a score of zero for physical maltreatment and non-contact punishment. Given the extremely skewed

distribution of the frequency scores, responses were recoded into dichotomous categories as either having or not having the maltreatment experience ('yes' versus 'no'). Experience of physical maltreatment was further categorised into: 'severe', 'moderate' or 'minor only'. The category 'minor only' excluded the co-occurrence of moderate or severe forms. Moderate and severe physical maltreatment were merged for analysis purposes due to a small number of cases of severe physical maltreatment (2.3%).

Socio-demographic background. For the parents this included parent's age, education and relationship with the child (mother or father), child's sex and age, the number of children in the household, family economic status, and residence (urban or rural).

Data analysis

The associations of parental aggression and parental childhood maltreatment with physical maltreatment of children were assessed using multinomial logistic regression models, comparing the relative risks of minor and moderate/severe physical maltreatment to the reference (non-maltreatment group). We estimated relative risk ratios (RRRs) of minor and moderate/severe physical maltreatment for each predictor. For emotional maltreatment and non-contact punishment, we applied binary logistic regression models and estimated odds ratios (ORs), respectively. Next, for each model, we adjusted for socio-demographic factors. We then assessed whether aggression-maltreatment associations were independent of parental history of childhood maltreatment by performing additional analyses with further adjustments. In order to compare the estimates of overall aggression and parental childhood maltreatment, we defined a binary variable for parental aggression score for a sensitivity analysis by using the 50th

percentile as a cut-off. We also calculated the rate of intergenerational transmission, defined as the percentage of parents maltreated in childhood who maltreated their own children (Kaufman and Zigler, 1987).

Maltreatment of children defined from the child's perspective was used to validate main findings for the parent data. In this study, 324 mother-child pairs and 235 father-child pairs within the same household were matched (Table S1 in the online Supporting Information). We validated associations of parental aggression and parental childhood maltreatment with child maltreatment by using child-reported maltreatment. The validation analysis showed overall consistency for parent and child data, indicating that our use of parent data for this analysis was appropriate and justified (Table S2 in the online Supporting Information). For example, the positive association of parental aggression with emotional maltreatment remained in the validation analysis (mother-child: OR=1.03[1.00, 1.06]; father-child: OR=1.06[1.01, 1.10]).

Missing data in the current sample ranged from zero per cent (including three outcome variables, relationship with the child, child's sex, the number of children, and residence) to 32.3 per cent (parent's age). Comparison of key variables in individuals with and without missing data, and the imputed data profile can be seen from Table S3 in the online Supporting Information. Missing values were more common among urban parents, wealthier parents or those with a history of childhood maltreatment, or those with more than one child. Multiple imputations were used to impute data in order to minimise data loss (Sterne *et al.*, 2009). Imputation models included all model variables and also predictors for non-response (parental experiences of maltreatment, only child, income,

and urban residence). Thirty imputed datasets were created, and a maximum length of 10 000 iterations was used. Imputed results were broadly similar to those using the original data. We present the imputed results. All statistical analyses were performed using SPSS 23.0. SPSS uses fully conditional specification (FCS) or chained equations imputation. It uses linear regression for continuous variables and logistic regression for categorical variables.

Results

A summary of outcome, exposure and socio-demographic variables

There were nine step-mothers and three step-fathers, so we combined mothers/step-mothers, and fathers/step-fathers. The mean age of parents was 39.8 [SD =4.9], 57.8% were mothers, and 60.9 per cent were from rural areas (see Table 1). As reported by parents, the mean age of children was 12.8 [SD =1.2], 48.6 per cent were girls, and 46.9 per cent were only children. Fifty-eight per cent of parents reported committing at least one form of maltreatment during the last year: 25.4 per cent for physical (6.6% for minor only, 16.5% for moderate, and 2.3% for severe), 55.2 per cent for emotional, and 5.2% for non-contact. Table 2 illustrates the preceding-year prevalence of 38 forms of maltreatment by parent gender. We found no parent gender differences in any form of maltreatment of children.

Fifty-six per cent of parents reported a personal history of childhood maltreatment. The mean score of parental aggression was 25.9 (range 12-60); the mean scores of each subscale were 7.0 for anger, 6.9 for hostility, 4.9 for physical aggression, and 7.1 for

verbal aggression. Men scored significantly higher than women only for physical aggression (5.3 vs 4.6).

Parent aggression and maltreatment of children

The associations between subscale scores of parental aggression were similar to the results when using the overall aggression score. Therefore, we focus here on the results for parental overall aggression. Results for subscale scores can be seen from Table S4 and Table S5 in the online Supporting Information. Higher parent aggression scores were significantly associated with physical maltreatment of children (see Table 3). For moderate/severe physical maltreatment the OR was 1.06 [1.04, 1.09] for each point higher on the overall aggression score, and 1.05 [1.01, 1.09] for each point for minor physical maltreatment. These associations persisted after adjusting for covariates (for each point on the aggression score: moderate/severe, OR=1.06[1.03, 1.10]; minor, OR=1.06[1.01, 1.11]), and were not abolished with further adjustments for parental history of childhood maltreatment (moderate/severe: OR=1.06[1.03, 1.09]; minor: OR=1.06[1.01, 1.11]).

Higher aggression scores were associated with an increased tendency to emotional maltreatment (see Table 4). The OR for emotional maltreatment was 1.07[1.04, 1.10] for each point higher on the overall aggression; the significant association persisted with additional adjustments for parental history of childhood maltreatment and other covariates (OR=1.07[1.04, 1.09]).

Non-contact punishment was associated with higher levels of overall parental aggression (see Table 4). The OR for non-contact punishment was 1.07 for each point of the overall

aggression score in the fully adjusted model (OR=1.07[1.02, 1.12]).

Parental history of childhood maltreatment and maltreatment of children

Among 296 parents with a history of childhood maltreatment, 254 (85.8%) admitted to maltreating their own children, that is, the rate of intergenerational transmission was 85.8 per cent.

Parents with a history of childhood maltreatment were twice as likely to use moderate/severe physical maltreatment. However, this ceased to be significant after adjustment for parental aggression score and socio-demographic variables (OR=1.48[0.87, 2.52]). There was no significant association between parental childhood maltreatment and the use of minor physical maltreatment (see Table 3). Parental childhood maltreatment was significantly associated with the use of emotional maltreatment (OR=1.89[1.27, 2.83]), reduced slightly (OR=1.54[1.01, 2.34]) after adjusting for parental aggression and socio-demographic variables (see Table 4). There was no significant association between parental childhood maltreatment and the use of non-contact punishment either in the unadjusted or adjusted analysis (see Table 4).

In order to compare the estimates of overall aggression and parental childhood maltreatment, we defined a binary variable (score >50th centile) for parental aggression score for a sensitivity analysis (see Table 3 and 4). The analysis showed the greater effects of parental overall aggression in the occurrence of severe physical (OR=2.37[1.41, 3.99]) and emotional maltreatment of children (OR= 2.14[1.41, 3.25]).

Discussion

This is the first study from mainland China to explore the relationship between different types of child maltreatment, aggressive tendencies in parents and parental childhood maltreatment. Our findings highlight important policy-relevant issues about the three separate factors, in the first instance, and then the relationship between them. This study also contributes to the small body of literature on aggressive tendency measured by Bryant and Smith's (2001) short AQ in China.

Our results suggest that child maltreatment of all types is common in China. Especially striking is the finding that 18.8 per cent of parents admitted to moderate and severe maltreatment of their children and 55.2 per cent to emotional maltreatment. These rates are much higher than in high-income countries (Gilbert *et al.*, 2009) and suggests a persisting normalisation of acts of child maltreatment in China. In addition, we found no parent-gender difference for any form of maltreatment, unlike other studies which found mothers more likely to admit maltreatment (Lansford *et al.*, 2010; Tang, 2006).

We found men scored significantly higher than women for physical aggression in line with much previous research (Gerevich *et al.*, 2007), but we found no gender difference for anger, hostility and verbal aggression, as reported by others (Gerevich *et al.*, 2007; Maxwell, 2007). The use of a standardised and validated scale also allows for direct comparison with elsewhere. The men and women in our study scored lower for each subscale than men in rural Guizhou with mean differences of aggression scores ranging from 1.4-3.4 (Zhou *et al.*, 2013), and slightly higher than Hong Kong Chinese for all

subscales (mean differences ranging from 0.1-0.8) except for hostility (Maxwell, 2007), higher than Spanish adults for overall aggression and each subscale (mean differences ranging from 0.2-2.1) except for verbal aggression (Gallardo-Pujol *et al.*, 2006), but lower than Greek adults for each subscale (mean differences ranging from 0.2-1.7) (Vitoratou *et al.*, 2009). There were also studies of other populations (e.g., UK, US and Canada) (Webster *et al.*, 2014; Bryant and Smith, 2001). However, we could not make direct comparisons due to inconsistent response scales (e.g., 7-point, 6-point or 5-point scale) or aggression mean scores not given.

Our study throws light on the relationship between these three variables. First, we show that a high parental aggression score was associated with higher levels of all types of maltreatment of children, irrespective of parental history of childhood maltreatment. While the positive association has been shown elsewhere for severe physical maltreatment (Stith *et al.*, 2009), this study provides evidence on physical maltreatment of different severity and other types of maltreatment such as emotional maltreatment and non-contact punishment. This is also the first time this has been observed in China. Secondly, our study provides evidence to support intergenerational transmission of maltreatment (Thornberry *et al.*, 2012). We show that 85.8 per cent of parents who had a history of childhood maltreatment subjected their children to maltreatment. This is higher than the range of 17-72 per cent indicated by both western and other Chinese studies (Kaufman and Zigler, 1987; Wang and Xing, 2014; Berlin *et al.*, 2011). There could be methodological reasons for this difference, for example, differing definitions for maltreatment, and different sample characteristics. Importantly, we included 38 disciplinary acts of different type and severity, which may lead to higher estimates of

maltreatment as it prompts recall. In contrast Wang and Xing (2014) used only six items drawn from CTSPC (Straus *et al.*, 1998). However, our very high figure of 85.8 per cent does indicate the persistence of a normative punitive culture in China.

The results show that intergenerational transmission of maltreatment differed with severity and type. Firstly, we found no evidence for intergenerational transmission of minor physical maltreatment and non-contact punishment. This contrasts with previous findings reported by Chinese studies (Wang and Xing, 2014). Secondly, parental childhood maltreatment was significantly associated with a higher risk of moderate/severe physical maltreatment of children, and parental aggression was an explanatory factor of this association. Specifically, parental exposure to maltreatment during childhood is positively associated with aggressive tendency in adulthood, which in turn is associated with maltreatment of children. This supports the findings of Simons *et al.* (1991) who provided evidence that harsh parenting of one generation may be transmitted indirectly through influencing the personality of the next generation (Simons *et al.*, 1991). Berlin *et al.* (2011) also found that the positive association between maternal childhood physical maltreatment and maltreatment of children could be mediated by mothers' aggressive tendency (Berlin *et al.*, 2011). Childhood maltreatment predicting aggressive tendency in adulthood is also supported by some mainland Chinese studies (Chen *et al.*, 2015), but our study explored for the first time the role of parental aggression in the intergenerational transmission of maltreatment.

Lastly, parental childhood maltreatment was positively associated with emotional maltreatment of children. This was partly explained by parental aggression. This is of

interest because most research has tended to focus on physical maltreatment. Two studies on a combination of verbal and physical harsh discipline lend support to our finding of the intergenerational transmission of emotional maltreatment (Bailey *et al.*, 2009; Simons *et al.*, 1991). They found that harsh parenting, including shouting, demonstrated continuity from generation to generation. Unlike physical maltreatment, we show intergenerational transmission of emotional maltreatment was only partly explained by the pathway of parental aggression. There may be other underlying mechanisms, for example, the social learning theory (Muller *et al.*, 1995). Biological or familial factors may also underlie the intergenerational maltreatment according to genetic studies on criminality and delinquency. However, these factors were not examined in this study. More research is needed to understand the underlying mechanisms, involving biological, family or social context factors.

The strength of this study is that we collected data from both parents and children, allowing for the variable of child maltreatment to be defined from more than one perspective, and for a comparison of findings for parents and children in a way that few studies do. Researchers recommend collecting data from multiple sources to get a 'better estimate' of child maltreatment prevalence (Kaufman *et al.*, 1994). However, our research also has limitations. Firstly, the data comprised self-report of past experience, with clear potential for recall bias and inaccuracy. Both acceptance of acts of maltreatment as normal in China, and simple lying, may lead to erroneous reporting. Parents were asked to complete questionnaires without children's involvement, but we do not know how many complied. Secondly, parental history of childhood maltreatment was measured with two questions. This may lead to under-reporting, despite specific examples being provided.

For instance, levels of overall maltreatment in childhood experienced by parents and children were very similar in our study, contradicting assumptions of secular downward trends in child maltreatment (Gilbert *et al.*, 2009). Thirdly, since this study only collected data from either the mother or father of each child within one household, we were not able to analyse the role of the spouse's aggressive tendency and childhood maltreatment. Fourthly, the cross-sectional design cannot address causality and longitudinal studies are clearly necessary in the future. Lastly, only four schools were sampled from Zhejiang province, which raises the question of the representativeness of this data. Even within the province, the findings should be generalised with caution.

Conclusions

Despite the limitations, this study has important implications. Firstly, parents with higher aggressive tendency were more likely to use all types of maltreatment with their children, and parental aggression was also an explanatory factor for the intergenerational transmission of moderate/severe physical maltreatment and emotional maltreatment. This shows that it may be possible to identify parents' aggressive tendencies through a simple test. This could in turn lead to early prevention and intervention programmes to reduce child maltreatment and break the intergenerational transmission of maltreatment. Secondly, we were able to identify possible norms of aggression measured by Bryant and Smith's (2001) shortened version of Aggression Questionnaire in a general population of Chinese parents. This could provide a basis for future studies allowing for comparisons across population groups in China. Finally, high levels of child maltreatment, especially severe forms, were admitted by Chinese parents. This indicates the need for parenting

education focusing on appropriate methods for disciplining children. Crucially, our findings indicate the need for a formal child protection system across the whole country.

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Table 1: A summary table of key variables reported by parents

Variables	<i>n</i> (%) or mean± <i>SD</i>
Outcome	
Child maltreatment (<i>N</i> =576) ^a	334(58.0)
Physical maltreatment (<i>N</i> =576)	
No	430(74.6)
Minor only	38(6.6)
Moderate/Severe	108(18.8)
Emotional maltreatment (<i>N</i> =576)	318(55.2)
Non-contact punishment (<i>N</i> =576)	30(5.2)
Exposure	
Parental history of childhood maltreatment (<i>N</i> =525)	296(56.4)
Parental aggression	
Overall (range 12-60) (<i>N</i> =515)	25.9±8.9
Female	25.7±9.0
Male	26.1±8.9
Anger (range 3-15) (<i>N</i> =518)	7.0±3.0
Female	7.2±3.1
Male	6.7±2.8
Hostility (range 3-15) (<i>N</i> =518)	6.9±3.0
Female	6.9±3.0
Male	6.9±2.9
Physical aggression (range 3-15) (<i>N</i> =517) ^b	4.9±2.4
Female	4.6±2.3
Male	5.3±2.6
Verbal aggression (range 3-15) (<i>N</i> =517)	7.1±2.6
Female	7.1±2.7
Male	7.2±2.6
Covariates	
Parents	
Age (range 22-63) (<i>N</i> =390)	39.8±4.9
Relationship with the child (<i>N</i> =576)	
Mothers	333(57.8)
Fathers	243(42.2)
Education (<i>N</i> =519)	
Primary school or below	60(11.6)
Middle school	279(53.8)
High school or above	180(34.7)
Children	
Age (range 10-16) (<i>N</i> =575)	12.8±1.2
Sex (<i>N</i> =576)	
Boy	296(51.4)
Girl	280(48.6)
Single child (<i>N</i> =576)	
Yes	270(46.9)
No	306(53.1)
Family	
Economic status (<i>N</i> =565)	
High-income	88(15.3)
Middle	373(64.8)
Low-income	104(18.1)
Residence (<i>N</i> =576)	
Urban	225(39.1)
Rural	351(60.9)

^a Child maltreatment indicated whether one or more of the acts were used during the previous year, including physical maltreatment, emotional maltreatment and non-contact punishment.

^b Physical aggression score: significant gender difference.

Table 2: Preceding-year prevalence of different forms of child maltreatment reported by parents (N=576)

Items	Preceding-year prevalence <i>n</i> (%)		
	Total	Mothers	Fathers
Physical maltreatment	146(25.3)	82(24.6)	64(26.3)
Minor physical maltreatment			
Slapped on the bottom with bare hand	59(10.2)	35(10.5)	24(9.9)
Hit on the bottom with an object such as a stick, broom, cane or belt	45(7.8)	28(8.4)	17(7.0)
Slapped on the hand, arm or leg	37(6.4)	17(5.1)	20(8.2)
Shook aggressively	32(5.6)	20(6.0)	12(4.9)
Pinched to cause pain	27(4.7)	16(4.8)	11(4.5)
Moderate physical maltreatment			
Twisted ear	65(11.3)	42(12.6)	23(9.5)
Hit on head with knuckles	39(6.8)	25(7.5)	14(5.8)
Hit elsewhere (not buttocks) with an object such as a stick, broom, cane or belt	33(5.7)	21(6.3)	12(4.9)
Slapped on face or back of head	22(3.8)	14(4.2)	8(3.3)
Kicked her/him	19(3.3)	7(2.1)	12(4.9)
Hit with a fist	11(1.9)	6(1.8)	5(2.1)
Pulled hair	10(1.7)	5(1.5)	5(2.1)
Threw or knocked down	9(1.6)	5(1.5)	4(1.6)
Put chili pepper, hot pepper or spicy food in his/her mouth (to cause pain)	2(0.3)	1(0.3)	1(0.4)
Severe physical maltreatment			
Hit over and over again with object or fist ('beat-up')	10(1.7)	6(1.8)	4(1.6)
Choked to prevent breathing	2(0.3)	1(0.3)	1(0.4)
Threatened with a knife	2(0.3)	1(0.3)	1(0.4)
Burned or scalded or punctured with needles	2(0.3)	2(0.6)	0(0.0)
Used sharp objects to hurt, such as a knife and broken glass	2(0.3)	2(0.6)	0(0.0)
Used a hand or pillow to prevent breathing (smother)	1(0.2)	1(0.3)	0(0.0)
Pressed his/her head under water	1(0.2)	1(0.3)	0(0.0)
Emotional maltreatment	318(55.2)	186(55.9)	132(54.3)
Shouted, yelled or screamed at him/her	220(38.2)	133(39.9)	87(35.8)
Threatened to spank or hit but did not actually do it	136(23.6)	86(25.8)	50(20.6)
Insulted by calling [name] dumb, lazy or other names like that	206(25.7)	112(33.6)	79(32.5)
Refused to speak or ignore	93(16.1)	59(17.7)	34(14.0)
Cursed	72(12.5)	43(12.9)	29(11.9)
Threatened to invoke harmful people against him/her, ghosts or evil spirits	41(7.1)	27(8.1)	14(5.8)
Threatened to leave or abandon	31(5.4)	18(5.4)	13(5.3)
Used public humiliation	30(5.2)	22(6.6)	8(3.3)
Blamed for parents' misfortune	20(3.5)	12(3.6)	8(3.3)
Said they would be sent away or kicked out of the house	12(2.1)	8(2.4)	4(1.6)
Told them you wished they were dead or had never been born	11(1.9)	7(2.1)	4(1.6)
Threatened to hurt	10(1.7)	7(2.1)	3(1.2)
Non-contact punishment	30(5.2)	19(5.7)	11(4.5)
Forced to hold a position that caused pain (e.g., standing/kneeling)	18(3.1)	11(3.3)	7(2.9)
Locked out of home	10(1.7)	5(1.5)	5(2.1)
Locked in the room	5(0.9)	4(1.2)	1(0.4)
Withheld a meal as punishment	4(0.7)	3(0.9)	1(0.4)
Locked up or tied to restrict movement	3(0.5)	3(0.9)	0(0.0)
Overall child maltreatment	334(58.0)	194(58.3)	140(57.6)

Table 3: Associations between parental childhood maltreatment/aggression and physical maltreatment of their children (multiple imputed data): relative risk ratios (RRRs) and 95% CIs

Variables	PM (Ref.= No)—Unadjusted		PM (Ref.= No)—Adjusted ^a		PM (Ref.= No)—Adjusted ^b		PM (Ref.= No)—Adjusted ^c	
	Minor only	Moderate/severe	Minor only	Moderate/severe	Minor only	Moderate/severe	Minor only	Moderate/severe
Overall aggression score	1.05(1.01,1.09)	1.06(1.04,1.09)	1.06(1.01,1.11)	1.06(1.03,1.10)	-	-	1.06(1.01,1.11)	1.06(1.03,1.09)
>50th centile	1.95(0.96,3.95)	2.71(1.71,4.29)	2.17(0.98,4.80)	2.56(1.54,4.28)	-	-	2.04(0.90,4.61)	2.37(1.41,3.99)
Parental childhood maltreatment	2.00(0.96,4.14)	2.02(1.28,3.18)	-	-	1.58(0.71,3.54)	1.80(1.08,3.00)	1.32(0.57,3.02)	1.48(0.87,2.52)

Abbreviations: PM, physical maltreatment. RRR from multinomial logistic regression; Reference category: No

^a Model included parental aggression and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.

^b Model included parental childhood maltreatment and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.

^c Full Model included parental aggression, parental childhood maltreatment and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.

Table 4: Associations between parental childhood maltreatment/aggression and maltreatment of their children (emotional maltreatment and non-contact punishment)

Variables	<i>Emotional maltreatment— OR (95% CI)</i>				<i>Non-contact punishment— OR (95% CI)</i>			
	Unadjusted	Adjusted ^a	Adjusted ^b	Adjusted ^c	Unadjusted	Adjusted ^a	Adjusted ^b	Adjusted ^c
Overall aggression score	1.07(1.04,1.09)	1.07(1.04,1.10)	-	1.07(1.04,1.09)	1.06(1.02,1.11)	1.07(1.02,1.13)	-	1.07(1.02,1.12)
>50th centile	2.41(1.68,3.45)	2.34(1.55,3.53)	-	2.14(1.41,3.25)	2.14(0.96,4.80)	2.12(0.86,5.25)	-	1.86(0.74,4.67)
Parental childhood maltreatment	1.80(1.26,2.56)	-	1.89(1.27,2.83)	1.54(1.01,2.34)	2.23(0.90,5.54)	-	2.31(0.88,6.08)	1.88(0.69,5.13)

^a Model included parental aggression and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.

^b Model included parental childhood maltreatment and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.

^c Full Model included parental aggression, parental childhood maltreatment and covariates, including parent's sex, age, and education, urban/rural residence, economic status, child's sex and age, the number of children.