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Impacts of Childhood Psychological Maltreatment on Adult Mental Health

Zhuoni Xiao

Thesis submitted in fulfilment of requirements for the degree of Doctor of Philosophy in Psychology

To

Department of Psychology

School of Philosophy, Psychology and Language Sciences

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Preface

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Contributions

During my PhD studies, I have contributed to the following publications.

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Abbreviations

a-BIC	adjusted Bayesian Information Criteria
ACE	Adverse Childhood Experience
ACEs	Adverse Childhood Experiences
ADHD	Attention Deficit Hyperactivity Disorder
AIC	Akaike's Information Criteria
aOR	Adjusted Odd Ratio
APSAC	The American Professional Society on the Abuse of Children
BFF	Big Five Factor
BIC	Bayesian Information Criteria
BPAQ	Buss-Perry Aggression Questionnaire
CAS	Clinical Anxiety Scale
CEA	Childhood Emotional Abuse
CEN	Childhood Emotional Neglect
CES-D	Centre for Epidemiological Studies - Depression Scale
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFQ	Cognitive Failure Questionnaire
CI	Confidence Interval
CPMS	Childhood Psychological Maltreatment Scale
CTQ	Childhood Trauma Questionnaire
CTQ-SF	Childhood Trauma Questionnaire - Short Form
DSM-IV	The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition

DSM-V	The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
EA	Emotional Abuse
EBLS	Evidence for Better Lives Study
EN	Emotional Neglect
HIC	High-income Country
ICD-10	International Classification of Diseases-10
IPIP	International Personality Item Pool
ISPCAN	International Society for the Prevention of Child Abuse and Neglect
LGBTQ	Lesbian, Gay, Bisxeual, Transgender, Queer
LMR	Lo-Mendell-Rubin likelihood ratio test
LPA	Latent Profile Analysis
MCAR	Missing Completely At Random
MLR	Robust Maximum Likelihood Estimation
OCD	Obsessive-Compulsive Disorder
OR	Odd Ratio
PA	Psychological Abuse
PANS	Psychological Abuse and Neglect Scale
PD	Personality Disorder
PHQ-9	Patient Health Questionnaire-9
PMR	Psychological Maltreatment Review
PMR-C	Psychological Maltreatment Review - Chinese version
PN	Psychological Neglect
PNS	Psychological Non-support
PRISMA	Preferred Reporting Items for Systematic Review and Meta-Analysis

PS	Psychological Support
PTSD	Post-trauma Stress Disorder
QA	Quality Assessment
QM	Model Sum of the Squares
REML	Restricted Maximum-likelihood Estimator
RMSEA	Root Mean Square Error of Approximation
RMSR	Root Mean Square of Residuals
SD	Standard Deviation
SE	Standard Error
SES	Social-Economic Status
SLT	Social Learning Theory
SRMR	Standardized Root Mean Squared Residual
TLI	Tucker-Lewis index

Abstract

Previous studies have shown the negative impacts of child abuse on mental health in later life. Compared to physical and sexual abuse, psychological maltreatment has received less attention. Emerging literature has explored the associations between psychological maltreatment on adult mental health. However, no systematic review or meta-analysis focuses on the associations between childhood psychological maltreatment and adult mental health while controlling for other adverse childhood experiences. In addition, there is a lack of measures in China that focus on assessing childhood psychological maltreatment in all its relevant dimensions. Further, limited studies have explored the associations between different types and profiles of childhood psychological maltreatment and its associations with adult mental health. Therefore, this thesis aims to fill these gaps by reviewing previous literature on childhood psychological maltreatment and adult mental health, translating and validating a measure that focuses on childhood psychological maltreatment for use in China, assessing the associations between different types of childhood psychological maltreatment and adult mental health, and exploring different profile patterns in Chinese and the UK populations of childhood psychological maltreatment and its associations on mental well-being.

Chapter 1 provides a brief background to the existing literature on childhood psychological maltreatment and its associations with adult mental health outcomes. It also presents an overview of frequently used measures assessing childhood psychological maltreatment in China and the UK. In addition, this chapter demonstrates the key gaps in the previous literature. Chapter 2 uses a systematic review approach to review the previous literature on childhood psychological maltreatment and various adult mental health outcomes (i.e., depression and anxiety, eating disorders, personality disorders, suicidal ideation and attempts, substance abuse, and other psychological symptoms). It also reviews the comparison of the mental health outcomes between clinical populations and the general population on the

prevalence of childhood psychological abuse and neglect. Meta-analyses are conducted on several themes (i.e., depression and anxiety, suicidal ideation, and clinical population) to explore the effects sizes of childhood psychological abuse on these mental health outcomes. Chapter 3 introduces, translates, and validates the Psychological Maltreatment Review (PMR) for the Chinese population. Factorial validity, internal consistency, convergent and divergent validity, and gender measurement invariance are assessed. Chapter 4, which builds on Chapters 2 and 3, uses the higher-order model to examine the associations between childhood psychological abuse, neglect, and non-support and various mental health outcomes (i.e., depression, anxiety, anger, hostility, and physical aggression). This chapter explores whether different types of childhood psychological maltreatment are more harmful than others, whether the harms associated with different types of psychological maltreatment are generalised or specific to particular domains of psychopathology, and whether there are gender invariances in these associations. Building on Chapter 4, which compares sub-dimensions of childhood psychological maltreatment, Chapter 5 explores the effects of different profiles of psychological maltreatment in the Chinese and the UK population. Various mental health outcomes, such as depression, anxiety, and aggression, and broader well-being, such as self-esteem, are assessed. Lastly, Chapter 6 provides a general summary of the results from Chapters 2 – 5 and an overall discussion. In conclusion, this thesis contributes to understanding the associations between childhood psychological maltreatment and adult mental health. The empirical findings of this thesis emphasise the need to have policies that prevent psychological maltreatment and interventions that can address its psychological harms.

Lay summary

Previous research has suggested that child maltreatment is linked with various mental health problems, and these difficulties may continue to adulthood. Studies further indicated that different forms of childhood maltreatment are linked with other mental well-being problems. Much previous research has focused on childhood physical and sexual abuse, whereas childhood psychological maltreatment research lags behind. Further, few studies have focused on the outcomes of different forms of childhood psychological maltreatment. This thesis aimed to examine the associations between psychological maltreatment, such as psychological abuse, neglect, and non-support and various mental well-being outcomes, such as depression, anxiety, aggressive behaviours, and self-esteem. In addition, this thesis also explored different profiles of childhood psychological maltreatment in Chinese and the UK population. The results suggested that childhood psychological abuse and neglect strongly related to mental health outcomes, while psychological non-support showed weaker associations. However, psychological non-support in the later study suggested associations with broader mental well-being, such as self-esteem. Moreover, the profiles of childhood psychological maltreatment for Chinese and the UK populations differed, suggesting potential country-contextual differences. In conclusion, childhood psychological maltreatment showed strong relations with mental health outcomes; parenting training, intervention, and prevention should be promoted to the public.

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Chapter 1: Introduction

Synopsis

This chapter provides different approaches to defining childhood psychological maltreatment and the definition of childhood psychological abuse and childhood psychological neglect. Moreover, it provides a short background to the literature on childhood psychological maltreatment, as well as its associations with adult mental health outcomes. In addition, it demonstrates an overview of frequently used measurements assessing childhood psychological maltreatment in China and the UK. This chapter also presents the prevalence of childhood psychological maltreatment worldwide, as well as gives explanations on the varying prevalence. Gaps in the previous literature are also mentioned in this chapter. Finally, this chapter introduces the aims and objectives of this thesis and outlines the content of the following chapters introducing a set of manuscripts at various stages of the publication process.

Individuals who experienced adverse childhood experiences (ACEs) such as physical abuse, sexual abuse, emotional abuse, neglect, and household dysfunction during their childhood tend to have more mental health problems in adulthood than those who do not have ACEs (Hughes et al., 2017). Several systematic reviews and meta-analyses have looked more specifically at the associations between different types of childhood abuse and adult mental health. For instance, a recent umbrella review suggested that the negative effects of child sexual abuse include self-injury, somatisation, depression, anxiety, psychosis, and schizophrenia (Hailes et al., 2019). Another review suggested that the long-term consequences of child physical abuse included substance abuse, suicidality, eating disorders, anxiety, and depression (Norman et al., 2012).

It is well established that different forms of childhood abuse are significantly linked with mental health problems and emotional, cognitive, behavioural, and social outcomes in childhood (Maguire et al., 2015). These difficulties frequently continue into adulthood (Hughes et al., 2017). A large number of studies investigating the impacts of childhood physical and sexual abuse on adult mental health have been conducted; however, research on childhood psychological maltreatment lags behind. It is this gap in the research literature that this thesis has attempted to start filling.

Childhood Psychological Maltreatment

The past few decades have evidenced a growing consensus that psychological maltreatment is more prevalent than other forms of child maltreatment, and its impact is more destructive (Garbarino, Guttmann, & Seeley, 1986). Indeed, an empirical study (Claussen & Crittenden, 1991) established that psychological maltreatment was the most common destructive type across all forms of child abuse and neglect. However, despite this recognition, various definitions of psychological maltreatment remain and a lack of agreement on which to

adopt for scientific research. Some researchers (Brassard & Gelardo, 1987) have stated that psychological maltreatment is at the core of all child maltreatment. Therefore, it is more challenging to give a considerably precise definition of psychological maltreatment (Garrison, 1987; Rosenberg, 1987). Furthermore, some researchers have argued that psychological maltreatment is embedded in different forms of child maltreatment. For instance, Brassard and McNeill (1987) included physically and sexually abusive and non-physical acts under the 'psychological maltreatment' label. Hart (1987) stated that parental rejection is implied by physical maltreatment. Claussen and Crittenden (1991) measured psychological maltreatment separately and found that the majority of children (90%) who reported having been physically abused or neglected also reported having experienced psychological maltreatment. Taken together, psychological maltreatment is difficult to distinguish from other forms of abuse and challenging to define.

McGee and Wolfe (1991) discussed four conceptual perspectives on the nature of child maltreatment and the operational definition of psychological maltreatment based on parent behaviours and child outcomes (see Table 1.1). The topography of parental behaviours towards a child could be described as either 'physical' (i.e., involving physical contact with the child) or 'non-physical'. These two possibilities are shown at the top of Table 1.1. Similarly, child outcomes could also be described as either 'physical' or 'non-physical', shown on the left margin of Table 1.1. For instance, parental physical behaviours (e.g., slapping, hitting) towards the child result in physical harm to the child (e.g., scars), demonstrating the examples of physical abuse (shown in Cell 1).

The remaining cells in Table 1.1 represent another approach to defining psychological maltreatment. From one perspective (Cell 2), negatively non-physical maltreatment, such as continuedly ignoring a child's need, can result in physical consequences such as failure to thrive (Kavanagh, 1982). Alternatively, parental negative physical behaviours can result in

psychological adversity to the child (Cell 3). For instance, the child became excessively fearful after repeating experiencing sexual or physical abuse (Brassard & Gelardo, 1987). Finally, the definition I will focus on in this thesis – the 'pure' psychological maltreatment was shown in Cell 4. Parental negatively non-physicals behaviours (e.g., harshly criticising the child) can result in non-physical harm (i.e., psychological), such as lower self-esteem (Arslan, 2015).

Table 1.1. Four conceptual perspectives on the nature of child maltreatment

		Parents Behaviours	
		Physical	Nonphysical/ "Psychological"
Child Outcomes	Physical	Cell 1 Physical Abuse	Cell 2 Psychological maltreatment? (e.g., failure to thrive due to maternal deprivation)
	Nonphysical/ "Psychological"	Cell 3 Psychological maltreatment? (e.g., child is excessively fearful after repeated physical abuse)	Cell 4 Psychological maltreatment? (e.g., child's self-esteem is lowered by verbal derogation)

Harrison (1979) suggested that to define a concept operationally, it must describe the concrete operations that must be performed to demonstrate and or measure the concepts. However, psychological maltreatment behaviours are more difficult to define operationally and measure. Therefore, some researchers (Brassard & McNeill, 1987; Garrison, 1987) have developed a categorisation schema identifying the subtypes of psychological maltreatment.

Hart (1987) uses a rational-intuitive approach to describe seven subtypes that could be considered caregiver acts of psychological abuse.

The seven subtypes included (McGee and Wolfe, 1991, p.7):

1. Rejecting: active expression of rejection, as opposed to passively ignoring the child (e.g., scapegoating, actively refusing to help the child)
2. Degrading: actions that deprecate the child, including verbal derogating (e.g., insulting, publicly humiliating)
3. Terrorising: actions or threats that cause the child extreme fear and anxiety (e.g., threatening to hurt or kill, leaving a young child unattended)
4. Isolating: acts that separate the child from others (e.g., locking child in closet or room alone, refusing to allow interactions with other outside families)
5. Missocialising / corrupting: acts that render the child antisocial or missocialised, that teach or otherwise encourage the child to develop orientations that are destructive to others or him- or herself (e.g., encouraging criminal behaviours or substance abuse by the child, inculcating racist values)
6. Exploiting: situations in which a child is used for advantage or profit (e.g., sexual molestation, treating the child as a servant or surrogate parent, using the child for the purposes of child pornography or prostitution)
7. Denying emotional responsiveness: acts of omission in which the caregiver "fail to provide the sensitive, responsive caregiving necessary to facilitate healthy social/emotional development" (Hart, 1987, p.7); the caregiver is detached, uninvolved, and interacts with the child only when necessary.

The American Professional Society on the Abuse of Children (APSAC, 1995) states that "Psychological maltreatment means a repeated pattern of caregivers behaviours or extreme incident(s) that convey to children that they are worthless, flawed, unloved, unwanted,

endangered, or of value only in meeting another's needs". This guideline describes several types of psychological maltreatment, which are similar to McGee and Wolfe (1991, p.7). Despite different types of psychological maltreatment being identified, certain difficulties are inherent in the definitions. Some behaviours fall into different categories of psychological maltreatment; however, some do not. For instance, "restricting or interfering with cognitive/social development" falls into corruption, a non-obvious classification (Glaser, 2002). An alternative framework has been developed which is not based on child-parent interaction or parental behaviours. The elements of this framework are based on the child's psychosocial being, as stated below (Glaser, 2002, p. 703):

1. A person who exists,
2. This child with her or his own attribution,
3. A child who, by definition, is vulnerable, dependent, and rapidly developing,
4. An individual processing and experiencing her or his own feeling, thoughts, and perceptions; and
5. A social being who will increasingly interact and communicate within her or his own social context.

Caregivers or parents need to respect, recognise, and value each one of these elements of the child's needs. Therefore, the failures or violations of meeting a child's psychosocial needs would be categorised as psychological maltreatment (Cicchetti, 1993).

Psychological Abuse

Psychological maltreatment can be subdivided into emotional abuse (sometimes termed "psychological abuse") and emotional neglect (sometimes termed "psychological neglect") (McGee and Wolfe, 1991). (In this thesis, the term "psychological abuse" and "psychological neglect" will be used for consistency).

The term “psychological abuse” refers to the commission of hostile acts by caregivers towards the child (McGee and Wolfe, 1991) (examples see Table 1.2). While it often occurs alongside other forms of abuse, it can also be inflicted on its own (Baker & Festinger, 2011) and has been shown to be linked to a range of adverse child outcomes. For instance, Glaser and Lynch (2001) recruited 94 children from 56 families whose names have been placed under the “Psychological Abuse” category on the Child Protection Register. It found that children who experienced psychological abuse suffered from multiple developmental impairments. For instance, 63% of children showed emotional impairment such as low self-esteem, anxiety, distress or being frightened; 49% of children showed behavioural impairments such as oppositional, age-inappropriate responsibility, attention seeking, or antisocial and delinquent; 47% of children showed difficulties on educational attainment or development such as underachievement or school nonattendance and lateness; 35% of children showed difficulties in peer relations such as withdrawn or isolated and aggression; 35% of children showed impairments on physical state such as small stature or poor growth and physically neglected or unkempt; and 8% of children showed other difficulties such as sexualised behaviours. A recent review (Maguire et al., 2015) of the impact of experiencing psychological abuse on the emotional, behavioural and cognitive development of school-aged children suggested that psychological abuse significantly influenced a child’s behavioural features, such as externalising, internalising, attention deficit hyperactivity disorder (ADHD), emotional features such as low self-esteem, external controls, depression, and suicidality, and cognitive features include academic performance, lower general intelligence, reduced literacy, and numeracy.

As Hughes et al. (2017) stated, difficulties related to mental health frequently continue into adulthood. Several studies have investigated the negative impact of childhood psychological abuse on adult mental health. For instance, Taillieu et al. (2016) used a nationally

representative sample in the USA and assessed the associations between childhood psychological abuse and later mental disorders. It found that childhood psychological abuse was associated with a mood disorder (e.g., major depression, dysthymia, mania, or hypomania), anxiety disorder (e.g., panic disorder, social phobia, specific phobia, generalised anxiety disorder or post-trauma stress disorder), and substance abuse (e.g., alcohol abuse/dependence or drug abuse/dependence).

Psychological Neglect

The term "psychological neglect" refers to a caregiver's acts of omission in failing to provide necessary care for children, which may include meeting their basic needs (Dubowitz, 2013) (examples see Table 1.2). Unlike psychological abuse, psychological neglect may be unintentional, and caregivers are sometimes unaware that they are emotionally neglecting their child (Iwaniec, 2006). Compared to psychological abuse, psychological neglect gains less attention and sometimes falls into the general 'Neglect' (combining psychological and physical). Despite this, some studies have explored the impact of psychological neglect. For instance, Cohen et al. (2017) used 580 adolescents (mean age: 18.25) to explore the distal consequences of psychological neglect. They found that psychological neglect positively correlated with symptoms of depression, post-trauma stress disorder, cigarette smoking and illicit substance. In another study (Kealy et al., 2020), the authors found that perceived psychological neglect was significantly related to narcissistic vulnerability, which was associated with depressive and generalised anxiety symptoms.

Taken together, psychological maltreatment describes a relationship between the caregivers and child rather than an event or series of repeated events occurring within the parent-child relationship. In this type of relationship, the parent-child interactions are harmful by causing impairments in the child's psychological/emotional health and development.

Furthermore, psychological maltreatment may lead to impairment by the commission of harm and omission of care without physical contact (Glaser, 2002).

Table 1.2. Example Behaviours of PA and PN

Psychological Abuse	Psychological Neglect
• Belittling, denigration, or other rejection • Singling out or humiliating in public, • Intentionally trying to scare, humiliate, ignore, or isolate a child • Confining within environment • Having rigid/unrealistic expectations accompanied by threats if not meet • Restricting social interaction in community	• Failing to provide necessary care for children • Providing little or no warmth, nurturing, praise during any developmental period in childhood • Being detached or uninvolved; interact only when necessary • Refusing to provide serious emotional health

Source. Adapted from Hibbard et al. (2012) and Dubowitz (2013).

Note. PA = Psychological Abuse; PN = Psychological Neglect.

The Prevalence of Psychological Maltreatment Worldwide

Research has shown that psychological maltreatment not only has deleterious effects on individuals' development but is also widespread (Iwaniec, Larkin, & Higgins, 2006). Psychological maltreatment has been found to be associated with a variety of mental health outcomes such as depression (Paul & Eckenrode, 2015), eating disorder (Guillaume et al., 2016), personality disorder (Kuo et al., 2015), low self-esteem (Arslan, 2016), externalising

behaviours (Hagborg, Tidefors, & Fahlke, 2017), anxiety (Choi, & Sikkema, 2016). However, it is invariably stated in research reports that psychological maltreatment is challenging to define and, therefore, to recognise reliably. Indeed, previous self-reported prevalence of psychological abuse has ranged from 11.3% to 46.7% (Stoltenborgh et al., 2012), while the prevalence of psychological neglect has ranged from 12.5% to 55.1% (Stoltenborgh, Bakermans-Kranenburg, and Van Ijzendoorn, 2013). This considerable variation in the prevalence resulted in difficulties in measuring psychological maltreatment and other factors that could influence the prevalence, such as procedural factors and sample characteristics.

Procedural factors have three dimensions – (1) whether the measurements are based on self-report or informants' report; (2) whether psychological maltreatment was measured by a single item or multiple items; and (3) whether the populations are convenience samples or randomised samples. Stoltenborgh et al. (2012) conducted a review of the prevalence of psychological abuse and found that the combined prevalence (i.e., the prevalence of self-report and informants' reports) was 26.7%. However, the combined prevalence of psychological abuse based on informants' reports was only 0.3%, significantly lower than the prevalence based on self-report (36.3%). Stoltenborgh et al. (2012) hypothesised that the prevalence of psychological abuse would be higher if researchers used multiple items rather than a single item to assess psychological abuse. According to these authors, this would be the case because multiple items provide more details and information on specific behaviours of psychological abuse, leading to high reports of psychological abuse.

Sample characteristics such as gender, geographic origin, differences between collectivism and individualism and family social-economic status (SES) can also affect the psychological maltreatment report rate (Stoltenborgh et al., 2012). Gender differences are important to consider in child maltreatment. For instance, girls report more childhood sexual abuse than boys (Walker et al., 2014). Scher et al. (2004) found that girls were more often the

victims of psychological abuse than boys. However, Iwanice et al. (2006) suggested that gender did not significantly influence the prevalence of psychological abuse. Similar findings from a meta-analysis (Stoltenborgh et al., 2012) suggested that gender did not seem to impact psychological abuse rates.

Another variable that has been explored concerning its impact on psychological maltreatment is the geographical origin. For instance, Meston et al. (1999) suggested that the differences between each family system and cultural values might be underlying the differences in the occurrence of child psychological abuse. Consistently, Moody et al. (2012) reported that the prevalence of psychological abuse in North America was 28.4% (reported by females) and 13.8% (reported by males), while the reported rate was lower in Europe for both genders (females: 12.5%; males: 6.2%). Similarly, Witt et al. (2017) reported that 2.6% (female: 3.9%; male: 1.2%) of the general population experienced psychological abuse in Germany.

Besides this, Stoltenborgh et al. (2012) also suggested that collectivism and individualism would show the difference in the reported rate of psychological abuse. They argued that familial and social harmony and interdependence were emphasised in collectivist cultures. It might result in parents' more frequent use of emotional discipline strategies, such as induction of guilt and shame. In some extreme form, these discipline strategies could be regarded as psychological abuse, showing relatively high rates of psychological abuse. On the other hand, the interdependence of collectivist values could prevent the individual from disclosing any abuse to prevent shame to the family (Elliott & Urquiza, 2006). However, no clear evidence supports significant differences between the prevalence of psychological abuse in collectivist and individualist societies.

The prevalence of psychological neglect sometimes is included under the overall 'Neglect' category, making it impossible to distinguish the prevalence of psychological neglect specifically in those studies. However, a few studies investigated the reported rates of

psychological neglect. For instance, Witt et al. (2017) reported that 7.1% (female: 8.1%; male: 5.9%) of the general population experienced psychological neglect in Germany. Another meta-analysis by Stoltenborgh et al. (2013) on the prevalence of psychological neglect worldwide found that the rate was 18.4%. A more recent study by van Berkel et al. (2020) on the prevalence of child maltreatment in the Netherlands suggested that psychological neglect was the most prevalent form of child maltreatment (18.69%). Socioeconomic status (SES) might be a reason that impacts the reported rate of psychological neglect. Indeed, Brown et al. (1998) conducted a 17-year prospective study on the risk factors for child maltreatment and found that low family income was significantly associated with child maltreatment. Stoltenborgh et al. (2013) also drew a similar conclusion. These authors suggested that family SES could affect the rate of psychological neglect – a family with low SES is often associated with more child psychological, and previous studies had a similar conclusion.

Research Gap

The Need for a Global Overview of the Mental Health Impacts of Childhood Psychological Maltreatment

However, due to the less attention and focus on psychological maltreatment, there is a literature gap in the review of the negative impacts of psychological maltreatment on adult mental health. Numerous systematic reviews and meta-analyses have been conducted on the associations between child maltreatment and adult mental health. For instance, Gardner et al. (2019) reviewed different forms of child maltreatment (e.g., physical abuse, sexual abuse, psychological abuse, neglect, and exposure to intimate partner violence) and found that all forms of child maltreatment were associated with the depressive disorder; psychological abuse was also associated with anxiety disorder and post-trauma stress disorder. Angelakis et al. (2020) reviewed 79 studies and found associations between core types of child maltreatment

and suicidal behaviours in children and young adults. Maguire et al. (2015) reviewed 30 studies on school-aged children who experience psychological abuse and neglect and found those with psychological maltreatment experiences presenting poor academic performance, ADHD symptomology or abnormal behaviours. Norman et al. (2012) reviewed 124 studies on the associations between physical abuse and psychological abuse and neglect. They found statistically significant associations between psychological abuse and neglect and depressive symptoms, drug use, suicide attempts, sexually transmitted infections, and risky sexual behaviours. There are numerous reviews have explored the associations between different forms of child maltreatment (e.g., physical, sexual, and emotional abuse, and neglect) and mental health in the general population, children, or adults; however, none have focused exclusively on psychological maltreatment and adult mental health. Moreover, previous literature has stated the negative impacts of childhood psychological maltreatment on adult mental health. Taken together, it highlights the need for a systematic review of the literature related to adult mental health.

The Need for a Valid, Reliable Multi-dimensional Measure of Psychological Maltreatment for Use Outside of HIC Context

Unlike physical and sexual abuse, psychological maltreatment is hard to detect and measure; therefore, a valid and reliable measurement would be needed. There are several measurements for assessing child maltreatment, for instance, the Childhood Trauma Questionnaire – Short Form (CTQ-SF; Bernstein et al., 2003) and Adverse Childhood Experience (ACE).

Bernstein et al. (2003) used exploratory and confirmatory factor analyses of 70 original Childhood Trauma Questionnaire items and developed a short version which contained 28 items (i.e., 25 clinical items and three validity items). The 25 clinical items are divided into

five sub-scale - physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect. For the emotional abuse sub-scale, example items are "Felt hated by family", or "Parents wished was never born". For the emotional neglect sub-scale, example items are "Made to feel important (reverse)", or "Family was source of strength (reverse)". CTQ-SF has been widely used in different populations, such as chronically depressed patients (Negele et al., 2015), substance-dependent patients (Ekinci & Kandemir, 2015), obese patients (Belli et al., 2019) as well as community populations (Brown et al., 2018; Forde et al., 2012). CTQ-SF has been translated into various languages, such as German (Wingenfeld et al., 2020), Chinese (Zhao et al., 2005), and Korean (Kim et al., 2011) and had acceptable reliability and validity. CTQ-SF has also been widely used in China. The reliability and validity of its scores in samples of undergraduates and clinically depressed populations (He et al., 2019), LGBTQ youth (Wang et al., 2021), substance use disorder patients (Cheng et al., 2018), patients with schizophrenia (Jiang et al., 2018) and adolescents (Wan et al., 2018) have been found to be acceptable.

Similarly, ACE has been used in several studies. ACE, developed by the Centre for Disease Control and Prevention, US, was used to examine individuals' adverse childhood experiences. There are ten items in this measure, assessing three dimensions of childhood adversity – child abuse (e.g., physical, sexual, and emotional), neglect (e.g., physical and emotional) and household dysfunction (e.g., household mental illness, parental separation/divorce, incarcerated household member, household substance abuse, and domestic violence). Example items for emotional abuse and neglect, respectively, are "Did you often feel that… No one in your family loved you or thought you were important or special?" or "Your family didn't look out for each other, feel close to each other, or support each other?"

The ACE is widely used across different contexts, such as community and developing country settings (Larkin, Shields, & Anda, 2012; Ramiro, Madrid, & Brown, 2010). Jia-Mei,

Wen, and Feng-Lin (2016) translated the ACE into Chinese and reported high internal consistency in the Chinese population.

Psychological Maltreatment Review (PMR; Briere, Godbout, & Runtz, 2012) is a newly developed measurement for assessing childhood psychological maltreatment, which focuses on three sub-dimension – psychological abuse, psychological neglect, and psychological non-support. Each dimension contains ten questions and uses a 7-point response scale to measure the frequency of caregivers' behaviours during respondents' childhood. Different from CTQ-SF and ACE, PMR only focuses on childhood psychological maltreatment.

While CTA-SF and ACE are widely used validated measures, they both have a limited number of items assessing psychological abuse and neglect – ACE only has a single item, while CTQ-SF only has five for each abuse and neglect. Moreover, many measures were developed based on the populations from the Western and high-income countries (HIC). Therefore, the availability of a measurement that would yield valid and reliable scores of psychological maltreatment is vital. Furthermore, there is a particular need for measures that can be used in a context outside of HIC, in which psychological maltreatment may be even more prevalent (Moody et al., 2018).

The Need to Examine Core Assumptions About Child Psychological Maltreatment

Vachon et al. (2015) suggested that there were four assumptions made concerning child maltreatment:

1. Harmfulness (i.e., that child maltreatment causes substantial harm)
2. Non-equivalence (i.e., that the harmfulness of child maltreatment varies by type of maltreatment)
3. Specificity (i.e., that specific forms of child maltreatment have specific consequences)

4. Non-universality (i.e., that there are gender and race differences among the effects of child maltreatment)

The most robust assumption was the harmfulness caused by child maltreatment. Several systematic reviews and meta-analyses have shown evidence of the firm and positive associations between different forms of child maltreatment and their harmfulness (see Fry, McCoy, & Swales, 2012; Leeb, Lewis, & Zolotor, 2011; Norman et al., 2012 for reviews). Some forms of child maltreatment in the legal system are felonies, but others are legal, supporting the assumptions of non-equivalence of harm (Vachon et al., 2015). Previous studies have focused on the equivalence harm of physical and sexual abuse; however, data from meta-analyses (Norman et al., 2012) did not show appreciable differences. Compared with physical and sexual abuse, psychological maltreatment gains less attention. Therefore, an important question is whether different forms of psychological maltreatment (i.e., psychological abuse and psychological neglect) are equally harmful. Muniz et al. (2019) found that childhood psychological abuse, not psychological neglect, was highly associated with externalising but not internalising problems. Vahl et al. (2016) found that childhood psychological abuse showed a stronger correlation with internalising problems than childhood psychological neglect.

The Need for More Nuanced Approaches to Measuring Experiences of Psychological Maltreatment

Previous studies focused on specific forms of childhood maltreatment and their links to mental health outcomes (Fung et al., 2020; Florez et al., 2020). These typically used variable-centred approaches that assume homogeneity among participants. Thus, it remains to be established how multiple childhood adversities of clusters interact with one another, as well as to illuminate how different exposure patterns may be (differentially) related to mental health outcomes. A new approach, person-centred analysis such as latent profile analysis, allow

common exposure patterns to be identified among the subgroups of participants (Love & Durtschi, 2021). Previous studies used this approach and showed how this approach could provide illumination on adverse childhood experiences. For instance, Dobson et al. (2021) used latent profile analysis and found that the samples could be divided into four profiles (i.e., "Dysfunctional Family Environment", "Sexually Abused", "Emotionally Mistreated", and "No Maltreatment"). While previous studies used the latent class/profile approach to illuminate abuse profiles and their consequences, none have thus far provided an in-depth exploration of psychological abuse, psychological neglect, and psychological non-support. Moreover, no studies use latent profile analysis to investigate the different profiles of childhood psychological maltreatment and compare the different profiles across China and the UK.

Thesis Aims

Due to the limitations outlined in the previous sections, the associations between different types of childhood psychological maltreatment and adult mental health are still poorly understood. Therefore, this thesis has the following aims:

1. Synthesise previous empirical research exploring the associations between childhood psychological maltreatment (i.e., psychological abuse and psychological neglect) and adult mental health outcomes.
2. Translate and validate The Psychological Maltreatment Review (PMR) in the Chinese population.
3. Explore the associations between different types of childhood psychological maltreatment and general psychopathology.
4. Investigate different profiles of childhood psychological maltreatment and their associations with adult well-being in Chinese and English-speaking populations.

Overview of Chapters

Chapter 2 summarises the previous studies relevant to childhood psychological abuse and neglect and adult mental health outcomes (i.e., depression, anxiety, substance abuse, suicidal ideation or attempts, personality disorders, eating disorders, and other psychological symptoms). This chapter fills the previous literature gap on the impacts of childhood maltreatment (i.e., abuse and neglect) on adult mental health.

Chapter 3 introduces the translations and examination of the factorial validity, internal consistency, convergent and divergent validity, and gender measurement invariance of the Chinese version of the Psychological Maltreatment Review (PMR). It used adverse childhood experiences, depression, and anxiety to assess convergent validity and used cognitive failure and imagination to assess divergent validity. This chapter translates the PMR and demonstrates good reliability for the adapted PMR, consistent with previous studies using the PMR in Western contexts. It also compares the factor structure of the Chinese and English versions of PMR and genders.

Chapter 4 examines the associations between childhood psychological abuse, psychological neglect, psychological non-support, and various adult mental health outcomes such as depression, anxiety, and aggression (anger, physical aggression, and hostility). This chapter presents a higher-order model that allows investigating whether different types of childhood psychological maltreatment are more harmful than others, whether the harms associated with different types of psychological maltreatment are generalised or specific to particular domains of psychopathology, and whether the associations vary by gender.

Chapter 5 examines different profiles of childhood psychological abuse, psychological neglect and psychological non-support and their associations with a range of mental health (i.e., depression, anxiety, anger, physical aggression, verbal aggression, and hostility) and broader

well-being (i.e., self-esteem). This chapter brings evidence of different latent profiles of the Chinese and English populations.

Lastly, **Chapter 6** provides a summary of the result from Chapter 2 – 5 and a general discussion. The studies from the empirical chapters were designed to investigate the associations between childhood psychological maltreatment and various mental health outcomes in both Chinese and English populations. Finally, this chapter also outlines the next steps for future research.

Chapter 2: The Impact of Childhood Psychological Maltreatment on Mental Health Outcomes in Adulthood: a Systematic Review and Meta-Analysis

Synopsis

This chapter synthesis the previous literature on the associations between childhood psychological abuse and neglect and several adult mental health outcomes, for instance, eating disorder, personality disorder, depression and anxiety, substance abuse, suicidal ideation, and other psychological symptoms. Furthermore, this chapter also investigated the comparison between clinical population and general population on the prevalence and differences on the impacts of childhood psychological maltreatment.

Dissemination status

The work presented in Chapter 2 has been published at Trauma, Violence, & Abuse as "The Impact of Childhood Psychological Maltreatment on Mental Health Outcomes in Adulthood: a Systematic Review and Meta-Analysis". The publication paper is available here: https://doi.org/10.1177/15248380221122816

Author contributions

I conceptualised and designed the study, reviewed paper, assessed the included study's quality, conducted analyses, drafted the initial manuscript, and revised the manuscript based on co-author and peer reviewers' feedback. Mina Murat Baldwin and Wong Siu Ching as second and third reviewers, reviewed the paper and assessed the included study's quality. Dr Murray, Dr Obsuth, and Dr Meinck supervised me and provided feedbacks at all stages from study design to journal submission.

The Impact of Childhood Psychological Maltreatment on Mental Health Outcomes in Adulthood: a Systematic Review and Meta-Analysis

Zhuoni Xiao[1*], Mina Murat Baldwin[1], Wong Siu Ching[1], Ingrid Obsuth[2], Franziska Meinck[3,4], Aja Louise Murray[1]

[1]Department of Psychology, University of Edinburgh, Edinburgh, UK

[2]Clinical Psychology, University of Edinburgh, Edinburgh, UK

[3]School of Social and Political Science, University of Edinburgh, Edinburgh, UK

[4]Faculty of Health Sciences, North-West University, Vanderbijlpark, South Africa

*Corresponding author at: 7 George Square, University of Edinburgh, Edinburgh, UK, EH8 9JZ; email: Z.Xiao-10@sms.ed.ac.uk

Abstract

Childhood emotional abuse and emotional neglect are the least well-studied forms of childhood maltreatment due to challenges in their definition and in detection. However, the available evidence suggests associations with multiple adulthood mental health problems in clinical and non-clinical populations. This systematic review and meta-analysis (PROSPERO registration number CRD42020197833) explored the associations between childhood emotional abuse and neglect and a range of adulthood mental health problems based on systematic searches of eight databases. In total, 79 English and 11 Chinese studies met our inclusion criteria. Results suggested that childhood emotional abuse and neglect had positive associations with various adulthood mental health problems (d = 0.02-1.84), including depression, anxiety, substance abuse, suicidal ideation or attempts, personality disorders, eating disorders and other psychological symptoms in the general population and across different geographical regions. Further, findings suggested that compared with the non-clinical population, individuals in clinical populations were more likely to have experienced emotional abuse and neglect during childhood. The review highlights the need for more research on emotional abuse and emotional neglect. Further, future research should include more populations from non-western countries and non-college populations. They further underline the importance of addressing issues related to childhood emotional abuse/neglect experiences in the prevention and treatment of mental health issues in adulthood.

Keywords

Childhood Psychological Maltreatment, Childhood Emotional Abuse, Childhood Emotional Neglect, Depression, Anxiety, Substance Abuse, Suicidal Ideation, Meta-analysis

Introduction

It is well established that different forms of childhood abuse are significantly associated with mental health problems and emotional, cognitive, behavioural, and social outcomes in childhood (Maguire et al., 2015) and that these difficulties frequently continue into adulthood (Hughes et al., 2017). A recent umbrella review, for example, suggested that the negative impacts of child sexual abuse included self-injury, somatization, schizophrenia, depression, anxiety, and psychosis (Hailes et al., 2019). Another systematic review suggested that long-term consequences of child physical abuse included substance abuse, suicidality, eating disorders, depression, and anxiety (Norman et al., 2012). Moody et al. (2018) reviewed the rates of childhood maltreatment worldwide in females and males based on self-reported measurements. They found that the prevalence of physical abuse ranges from 5.0% to 40.2%; sexual abuse ranges from 2.5% to 29.8%; emotional abuse ranges from 6.5% to 53.8%, and neglect (both physical and emotional) ranges from 1.6% to 67.3%. The large variation in the estimate of self- reported childhood maltreatment likely reflects the fact that the review covered different regions such as Africa, Asia, Australia, Europe, and South and North America, combined with possible recall and self-report biases (Moody et al., 2018). The reason of large variation may be because different regions have different definitions and boundaries regarding childhood maltreatment, as well as true differences in their prevalence rates. Given the prevalence and evidence for the negative outcomes of childhood maltreatment there is a strong need for studies that can illuminate the full range and severity of its impacts. However, not all forms of childhood maltreatment have received equal attention in research. In particular, research exploring psychological maltreatment lags behind that of other forms of maltreatment. Psychological maltreatment can be sub-divided into emotional abuse (sometimes termed ‘psychological abuse’) and emotional neglect (sometimes termed ‘psychological neglect’) (McGee & Wolfe, 1991).

The term "emotional abuse" refers to hostile acts of commission by the caregivers toward the child (McGee & Wolfe, 1991) (for example behaviours see sTable 2.1 below). While it often occurs alongside other forms of abuse, it can also be inflicted on its own (Baker & Festinger, 2011). Previous literature has suggested negative impacts of childhood emotional abuse (CEA) on adult mental health. For instance, in one study, CEA was significantly associated with major depression, anxiety disorder and substance abuse disorder in a nationally representative adult sample from the USA (M_{Age} = 48.1 years) (Taillieu et al., 2016).

"Emotional neglect" refers to a caregiver's acts of omission, which may include failing to provide necessary care for children (Dubowitz, 2013) (for example behaviours see Table 2.1 below). Unlike CEA, childhood emotional neglect (CEN) may be unintentional, and caregivers are sometimes unaware that they are emotionally neglecting their child (Iwaniec, 2006). Research by Salokangas et al. (2019) suggested that CEA was significantly associated with depression, anxiety, and substance abuse. Finally, CEA and CEN may occur in different forms, which may be verbal or non-verbal, with intention or without intention, and active or passive.

Table 2.1. Example Behaviours of Childhood Emotional Abuse and Childhood Emotional Neglect

Childhood Psychological Abuse	Childhood Psychological Neglect
Belittling, denigrating, or other rejection	Failing to provide necessary care for children
Singling out or humiliating in public	Providing little or no warmth, nurturing,
intentionally trying to scare, humiliate,	praise during any developmental period in
ignore, or isolate a child	childhood
Confining within environment	Being detached or uninvolved; interact only
Having rigid/unrealistic expectations	when necessary
accompanied by threats if not meet	Refusing to provide serious emotional health

Restricting social interaction in community

Adapted from Hibbard et al. (2012) and Dubowitz (2013).

Taken together, psychological maltreatment refers to a repeated pattern of caregivers' behaviours that are likely to be interpreted by a child as being unwanted or unloved, and that undermine the child's development and socialization (Glaser, 2002). Psychological maltreatment describes a relationship between the parents and child rather than an event or series of repeated events occurring within the parent-child relationship, or the parent-child interactions are actually or potentially harmful by causing impairments in child's psychological/emotional health and development. Further, psychological maltreatment includes both omission and commission, and without physical contact (Glaser, 2002).

In line with research on other forms of maltreatment, psychological maltreatment has been shown to negatively affect children's social, cognitive, emotional, and/or physical development (Hibbard et al., 2012), with difficulties continuing into adulthood (Hughes et al., 2017; Grummit et al., 2021). Indeed, previous evidence suggests that the negative impacts of psychological maltreatment during childhood may manifest in numerous ways, such as impaired emotional, cognitive, or social development, and lead to mental health outcomes such as depression (Christ et al., 2019), suicide attempts (Falgares et al., 2018), emotional dysregulation (Burns, Jackson, & Harding, 2010), or personality disorder (Goodman et al., 2014) in the general population. Moreover, several studies have suggested links between childhood psychological maltreatment and mental health problems in clinical populations (Xie et al., 2018), for instance, those with eating disorders (Kent et al., 1999), alcohol dependency (Evren et al., 2011), or depressive disorders (Neumman, 2017). Besides this, mental health problems resulting from childhood psychological maltreatment can have multiple secondary effects in terms of social impairment (Armijo, 2017), lost productivity (Doran & Kinchin, 2019)

and increased treatment/support needs (Dixon, Holoshitz, & Nossel, 2016). However, no previous research has provided a systematic overview of associations between childhood psychological maltreatment and adult mental health.

There have been numerous systematic reviews and meta-analyses on the associations between childhood abuse and negative consequences, but none have focused exclusively on psychological maltreatment and adult mental health. For instance, Norman et al. (2012) found that CEA, and neglect in the general population were associated with depression, drug use, suicide attempts, sexually transmitted infection, and risky sexual behaviours. Maguire et al. (2015) demonstrated the social, emotional, and behavioural features in children who experienced neglect or CEA. The results showed that these children were more likely to exhibit poor academic achievement, were more prone to suicidality and low self-esteem and were less likely to develop friendships. Gardner, Thomas, and Erskine (2019) demonstrated that child abuse (i.e., sexual, physical, and emotional abuse and neglect) was associated with depressive disorder. Green, Browne, and Chou (2019) found that individuals with psychotic illness who experienced child abuse (i.e., sexual, sexual, physical, and emotional abuse and neglect) were at approximately twice the risk of perpetrating violence than individuals who did not experience child abuse. Angelakis, Austin and Goodling (2020) found that core types of childhood abuse (physical, sexual, and emotional abuse and neglect) are associated with a higher rate of suicidal behaviours in young people. In addition, Angelakis et al. (2020) also explored the association between childhood abuse and suicide attempt in prisoners. They found that childhood abuse (i.e., sexual, physical, and emotional abuse and physical and emotional neglect) was strongly associated with suicide attempts in this population.

As such, numerous reviews have explored the associations between different forms of child abuse and mental health in children, young adults, general populations, and the prisoner population. However, those reviews are limited with respect to identifying the effects of

psychological maltreatment. For instance, Maguire et al. (2015) looked at neglect as a whole instead of only focusing on emotional neglect. Norman et al. (2012) examined the effects of CEA but only focused on a limited set of psychosocial outcomes. Furthermore, given the rate at which research is published in this area, an updated review of the links between CEA and mental health outcomes capturing research published in the decade since the searches of the Norman et al. (2012) systematic review is merited. Moreover, some existing literature has proposed that psychological maltreatment has a greater deleterious effect on mental health outcomes than physical abuse. For instance, Claussen and Crittenden (1991) found that psychological maltreatment was more strongly predicted subsequence impairment than physical abuse. This suggests the needs for systematic reviews that examine the links between psychological maltreatment and adult mental health.

To the best of the authors' knowledge – to date, no research has been carried out with a specific focus on synthesizing current evidence on the relations between childhood psychological maltreatment by caregivers (i.e., parents or another caregiving adult living in the same household) and adult mental health. According to the Office for National Statistics (2016), the perpetrators of psychological maltreatment are most likely to be the primary female caregivers (40%) (i.e., biological/step/adoptive father) and the primary male caregivers (35%) (i.e., biological/step/adoptive mother). Indeed, in the nuclear family model, parents are among the caregivers who spend most of the time with their children and are the primary disciplinarians. They tend to be the most common perpetrators of most types of child maltreatment (Devries et al., 2018). Therefore, a systematic review and meta-analysis of associations are needed to clarify how psychological maltreatment perpetrated by an adult living in the same household during childhood is associated with different mental health outcomes in adulthood.

The goal of the current study was to address this gap and provide an improved understanding of the consistency and strength of the link between childhood psychological maltreatment and a range of adult mental health outcomes at both the clinical and sub-clinical levels. The current systematic review and meta-analyses can provide more precise estimates of the associations with various mental health outcomes than have been provided by any primary study to date. This is important because it provides a clearer picture of which mental health issues are potentially most affected by psychological maltreatment, informing prevention and intervention that is more tailored to the anticipated psychological impacts of psychological maltreatment. It also allows us to examine the factors that moderate the magnitude of these associations and to evaluate whether the field is affected by publication bias. By including studies both published in English and Chinese, we can also start exploring the question of any potential differences in the links between childhood maltreatment and mental health outcomes across country and cultural contexts. Previous research has suggested that there are potential cultural differences between Western contexts and China in accepted and expected parenting behaviours (Xiao et al., 2022) and this may have implications for the associations between psychological maltreatment and mental health outcomes. In addition, previous reviews on any maltreatment have only included English speaking studies which could have some limits.

Study Aim

Hence, we here undertake a systematic review and meta-analyses of the relations between psychological maltreatment and a range of mental health outcomes in studies published in both Chinese and English. There are four primary review questions:

1. What are the long-term associations of childhood psychological maltreatment (CEA and CEN) on adult mental health.

2. What are the unique effects of childhood psychological maltreatment (CEA and CEN) by caregivers on adult mental health after adjusting for other forms of abuse and relevant confounders?

3. How do study-level moderators such as years of publication, study methodological quality, and study location affect these associations?

4. Are there differences in these associations between English-language and Chinese- language papers?

Method

This review is reported following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) (Pages et al., 2021). The protocol for this systematic review was registered in the International Prospective Register of Systematic Reviews (PROSPERO) with registration number CRD42020197833 and published in the journal Systematic Reviews (Xiao et al., 2021).

Search Strategy

The selection of search terms was based on the keywords used in the previous literature examining the impact of childhood psychological maltreatment on adult mental health problems. Table 2.2 provides an overview of the search terms. The Boolean operators 'OR' and 'AND' were used to combine terms with specific syntax adapted for individual databases (an example is provided in Supplementary Material Table S2.1). As well as linking mental health and maltreatment terms together, the maltreatment terms were combined with child* and the mental health terms with adult* in order to link the concepts to the relevant developmental stages. We searched the Web of Science, Medline, PubMed, PsycINFO, Applied Social Science Index and Abstract, ERIC and EMBASE databases and ZhiWang for

literature written in Chinese. The exclusion of studies other than those published in English may have potential biases because they do not represent all of the evidence (Morrison et al., 2012). Therefore, studies written in both English and Chinese will be reviewed, reflecting the language capabilities of the team.

Table 2.2. Overview of Search Terms

Childhood emotional abuse and Neglect	Adult mental health
Child abuse	Mental health
Childhood psychological maltreatment	Generalized anxiety disorder
Childhood emotional abuse	Depression
Childhood emotional neglect	Major depression disorder
Psychological aggression	PTSD
Psychological violence	Personality disorder
Psychological domestic violence	Eating disorder
Childhood psychological victimization	Bipolar disorder
	Schizophrenia
	Panic disorder
	Psychosis
	Social anxiety disorder
	Suicide attempt
	Suicidal ideation
	Non-suicidal self-injury
	Substance abuse

Eligibility Criteria

We only included studies that met the following criteria: a) participants aged over 18 at the assessment of the mental health problem, b) studies that measured CEA and/or CEN before age 18 using prospective longitudinal and retrospective methods, using self-or-other-reported questionnaires, interviews, or police or social work records, c) studies that measured mental health problems (standard diagnoses as listed in the DSM-V or ICD-10 or using mental health scores based on validated measures) using self-or-other-reported questionnaires or clinical interviews, d) studies that only assessed childhood psychological maltreatment, CEA and/or CEN or studies that assessed both CEA and CEN and other types of abuse (e.g., physical or sexual), e) studies where the perpetrators were the primary caregivers or an adult living in the same household, f) studies published in English or Chinese language.

We excluded the following types of studies: 1) any book chapters, case studies, letters, opinions, and editorials that did not present new data, b) qualitative investigations, c) review papers (e.g., narrative reviews, systematic reviews, or meta-analysis), d) studies that did not provide an analysis of CEA/CEN linked to different mental health outcomes separately, e) studies that focus on non-parental others (e.g., in institutional care) or where data from primary caregivers or adults in the household could not be disaggregated from the data on abuse perpetrated by others, f) studies where different types of abuse were combined and not separately reported so that it was not possible to obtain an effect for CEA/CEN, g) studies where the outcomes were physical rather than mental conditions.

Study Selection

First, the titles and abstracts were assessed, followed by full-text screening conducted on those that met inclusion criteria. All articles identified in the searches were screened by two reviewers, co-authors of this paper. Reviewer one (ZX) and reviewer two (MMB) screened the English language articles, while reviewer one and reviewer three (WSC) screened the Chinese articles. All reviewers hold at least masters-level degrees in Psychology and have specialist

knowledge of mental health. In addition, reviewers 1 and 3 have specialist knowledge of the topic of abuse. Disagreements between the reviewers were resolved by a fourth reviewer (ALM) who holds a doctorate in Psychology and has specialist knowledge of the topics of abuse and mental health. The reviewers then independently conducted data extraction and studies' methodological quality assessment. It was possible to arrive at consensus for all studies, with 10 English language studies and 8 Chinese language studies first requiring discussion between reviewers.

Data Extraction

Data from each selected study were extracted and recorded in the form presented in Supplementary Materials (Table S2.2 – Table S2.9). The form has fields "Population Data" that include information regarding 1) authors' names, 2) publication year, 3) sample size, 4) location, 5) sample population, 6) sample population demographics, and 7) setting. "Study Data" includes information regarding 1) study methodology, 2) types of abuse assessed, 3) measurement of CEA/CEN, 4) measurement of mental health outcomes, 5) perpetrator of maltreatment, and 6) age at exposure to maltreatment. "Result" includes information regarding 1) study findings, 2) odds ratio or adjusted odds ratio if available, and 3) other statistical information as relevant.

Assessment of Methodological Quality

Classification of risk of bias was based on the Newcastle-Ottawa Quality Assessment Scale (see Supplementary Material Table S2.10 – Table S2.12) was used to assess both case-control studies (e.g., non-longitudinal studies) and cohort studies (e.g., longitudinal studies) (Well et al., 2017). Three main domains with eight sub-domains were included in this assessment: selection (adequateness of case definition, representativeness of the cases, selection of controls and definition of controls), comparability (comparability of cases and controls based on the design or analysis) and exposure (ascertainment of exposure, same

method of ascertainment for cases and control and non-response rate). Each study was awarded stars (i.e., if the study met the criteria for sub-domains, a star would be awarded.) from zero to eight based on these criteria, with more stars representing a lower risk of bias.

Data synthesis and analysis

We used a narrative synthesis to analyse the main characteristics of each study (i.e., study location, sample size and characteristic, abuse types, abuse measurement, mental health measurement, perpetrators, and study effect size). Studies were organized based on mental health outcomes and population types (i.e., personality disorder, eating disorder, psychological symptoms, suicidal ideation, depression and anxiety, substance abuse and clinical population studies).

Due to the restricted number of the reported effect sizes in other areas, only the effects related to three mental health problems/populations (i.e., suicidal ideation, depression and anxiety and clinical population) were meta-analysed. A random-effects model was used as it was assumed that effect sizes were sampled from a heterogeneous population, i.e., studies were expected to represent fairly substantial differences in method (i.e., types of participants, measurements) and were thus not anticipated to reflect a single underlying effect size. The 'metafor' package for R statistical software was used to carry out the meta-analyses (Viechtbauer, 2010). Due to different statistical information provided in the included papers, we extracted all "r" statistics and converted them into Cohen's d. If a paper did not provide "r", we extracted the odds ratio and converted it to "r" in an additional step.

Study heterogeneity was assessed qualitatively by examining the characteristics of the studies. Statistical heterogeneity was assessed by calculating I^2. Publication bias was explored using a funnel plot (Higgins & Green, 2011). A trim and fill method (Duval, 2006) was used to statistically test for its potential impacts. A moderator analysis assessed study-level moderators such as year of publication, quality of the study, and location of the study.

Overview of Studies

Based on the English literature search, 2,389 studies were found. Of these, 23 were duplicates, leaving 2,366 studies (see Figure 2.1). Screening by title left 379 and after screening the abstract, 193 studies remained eligible for full-text screening. In the full-text screening phase studies were excluded because: 1) mental health outcomes were assessed before the age of 18 (n = 48); 2) psychological maltreatment was not analysed separately (n = 47); 3) abuse was not perpetrated by primary caregivers (n = 4); and 4) there was no mental health outcome variable (n = 15). In total, 79 studies were included in the systematic review.

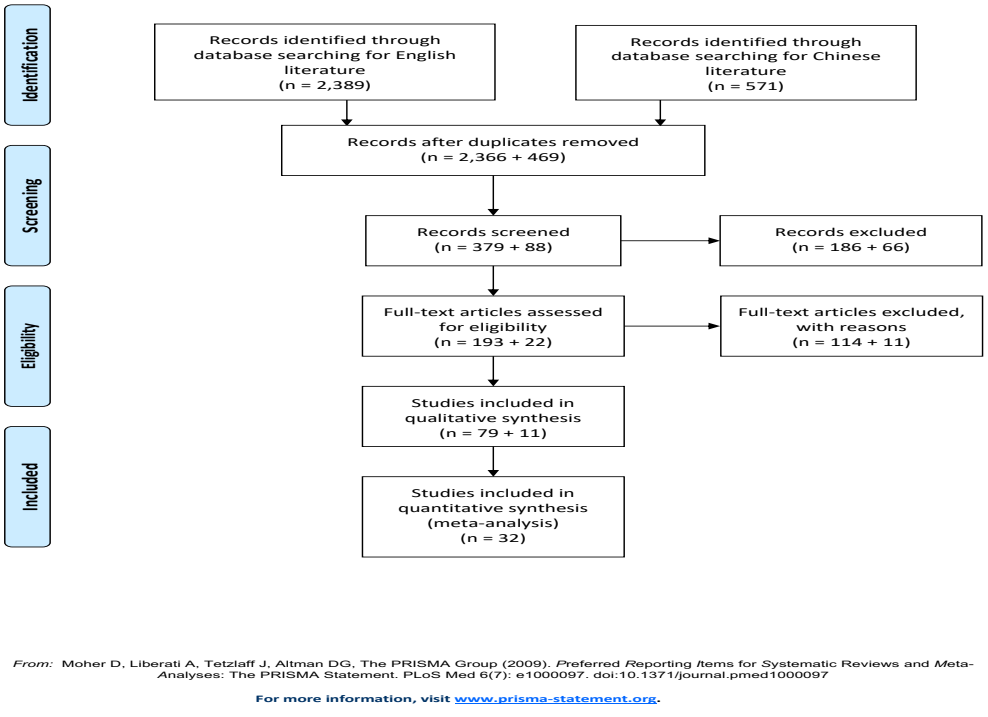

Figure 2.1. Flow chart of the systematic review based on PRISMA guidelines.

Based on the Chinese literature search, 571 studies were found. Of these, 102 were duplicates, leaving 469 (see Figure 2.1). After screening by title, 88 studies remained, and 11

studies were eligible for the full-text screening after abstract screening. Studies were excluded in the full-text screening phase because 1) mental health outcomes were assessed before the age of 18 (n = 5); 2) CEA and CEN were not measured (n = 2); and 3) mental health outcome variables were not assessed (n = 4). In total, 11 Chinese studies were included in the systematic review.

For the English-language studies (n = 79; 38 studies measured both CEA and CEN, 30 studies measured CEA and 1 study measured CEN only), Supplementary Material (Table S2.2) shows the main characteristics of all the included studies organized by theme. The 79 studies were published between 1997 and 2020. Fourteen studies conducted longitudinal research or used secondary datasets; four studies (Afifi et al., 2012; Harford et al., 2014; Taillieu et al., 2016; Waxman et al., 2014) used the same secondary dataset for different outcomes. The rest of the studies (n = 65) used a case-control study design and were cross-sectional studies. The sample size of the studies ranged from 75 to 34,653. In studies based in non-clinical settings (n = 48), most were conducted in the general population (n = 21) or in college student populations (n = 11). In the clinical settings (n = 23), studies were conducted relating to various mental health problems in patient populations (i.e., depression, bipolar disorder, schizophrenia, mood disorder, substance abuse disorder). Of these, 13 studies compared non-clinical and clinical populations. Four studies included only females (Christ et al., 2019; Haferkamp et al., 2015; Kent et al., 1997; Thompson et al., 2000), and two studies only included male participants (Can et al., 2019; Evren et al., 2016). Most of the studies (n = 57) measured all abuse types (physical abuse, physical neglect, sexual abuse, EA and EN), and most (n = 59) used the Childhood Trauma Questionnaire (CTQ) or Childhood Trauma Questionnaire-Short Form (CTQ-SF). These two questionnaires measure traumatic incidents including physical abuse, sexual abuse, EA, EN, and physical neglect). The included studies used various measures for mental health outcomes. These ranged from general mental health measurements

(e.g., Centre for Epidemiological Studies Depression Scale – CES-D); to those that corresponded with the DSM-IV classification (e.g., Structured Clinical Interview for DSM-IV Axis I Disorder); few developed their own questions. The perpetrators of the CEA or CEN were mainly primary caregivers (n = 65); some (n = 13) were parents or adults living in the same household, while only one study examined multiple perpetrators (Kruger et al., 2017).

For the literature written in Chinese (n = 11), Supplementary Material (Table S2.3) provides the main characteristics of the included studies. Meta-analysis was not possible due to the small number of studies in each outcome group. The 11 studies were published between 2001 and 2018. All the studies used a case-control study design. The sample size of the studies ranged from 110 to 1,502; however, most of the studies (n = 9) were of college students. The measures were well-established in the Chinese context with acceptable internal consistency ($\alpha > .70$). All studies used measurements that assessed CEA and CEN (i.e., Child Psychological Abuse and Neglect Scale, Childhood Emotional Abuse Scale, Parent-Child Conflict Tactics Scales). The perpetrators of the maltreatment were all parents or caregivers. Measures for mental health outcomes covered various mental health problems, for instance, depression (i.e., Self-Rating Depression Scale, Centre for Epidemiologic Studies Depression Scale), personality disorder (i.e., Symptoms Checklist 90), and suicidal ideation (i.e., Positive and Negative Suicide Ideation).

Supplementary Materials (Table S2.4 – Table S2.6) and Supplementary Materials (Table S2.7 – Table S2.9) provide the available information on the extraction forms mentioned above for English and Chinese studies, respectively.

Results

CEA and CEN and Adult Mental Health Outcomes in the English Language Publications

CEA and CEN and Adult Personality Disorder

Across six studies (three in a clinical setting), CEA and CEN were risk factors for the development of Personality Disorders (PD) later in life, even when controlling for other types of abuse, basic demographic characteristics, parental psychopathology, and comorbid PDs. Specifically, Waxman et al. (2014) found that CEN predicted avoidant, paranoid and schizoid PD and CEA predicted borderline, narcissistic and schizotypal PD. Goodman et al. (2014) reported that both CEA and CEN were associated with borderline personality disorder symptoms. A more recent study by Fung, Chung, and Ross (2020) also had similar results. Bernstein et al. (1998) explored the associations in substance abuse patients and found that CEA and CEN predicted personality pathology (all clusters). Cohen et al. (2013) and Cohen et al. (2014) studied nonpsychotic psychiatric patients and found CEA predicted Cluster C (DSM-5, 2013) (Obsessive-Compulsive, Passive-aggressive, and Self-Defeating) personality disorder traits. The effect size (Cohen's d) of these five studies for CEA ranged from 0.16 to 0.95; and for CEN, ranged from 0.16 to 0.59.

CEA and Adult Eating Disorder

In one study (non-clinical setting), CEA was the only form of abuse that predicted unhealthy eating attitudes in adulthood when controlling for other types of abuse. Age of exposure to CEA did not moderate this association (Kent et al., 1997).

CEA and CEN and Adult Suicidal Ideation/Attempts and Non-Suicidal Self-Injury Behaviours

Across 11 studies (all non-clinical settings), there were positive associations between CEA/CEN and suicidal ideation/attempts, even when adjusting for gender, age, race, or marital status (Harford et al., 2014). Gibb et al. (2001) conducted a 2.5-year follow-up study and found the associations between suicidal ideation and greater CEN in childhood remained significant. Briere et al. (2016) reported that CEA was associated with both recent suicide attempts and

recent suicidal ideation without attempts. Similarly, Harford et al. (2014), Thompson et al. (2000) and Saracli et al. (2016) reported the associations between CEN and suicidal ideation and attempts, with CEN was significantly related to suicidality. However, only one study (Smith et al., 2018) reported a non-significant link between CEA and suicidality. Besides suicidal ideation or attempts, Buser and Hackney (2012) found CEA to be significantly related to non-suicidal self-injury behaviours. The effect sizes (Cohen's d) in these 11 studies for CEA ranged from 0.11 to 1.28 and for CEN ranged from 0.30 to 1.28.

CEA and CEN and Adult Substance Abuse

Across nine studies (one clinical setting) individuals who experienced CEA were more likely than individuals who did not experience CEA to engage in different kinds of substance abuse, for instance, alcohol (Crouch et al., 2018; Elliott et al., 2014; Mandavia et al., 2016; Yuan et al., 2014), cannabis (Aas et al., 2014), heroin (Afifi et al., 2012) or nicotine (Elliott et al., 2014) abuse. Even when adjusting for demographic factors (age group, race/ethnicity, educational attainment, income, and rurality), most studies still found significant associations. Aas et al. (2014) found that cannabis abuse was significantly associated with CEA in bipolar disorder. However, Yuan et al. (2014) only found associations in females but not in males. Contrary to the above, one study (Florez et al., 2020) found that CEA was not directly associated with alcohol misuse. Only two studies (Afifi et al., 2012; Elliott et al., 2014) explored the associations between CEN and substance abuse and reported significant findings. The effect size (Cohen's d) of these nine studies for CEA ranged from 0.30 to 0.85 and for CEN ranged from 0.15 to 0.66.

CEA and CEN and Adult Depression and Anxiety

Across 14 studies (all non-clinical settings), there were significant associations between CEA or CEN and adult depression and anxiety. Some studies explored the relations between CEN

and adult depression and anxiety and found these associations were positive and significant (Balsam et al., 2010; Brown et al., 2016; Crow et al., 2014; Gong & Chan, 2018; Novelo et al., 2018; Sunley et al., 2020; Wright, Crawford, & Del Castillo, 2009). Many of the included studies examined mediators such as behavioural activation (O'Mahen et al., 2015), self-compassion and gratitude (Wu et al., 2018), or moderators such as emotional dysregulation (Crow et al., 2014). The effect size (Cohen's d) of these 14 studies for CEA ranged from 0.56 to 1.40; for CEN ranged from 0.01 to 0.70.

CEA and CEN and Other Psychological Symptoms

Across seven studies (all non-clinical settings), there were positive relations between CEA and CEN and other mental health issues defined and measured with different levels of specificity. The included studies assessed various mental health issues, for instance, auditory and visual hallucination (Abajobir et al., 2017), internalizing problems (van Duin et al., 2019), and general psychological symptoms (Dias et al., 2015; Fung et al., 2020; OLaoideet al., 2018; Sheikh, Abelsen, & Olsen, 2016; Taillieu et al., 2016). Taillieu et al. (2016) found that experiencing CEA and CEN increased the likelihood of mental health problems - CEN was associated with increased odds (aOR = 1.3) of depression, dysthymia, and social phobia, while CEA was associated with increased odds (aOR = 1.6) for lifetime diagnosis for borderline personality disorder. Fung et al. (2020) found when controlling for other types of abuse, individuals who experienced both emotional abuse and emotional neglect scored the highest for mental health problems (e.g., depression, anxiety, borderline personality disorder, PTSD, and somatoform dissociation), while individuals who experienced only emotional abuse or emotional neglect scored higher than individuals who had not experienced abuse. The effect size (Cohen's d) of these seven studies for CEA ranged from 0.032 to 0.554 and for CEN ranged from 0.101 to 0.787.

CEA and CEN reported in Clinical Populations

Participants in a total of 32 retrospective studies based on adult clinical populations from a range of countries (e.g., USA, UK, China, Turkey, France, Italy, Germany, Brazil, Istanbul, Korea, Norway, Poland, Iran, South Africa, Geneva, New Zealand), reported having experienced more CEA and CEN during their childhood compared to non-clinical populations. Except for the Bruni et al. (2018) study, which only measured CEA, all other studies measured both CEA and CEN. All mental health problems were diagnosed based on the DSM-IV or ICD-10 classification. Mental health problems included eating disorders (Amianto et al., 2018), PTSD (Evren et al., 2010; Evren et al., 2016; Haferkamp et al., 2015), major depression disorder (de Mattos Souza et al., 2016), bipolar disorder (Janiri et al., 2015; Etain et al., 2010; Fowke, Ross, & Ashcroft, 2012; Hariri et al., 2015; Kefeli et al., 2018; Ostefjells et al., 2017; Pavlova et al., 2015; Russo et al., 2013; Watson et al., 2014), alcohol use disorder (Can et al., 2019; Potthast et al., 2014), depression (Arnow et al., 2011; Huh et al., 2017; Kounou et al., 2013; Neumann, 2017; Schulz et al., 2017), personality disorder (Zhang et al., 2013), mood disorder (Ventimiglia et al., 2020), schizophrenia (Bruni et al., 2018), substance abuse (Khosravani et al., 2019; Mirhashem et al., 2017; Price, Connor, & Allen, 2017) and other psychological symptoms (Kruger et al., 2017; Sar, Islam, & Ozturk, 2009; Xie et al., 2018). None of the studies explored gender differences, except Russo et al. (2013), who found no gender differences in childhood CEA in bipolar disorder patients. Amianto et al. (2018) found that patients with eating disorders experienced more CEA and CEN than the healthy control group. Can et al. (2019) and Potthast et al. (2014) found that CEA scores were higher in alcohol use disorder patients. Haferkamp et al. (2015) suggested that women who had PTSD scored higher in CEA when controlling for other types of abuse. These findings suggested that clinical populations have a higher prevalence of CEA and CEN than non-clinical populations. The

effect size (Cohen's d) of these 32 studies for CEA ranged from 0.02 to 1.84; for CEN, they ranged from 0.08 to 0.73.

CEA and CEN and Adult Mental Health Outcomes in the Chinese Language Publications

Across 11 studies (one clinical setting), CEA, CEN, or psychological maltreatment was associated with various mental health outcomes in the Chinese population, mainly undergraduates. Only one study (Zhang et al., 2018) explored the differences between obsessive-compulsive disorder (OCD) patients and the general population and suggested that people with an OCD diagnosis were more likely to report having experienced psychological abuse during childhood. The retrospective studies drawing their samples from community settings showed significant correlations between childhood psychological maltreatment and self-injury behaviors (Dai et al., 2016; Zhang et al., 2017), suicidal ideation (Yang et al., 2019), aggression (Han et al., 2018), depression and anxiety (Chang & Wang, 2008; Deng et al., 2018; Guo, 2018; Wang & Liu, 2017; Zeng, 2016) and general mental health (Xie et al., 2008). Apart from these associations, some studies also explored the moderators and mediators of these links. For instance, Deng et al. (2018) found resilience played an important mediating role between college students' depression and childhood CEA; those students who experienced CEA and had higher resilience skills could reduce the chance of suffering depression symptoms. Wang and Liu (2017) suggested that cognitive flexibility played a mediating role in adult depression and CEA. Yang et al. (2019) found that rumination was a significant mediator between adult suicidal ideation and CEA. One study (Xie et al., 2008) examined gender differences in the occurrence rate of CEA and found that males had higher occurrence rates on both CEA and CEN than females.

Meta-analyses

A random-effect model (restricted maximum-likelihood estimator: REML) was used to carry out each meta-analysis.

Suicidal Ideation/Attempts

Based on nine studies (included studies are present in Table 2.3) that examined suicidal ideation/attempts as an adult outcome of CEA. The pooled estimate for the associations between CEA and adult suicidal ideation was 0.479 (95%CI [0.156, 0.803], $p < .001$, $tau^2 = 0.030$, $H^2 = 1.14$) suggesting a medium effect size (Figure 2.2). The heterogeneity test suggested that the variance between the included studies was not significant ($Q(8) = 8.186$, $p = .416$, $I^2 = 11.94\%$). Using the trim and fill method (Duval, 2006) to test potential publication bias, it was estimated that five studies were potentially missing (SE = 1.796). After adjustment for potential publication bias, the pooled estimated were 0.233 (95%CI [-0.025, 0.490], $p = 0.077$). The test for heterogeneity suggested $Q(13) = 18.844$, $p = .128$, $I^2 = 0$, suggesting that the effect size was smaller after adjustment. Funnel plots are provided in Figure 2.3.

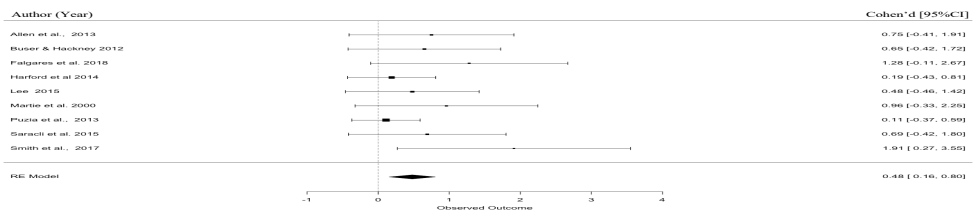

Figure 2.2. Forest Plot for CEA and Suicide Ideation

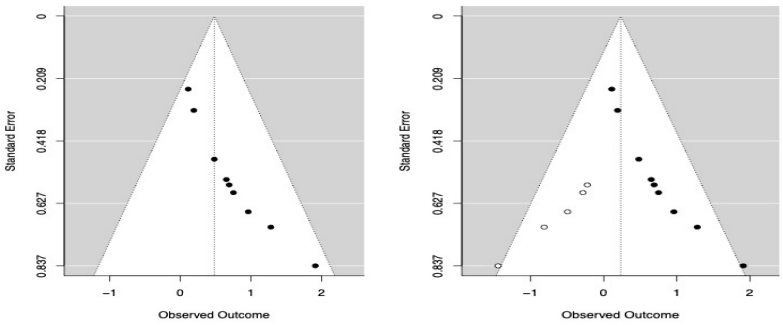

Figure 2.3. Funnel Plots of the included. Studies of the associations between emotional abuse and suicide ideation (left). Studies of the associations between emotional abuse and suicide ideation used the Trim and Fill method (right).

Depression and Anxiety

Based on the eight included studies (see Table 2.3), the pooled estimates for the associations between CEA and adult depression and anxiety were 0.36 (95%CI [0.036, 0.687], p = .030, tau^2 = 0.053, H^2 = 1.33) suggesting a small to medium effect size (Figure 2.4). The heterogeneity test suggested that the variance between the included studies was not significant (Q (7) = 9.214, p = .238, I^2 = 24.82%), demonstrating that the studies were comparable. Using the trim and fill method (Duval, 2006), it was estimated five studies were potentially missing (SE = 1.648). After adjusting for potential bias, the pooled estimates were 0.05 (95%CI [-0.113, 0.221], p = .524). The test for heterogeneity was Q (12) = 18.924, p = .090, I^2 = 0 suggesting that the effect size was smaller after adjusting potential publication bias. Funnel plots are shown in Figure 2.5.

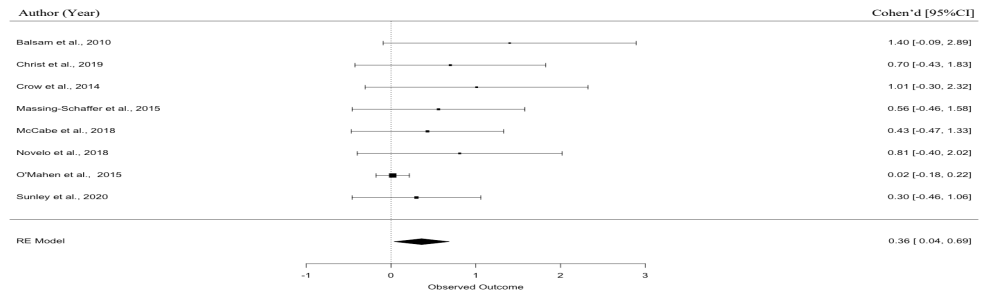

Figure 2.4. Forest Plot for CEA and Depression and Anxiety

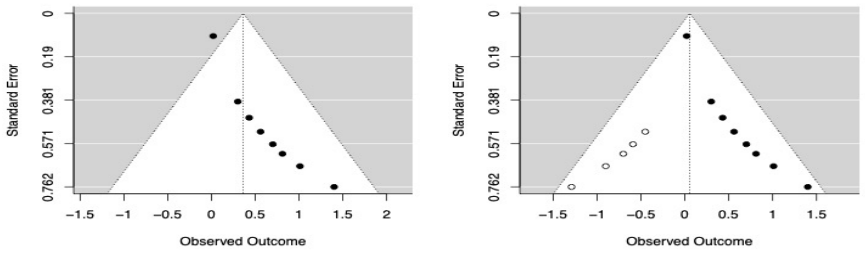

Figure 2.5. Funnel Plots of the included. Studies of the associations between emotional abuse and depression and anxiety (left). Studies of the associations between emotional abuse and depression and anxiety used the Trim and Fill method (right).

Clinical Population

Based on the 15 included studies (see Table 2.3), the pooled estimates for the associations between CEA and having a clinical diagnosis of a mental health disorder were 0.2 (95%CI [0.035, 0.365], p = .018, tau^2 = 0.013, H^2 = 1.16), suggesting a small to medium effect size. The heterogeneity test suggested that the variances between the included studies were not significant (Q (14) = 15.952, p = .316, I^2 = 13.44%). Figure 2.6 depicts the forest plot of the included studies. Using the trim and fill method (Duval 2006), it was estimated that seven studies were potentially missing (SE = 2.228). After adjusting for the potential bias, the pooled estimates were 0.07 (95%CI [-0.049, 0.202], p = .23). The test for heterogeneity was Q (21) = 31.038, p = .073, I^2 = 0, suggesting that effect size was smaller after adjusting the potential publication bias. Funnel plots are shown in Figure 2.7.

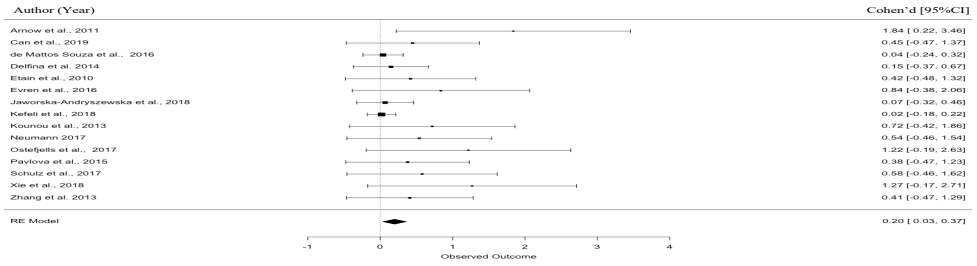

Figure 2.6. Forest Plot for CEA and Clinical Population

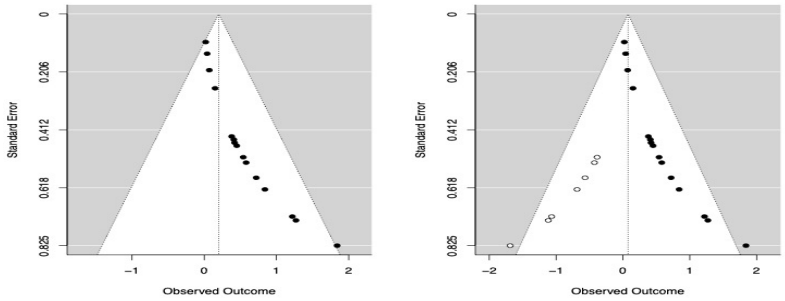

Figure 2.7. Funnel Plots of the included. Studies of the associations between emotional abuse and clinical population (left). Studies of the associations between emotional abuse and clinical population used the Trim and Fill method (right).

Table 2.3. Pooled effect size from random-effects meta-analyses

Author	Year	Location	N	r	Effect Size [95%CI]
Suicide Ideation					
Allen et al.	2013	N/A	260	0.35	0.75 [-0.41 - 1.91]
Buser & Hackney	2012	USA	390	0.30	0.65 [-0.42 - 1.72]
Falgares et al.	2018	Italy	293	0.54	1.28 [-0.11 – 2.67]
Harford et al.	2014	USA	34,653	0.10	0.19 [-0.43 – 0.81]
Lee	2015	Korea	1,396	0.23	0.48 [-0.46 – 1.42]
Thompson et al.	2000	USA	335	0.43	0.96 [-0.33 – 2.25]
Puzia et al.	2013	USA	189	0.06	0.11 [-0.37 – 0.59]
Saracli et al.	2016	Turkey	897	0.32	0.69 [-0.42 – 1.80]
Smith et al.	2018	USA	91	0.69	1.91 [0.27 – 3.55]
Suicide Ideation Total					0.48 [0.16 – 0.80]

Depression & Anxiety					
Balsam et al.	2010	USA	669	0.58	1.40 [-0.09 – 2.89]
Christ et al.	2019	Netherland	276	0.33	0.70 [-0.43 – 1.83]
Crow et al.	2014	USA	3,902	0.45	1.01 [-0.30 – 2.32]
Massing-Schaffer et al.	2015	USA	185	0.27	0.56 [-0.46 – 1.58]
McCabe et al.	2018	Latinas	548	0.21	0.43 [-0.47 – 1.33]
Novelo et al.	2018	Brazil	449	0.38	0.81 [-0.40 – 2.20]
Sunley et al.	2020	Netherland	22,551	1.48	0.30 [-0.18 – 0.22]
Depression & Anxiety Total					0.80 [-0.46 – 1.06]
Clinical Population					
Arnow et al.	2011	USA	5,673	0.68	1.84 [0.22– 3.46]
Can et al.	2019	Turkey	328	0.45	0.45 [-0.47 – 1.37]
de Mattos Souza et al.	2016	Brazil	473	0.02	0.04 [-0.24 – 0.32]
Janiri et al.	2015	Italy	207	0.08	0.15 [-0.37 – 0.67]
Etain et al.	2010	France	300	0.21	0.42 [-0.48 – 1.32]
Evren et al.	2016	Turkey	190	0.39	0.84 [-0.38 – 2.06]
Jaworska-Andryszewska et al.	2018	Poland	52	0.04	0.07 [-0.32 – 0.46]
Kefeli et al.	2018	Turkey	80	0.01	0.02 [-0.18 – 0.22]
Kounou et al.	2013	France	181	0.34	0.72 [-0.42 – 1.86]
Neumann	2017	Germany	191	0.26	0.54 [-0.46 – 1.54]
Ostefjells et al.	2017	Norway	261	0.52	1.22 [-0.19 – 2.63]
Pavlova et al.	2015	Geneva	174	0.19	0.38 [-0.47 – 1.23]
Schulz et al.	2017	Germany	123	0.28	0.58 [-0.47 – 1.23]
Xie et al.	2018	China	679	0.54	1.27 [-0.17 – 2.71]

Zhang et al.	2013	China	2,090	0.20	0.41 [-0.47 – 1.29]
Clinical Population Total					0.31 [0.03 – 0.37]

Methodological Quality Assessment

The Newcastle-Ottawa Quality Assessment Scale (Well et al., 2017) was used to assess the quality (range = 0-8) of selected studies. For English studies, there were 61 case-control studies (M = 5.96, range = 4-8) (see Supplementary Material Table S2.10) and 14 cohort studies (M = 6.07, range = 4-8) (see Supplementary Material Table S2.11). For the Chinese literature, there were 11 case- control studies (M = 3.90, range = 3-5) (see Supplementary Material Table S2.12).

Moderator analysis

Moderation analysis was conducted to evaluate if study-level moderators (year of publication, study quality and study location) affected the associations between EA and adult mental health. We conducted a moderation analysis for suicidal ideation, depression, and anxiety and the clinical population studies. The results suggested that none of these moderators significantly impacted these associations (see Table 2.4).

Table 2.4. Moderator Analyses

	QM (df)	p
Suicide ideation		
Year	0.000 (1)	0.983
Location	2.072 (4)	0.723
QA	8.168 (1)	0.318
Depression & anxiety		
Year	0.266 (1)	0.606

Location	7.998 (4)	0.092
QA	0.068 (1)	0.795
Clinical population		
Year	2.709 (1)	0.100
Location	13.105 (10)	0.218
QA	0.050 (1)	0.822

Notes. QA = quality assessment

Key findings are presented in Table 2.5.

Table 2.5. Critical Findings

1. This is the first systematic review and meta-analyses that looks at the long-term effects of CEA and CEN on adult mental health
2. CEA and CEN are significantly associated with adult personality disorder, eating disorder, depression, anxiety, suicidal ideation or attempts, substance abuse, and other psychological symptoms.
3. Clinical populations are more likely than non-clinical populations to have experienced CEA or CEN during childhood.
4. The associations between CEA/CEN and adult mental health remain significant after adjusting for other types of abuse.
5. Moderators such as publication year, region, and study methodological quality did not affect the associations between CEA/CEN and adult mental health problems.
6. There is a consistency of findings in associations between studies conducted in European countries, the USA, and Asia, suggesting that the impact of CEA/CEN on adult mental health is universal.

7. Studies conducted on the Chinese populations showed consistent results with English studies.

Discussion

Findings from 79 English and 11 Chinese papers using data from 132,082 participants over 18 years old suggested that CEA and CEN are associated with poorer adult mental health. Our goals were to: 1) review and synthesize evidence to illuminate the long-term effects of childhood psychological maltreatment on mental health; 2) assess whether there were unique effects of these forms of abuse after adjusting for others; 3) explore whether study-level moderators such as year of publication, study methodological quality, and study location affect these associations; and 4) explore whether there are differences in these associations between English- and Chinese-language papers.

Our findings suggested that CEA and CEN are associated with mental health outcomes in adulthood in both English- and Chinese- language papers, including the outcomes of suicidal ideation, depression, anxiety, eating disorders, personality disorders, and other psychological symptoms. Similarly, those belonging to clinical populations defined by adulthood mental health issues (e.g., major depression, bipolar disorder, personality disorder, schizophrenia, etc.) were shown to have experienced more CEA and CEN. We conducted meta-analyses for the mental health outcomes with sufficient studies, namely, suicidal ideation, depression, and anxiety. The results showed that the pooled estimates suggested a small to medium effect in the expected direction. Moreover, the current review also found that the effects of CEA and CEN remained significant after adjusting for other forms of abuse.

We also found that the results from the included studies were not affected by the region where the studies were conducted. We also found in our descriptive comparison that the results

in English- and Chinese-language papers were consistent. That is, except for the different measurements and participants involved in English- and Chinese- languages, we found no differences between English and Chinese literature in the association between CEA and/or CEN and poorer adult mental health. Taken together, these findings suggest that the associations between CEA and/or CEN and adult mental health are likely to be universal. Finally, the quality of the studies did not moderate the results of the included studies.

Completeness and Applicability of Evidence

This is the first systematic review focused on the long-term mental health correlation of experiencing CEN and CEA perpetrated by caregivers (parents or adults living in the same household) as victims. Our findings are consistent with previous systematic reviews that have focused on associations between other types of abuse and adult mental health (e.g., Norman et al., 2012; Leeb et al., 2011). For instance, Norman et al. (2012) reported an association between different forms of abuse (physical abuse, EA, and neglect) and various health consequences (e.g., drug use, suicide attempts, depression disorder, risky sexual behaviours); however, unlike in the present review, CEN was only considered as part of the broader concept of child neglect. Relative to this study, our findings provide updated results reflecting studies published in the last decade since the publication of that review, and also report additional associations between CEA and CEN and the outcomes of personality disorders, eating disorders, depression, and anxiety, suicidal ideation, self-injury, substance abuse, and other psychological symptoms. We also found that clinical populations reported more CEA and CEN in their childhood. Another recent systematic review (Petruccelli, Davis, & Berman, 2019) explored different forms of childhood maltreatment and their impact on depressed mood, illicit drug use, suicidal ideation, obesity, and problematic alcohol or tobacco use. They found that the associations between childhood maltreatment and mental health outcomes were positive and significant. Finally, Liu et al. (2018) found that CEA and CEN were related to non-suicidal self-injury behaviours in

their review. The findings from our review, in which we cover varying populations without limitations on gender, ethnicity, cultures, and socio-economic status, are thus consistent with previous reviews suggesting long-term impacts of experiencing childhood abuse. We also reviewed the Chinese literature, which examined whether the associations between CEA/CEN and adult mental health generalized to different cultural contexts and found similar results.

However, there were some methodological differences worth highlighting. In the Chinese literature, researchers only measured CEA and CEN, not accompanied by measures of other types of abuse, which may have left the possibility of confounding with other types of abuse. Moreover, only Chang and Wang (2008) used a general population sample, other studies (n = 9) used college students, and one (Zhang et al., 2018) compared clinical populations and general populations.

Quality of Evidence

During the review process, some key limitations were identified. First, there was considerable variability in measurement methods for psychological maltreatment and mental health outcomes. Using different measures has both benefits and disadvantages. For example, similar results based on diverse measurement approaches increases confidence in the findings; however, measurement heterogeneity also makes it difficult to compare the results across studies. There were several ways in which the measurement approaches differed. First, some studies measured various types of abuse while some only measured CEA and CEN. In the latter case there was no possibility to adjust for different forms of abuse. As such, these studies show that those experience CEA and CEN will be at risk of poorer adult mental health outcomes; however, they cannot identify the unique effects of CEA or CEN. This is a limitation given that different forms of abuse and adversity often co-occur and future studies on CEA and CEN are encouraged to measure these concepts in the concept of other risk factors for mental health issues, especially other forms of abuse. Another difference among studies was that some aimed

to measure only childhood abuse within the family setting (e.g., physical abuse, sexual abuse, emotional abuse, or neglect). In contrast, others aimed to capture more general surroundings such as peer relations or living environment. Third, the age of victimization varied widely, from 14 to 18. Finally, the perpetrators referred to in the measures differed. Some studies examined parents or caregivers as perpetrators; some were parents or another older adolescent or adult; some were parents or adults in the same household (e.g., this is often how the CTQ is used); some referred to multiple perpetrators. This was different from the Chinese studies where the perpetrators referred to in all the included studies were limited to only parents or primary caregivers.

The English language studies were mainly located in the USA (n = 32). There were another 26 studies conducted in high-income countries or regions (e.g., UK, France, Poland, Italy, Netherland, South Korea, Germany, Norway, Portugal, New Zealand, Hongkong, Australia, Geneva) and 21 studies conducted in low- or middle-income countries or regions (e.g., China, Brazil, Turkey, Iran, South Africa). Our review suggested that the associations between CEA and poor adult mental health are consistent worldwide, and this was confirmed by our moderation analysis which tested location as a moderator. The locations of the Chinese studies spanned the southern to the northern region of China; however, they were mainly from the regions with higher economic development. The lack of studies conducted in regions with lower economic development may be because there are many “left-behind children” (i.e., parents moved to other cities for work and left their children at home and asked other relatives or guardians to take care of them). The absence of parents may make the associations between CEA or CEN and adult mental health difficult to research. Studies were mainly conducted between 2010 and 2020, which suggested increasing attention to childhood psychological maltreatment and adult mental health. However, moderator analyses suggested that associations between CEA and adult mental health were not affected by the publication years.

Finally, results suggested that most of the studies had a low risk of bias for English literature, while most studies had a higher risk of bias for Chinese literature. However, for both English and Chinese literature, the study quality did not affect the associations between CEA/CEN and adult mental health.

Finally, our review highlighted that CEN was found to have received less research attention compared to CEA. Only 38 English language and 11 Chinese language studies assessed CEN in our review. There are four types of child abuse – physical, sexual, emotional abuse, and neglect. Emotional neglect is under the category of neglect; therefore, some studies investigated neglect as a whole instead of emotional neglect only. For future research and measurement development, it would be beneficial to focus on the measurements for CEN and its impacts on adult mental health.

Strengths and Limitations

The current systematic review and meta-analyses represent the first effort to synthesize the English and Chinese literatures on the associations between childhood psychological maltreatment and adult mental health.

The inclusion of studies written in both English- and Chinese-language may reduce generalizability issues as investigators in non-English speaking countries tend to publish some work in local journals (Dickersin, Scherer, & Lefebvre, 1994). In particular, researchers might be more likely to publish positive and significant results in an international English journal while reporting negative findings in the local journal (Egger & Smith, 1998). In the current review, we included a wide geographical reach and also included samples diverse in terms of languages, genders, ethnicity, cultures, race, nationality and geography; however, some areas of the world, especially those less developed within and across countries were under-represented.

However, our study also has some limitations with respect to diversity. Although the current review covered a wide geographical range, information such as gender identity, sexual orientation, religion, and ability were not typically available and older age groups were generally under-represented. Further research will be needed to address these gaps. In addition, due to the limited number of studies on some mental health problems (i.e., eating disorders, personality disorders, substance abuse, and other psychological symptoms) and articles written in Chinese, it was only possible to carry out meta-analyses on a limited number of outcomes (i.e., suicidal ideation, depression, and anxiety, and more reported CEA and CEN in clinical population). The lack of studies conducted in non-Western countries also meant that we could not fully explore these associations and their differences across different regions such as Africa, India, or South Asia. Last, despite our research team using multiple strategies to screen and extract the literature, we might have missed or misinterpreted some details presented in the literature reviewed, given the inherent challenge of identifying all studies and the subjectivity of the review process.

Implications and Future Research

This review has implications for future research, policy, or practice related to childhood psychological maltreatment and adult mental health. First, it highlights that more research in general population samples beyond the USA and other developed countries and college student samples is needed to enhance the understanding of the associations between childhood psychological maltreatment and adult mental health. More longitudinal studies are also needed to understand the longer-term impacts of these associations across the whole lifespan including into older adulthood. This understanding could help develop prevention and interventions or training programs across the lifespan that would aim to prevent and alleviate the associations childhood psychological maltreatment and individuals of different ages. For instance, parental training could benefit parents unaware that their behaviours are harmful to their children.

Researchers could also compare the differences in childhood psychological maltreatment in different countries or regions to explore whether different psychological maltreatment behaviours are related to specific mental health problems. Finally, EA and EN are difficult to detect and quantify; therefore, it is essential to further define and develop measures and measurement approaches to assess psychological maltreatment for further research.

Policies that better address the issue of childhood psychological maltreatment are needed. There are policies and laws about sexual and physical abuse; however, written policies or legal guidance for emotional abuse and emotional neglect generally lag behind these. Parents need to be aware of their behaviours towards their children and implement strategies such as adaptive emotional regulation strategies when children misbehave to avoid behaviour consistent with psychological maltreatment. Importantly, childhood psychological maltreatment needs to be acknowledged as a severe public health concern instead of a personal and social problem, as it is seen now. Implications for practice, policy, and research are summarized in Table 2.6.

Table 2.6. Implications for Practice, Policy, and Research

1. More research studying the associations between CEA/CEN and adult mental health outcomes is needed in elder populations, clinical populations, and contexts beyond the USA or other developed countries.
2. Interventions to reduce CEA and CEN may help reduce the burden of adult mental health problems. Parenting training programs could, for example, use the findings from our review as the foundation to engage in intervention or coping strategies.
3. For clinical populations, childhood experiences may merit exploration in treatment contexts.

4. This systematic review provided evidence suggesting possible long-term impacts of childhood psychological maltreatment on adult mental health. Therefore, more attention to CEA and CEN prevention and mitigation is needed.

Chapter 3: Validation of the Chinese version of the Psychological Maltreatment Review (PMR): A multidimensional measure of psychological maltreatment

Synopsis

This chapter translated and validated the Chinese version of Psychological Maltreatment Review. Furthermore, this chapter also used depression and anxiety as convergent validity and cognitive failure and imagination as divergent validity to investigate the structure validity.

Dissemination status

The work presented in Chapter 3 is currently under review. Publicly available as a PsyArXiw pre-print: 10.31234/osf.io/ykm27

Author contributions

I conceptualised and designed the study, collected data, conducted analyses, drafted the initial manuscript, and revised the manuscript based on co-author and peer reviewers' feedback. Dr Murray, Dr Obsuth, and Dr Meinck supervised me and provided feedbacks at all stages from study design to journal submission.

Validation of the Chinese version of the Psychological Maltreatment Review (PMR): A multidimensional measure of psychological maltreatment

Zhuoni Xiao[1*], Ingrid Obsuth[2], Franziska Meinck[3,4,5], Aja Louise Murray[1]

[1] Department of Psychology, University of Edinburgh, Edinburgh, UK

[2] Clinical Psychology, University of Edinburgh, Edinburgh, UK

[3] School of Social and Political Science, University of Edinburgh, Edinburgh, UK

[4] Faculty of Health Sciences, North-West University, Vanderbijlpark, South Africa

[5] School of Public Health, University of the Witwatersrand, Johannesburg, South Africa

*Corresponding author at: 7 George Square, University of Edinburgh, Edinburgh, UK, EH8 9JZ; email: Z.Xiao-10@ed.ac.uk

Abstract

The Psychological Maltreatment Review (PMR) is an instrument for retrospectively assessing childhood psychological maltreatment experiences in the dimensions of psychological abuse, psychological neglect, and psychological support; however, it has not yet been validated in Chinese. The present study used confirmatory factor analysis (CFA) examined the factorial validity and internal consistency of the Psychological Maltreatment Review in Chinese population. The current study recruited 540 Chinese participants aged over 18 and from different region of China. We examined: (1) factorial validity and internal consistency, (2) convergent validity, (3) divergent validity, and (4) gender measurement invariance in a Chinese version of the PMR. With minor modifications, model fit for the Chinese (CFI = 0.901, TLI = 0.893) was acceptable and convergent validity was demonstrated. We found psychological abuse and psychological neglect was positively correlated with ACE, anxiety, and depression while negatively correlated with psychological support. Psychological support was negatively associated with ACE, anxiety, and depression. However, model fit for males was poor, which led to the conclusion that gender configural invariance did not hold. Overall, the Chinese version of the PMR appears to produce scores that are valid and reliable for measuring psychological maltreatment in the general population though further work will be required to understand how to measure the concept in a valid and comparable way across genders.

Keywords

Psychological Maltreatment Review (PMR), Psychological Abuse, Psychological Neglect, Psychological Support, Mental Health, Child Abuse

Introduction

Psychological maltreatment is a serious and widespread form of child abuse. Though there is no agreed-upon standard definition for psychological maltreatment (Hibbard et al., 2012); based on commonly accepted notions, we here define it as behaviours that encompass psychological abuse and psychological neglect in line with Briere, Godbout, and Runtz (2012). It often co-occurs with other forms of abuse, which makes it more difficult to detect. Further, unlike physical and sexual abuse, psychological maltreatment can be experienced over a period of time, without leaving physical marks. These difficulties in definition and detection have meant that research into psychological maltreatment lags behind other forms of abuse (Xiao et al., 2022). The availability of a measure that yields valid and reliable scores on psychological maltreatment is important to further build the evidence base on the scale, risk factors for, and outcomes of psychological maltreatment. There is particular need for measures that can be used in contexts outside of Western and high-income countries (HIC), in which psychological maltreatment may be even more prevalent (Moody et al., 2018; Stoltenborgh et al., 2012).

While the majority of the available research has been carried out in HIC countries thus far, several previous studies have also been conducted on psychological maltreatment in China, using a variety of measures. For instance, the 'Childhood Psychological Maltreatment Scale (CPMS)' was used to explore the associations between childhood psychological maltreatment and mental well-being in children (Luo, Liu, & Zhang, 2020; Zhang, Ma, & Chen, 2016) and adults (Fang et al., 2020; Li, Wang, & Liu, 2021). The Childhood Trauma Questionnaire – Short Form (CTQ-SF) (Bernstein et al., 2003) has been also widely used to assess psychological maltreatment in China and the reliability and validity of its scores in samples of people with schizophrenia (Jiang et al., 2018), undergraduates and clinically depressed populations (He et al., 2019), LGBTQ youth (Wang et al., 2021) and substance use disorder patients (Cheng et al., 2018) has been found to be acceptable. Similarly, the Adverse Childhood

Experiences Questionnaire (ACE) has been used in a number of studies. Using the ACE measure, for example, Zhang et al. (2020) explored associations between adverse childhood experiences and psychopathological symptoms in children in a four-year longitudinal cohort, and found emotional neglect was significant associated with depressive and externalizing symptoms. Fung et al. (2020) used the ACE measure and found psychological maltreatment was significantly associated with poor socioeconomic status and mental health problems.

Compared to other measures that assess childhood psychological maltreatment, the Psychological Maltreatment Review (PMR) has significant advantages. For example, measures such as the ACE or CTQ-SF only include single or limited numbers of items on emotional abuse and emotional neglect, which do not allow the phenomenon of psychological maltreatment to be captured in all of its diverse forms.

The Psychological Maltreatment Review (PMR) is a free adult self-report instrument developed by Briere et al. (2012) that measures psychological maltreatment which occurred before age 18. It contains three sub-scales – psychological abuse, psychological neglect, and psychological support. Respondents are required to indicate the frequencies of different items within the instrument on a 7-point Likert-type response scale from 1 (never) to 7 (over 20 times per year). In their original PMR development paper, Briere et al. (2012) assessed adults' childhood psychological maltreatment experiences separately for the most significant male and female parental figures during childhood. The PMR showed good reliability (Cronbach α ranged from 0.89 – 0.95) and structural validity (CFI = 0.93 for paternal and CFI = 0.95 for maternal). Other previous studies (Briere et al., 2017; Godbout et al., 2019; Rosen et al., 2020; Rossi et al., 2020; Talevi et al., 2018) using the PMR have also demonstrated good internal consistency and validity. However, there is lack of validation studies for this measure in other contexts than the US. One validation has been carried out in Italy (Pacitti et al., 2020). In this study, researchers translated the PMR into Italian and found

that the translated version had acceptable factorial validity and reliability (Cronbach α ranged from 0.88 – 0.94) for both paternal (CFI = 0.92, TLI = 0.91) and maternal (CFI = 0.89, TLI = 0.88) scales in clinical samples. However, to the authors' knowledge no other studies have attempted to validate it in other contexts.

The PMR is the only validated measure that assesses (a lack of) psychological support (i.e., "gestures or acts of caring, acceptance, and assistance that are expressed by caregivers towards a child"; Shaw et al., 2004) within the psychological maltreatment construct. This is important because using the measure, researchers are able to, for example, explore the interactions between psychological maltreatment and psychological support and examine the associations between psychological support and adult mental health outcomes when controlling for psychological maltreatment (Briere et al., 2012). Despite the promise of the PMR as a measure of psychological maltreatment; however, there is currently a paucity of validation studies on its functioning beyond its English language version.

An important step in the validation of a measure in a new context is demonstrating that it is correlated in an expected manner with measures with which it should be related based on theory and past empirical research (i.e., examining convergent validity). For example, there is ample evidence that psychological maltreatment is related to anxiety and depression. Arrow et al. (2011), for example, found psychological abuse to be associated with depression severity in a clinical population. Christ et al. (2019) also found that psychological abuse was associated with depressive symptoms in college students. In addition, positive associations between psychological abuse and anxiety were found by González-Díze, Orue, & Calvete (2017). Furthermore, several studies have demonstrated that psychological abuse and psychological neglect are significantly positively correlated with anxiety and depression (Balsam et al., 2010; Brown et al., 2016; Crow et al., 2014; Gong & Chan, 2018). A meta-analysis conducted by Xiao et al. (2022) suggested that effect size for childhood emotional abuse on depression and

anxiety was 0.56 to 1.40 while for emotional neglect was 0.01 to 0.70. In terms of psychological support, Boudreault-Bouchard et al. (2013) demonstrated that psychological support can decrease psychological stress and reinforce self-esteem. Moreover, Stafford et al. (2016) showed that higher parental care (i.e., affectionate, warm, responsive parenting) was associated with greater mental well-being.

A second important aspect of measure validation is demonstrating divergent validity. This refers to demonstrating that measures of conceptually different traits are not or not too highly correlated with one another (Campbell & Fiske, 1959). For example, for a measure such as the PMR, constructs such as cognitive failure (defined as one's tendency to experience errors and slips in functioning; Broadbent et al., 1982) and imagination (defined as a person's preference for imagination, artistic, and intellectual activities; Goldberg, 1992) could be used to test the divergent validity since there is no a priori reason to assume that they would be highly correlated. A final desirable property of a measure adapted to a new setting is gender invariance. This facilitates comparisons of score levels and correlates across genders. On the other hand, when there is lack of gender invariance, the level, or frequencies of psychological maltreatment, for example, can be over/underestimated for one gender compared to other one, or the meaning of psychological maltreatment can be captured differently by gender (Murray et al., 2020). There are a few studies examining gender differences on reporting emotional abuse or emotional neglect. Claussen and Crittenden (1991) gathered a large sample from a community and did not find significant gender differences in the relations of emotional abuse. On the other hand, Finkelhor et al. (2015) found females reported more emotional neglect than males. Briere et al. (2012) found no gender differences on reporting paternal psychological abuse, however, females reported more psychological support and psychological neglect from parents and more psychological abuse from maternal figures. A more recent work done by Meinck et al. (2020) found gender invariance for the International Society for the Prevention

of Child Abuse and Neglect (ISPCAN) which has an emotional subscale. Inferences such as these, however, assume gender invariance, whereas it is a property that must be tested than assumed.

Testing gender invariance can also provide new understanding of gender differences. Analysis of gender invariance can, for example, provide the insight of whether females and males share similar conceptions on childhood psychological maltreatment and obtain similar scores on the childhood psychological maltreatment measures when experiencing a comparable level of frequencies and severity on certain behaviours (Svetina et al., 2020). Gender invariance analysis can be conducted within a multi-group confirmatory factor analysis (CFA) (Svetina et al., 2020). Different levels of measurement invariances can support different types of gender comparisons. When configural invariance is achieved, it suggests that the same items load on the same factors for both genders. Metric invariance is when both genders have the same factor loadings. This allows valid comparisons of covariances involving the latent constructs across genders. Scalar invariance is when both loadings and intercepts (or thresholds) are equal across genders and allows for means to be validly compared (Putnick & Bornstein, 2016). However, a lack of gender invariance does not necessarily mean that gender differences cannot be tested, it rather indicates that the gender non-invariances should be modelled in a 'partial invariance' model to avoid the biases on interpretation (Pokropek, Davidov, & Schmidt, 2019).

Study Aim

Given the need for a valid measure for use in non-Western, non-HIC country contexts to understand childhood psychological maltreatment, we thus translated and validated a 30-item measure of psychological maltreatment with three sub-scales in Chinese adults: The Psychological Maltreatment Review (PMR). We evaluated the factorial validity, convergent validity, divergent validity, reliability, and gender invariance. Convergent validity was evaluated via the correlations between anxiety and depression while divergent validity was

evaluated via the correlations between cognitive failure and imagination. As we mentioned above, a valid measure of psychological maltreatment, psychological abuse and psychological neglect should be positively associated with anxiety and depression, while psychological support should be negatively associated with anxiety and depression. In addition, the elements of PMR should be non-significant or weak associations with cognitive failure and imagination. We hypothesised that the Chinese version of the PMR could provide reliable and valid scores for assessing childhood psychological maltreatment, which could be widely used in Chinese-speaking populations.

Method

Ethics

This research was approved by the Ethical Committee of the Department of Psychology at the University of Edinburgh (317-1902/8). Participants were provided with an information sheet before taking part and invited to provide informed consent.

Participants

A total 540 participants were recruited via social media in China and completed an online questionnaire in Qualtrics. Participants who were aged over 18 and grew up in China were eligible to participate. Before starting the PMR questionnaire, demographic information was collected including gender, age, region of residence, occupation, and their primary caregivers.

The PMR was translated into Chinese using the Evidence for Better Lives Study (EBLS) translation protocol (Valdebenito et al., 2020), guided by the World Health Organisation's best practice

guideline: https://terrance.who.int/mediacentre/data/WHODAS/Guidelines/WHODAS%202.0%20Translation%20guidelines.pdf. The author (ZX) and another bilingual translator

translated the PMR from English into Chinese independently. Some of the items were adjusted based on the Chinese cultures or to fit the pragmatics of the Chinese language (e.g., item 2 – "Left you alone for long periods of time when they shouldn't have" to "left you alone with no one to take care of you or supervise you"; item 14 – "Acted like you weren't there, even though you were" to "lack of sense of presence around caregivers"). After that, the translated Chinese version was back translated into English by a second bilingual translator. The translated English items were checked by the lead author for whether they corresponded with the original English version.

Measures

Childhood Psychological Maltreatment

Participants' childhood psychological maltreatment experiences were measured using the Psychological Maltreatment Review – Chinese version (PMR-C; formerly referred to as the Psychological Abuse and Neglect Scale – PANS; Briere, 2006). The PANS and the current PMR differ only in name. It consists of 10 items per sub-factor (i.e., psychological abuse, psychological neglect, and psychological support). Participants are asked to indicate the frequency with which they have experienced each event inflicted on them by their caregivers, from 1 (never) to 7 (over 20 times per year). Psychological Abuse is measured by items such as "Yelled at you", "Said you were stupid", or "Embarrassed you in front of people". Psychological Neglect is measured by items such as "Acted like you weren't there, even though you were", "Ignored you", and "Didn't do things they said they would do for you", while Psychological Support is measured by items such as "Encouraged you to have friends", "Tried to make you feel better when you were upset or hurt" and "Took you places or did things with you". A mean score is calculated for each sub-scale, with higher scores, represented higher levels of childhood abuse, childhood neglect or childhood support. The Chinese version

of the PMR (PMR-C) developed in the current study is a translation of the PMR with permission by the authors of the original English language version. Please see the Supplementary Material for the final version of the PMR-C.

Childhood Adverse Experiences

The Adverse Childhood Experiences Questionnaire (ACE), which was developed by the Centre for Disease Control and Prevention, US, was used to measure participants' adverse childhood experiences, used to examine the convergent validity of the PMR-C. There are ten items using dichotomous response (i.e., yes or no) covering three domains of childhood trauma – childhood abuse, neglect and household dysfunction. The ACE includes items such as "Did you often feel that… No one in your family loved you or thought you were important or special?" or "Your family didn't look out for each other, feel close to each other, or support each other?" or "Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?". The ACE is widely used across different ethnic groups (Crouch et al., 2018; Harford, Yi, & Grant, 2014). The Mandarin Chinese version of the ACE was used in the present study. The ACE was adopted from Jia-Mei, Wen, and Feng-Lin (2016) with high internal consistency (Cronbach $\alpha = .91$) in the Chinese population.

Anxiety

The Clinical Anxiety Scale (CAS; Snaith et al., 1982) assesses anxiety levels derived from the Hamilton Anxiety Scale (Hamilton, 1959). It comprises of 25 items and uses a 5-point Likert response scale. It includes seven positively and eight negatively worded statements that describe one's anxiety levels with scores of 30 and higher representing higher anxiety. Example items include "I have spells of terror or panic" or "Due to my fear, I avoid social situations, whenever possible". The CAS has shown good reliability and validity across different contexts (Westhuis & Thyer, 1989). For instance, the CAS has been used in clinical settings (Kim et al., 2017; Yap et al., 2015), and in research exploring self-management (Mezo

& Franxis, 2012; Mezo & Heiby, 2011). The CAS was translated into Chinese following the procedure describe above as a suitable existing translation was not available. The CAS was used to examine the convergent validity of PMR.

Depression

Participants' depression levels were measured by the Patient Health Questionnaire–9 (PHQ-9). The PHQ-9 is a 9-item self-report instrument used for assessing individuals' depression levels over the past two weeks. The nine items are derived from the Diagnostic and Statistical Manual of Mental Disorder (DSM) criteria for major depression disorder and capture: (1) anhedonia, (2) depressed mood, (3) sleep problem, (4) feeling tried, (5) eating problem, (6) low self-esteem, (7) lack of concentration, (8) feeling restless, and (9) suicide ideation or self-harm attempts. Items are scored from 0 (never) to 3 (nearly every day), giving a total score range from 0 to 27, with higher scores representing higher levels of depressive symptoms. Example items include "Feeling bad about yourself or that you are a failure or have let yourself or your family down" or "Little interest or pleasure in doing things". Previous studies have shown good reliability based on Cronbach's α from 0.86 to 0.89 (Kroenke, Spitzer, & Williams, 2001). Moreover, the PHQ-9 is reported to be valid across different ethnic groups (Galenkamp et al., 2017). Xia et al. (2019) used the PHQ-9-C in Chinese populations and the measures showed good internal consistency (Cronbach α = .86). The PHQ-9-C was adapted from Xia et al. (2019) in the current study, and it used to examine convergent validity of PMR as well.

Cognitive Failure

Cognitive failure was used to test divergent validity. It was measured by the Cognitive Failure Questionnaire (CFQ) from the International Personality Item Pool (IPIP) which was modified from the original measure developed by Broadbent et al. (1982). The original version contained 25 items yielding scores with good reliability (Cronbach α = .89). The version used

in the current study contained 10 items - four positively and six negatively worded items, with responses recorded on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). Total scores range from 10 to 50, with higher scores representing a higher the likelihood of cognitive failure. Example items include "Like to take responsibility for making decisions", "Spill things", or "Always know why I do things". The current version of CFQ showed the good internal reliability (Cronbach's α ranged from 0.70 to 0.96) (Abbasi et al., 2021), and it used to examine the divergent validity of PMR.

Imagination

Participants' imagination ability was used as a second test of divergent validity. It was measured by the Imagination subscale of the Big Five Factor (BFF) (Goldberg, 1992) from the International Personality Item Pool (IPIP). It contains 20 items, with 7 negatively worded statements and 13 positive statements. The response used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with total scores ranging from 20 to 100. Participants with higher scores represented having higher imagination ability. Example items include "Have difficulty understanding abstract ideas", "Love to think up new ways of doing things", or "Carry the conversation to a higher level". Previous studies have demonstrated good internal reliability for its scores, with Cronbach α ranging from 0.82 (Tangney, Baumeister, & Boone, 2004) to 0.90 (Goldberg, 1992). In the current study, imagination measure was used to examine the divergent validity of PMR.

Statistical Procedure

Factorial Validity and Reliability

Descriptive analyses were conducted in SPSS before preparing the data to be exported into R. The structural validity of the PMR-C was explored by confirmatory factor analysis (CFA) using the 'lavvan' package in R statistical software (Rosseel, 2012). Adequate-fitting

models by conventional fit criteria (CFI > .90, TLI >.90, RMSEA < .08, RSMR < .09; Kline, 2015) were taken as evidence for factorial validity. Modification indices (MIs) for poor-fitting models were examined and modifications were made whenever justifiable on conceptual grounds (i.e., a plausible case that the items should be related in excess of that due to the latent variables based on an examination of their contents). Based on the theory from Briere et al. (2012), a three-factor model was tested using robust maximum likelihood estimation (MLR). However, researchers have also combined the scores for psychological abuse and psychological neglect in the past (Rosen et al., 2020), we also tested a two-factor model using MLR. Internal consistency reliability for each factor was estimated from the final models, selected from the two- and three-factor specifications described above using the omega coefficient and Cronbach's α (McDonald, 1999).

Gender Invariance

The factor model selected in the CFA analyses was used as the basis for gender invariance testing. Details are provided in the Results section but in brief, gender invariance testing begins by examining configural invariance (assessing that the same factor model fits in both genders) then adds loading and then intercept invariance constraints across genders. If these additional constraints result in substantial deteriorations in fit, then invariance at the metric (loading) and/or scalar (intercept) invariance is judged not to hold. A partial invariance model can be sought by releasing equality constraint until the difference in fit between the constrained and relevant comparison unconstrained model become non-significant.

Nomological Network

Correlation analysis was used to assess the relations between sub-scores of the PMR (i.e., psychological abuse, psychological neglect, and psychological support) and other measurements' scores to which they could be assumed to be differentially related. To aid interpretation of the pattern, correlations between variables were visualised as a network using

the qgraph package in R software (Epskamp et al., 2012). We hypothesised that psychological abuse and psychological neglect would be positively correlated with ACEs, anxiety, and depression, and psychological abuse and psychological neglect would be negatively correlated with psychological support. Moreover, we hypothesised that psychological abuse, psychological neglect, and psychological support would show weak or non-significant correlations with imagination and cognitive failure. Missing data in these analyses were handled using pairwise deletion, which provides unbiased parameter estimates only when data are missing completely at a random (MCAR).

In the Results section, we reported how we determined our sample size, all data inclusions, all manipulations, and all measures in the study.

Results

Demographic Characteristics

After removing blank and invalid questionnaires (N = 5), a total of 540 responses were used in this study. The respondents came from different regions in China – North China (North China (13.3%, N = 73), Central China (7.9%, N = 43), East China (15.4%, N = 84), Northeast China (5.9%, N = 32), Southern China (50.5%, N = 276) Southwest China (4.9%, N = 27), and Northwest China (2.2%, N = 12). Most of the participants were students (44.6%, N = 244) or full-time employed (43.3%, N = 237) and some of them were part-time employed (7.9%, N = 43), unemployed (2.7%, N = 15) and home-carers (1.5%, N = 8). The sample was majority female (63.4%) and most of the participants were born in the 1990s (60%). Other demographic characteristics were provided in Table 3.1 below.

Table 3.1. Demographic Characteristics

	N	%
Female	347	63.90%
Male	197	36.00%
Non-binary	3	0.5%
Age		
18-20	114	20.80%
21-30	328	60.00%
31-40	90	16.50%
41-60	14	2.60%
Over 61	1	0.20%
Primary Caregivers		
Mother	346	63.3%
Father	107	19.6%
Stepmother	4	0.70%
Stepfather	1	0.20%
Grandparents	74	13.50%
Nanny	6	1.10%
Others	9	1.60%

Notes. N = 540. Others refer to other relatives such as uncle or aunt.

Factorial Validity

Model fit indices for the 2-factor model based on Rosen et al. (2020) indicated a poor fit (CFI = 0.830, TLI = 0.817, RMSEA = 0.080, SRMR = 0.070). We then tested the three-factor model to assess the factor structure. Model fit indices for the CFA suggested that the

original hypothesised three-factor model structure of the PMR was a better fit than the two-factor model but still suggested that this model did not fit the data well (CFI = 0.860, TLI = 0.849, RMSEA = 0.073, SRMR = 0.064) (factor loadings for the original three-factor model are provided in Supplementary Material (Table S3.1). We considered whether MIs pointed to any areas of local mis-fit. These highlighted that four items covaried with each other over and above their relations via the latent factors (i.e., item 9 "Said 'I love you" and item 15 "Hugged you"; item 1 "Yelled at you" and item 7 "Criticised you"). Given that item 9 and item 15 may not fit well within the Chinese culture context (directly showing parental love), we decided to remove these two items. In addition, as the MIs indicated highly correlated items, we decided to allow item 1 and item 7 to covary. The modified model fit the data well (CFI = 0.903, TLI = 0.894, RMSEA = 0.064, SRMR = 0.059). Although the TLI was slightly below 0.90, it was judged acceptable on balance given that all other fit indices were good. For further analysis, the modified model was used as it was judged to be the more optimal model than the original three-factor model. The factor loadings for the modified model are presented in Table 3.2 below. The factor loadings ranged from 0.463 to 0.815. The endorsement of each of the items were provided in the Supplementary Material (Table S3.2).

Table 3.2. Factor loadings for the modified model

	PA	PN	PS
PMR Items			
Item 1 - Yelled at you	0.510		
Item 4 - Insulted you	0.772		
Item 7 – Criticised you	0.465		
Item 10 - Said mean thing about you	0.793		
Item 13 - Called you names	0.542		

Item 16 - Said you were stupid	0.713		
Item 19 - Made fun of you	0.806		
Item 22 – Tried to make you feel guilty	0.609		
Item 25 – Ridiculed or humiliated you	0.815		
Item 28 – Embarrassed you in front of people	0.806		
Item 2 - Left you alone for long period of time when they shouldn't have		0.558	
Item 5 – Act like they didn't seem to care you		0.719	
Item 8 – Ignored you		0.752	
Item 11 – Didn't do things for you that they should have		0.467	
Item 14 – Act like you weren't there, even though you were		0.695	
Item 17 – Weren't around when you needed them		0.725	
Item 20 – Didn't do thin they said they would do for you		0.634	
Item 23 – Let you down		0.753	
Item 26 – Didn't seem to love you		0.780	
Item 29 – Didn't take care of you when they should have		0.685	
Item 3 – Were on your side when things were bad			0.652
Item 6 – Praised you when you did something good			0.716
Item 12 – Did things that let you know they love you			0.734
Item 18 – Take your place or did thing with you			0.669
Item 21 – Encourage you to have friends			0.642
Item 24 – Tried to make you better when you were upset or hurt			0.723
Item 27 – Talked to you			0.731
Item 30 – Helped you with homework or other thing you had to do			0.507

Notes. PA = Psychological Abuse; PN = Psychological Neglect; PS = Psychological Support.

Descriptive Statistics and Reliability

We measured a set of variables (i.e., psychological abuse, psychological neglect, psychological support, ACE, anxiety, depression, imagination, and cognitive failure) in the present study for the purposes of assessing convergent, and divergent validity. Table 3.3 provides the descriptive statistics and reliability for all measures as well as the composite scores for the PMR sub-dimensions.

Table 3.3. Omega coefficient and Cronbach α for adjusted PMR model

	N	Mean	SD	Omega	Cronbach's α
Psychological Abuse	540	28.87	13.53	0.93	0.90
Psychological Neglect	540	25.02	12.48	0.91	0.90
Psychological Support	540	44.46	13.67	0.90	0.87
ACEs	514	0.89	1.62	0.85	0.81
Anxiety	501	30.59	15.32	0.94	0.92
Depression	460	7.04	5.10	0.89	0.87
Cognitive failure	472	26.77	5.82	0.84	0.74
Imagination	466	66.26	11.75	0.92	0.89

Nomological Network

The correlation matrix of psychological abuse, psychological neglect, and psychological support and hypothesised correlated measures is provided in Supplementary Material (Table S3.3) and visualised in Figure 3.1. Thicker lines represent stronger relations between variables, and transparent line between measures indicate that the relations that were

not significant. Green links represent positive relations and red lines represent negative relations. Psychological abuse was positively correlated with both ACE scores and psychological neglect, while ACE scores, psychological abuse and psychological neglect were negatively correlated with psychological support. As expected, anxiety and depression were positively correlated with psychological abuse and psychological neglect, while negatively correlated with psychological support. Furthermore, imagination and cognitive failure showed non or weak correlations on psychological abuse and psychological neglect. However, psychological support was significantly associated with imagination and cognitive failure.

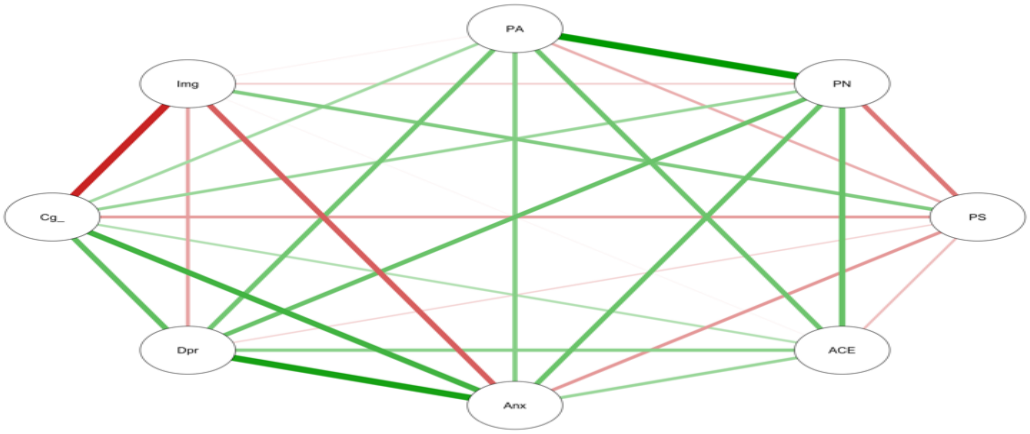

Figure 3.1. Nomological Network. Notes. PA = Psychological Abuse; PN = Psychological Neglect; PS = Psychological Support; ACE = Adverse Childhood Experiences; Anx = Anxiety; Dpr = Depression; Img = Imagination; Cg_ = Cognitive Failure.

Gender Invariance

We ran the CFA for both the female and male sub-samples. The result suggested that the model fit for females was good (CFI = 0.908, TLI = 0.809, RMSEA = 0.057, SRMR = 0.054); however, the model fit for males was poor (CFI = 0.872, TLI = 0.870, RMSEA = 0.066,

SRMR = 0.071). Due to the poor model fit for male, further measurement invariance analysis was not conducted. Instead, it was concluded that even configural invariance did not hold. We also ran an independent sample T-test to explore whether there were gender differences on reporting childhood psychological abuse, psychological neglect, and psychological support. The results suggested that non-significant differences across genders ($p > .05$). The frequencies for genders of each response for each item were presented in the Supplementary Material (Table S3.4).

Discussion

The primary aim of the study was to translate and validate the Chinese version of the Psychological Maltreatment Review in a group of Chinese adults from the general population and to explore the gender invariance of the PMR model in this sample. Overall, our findings supported the structural validity, internal consistency reliability, and convergent/divergent validity of a slightly adapted version. However, gender invariance was not demonstrated.

We conducted a confirmatory factor analysis on the hypothesised three-factor model to test the proposed factor structure of the PMR in this new setting. The items loaded onto the factors well; however, the model fit of the original model was below the conventionally accepted threshold. Consequently, we modified the model by removing item 9 ("Said 'I love you') and item 15 ("Hugged you") and correlating items 1 ("Yelled at you") and 7 ("Criticised you") and this led to a model that fit well. The internal consistency reliability of the three sub-scales was excellent.

We also explored the construct validity through associations between the three factors and other variables. As hypothesised, psychological abuse and psychological neglect were positively associated with ACE scores, anxiety, and depression, and negatively associated

with psychological support. Psychological support was negatively associated with ACE scores, anxiety, and depression. Further, as hypothesised, imagination and cognitive failure showed non-significant or only weak associations with psychological abuse and psychological neglect as compared to the association between psychological abuse and neglect and the convergent validity measures. Psychological support was significantly correlated with imagination and cognitive failure in the current sample.

Our study also demonstrated good reliability for the adapted PMR, consistent with previous studies that have used the PMR in Western contexts. We used ACEs, anxiety, and depression as evidence of convergent validity; the results suggested psychological abuse, psychological neglect, and psychological support were significantly correlated with these measures, which showed convergent validity. We used cognitive failure and imagination as evidence of divergent validity, the results suggested that psychological abuse and psychological neglect showed smaller correlations with imagination and cognitive failure, compared with the 'convergent validity' measures which supports the divergent validity of scores. However, the divergent validity of the psychological support scale was more questionable as its correlations with imagination and cognitive failure were not clearly smaller than with the convergent validity measures. This may reflect the fact that parental support is positively related to child cognitive abilities (Karbach et al., 2013), meaning that to the extent that cognitive failure and imagination are partial reflections of cognitive ability, they will be less suitable for testing the divergent validity of psychological support as compared to for psychological abuse and neglect.

Compared to the original factor model, there were several issues raised by the PMR-C analyses that should be noted. First, to improve the model fit, we removed items 9 and 15, and correlated items 1 and 7. Although items 9 and 15 loaded on the 'psychological support' factor very well, the model fit was considerably improved after removing them. As discussed above,

these two items refer to direct displays of parental love and support compared to other items from this factor, which may not fit the Chinese culture. In the Chinese culture, caregivers are more likely to show their support through an implicit approach (i.e., praise you, take you out), instead of saying 'I love you' or having physical contact (e.g., hugging, kissing) (Li, 2020). However, it should be noted that the caregivers in the current study were born on or before 1970s, and little research has identified if caregivers showing direct psychological support via saying 'I love you' or physical contact is more normative for younger generations of parents. We examined MIs to see whether items were correlated with each other and found items 1 ("Yelled at you") and 7 ("Criticised you") were highly correlated. We judged that "Yelled at you" and "Criticise you" can be concurrent in that caregivers will tend to criticise their children while yelling at them. Third, there were multiple translation challenges. For instance, the meaning of item 22 ("Made fun of you") and item 25 ("Ridiculed or humiliated you") were very close in the Chinese context, therefore, if of these two items may be redundant. This is a common issue when translating from English, which has a larger lexicon than many other languages and thus makes distinctions that may not be possible in other language (de Jong et al., 2018). Further, for the description of item 24 ("Left you alone for long periods of times when they shouldn't have"), the meaning of 'left you alone for long periods' is vague in the source language. This means we were not able to find a precise wording in the translation. Again, ambiguous descriptions in the source language are a known issue when translating questionnaires into other languages (Acquadro et al., 2018).

Limitations

Several limitations should be noted. First, we only measured psychological maltreatment perpetrated by one primary caregiver before age 18; however, in the original study (Briere et al., 2012), researchers asked the participants to answer the questionnaires for each parent (i.e., the individual's most important maternal and paternal figure) during

childhood, in order to reduce participants' burden. Therefore, we are unable to see the differences between maternal and paternal figure. Second, there was a limited age variation of participants, i.e., participants were born in the 1960s to 2000s; however, most of the participants in the current study were aged between 18 and 30. This means we were unable to explore age differences in the psychometric properties of the scale. Third, the English-speaking regions and China have both different languages and cultures. This makes it difficult to disentangle the effects of language and culture on the differences between the samples (Bader et al., 2021). Bader et al. (2021) proposed cultural, comprehension, and translation bias (CCT) to disentangle the effects of culture and language on measurement non-invariance in cross-cultural research, which could be an interesting future research direction for the PMR.

Implications and Further Research Direction

Given our findings, the PMR can be seen as a reliable measurement of retrospectively assessed childhood psychological maltreatment in the Chinese population. As mentioned above, evaluation of childhood trauma is important in clinical populations. A reliable and valid assessment is, for example, vital for measuring childhood experiences through retrospective assessment and can help clinicians or therapists gain a basic insight into an individual's history as it relates to current mental health problems. Several studies have shown that childhood psychological maltreatment is reported more often in clinical populations compared to the general population. For instance, this has been observed in patients (Bruni et al., 2018), bipolar disorder patients (Etain et al., 2010; Fowke et al., 2012; Hariri et al., 2015; Jaworska-Andryszewska et al., 2018; Kefeli et al., 2018), alcohol dependency patients (Evren et al., 2010; 2016), substance abuse patients (Khosravani et al., 2019), and depression patients (Neumann, 2017; Schulz et al., 2017). Therefore, a reliable and valid instrument for assessing childhood psychological maltreatment for the clinical population is needed, making the validation of the PMR in clinical populations an important future direction. More generally, the translation

challenges encountered underline the importance of translatability assessments and involvement of experts from multiple cultural contexts during the development of new measures to maximise the future chances that a measure can be meaningfully translated into new language (Acquadro et al., 2018).

We also evaluated gender invariance for PMR model in the current study; however, not even configural invariance was supported. It suggested that the model structures of PMR for genders may different. Future research to develop scales that can measure psychological maltreatment equivalently in males and females would be beneficial. Research has shown there are gender differences in reporting childhood abuse, for instance, Meng and D'Acry (2016) suggested that females reported more sexual abuse while male reported more physical abuse. There is, however, less evidence showing if females or males experienced more psychological maltreatment during childhood and whether females and males perceive psychological maltreatment differently. Claussen and Crittenden (1991) found no gender differences on reporting emotional abuse in a large community population. Although fewer studies have explored the gender differences on childhood emotional neglect, the handful of available studies have generally suggested no gender differences on the overall estimated prevalence (Clement et al., 2016; Finkelhor et al., 2015; Stoltenborgh et al., 2013). Findings of the current study suggested that there were no gender differences on reporting childhood psychological abuse, psychological neglect, and psychological support, which showed consistency with previous literature. Further clarification on this issue can be gained by resolving the challenge of measuring psychological maltreatment comparably in males and females. Future research could, for example, conduct qualitative interviews to identify how males and females may conceptualise and report on psychological abuse differently and inform the development of more equivalent items across genders.

Conclusion

We found evidence that the Psychological Maltreatment Review (PMR) yields reliable and valid scores for assessing individuals' childhood psychological maltreatment experiences in the Chinese populations. However, the factor structure was slightly different from the original paper, likely due to cultural differences and some minor translation challenges related to the different lexicon of the two languages. Gender invariance was not supported which suggested the model structure of PMR for genders may different and future research will be required to understand if and how psychological maltreatment could be measured in a comparable manner across genders.

Chapter 4: Relations between Childhood Psychological Maltreatment and Mental Health Dimensions within a Higher-order Model

Synopsis

This chapter used a higher-order model to explore the associations between childhood psychological maltreatment and adult mental health. In the higher-order model, depression and anxiety was loaded on internalising, while anger, physical aggression, and hostility was loaded on externalising. In addition, internalising and externalising was loaded on general psychopathology.

Dissemination status

The work presented in Chapter 4 submitted to Journal of Interpersonal Violence. Publicly available as a PsyArXiw pre-print: 10.31234/osf.io/hvbwu

Author contributions

I conceptualised and designed the study, collected data, conducted analyses, drafted the initial manuscript, and revised the manuscript based on co-author and peer reviewers' feedback. Dr Murray, Dr Obsuth, and Dr Meinck supervised me and provided feedbacks at all stages from study design to journal submission.

Abstract

Experiences of childhood psychological maltreatment have been found to be associated with various mental health outcomes, and this association persists into adulthood. This study investigated whether some types of psychological maltreatment are more harmful than others; whether the harms associated with different types of psychological maltreatment are generalized or specific to particular domains of psychopathology; and whether the associations vary by gender. Participants (N = 544, 63.9% mother as primary caregiver) were Chinese adults from various regions in China. Participants completed measures of childhood psychological maltreatment experiences perpetrated by their primary caregiver and the mental health outcomes of depression, anxiety, anger, physical aggression, and hostility. The data were analyzed in a hierarchical model in which depression and anxiety were defined as indicators of an internalizing factor, while anger, physical aggression, and hostility were defined as indicators of an externalizing factor. Internalizing and externalizing then defined a higher-order general psychopathology factor. The results suggested equivalent harms of psychological abuse and psychological neglect. Further, the associations between psychological maltreatment and mental health were not unique to specific symptoms domains but showed broadband associations with general psychopathology. These findings suggest that trans-diagnostic interventions may be the most effective approach for addressing the mental health impacts of psychological maltreatment.

Keywords

Psychological Maltreatment, Psychological Abuse, Psychological Neglect, Psychopathology, Trans-diagnostic Psychopathology

Introduction

Childhood psychological maltreatment is common and can have negative impacts on adult mental health. Indeed, a recent systematic review (Xiao et al., 2022) reported associations between different forms of psychological maltreatment (i.e., emotional abuse and emotional neglect) and a range of adult mental health outcomes such as depressive disorder (Neumann, 2017), anxiety symptoms (Sunley et al., 2020), low self-esteem (Arslan, 2016) and borderline personality disorder (Fung, Chung, & Ross, 2020) in adults.

According to Vachon et al. (2015), there are four public belief assumptions made in relation to child maltreatment: (1) harmfulness (i.e., that child maltreatment causes substantial harm), (2) non-equivalence (i.e., that the harmfulness of child maltreatment varies by type of maltreatment), (3) specificity (i.e., that specific forms of child maltreatment have specific consequences), and (4) non-universality (i.e., that there are gender and race differences among the effects of child maltreatment). They tested each of these and found evidence only for the harmfulness assumption for all non-sexual child based maltreatment types, and not equivalence, non-specificity, and universality. However, research on these assumptions for different forms of psychological maltreatment (i.e., psychological abuse, psychological neglect, and psychological non-support) needs to be explored. The current study aims to explore assumptions (2) non-equivalence, (3) specificity, and (4) non-universality using a large sample of Chinese adults who reported on their childhood psychological maltreatment experiences and current mental health.

Building on previous evidence that has confirmed the harmfulness of childhood psychological maltreatment, an important question is whether different forms of psychological maltreatment are equally harmful (the 'non-equivalence assumption'). A key distinction within psychological maltreatment is between psychological abuse, psychological neglect, and a lack of psychological support. The past evidence for the non-equivalence assumptions in the context

of childhood psychological maltreatment is generally supportive of the assumption. For instance, Muniz et al. (2019) found that childhood psychological abuse, not psychological neglect was highly correlated with externalizing but not internalizing problems. Further, Vahl et al. (2016) found that childhood psychological neglect was less strongly related to internalizing problems than childhood psychological abuse. Compared with psychological abuse and psychological neglect; however, psychological non-support has received less attention (Briere, Godbout, & Runtz, 2012). Psychological non-support refers to a caregiver failing to provide gestures or acts of caring, acceptance, and assistance towards a child (Shaw et al., 2004). Previous studies have shown that less psychological support by caregivers is linked to several forms of psychopathology (Xiao et al., 2022). Conversely, psychological support is associated with fewer posttraumatic stress disorder symptoms after experiencing events such as natural disasters (Bokszczanin, 2008). However, the links between psychological non-support and mental health have not yet been fully explored. Therefore, it is important to investigate its associations alongside those of more widely researched forms of psychological maltreatment, namely psychological abuse and psychological neglect.

Whether the specificity assumption holds in the context of childhood psychological maltreatment also remains unclear. In the extant literature, there is some evidence that psychological maltreatment confers broadband risks for mental health. For instance, Vahl et al. (2016) found childhood psychological abuse and psychological neglect were associated with internalizing and externalizing problems, rather than with specific domains of mental health. In addition, Heleniak et al. (2016) found similar associations between internalizing and externalizing problems and psychological abuse. However, a recent study found evidence that psychological abuse was more likely related to externalizing than internalizing problems (Muniz et al., 2019). Therefore, the extent to which associations between psychological maltreatment and mental health outcomes are generalized or disorder-specific is still unclear.

This is complicated by the fact that different mental health domains tend to be correlated with one another (Murray, Eisner, & Ribeaud, 2016). As such, research that disentangles the unique versus generalized associations between psychological maltreatment and mental health outcomes is particularly needed to provide illumination on this issue.

In regard to the non-universality assumption, a key dimension on which there may be differential effects of psychological maltreatment on mental health outcomes is gender. Vahl et al. (2016) found positive associations between psychological neglect and internalizing problems in boys but only non-significant associations in girls. However, Hagbrog, Tidefors, and Fahlke (2017) did not find gender differences in the associations between psychological maltreatment and externalizing problems. As such, there also remains a need for further research to clarify the nature and extent of any gender differences in the associations between psychological maltreatment and mental health outcomes.

Recently, mental health research has been moving towards trans-diagnostic perspectives that acknowledge that there is considerable co-occurrence between common mental health and behavioural issues in both children and adults (Forbes et al., 2020). These perspectives have highlighted the dimensions of internalizing and externalizing problems as broadband factors that can capture the co-occurrence between a range of different symptoms. The internalizing dimension captures the co-occurrence between disorders such as depression and anxiety, while the externalizing dimension captures the co-occurrence of issues such as aggression and conduct problems. The general factor of psychopathology is a further extension that captures the co-occurrence of internalizing and externalizing problems (Forbes et al., 2020). It has been suggested that the general factor of psychopathology can be explained by the influence of non-specific causal factors that increase risk of all symptom domains of psychopathology, both internalizing and externalizing (Lahey et al., 2017).

Several studies have explored the associations between environmental stressors and psychopathology using a hierarchical model of psychopathology similar to the above-described (Forbes et al., 2016; Kotov et al., 2017). This includes a number of studies using this framework to examine the impacts of childhood adversity on psychopathology. For instance, Meyers et al. (2015) found that early exposure to traumatic events was related to broader internalizing and externalizing problems. Keyes et al. (2012) found that the effects of child maltreatment on common psychiatric disorder were fully mediated through the latent liability dimensions, with an impact on underlying liability levels to internalizing and externalizing level, rather than specific psychiatric disorders. A more recent study (Conway et al., 2018) found nearly equivalent prospective effects of early family stress on overarching internalizing and externalizing dimension, but no evidence of disorder-specific effects. Taken together, early childhood adversity experiences had non-specific associations with psychopathology, increasing the risk for symptoms of various mental disorders via their associations with broad trans-diagnostic factors, but did not appear to have unique relations with specific symptom domains (Conway et al., 2019).

Building on these findings and taking a hierarchical approach to modelling mental health would allow us to examine the specificity of the associations between forms of psychological maltreatment and specific mental health symptoms domains as well as the broader relationships with higher order trans-diagnostic factors. In addition, it would allow us to compare the strength of these associations, as well as test whether gender could be moderators among these associations. Furthermore, we used the Chinese community samples in the current study, as there are a lack of studies outside Western context, and it is important to gather more globally representative data on the potential impacts of psychological maltreatment.

Study Aim

In the current study, we aimed to address the questions: (1) whether the impacts of different types of childhood psychological maltreatment are the same on domains of psychopathology – Q1: (non-) equivalence of harm? (2) whether these associations are unique to specific domains of psychopathology (i.e., depression, anxiety, anger, physical aggression, and hostility), or act at the level of broader domains (i.e., internalizing or externalizing behaviors), up to the most generalized broadband risks for psychopathology – Q2: outcome specificity? (3) does gender moderate the strength of the associations between psychological maltreatment and psychopathology - Q3: gender invariance and gender differences?

Thus, the primary objective of this study was to address these gaps in the literature using a hierarchical model in a Chinese adult sample. To the authors' knowledge, this is the first study that explored the associations between different domains of mental health in adults and their relations with childhood psychological abuse, psychological neglect, and psychological non-support.

Hypotheses were based on the literature mentioned above, it was expected that psychological abuse and psychological neglect would be more strongly associated with psychopathology than psychological non-support. It was also expected that different forms of psychological maltreatment would have broadband associations with general psychopathology and only small or non-significant unique associations with specific domains of psychopathology (i.e., depression, anxiety, anger, physical aggression, and hostility). Finally, gender invariance was expected – in line with most of the previous literature that has found no significant differences in the associations between different types of psychological maltreatment on psychopathology (Vahl et al., 2016).

As previous research has shown that adverse childhood experiences such as physical abuse, sexual abuse or household dysfunction can have negative impacts on adult mental health outcomes (see Hughes et al., 2017 for review), there were adjusted for in our models.

Method

Ethics

This research was approved by the Department of Psychology Ethics Committee of the University of Edinburgh (317-1902/8). Participants were provided with an information sheet before taking part and gave informed consent before participating.

Sample and Procedures

Five hundred forty-three participants (60% aged 21-30; 63.2% females) were recruited via social media in China and completed an online questionnaire utilizing the Qualtrics platform. A full description of the demographic characteristics of the participants are provided in Supplementary Materials (Table S4.1).

Types of Psychological Maltreatment

The Chinese version of the Psychological Maltreatment Review (PMR; Briere et al., 2012) was used to measure psychological maltreatment. This measure was translated into the Chinese language and validated in a previous study by Xiao et al. (2022). Participants were asked to rate the frequencies of behaviours by caregivers that they experienced before the age of 18 on a response scale from 0 (never) to 6 (over 20 times per year).

Psychological Abuse was measured by ten items (e.g., “Said mean thing about you” or “Embarrassed you in front of people”). Cronbach’s alpha in this sample was 0.90, with McDonald’s omega was 0.93.

Psychological Neglect was measured by ten items (e.g., "Didn't do things they said they would do for you" or "Acted like you weren't there, even though you were"). Cronbach's alpha was 0.90, with McDonald's omega was 0.91.

Psychological Non-support was measured by eight items (e.g., "Tried to make you feel better when you were upset or hurt" or "Praised you when you did something good"). Cronbach's alpha was 0.87, with McDonald's omega was 0.91.

Types of psychopathology symptoms domain

Five domains of psychopathology including two symptoms' measurements and three behavioral problems were assessed. These were selected as core domains of psychopathology with a common onset in childhood and adolescence and persistence into adulthood (Lahey et al., 2004).

Depression was measured by the Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001). In the current study, we adopted the Chinese version from our previous study (Xiao et al., 2022). Example items include "Trouble concentrating on things, such as reading the newspaper or watching television" or "Thoughts that you would be better off dead or of hurting yourself in some way". The measure has excellent psychometric properties in English (Kroenke et al., 2001) as well as in Chinese (Wang et al., 2014). Participants were asked to indicate whether they suffered from those symptoms over the past two weeks on 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). Cronbach's alpha was 0.87 in this sample, with McDonald's omega was 0.87.

Anxiety was measured by the Clinical Anxiety Scale (CAS; Snaith et al., 1982). In the current study, the Chinese version of CAS was adopted from Xiao et al. (2022). Participants were asked to respond from 0 (rarely none of the time) to 4 (most or all of the time). Example items such as "Due to my fears, I avoid social situations, whenever possible," or "I used tranquilizers or antidepressants to cope with my anxiety". Previous studies have shown

acceptable reliability for the scale's scores (Kim et al., 2017). Cronbach's alpha was 0.93 in this sample, and McDonald's omega was 0.95.

Physical aggression was measured by the Buss-Perry Aggression Questionnaire – physical aggression sub-scale (BPAQ; Buss & Perry, 1992). Nine items with a 5-point Likert-scale from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me), were used to assess participants' physical aggression level. Example items include: "I get into fights a little more than the average person" and "Given enough provocation, I may hit another person". Cronbach's alpha was 0.79, with McDonald's omega was 0.84 in the current sample.

Anger was measured by seven items used a 5-point Likert-scale from the BPAQ – anger sub-scale. Example items such as "Sometimes I fly off handle for no good reason" or "I sometimes feel like a powder keg ready to explore". Cronbach's alpha was 0.83 and McDonald's omega was 0.87 in the current sample.

Hostility was measured by eight items using a 5-point Likert-scale from the BPAQ – hostility sub-scale. Example items such as "I know that 'friends' talk about me behind my back" or "I am suspicious of overly friendly strangers". Cronbach's alpha was 0.86, with McDonald's omega was 0.86 and McDonald's omega was 0.89 in the current sample.

Control Variable

Adverse Childhood Experiences (ACE). Ten items using dichotomous response (i.e., yes or no) were used to assess participants' childhood adversity which included child abuse and household dysfunction (adopted from the previous study by Xiao et al., 2022). Example items included: "Were your parents ever separated or divorced" and "Did a household member go to prison". In the data analysis, we removed questions that related to emotional abuse and emotional neglect to avoid overlap with the PMR, therefore, only 8 items of ACE

were included in the data analysis. Cronbach's alpha for the eight items was 0.76, with McDonald's omega was 0.81 in the current sample.

Data Analysis

Descriptive analyses were conducted in SPSS. The structural validity of the psychopathology of different domains was explored by confirmatory factor analysis (CFA) using the 'lavaan' package in R statistical software (Rosseel, 2012). The higher-order model was tested using robust maximum likelihood estimation (MLR). An internalizing factor was specified representing the common variance of depression and anxiety, and an externalizing factor was specified representing the common variance of anger, physical aggression, and hostility. A general psychopathology factor specified representing the common variance in internalizing and externalizing problems (see Figure 4.1).

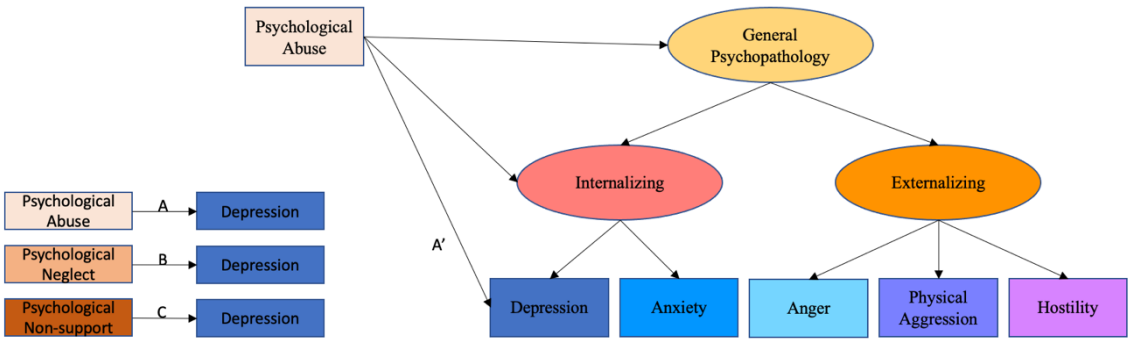

Figure 4.1. An example of the paths. Paths A, B, and C each represent total effects for a specific type of childhood psychological maltreatment with a specific symptom domain of psychopathology. Path A' represents a direct effect, after controlling for higher-order factors (i.e., the association unique to depressive symptoms, specifically).

Analyses for (non-) equivalence of harm were based on testing for differences in the strength of the association for each type of psychological maltreatment with each domain of psychopathology. For example, paths A, B, and C in Figure 4.1 represented the total effects for the associations between experiences of psychological abuse, psychological neglect, and psychological non-support with depressive symptoms. Multiple linear regressions were conducted to test (non-) equivalence of harm.

Analyses for outcome specificity were based on examining whether these psychological maltreatment-psychopathology associations were related to specific domains of psychopathology (i.e., depression, anxiety, anger, physical aggression, and hostility), to the overlap among these symptom domains (i.e., in the boarder common factors of internalizing or externalizing), or to general psychopathology. Specifically, each total effect was compared with its corresponding direct effect. Direct effects represented the unique associations between each type of psychological maltreatment and each domain of psychopathology after controlling for the shared variance captured in higher-order factors in the model. Multiple multivariate regressions were fit within the higher-order model. For example, path A' in Figure 4.1 represented a direct effect – the part of the total effect between psychological abuse and depression that is unique to depression specifically. In contrast, the differences between path A and path A' is the indirect effect, which refers to the part of the total effect that is accounted for by internalizing and general psychopathology (i.e., not unique to depression).

Analyses for gender invariance were explored in each model as a moderator. Specifically, Satorra-Bentler chi-squared difference testing (Satorra & Bentler, 2010) and a critical value of 0.01 change in the comparative fix index (CFI; Cheung & Rensvold, 2002) were used to compare models that allowed parameters to vary by gender and models that constrained parameters to equality by gender.

In order to control for adverse childhood experiences, the eight items ACE sum score was controlled for in the hierarchical models as other adverse childhood experiences may affect mental health (Jones et al., 2018). Code for all models if provided at: https://osf.io/h3n7k/?view_only=cf6430b215634ed3b007ef91baf2fd7f.

Results

Inferential Statistics

Table 4.1 showed the descriptive statistic and correlations between variables.

Structural Model of Psychopathology

The hierarchical structural model of psychopathology shown in Figure 4.1 provided, on balance, a good fit to the data (CFI = 0.985, TLI = 0.951, RMSEA = 0.100, SRMR = 0.027). This justified the use of the model for further stages of the analyses. In addition, the model met criteria for configural, metric and scalar measurement invariance by gender (Muthén & Muthén, 1998-2018; see Table 4.2). Subsequent analyses were thus run assuming scalar measurement invariance.

(Non-) Equivalence of Harm

When controlling for adverse childhood experiences, psychological abuse and psychological neglect had small to moderate positive and significant total effects on all symptom domains of psychopathology (from b = 0.265 to b = 0.386; see Table 4.3). Psychological non-support had small positive and significant total effects only on depression (b = 0.089) and anxiety (b = 0.278) (see Table 4.3). The results indicated that after controlling for adverse childhood experiences, all types of childhood psychological maltreatment had positive and significant associations with symptom domains of psychopathology. However, externalizing behaviors (i.e., anger, physical aggression, and hostility) did not have significant associations with psychological non-support.

Outcome Specificity

When controlling for adverse childhood experiences large proportions of the total effect for psychological abuse (86% - 100%), and psychological neglect (77% - 100%) were consistently accounted for by the higher-order factors. Psychological non-support showed that a 59% proportion of anxiety and 99% proportion of depression of the total effects was consistently accounted for by the higher-order factors. All the direct effects – representing the part of the total effect unique to each symptom domain were non-significant (see Table 4.3).

Moving to the next level of the higher-order model, there were positive and significant total effects of different types of psychological maltreatment on internalizing and externalizing behaviours (from b = 0.357 to b = 0.430). A large proportion (60% - 100%) of each effect was consistently accounted by for the general psychopathology factor. All the other direct effects were non-significant or significant but negative. However, the direct effects of psychological abuse and of psychological non-support on externalizing behaviour was significant (see Table 4.3).

Finally, moving to the next level of the higher-order model, the effects of different types of psychological maltreatments on general psychopathology were all positive and significant but weaker (b_{PA} = 0.460, b_{PN} = 0.479, b_{PS} = 0.254; see Table 4.3).

Taken together, these results suggested that the associations between different types of psychological maltreatment and psychopathology are not unique to specific symptom domains but associated with all symptom domains captured by an association with internalizing, externalizing and general psychopathology (see Figure 4.2 for visual summary of the parameters presented in Table 4.3 and Table 4.3).

Gender Invariance

Gender was examined as a moderator in all analyses using a multi-group framework that compared models with regression paths constrained versus unconstrained across males and

females. All models were invariant by gender, with all ΔCFI < 0.01 and Satorra-Bentler chi-squared difference tests non-significant except the association between psychological non-support and hostility, for which gender invariance did not hold.

Table 4.1. Descriptive statistics and correlations between variables

	Mean	SD	PA	PN	PNS	ACE	Anxiety	Anger	Physical Aggression	Hostility	Depression
PA	18.89	13.50	1	.756	.242	.347	.356	.368	.391	.347	.419
PN	15.05	12.49	<.001	1	.410	.356	.441	.324	.366	.345	.441
PNS	18.22	11.37	<.001	<.001	1	.121	.306	.051	.037	.049	.127
ACE	0.90	1.69	<.001	<.001	.006	1	.297	.252	.237	.264	.323
Anxiety	30.72	15.21	<.001	<.001	.000	<.001	1	.509	.473	.474	.696
Anger	18.56	5.12	<.001	<.001	.261	<.001	<.001	1	.694	.620	.444
Physical Aggression	22.89	5.71	<.001	<.001	.401	<.001	<.001	<.001	1	.561	.428
Hostility	22.83	5.89	<.001	<.001	.280	<.001	<.001	<.001	<.001	1	.547
Depression	1.98	2.84	<.001	<.001	.005	<.001	<.001	<.001	<.001	<.001	1

Notes. N = 544. PA = Psychological Abuse, PN = Psychological Neglect, PNS = Psychological Non-Support, ACE = Adverse Childhood Experience. Pearson correlations above the diagonal; p-values below the diagonal.

Table 4.2. Configural, metric, and scalar gender invariance testing for the structural model of psychopathology

Level of invariance by gender	CFI	TLI	RMSEA	SRMR	Satorra-Bentler χ^2differenc test
Configural (invariant factor structure)	0.982	0.938	0.095	0.031	Configural vs. metric $\chi^2(4) = 8.35$, $p = 0.079$
Metric (invariant factor loadings)	0.978	0.956	0.095	0.044	Metric vs. scalar $\chi^2(3) = 0.00$, $p = 1$
Scalar (invariant intercepts and factor loadings)	0.978	0.937	0.114	0.044	Configural vs. scalar $\chi^2(1) = 2.09$, $p = 0.148$

Notes. N = 541. CFI = comparative fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, SRMR = Standardized Root Mean Square Residual.

Table 4.3. Standardized total effects, direct effects, and proportion of the variance accounted for by higher-order factors for different types of childhood psychological maltreatment with each domain of psychopathology when controlling ACE

Domain of Psychopathology	Gender	Types of Childhood Psychological Maltreatment								
		Psychological Abuse			Psychological Neglect			Psychological Non-support		
		Total effect	Direct effect	Proportion unique	Total effect	Direct effect	Proportion unique	Total effect	Direct effect	Proportion unique
ACE	General	0.045	0.269*	-	0.041	0.271	-	0.061	0.383*	-
	Male	0.005	0.291*		-0.001	0.270*		0.007	0.282*	
	Female	0.081*	0.280*		0.073	0.291*		0.089	0.252*	
Depression	General	0.286*	0.025	8%	0.284*	0.009	3%	0.089 *	0.001	1%
	Male	0.269*	0.325*		0.267*	0.206*		0.084*	0.116*	
	Female	0.298*	0.117		0.279*	0.038		0.084*	0.010	
Anxiety	General	0.289*	-0.074	0%	0.386*	-0.020	0%	0.278*	0.155	41%
	Male	0.268*	0.170*		0.377*	0.171*		0.273*	0.317*	
	Female	0.305*	0.048*		0.394*	0.031*		0.271*	0.159*	

Anger	General	0.321*	-0.074	0%	0.265*	-0.111	0%	0.021	-0.015	-
	Male	0.285*	-0.122		0.252*	-0.118		0.023	-0.013	
	Female	0.323*	-0.043		0.261*	-0.099		0.023	-0.022	
Physical	General	0.354*	0.051	14%	0.321*	0.055	17%	0.005	0.019	-
Aggression	Male	0.308*	0.041		0.298*	0.056		-0.006	-0.004	
	Female	0.355*	0.040		0.313*	0.043		-0.006	0.001	
Hostility	General	0.297*	0.028	9%	0.289*	0.067	23%	-0.088	-0.095*	-
	Male	0.264*	0.105		0.270*	0.105		-0.083	0.105	
	Female	0.299*	0.001		0.286*	0.001		-0.084	0.001	
Internalizing	General	0.357*	-0.231	0%	0.430*	0.014	3%	0.266*	0.292*	109%
	Male	0.425*	-0.252		0.496*	-0.037		0.267*	0.387*	
	Female	0.316*	-0.217		0.386*	0.082		0.250*	0.234*	
Externalizing	General	0.404*	0.160*	40%	0.360*	-0.012	0%	-0.005	-0.297*	-
	Male	0.458*	0.163*		0.501*	0.031		-0.076	-0.358*	
	Female	0.369*	0.156		0.266*	-0.078		0.024	-0.250*	
	General	0.460*	-	-	0.479*	-	-	0.254*	-	-

General	Male	0.505*	-		0.573*	-		0.250*	-
Psychopathology	Female	0.425*	-		0.413*	-		0.247*	-

Notes. * = <.05

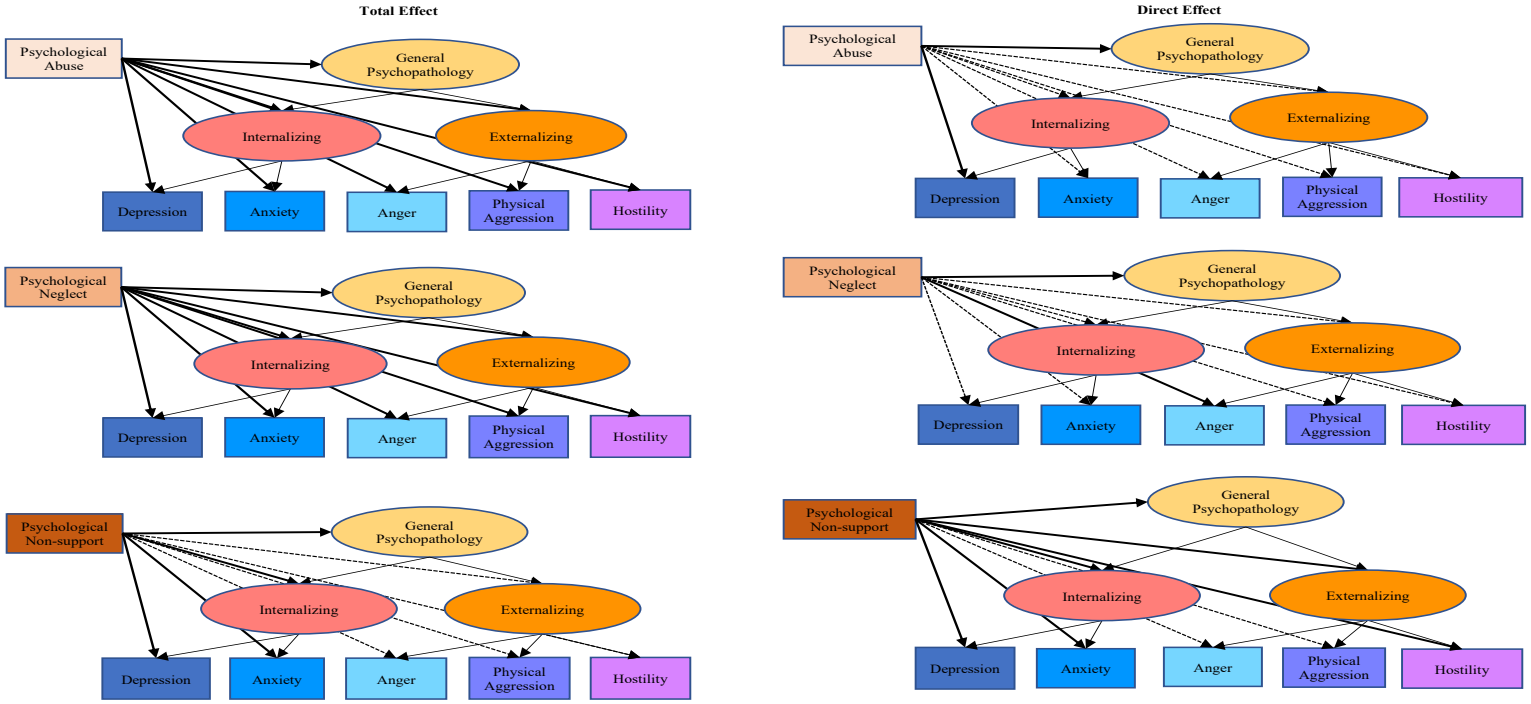

Figure 4.2. Visual summary of the total versus direct effects (parameters specified in Table 4.3) for each type of childhood psychological maltreatment with each domain of psychopathology when controlling adverse childhood experiences. Solid lines represent significant effects, and dashed lines denote non-significant effects at $p < 0.01$. Note that the direct effect for general psychopathology is equal to the total effect, as there are no higher-order variables controlled for in this association.

Discussion

Experiences of psychological maltreatment are common during childhood and have been associated with a broad variety of psychopathology outcomes in adulthood. The current study examined the hypotheses that (1) psychological abuse and psychological neglect would be more strongly associated with psychopathology than psychological non-support ((non-) equivalent harm?); (2) different forms of psychological maltreatment would have broadband associations with specific domains of psychopathology (i.e., depression, anxiety, anger, physical aggression, and hostility) (outcome specificity); and (3) the strength of these associations would not vary by gender (gender invariance?). As hypothesised, the results suggested that psychological abuse and psychological neglect were more strongly associated with psychopathology than psychological non-support. In addition, the results indicated that psychological abuse and psychological neglect had broadband associations across all common domains of psychopathology, including at all levels of a hierarchical model of psychopathology after adjusting for adverse childhood experiences. Psychological non-support, on the other hand, was only associated with general psychopathology, internalizing problems, and anxiety after controlling for adverse childhood experiences, supporting the non-equivalence assumption. Finally, the results suggested that these associations were invariant by gender, with the exception of the associations between psychological non-support and hostility – males showed negative but significant associations between psychological non-support and hostility, while females did not show any significant association.

Implications

Equivalence of harm was indicated by the findings that childhood experiences of psychological abuse and psychological neglect had similar, small to moderate relationships with all symptom domains of psychopathology examined. The comparisons of harmfulness between childhood psychological abuse and psychological neglect have been rare in previous

studies. Previous studies have suggested that psychological neglect has weaker associations with internalizing problems than psychological abuse (Vahl et al., 2016). In contrast, the current study found psychological neglect was more strongly associated with internalizing problems than psychological abuse.

Psychological neglect is a prevalent form of abuse (Taillieu et al., 2016); however, it receives less attention than others. The relative lack of prevention and intervention efforts related to psychological neglect may be because acts of omission (psychological neglect) are more difficult to identify than acts of commission (psychological abuse) (Chamberland et al., 2011). Recognizing and responding to psychological maltreatment in all its forms is important and a priority for public health. Given the potential harmfulness of psychological maltreatment during childhood, parents or other caregivers need to be aware of the consequences of psychological maltreatment towards children, and its possible long-term on mental health. For example, parenting programs for preventing psychological maltreatment are promising approaches for preventing and reducing the potential negative impacts on mental health (e.g., Cluver et al., 2018). However, these parenting programs do not tend to measure psychological maltreatment outcomes other than emotional abuse, which and it will be important to expand the outcome measures for these studies to include the broader set of potentially harmful parenting practices. More generally, an effective parenting program may need to integrate both efforts to reduce non-physical forms of aggression by parents or caregivers (i.e., promoting positive parenting, supportive and trust bonding with child) and reduce different forms of child psychological maltreatment.

In the current study, all levels of the hierarchical model of psychopathology were associated with childhood psychological abuse and psychological neglect, with the strongest associations with general psychopathology, followed by internalizing and externalizing factors. There was no evidence for outcome specificity, as most of the domain-specific relationships

were accounted for by the associations between psychological maltreatment and general psychopathology. There is lack of literature exploring whether psychological maltreatment is a trans-diagnostic risk factor in psychopathology. In one of only a small number of studies to address this issue, Keyes et al. (2012) found that different forms of child maltreatment predicted internalizing and externalizing problems rather than symptoms of specific psychiatric disorders. Our results were consistent with this and thus are in line with the limited evidence base on this thus far available.

Several studies examining childhood adversity more broadly (Conway et al., 2018; Schaefer et al., 2018) draw similar conclusions – suggesting that childhood adversities such as domestic violence, bullying by peers, sexual abuse, physical abuse, emotional abuse, and early childhood stress are associated with broad factors such as internalizing, externalizing, or general psychopathology. The current study suggested the generality of the risks conferred by childhood psychological maltreatment as well, indicating that developing broadband preventive intervention and trans-diagnostic treatment may be the most efficacious approach to mitigating the mental health harms of childhood psychological maltreatment.

Some previous research has suggested gender differences in the association between childhood psychological maltreatment (Vahl et al., 2016); however, other research has reported evidence conflicting with this. For instance, Li, Zhao, and Yu (2022) found no gender differences in the relations between childhood emotional abuse and depression. In line with the previous literature, the current study found only minimal evidence for gender as a moderator of the relations between childhood psychological maltreatment and mental health outcomes, limited to the relations between hostility and psychological non-support which were only present for males. This suggests that the negative impacts of psychological maltreatment are largely universal across males and females, consistent with the evidence on other forms of child abuse (Vachon et al., 2015).

Strengths and Limitations

There are some limitations that should be considered. The primary limitations are regarding measurement. First, the reliance on retrospective self-report for recalling childhood psychological maltreatment experiences may be subjective to biases. Several empirical studies have investigated the biases of adulthood recalled childhood adversity experiences, finding inconsistencies between prospective and retrospective reporting (e.g., Colman et al., 2016). However, Hardt and Rutter (2004) concluded that although there were false negative experiences and substantial measurement error on recalling childhood adversity, the errors or biases were not strong enough to invalidate retrospective measurement. Nevertheless, replicating the present findings using alternative approaches, including prospective data collection and multi-informant perspective will be important.

Further research should also include the measurement of substance abuse. Substance abuse as a common expression of externalizing behaviors and has been well-investigated as an outcome of childhood psychological maltreatment. Extant research has indicated that participants with childhood psychological abuse experiences are more likely to be engaged in different kinds of substance abuse such as alcohol (Crouch et al., 2012), cannabis (Aas et al., 2014), nicotine (Elliott et al., 2014), or heroin (Afifi et al., 2012). A systematic review (Xiao et al., 2022) suggested that the effect size for the associations between substance abuse and childhood psychological abuse were moderate to strong (from 0.30 to 0.85), while the effect size for childhood psychological neglect were small to strong (from 0.15 to 0.66).

In the current study, we recruited from the general population from different regions in China, but we did not recruit from clinical populations. Previous literature has suggested that clinical populations may have suffered more childhood psychological maltreatment than general populations. This includes higher abuse prevalence in clinical population such as those with major depression (de Mattos Souza et al., 2016), personality disorders (Zhang et al., 2013),

eating disorders (Amianto et al., 2018), or PTSD (Evren et al., 2016). A systematic review conducted by Xiao et al. (2022) showed that the small to moderate effect size of the associations between childhood psychological maltreatment and having a clinical psychopathology diagnosis. It would, therefore, be valuable to replicate the current study in high-risk population (i.e., high risk of exposure to childhood psychological maltreatment) or clinical populations to examine whether the findings reported here generalize to these populations.

Conclusion

Taken together, the results indicated that experiences of childhood psychological maltreatment, may pose a broadband risk for any and all forms of psychopathology. With no physical scars, no standard definition, and challenges in legislating against it, it can be difficult to detect, recognize, prevent, and intervene on this risk factor. Given its broad and lasting negative impact into adulthood, research and policy should place greater emphasis on psychological maltreatment, which occurs with high frequency; however, children receive less formal protection against it than other types of child maltreatment.

Chapter 5: Latent Profiles of Childhood Psychological Maltreatment and their Links to Adult Mental Health in China and the UK

Synopsis

This chapter used person-centred approach to explore different profiles and their associations with mental health outcomes. Both Chinese and the UK samples were divided into four profiles; however, the characteristic between Chinese and the UK in different profiles were different.

Dissemination status

The work presented in Chapter 5 has been accepted at Child and Adolescent Psychiatry and Mental Health as "Latent Profiles of Childhood Psychological Maltreatment and their Links to Adult Mental Health in China and the UK".

Author contributions

I conceptualised and designed the study, collected data, conducted analyses, drafted the initial manuscript, and revised the manuscript based on co-author and peer reviewers' feedback. Dr Murray, Dr Obsuth, and Dr Meinck supervised me and provided feedbacks at all stages from study design to journal submission.

Latent Profiles of Childhood Psychological Maltreatment and their Links to Adult Mental Health in China and the UK

Zhuoni Xiao[1*], Ingrid Obsuth[2], Franziska Meinck[3,4,5], Aja Louise Murray[1]

[1] Department of Psychology, University of Edinburgh, Edinburgh, UK

[2] Clinical & Health Psychology, University of Edinburgh, Edinburgh, UK

[3] School of Social and Political Science, University of Edinburgh, Edinburgh, UK

[4] Faculty of Health Sciences, North-West University, Vanderbijlpark, South Africa

[5] School of Public Health, University of the Witwatersrand, Johannesburg, South Africa

*Corresponding author at: 7 George Square, University of Edinburgh, Edinburgh, UK, EH8 9JZ; email: Zhuoni.Xiao@ed.ac.uk

Abstract

Background

Though links between childhood maltreatment and mental health have been established, little known about how specific types of childhood maltreatment tend to cluster and how the resulting patterns of exposure impact mental health outcomes.

Method

The current study used latent profile analyses in Chinese (N = 544) and UK (N = 589) samples to identify childhood psychological maltreatment profiles (i.e., profiles of psychological abuse, psychological neglect, and psychological non-support) in different country contexts, and their associations with a range of mental health (i.e., depression, anxiety, anger, physical aggression, verbal aggression, and hostility), and broader well-being (i.e., self-esteem) outcomes.

Results

Four profiles were identified in both samples, but their nature differed between the Chinese sample ("*Psychological Non-support*", "*Low-Maltreated*", "*High-Maltreated*", and "*Severe-Maltreated*") and the UK sample ("*Low-Maltreated*", "*Moderate-Maltreated*", "*High-Maltreated*", and "*Severe-Maltreated*"). Individuals in the "*Psychological Non-support*" in China and "*Low-Maltreated*" class in the UK displayed better mental health outcomes – lower levels of depression, anxiety, and aggression, and higher self-esteem. In contrast, individuals in the "*Sever-Maltreated*" profiles in both the Chinese and UK samples displayed poorer

mental health outcomes – higher depression, anxiety, and aggression, and lower self-esteem. Interventions and prevention efforts are needed for individuals categorized in all profiles.

Conclusion

This study emphasised the importance of using targeted intervention or prevention to prevent psychological maltreatment, as well as improve mental health outcomes in individuals experienced psychological maltreatment.

Keywords:

Latent Profile Analysis, Psychological Maltreatment, Mental Health, Cultural Differences, Mental Well-being

Introduction

Childhood maltreatment is common worldwide, with an estimated prevalence of sexual abuse of approximately 2.6% - 12.8%; physical abuse of approximately 6.7% - 18.9%; psychological abuse of approximately 9.2% - 33.4%; and neglect of approximately 6.6% - 47.2% (Moody et al., 2018). Childhood maltreatment has negative impacts on a wide range of mental health and behavioural outcomes, such as depression and anxiety (Gardner, Thomas, & Erskine, 2019), suicidality (Angelakis, Gillespie, & Panagioti., 2019), and violence (Fitton, Yu, & Fazel, 2020) (Xiao et al., 2022). However, a majority of past childhood maltreatment studies have focused on specific forms of childhood maltreatment and their links to mental health outcomes (Fung et al., 2020; Florez et al., 2020). These typically use variable-centred approaches that assume homogeneity among participants. Thus, it remains to be established how multiple childhood maltreatment types of clusters interact with one another and to illuminate how different exposure patterns may be (differentially) related to mental health outcomes.

Person-centred analyses, such as latent profile analyses, allow common exposure patterns to be identified among subgroups of participants (Love & Durtschi, 2021). Previous studies utilizing this method have shown how the method can provide illumination on adverse childhood experiences. For instance, Dobson et al. (2021) used a latent profile analysis of adverse childhood experiences and explored adult mental health in community samples and found the samples could be divided into four profiles (i.e., "*Dysfunctional Family Environment*", "*Sexually Abused*", "*Emotionally Mistreated*", and "*No Mistreatment*").

Another more recent study (Hemady et al., 2021) conducted a latent profile analysis of adverse childhood experiences in a multi-country cohort and found that the sample could be divided into four classes (i.e., "*Highly Maltreated*", "*Emotionally and Physically Abused with Intra-familial Violence Exposure*", "*Emotionally Abused",* and "*Low Household Dysfunction and Abused*") differing in their outcomes. While these previous studies demonstrate the value of the latent class approach to illuminating abuse profiles and their consequences (see Rivera, Fincham, & Bray, 2018 for review), only a few studies (Pears, Kim, & Fisher, 2008; Villodas et al., 2015) provided an in-depth exploration of different childhood psychological maltreatment profiles (i.e., psychological abuse, psychological neglect, and psychological non-support) specifically. This study adds to the existing literature by applying a latent profile analysis to explore latent subtypes of childhood psychological maltreatment.

Childhood psychological maltreatment refers to a repeated pattern of caregivers' behaviours or extreme incident(s) that convey to children that they are worthless, flawed, unloved, unwanted, endangered, or of value only in meeting another's needs (American Professional Society on the Abuse of Children, 1995). It can be divided into psychological abuse (sometimes termed "emotional abuse") and psychological neglect (sometimes termed "emotional neglect"). (In this paper, the terms psychological abuse and psychological neglect will be used for consistency). Psychological abuse refers to the commission of hostile acts by caregivers towards the child (McGee and Wolfe, 1991), behaviours such as belittling, restricting social interaction, and intentionally trying to scare, humiliate, ignore, or isolate

could be seen as psychological abuse. Psychological neglect refers to caregivers' acts of omission in failing to provide necessary care for children, which may include meeting their basic needs (Dubowitz, 2013), behaviours such as providing little or no warmth nurturing, or praise during any developmental period in childhood, and being detached or uninvolved, interact only when necessary, could be seen as psychological neglect. Psychological support refers to gestures or acts of caring, acceptance, and assistance expressed by caregivers towards a child (Shaw et al., 2004). Caregivers who fail to these behaviours would be seen as lack of psychological support (i.e., psychological non-support).

A wide range of mental health symptoms has been linked to psychological maltreatment (Xiao et al., 2022), making them key outcomes to investigating LPA-derived latent subtypes. The latent profile subtypes that emerge from methods such as LPA are particularly valuable if they encode meaningful information about differential causes or outcomes of psychological maltreatment. For example, if the subtypes from LPA can be used to predict which mental health issues an individual is at risk of, they can provide not only a description of common patterns of psychological maltreatment but also clinically valuable information that can forecast risk and potentially inform the targeting of interventions.

Previous studies have also been conducted to investigate the negative impacts of childhood psychological maltreatment on depression and anxiety. For instance, Christ et al. (2019) explored the links between childhood psychological abuse and depressive symptoms. They found that only psychological abuse was independently associated with depressive

symptoms across different types of abuse. Further, a systematic review (Gardner et al., 2019) demonstrated significant associations between psychological abuse and depression and anxiety. Previous studies have also suggested significant associations between childhood psychological neglect and adult psychiatric disorders such as depression, anxiety, psychotic disorders, and substance abuse. For instance, Salokangas et al. (2019) found that physical abuse and psychological neglect were strongly associated with adult psychiatric disorders.

Childhood psychological maltreatment affects not only internalizing problems but also externalizing problems. According to Social Learning Theory (SLT; Bandura & Walters, 1977), children observe their caregivers' behaviour to adapt their behaviour in social contexts. Vicarious learning is more likely when the model of the observer is rewarded, but it can also occur without favourable consequences. Based on this theory, some children learn to do what has been done to them (as well as what they witness). The child victim later becomes a perpetrator, creating one route to the intergenerational transmission of violence (Felson & Lane, 2009). Indeed, children who have experienced physical abuse are more likely to engage in violent behaviours, while children who have experienced sexual abuse are more likely to engage in sexual offences (Felson & Lane, 2009). Based on these previous empirical studies on other types of maltreatment and aggression, children who have experienced psychological abuse or psychological neglect should therefore be more likely to engage in violent behaviours such as verbal violence, anger, or hostility. Emerging research on psychological abuse has found it to be the strongest predictor of relationship violence (i.e., physical, sexual, and

psychological) compared with other maltreatment types (Berzenski & Yates, 2010). Similarly, psychological abuse and neglect have been found to be associated with aggression in college students (Crawford & Wright, 2007).

Childhood psychological maltreatment affects mental health outcomes and is negatively associated with broader well-being, such as self-esteem (Crawford & Wright, 2007). According to Stanley Coopersmiths' self-esteem theory (1959), self-esteem is rooted in early childhood with a foundation of trust, unconditional love, and security, which is impacted as life progresses by a combination of positive and negative evaluations. From this perspective, childhood psychological abuse and psychological neglect represent key risk factors for poor self-esteem development. Indeed, recent empirical investigations have found evidence consistent with this claim. For instance, Badr et al. (2018) found that childhood psychological maltreatment was a significant predictor of low self-esteem after adjusting for potential confounders, and Chen and Qin (2020) found that childhood psychological abuse was negatively associated with self-esteem. Studies that have explored childhood psychological neglect have also suggested its negative associations with self-esteem (Mwakanyamale, Wande, & Yizhen, 2018; Rees, 2008).

Study Aim

The objective of the present study was to examine whether LPA-derived psychological maltreatment profiles in two samples from different country contexts were associated with a range of mental health and broader well-being outcomes. We first sought to identify different

sub-populations (i.e., profiles) within the samples based on their combined levels of childhood psychological abuse, psychological neglect, and psychological non-support. We then investigated the associations between these profiles and mental health outcomes (i.e., depression and anxiety), aggression (i.e., anger, physical aggression, verbal aggression, and hostility), and well-being (i.e., self-esteem).

Methods

Sample and Procedure

A general community sampling approach was used in the present study. Participants were not specifically recruited based on their experiences of psychological maltreatment; however, the focus on psychological maltreatment was made clear in the information sheet which was provided to participants before the study. Five hundred and forty-four participants (59.9% aged 21-30; 63.4% females; 61.6% mother as primary caregiver) were recruited via social media in China. Five hundred and eighty-nine participants (60.6% aged 21-30; 63% female; 84.2% mother as primary caregiver) were recruited via the local university volunteer panel and Prolific in the UK. Participants from China and Prolific were offered 2 pounds as compensation, while participants from local university volunteer panels were offered course credits. Both groups completed an online questionnaire utilizing the Qualtrics platform. A full description of the demographic characteristics of the participants is provided in Tables S5.1 (China) and S5.2 (the UK) in the Supplementary Material.

Measure

Childhood Psychological Maltreatment was measured using the Psychological Maltreatment Review (PMR; Briere, Godbout, & Runtz, 2012), adapted from Xiao et al. (2022). Three sub-factors were measured with 30 items – Psychological Abuse, Psychological Neglect,

and Psychological Non-support. Participants were asked to rate their caregivers' behaviours for each item from 0 (never) to 6 (over 20 times per year). Example item contents for psychological abuse included "*Insulted you*", "*Criticised you*", or "*Called you names*"; example item contents for psychological neglect included "*Act like they didn't seem to care you*", "*Ignore you*", or "*Act like you weren't there, even though you were*". Psychological non-support (i.e., lack of psychological support) was measured by item contents such as "*Hugged you*", "*Encouraged you to have friends*", or "*Tried to make you better when you were upset or hurt*". The psychological non-support item scores were reversed when calculating the sum scores. Higher scores represent a higher level of psychological abuse, neglect and non-support. As reported in our previous work (Xiao et al., 2022), two Psychological Non-support items of the Chinese version were removed due to evidence of cultural differences in the meaning of these items, complicating the comparison of findings across contexts.

Depression was measured using the Patient Health Questionnaire-9 (PHQ-9), which has been established as a reliable screening tool for depression (Costantini et al., 2021; Levis, Benedetti, & Thombs, 2019). Participants were asked to indicate whether they suffered from nine symptoms over the past two weeks on 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). Scores lower than 4 represent minimal depression, which means no need for depression treatment. Scores between 5 and 9 represent mild depression, while scores between 10 to 14 represent moderate depression. Scores between 15 and 19 represent moderately severe depression, and scores higher than 20 represent severe depression.

Anxiety was measured using the Clinical Anxiety Scale (CAS; Snaith et al., 1982). Previous studies have suggested acceptable reliability (Kim et al., 2017). In the current study, we adopted the Chinese version of CAS from our previous work (Xiao et al., 2022). Participants were asked to respond to 25 items with response options from 0 (rarely none of

the time) to 4 (most or all of the time). Higher scores represent higher levels of anxiety. The clinical cut-off point for this measure is a score of 30.

Aggression was measured by the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). There are four sub-scales within the BPAQ – anger (7 items), physical aggression (9 items), verbal aggression (5 items), and hostility (8 items). All the subscales were used for outcome variables to explore the associations between different profiles and dimensions of aggression. Allen and Anderson (2017) pointed out the meaningful distinctions between different forms of aggression which have been identified, necessitating the use of separate subscales to capture all these aggression concepts. A five-point Likert scale from 'extremely uncharacteristic of me' to 'extremely characteristic of me' was used. Previous studies have shown the high reliability of the BPAQ in a different context (Samani, 2008).

Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Participants were asked to respond to 10 items using a four-point scale from 'strongly disagree' to 'strongly agree'. Higher scores represent a higher level of self-esteem. A score between 20 and 30 is within the normal range. Scores below 20 mean low self-esteem. The Rosenberg self-esteem scale has been widely used in a different context, with evidence for acceptable reliability (Robins, Hendin, & Trzesniewski, 2001; Wu et al., 2017).

Adverse Childhood Experience as a covariate was measured using Adverse Childhood Experiences (ACE, developed by the Centre for Disease Control and Prevention, US; Felitti et al., 1998). The ACE has been widely used across different ethnic groups (Crouch et al., 2018; Harford, Yi, & Grant, 2014). Ten items using dichotomous response options (i.e., yes or no) covered three dimensions – childhood abuse, neglect, and household dysfunction. We removed items 1 and 4 as they measured psychological abuse and psychological neglect in our data analysis.

Cronbach's alpha for each measure is presented in Table S5.3 in Supplementary Materials.

Data Analysis

First, latent profile analysis (LPA) was used to identify subgroups of participants with similar patterns across three types of childhood psychological maltreatment when controlled for ACE. These models were implemented in *Mplus* 8.4 using the robust maximum likelihood estimator (MLR). Solutions with one to eight profiles were examined to determine an optimal profile model. The optimal model was selected based on criteria including Akaike's Information Criteria (AIC; Akaike, 1987), Bayesian Information Criteria (BIC; Schwarz, 1978), adjusted Bayesian Information Criteria (a-BIC, Sclove, 1987), Lo-Mendell-Rubin likelihood ratio test (LMR test; Lo, Mendell, & Rubin, 2001), where a significant LMR *p-value* indicates that a model with k number of profiles is preferred over (significantly improves upon) a model with K-1 profiles. The means of psychological abuse, psychological neglect, and psychological non-support were freely estimated across all profiles, and their variances were constrained to equality. After identifying the optimal profile groups, participants were assigned to their most likely profile groups.

Second, the outcomes (i.e., depression, anxiety, anger, physical aggression, verbal aggression, hostility, and self-esteem) were investigated via the manual three step BCH approach (i.e., step 1: latent profile model was estimated using only latent profile indicator variables (i.e., psychological abuse, psychological neglect, and psychological non-support both with and without ACEs as a covariate); step 2: the most likely profile variable was created using the latent profile posterior distribution obtained during the first step; step 3: the most likely profile regressed on predictor variables (i.e., depression, anxiety, anger, physical aggression, hostility, verbal aggression, and self-esteem) taking into account the misclassification in the second step) procedure available in *Mplus* (Asparouhov & Muthén,

2014). We used the 'BCH' method (i.e., which used a weighted multiple group analysis in step 3, where the groups correspond to the latent profiles, and thus the profile shift is not possible because the profiles are known) that allowed us to compare the means of each outcome across latent profiles and thus explore whether these outcomes were significantly different for different patterns of psychological maltreatment (Bakk & Vermunt, 2006). Because the factor structures of childhood psychological maltreatment differed in China and the UK samples (Xiao et al., 2022) and to leave open the possibility for broader contextual differences to emerge, we conducted the data analyses separately for these samples.

Sensitivity Analysis

LPA was used to identify subgroups of participants with similar patterns across three types of childhood psychological maltreatment without controlled for ACE. Results and interpretation were provided in Supplementary Material.

Result

Descriptive Statistics

Table 1 presents the descriptive statistics for the Chinese and UK population. The Supplementary Material presents the correlations between variables in Tables S5.4 (China) and S5.5 (the UK).

Table 5.1. Descriptive Statistics

	China	UK	
	Mean (SD)	Mean (SD)	t (df)
PA	18.89 (13.50)	16.97 (13.67)	2.38 (1131)

PN	15.06 (12.48)	12.33 (13.73)	3.49 (1131)
PNS	18.22 (11.38)	20.81 (7.77)	-4.51 (1131) ***
ACE	.60 (1.23)	1.14 (1.34)	-6.99 (1101) **
Self-esteem	29.46 (5.19)	28.21 (5.12)	3.94 (1062)
Anxiety	30.75 (15.14)	30.57 (18.18)	.18 (1084) ***
Anger	18.55 (5.13)	16.19 (5.73)	6.99 (1036) **
Physical Aggression	22.87 (5.73)	18.28 (6.74)	11.75 (1036) ***
Hostility	22.79 (5.92)	22.42 (6.46)	.94 (1036) *
Verbal Aggression	14.87 (3.22)	14.17 (4.34)	2.93 (1036) ***
Depression	7.07 (5.10)	10.27 (6.62)	-8.67 (1060) ***

Notes. PA = Psychological Abuse, PN = Psychological Neglect, PNS = Psychological Non-Support, ACE = Adverse Childhood Experiences, p < .001***, p < .01**, p < .05*.

Latent Profile Solution – Chinese Samples

A series of latent profile models with one to eight were specified and estimated. The LMR test had a non-significant value for the 5-class model ($p > .05$), suggesting a 4-class optimal model. Table S5.6 in the Supplementary Material indicated that the entropy of the four-profile solution was 0.860, which is considered satisfactory (Morin et al., 2011). Additionally, the average latent class probabilities for the four-profile model were 0.950, 0.932, 0.957, and 0.924, above the cut-off criterion of 0.80 (Nylund, Asparouhov, & Muthén, 2007). Accordingly, we adopted the four-profile model for the Chinese samples as the best solution based on theoretical and statistical considerations.

Figure 5.1 displays the four-profile solution that was retained. Values on the Y-axis represented the sum scores of different types of childhood psychological maltreatment. The first latent profile was the smallest and described the 5.4% of the sample who reported the

lowest level of psychological abuse and psychological neglect but the highest level of psychological non-support and was thus labelled the "*Psychological Non-support*" profile. The second latent profile represented 56% of the samples labelled "*Low-Maltreated*," given that the level of psychological abuse and psychological neglect was higher than the "*Psychological Non-support*" group but with the lowest level of psychological non-support. The third latent profile, named the "*High-Maltreated*" profile, characterised 32.9% of the sample presenting experiences of a higher level of psychological abuse, psychological neglect, and psychological non-support. The fourth latent profile, labelled "*Severe-Maltreated*", includes 5.5% of the sample and reported the highest level of psychological abuse, neglect, and non-support. Table S5.8 in the Supplementary Material presents the means and standard errors of each psychological maltreatment type.

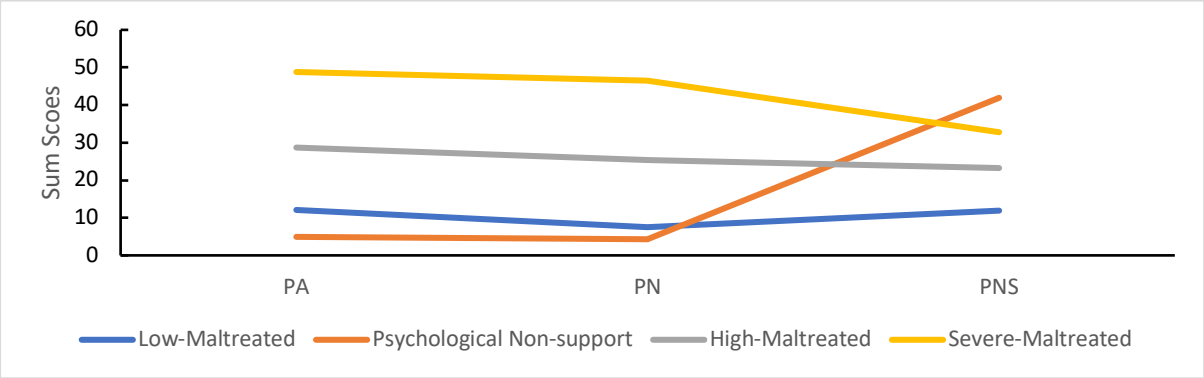

Figure 5.1. Latent Profile of Childhood Psychological Maltreatment in Chinese Samples

Latent Profile Solution – UK Samples

The four-class solution was also considered the best-fitting model for the UK sample based on a series of fit indices (see Table S5.7 in Supplementary Material). The LMR test had a non-significant value for the 5-class model ($p > .05$), suggesting a 4-class optimal model and the BIC, which has been identified as the most reliable of the available fit indices (Nylund et

al., 2007b), was lower than other models with significant *p*-values. We, therefore, adopted the four-profile model as the best solution for further analyses.

Figure 5.2 displays the four-profile solution for the UK sample. Values on the Y-axis represent the sum scores of different types of childhood psychological maltreatment. The first latent profile was the largest and described 57.9% of the sample who reported the lowest level of childhood psychological maltreatment and were thus "*Low-Maltreated*". The second latent profile represented by 25.4% of the sample was labelled "*Moderate-Maltreated*," given that samples experienced moderate childhood psychological maltreatment. The third latent profile, named the "*High-Maltreated*" profile, characterised 11.2% of samples, representing a higher level of childhood psychological maltreatment. The fourth latent profile, labelled "Severe-*Maltreated*", included 5.5% of the sample who reported the highest level of childhood psychological maltreatment. Table S5.9 in the Supplementary Material presents the means and standard errors for each form of psychological maltreatment.

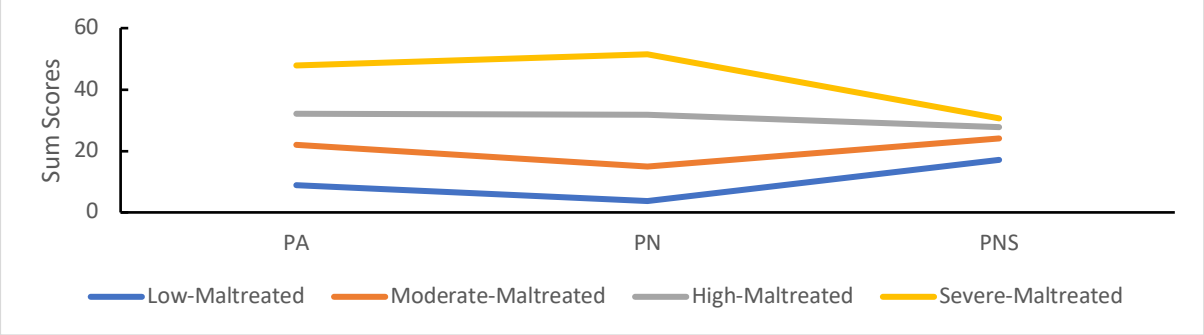

Figure 5.2. Latent Profile of Childhood Psychological Maltreatment in the UK Samples

The Associations between Profiles and Mental Health – Chinese Samples

The relationships between four latent profiles and mental health outcomes for the Chinese sample are displayed in Table S5.10 in the Supplementary Material, and Figure 5.3 presents the outcomes for each profile. The results indicated that the sample in the

"*Psychological Non-support*" profile exhibits better mental health outcomes with the lowest depression and aggression levels. Moreover, the sample in the "Low-Maltreated" exhibit the lowest level of anxiety with the highest level of self-esteem. In addition, those assigned to the "*Severe-Maltreated*" profile show poorer mental health outcomes than other profiles, with the highest levels of depression, anxiety, and aggression and the lowest levels of self-esteem. The "*Psychological Non-support*" profile was categorised as having minimal depression. The other three profiles were associated with mild or moderate depression. The differences in levels of depression between all profiles were significant, except for the difference between the "*Moderate-Maltreated*" and "*Severe-Maltreated*" profiles. When compared to anxiety levels, the "Low-Maltreated" profile displayed the lowest level of anxiety, while other profiles were all above the clinical cut-off point. There was no difference between the "*High-Maltreated*" and "*Severe-Maltreated*" profiles, but differences between other profiles were significant.

Only the "*Psychological Non-support*" profile was below the norm mean score compared to anger. The difference between all profiles was significant. When compared to physical aggression scores, "*Psychological Non-support*" and "*Low-Maltreated*" profiles were below the norm mean score, while "*High-Maltreated*" and "*Severe-Maltreated*" profiles were above the norm mean scores. The differences between all profiles were significant, except for the difference between "*Moderate-Maltreated*" and "*Severe-Maltreated*". Compared to verbal aggression scores, only the "*Psychological Non-support*" profile was below the norm mean score. The differences between the "*Low-Maltreated*". "*Moderate-Maltreated*" and "*Severe-Maltreated*" were non-significant, while the differences between "*Psychological Non-support*" with other profiles were significant. Only the "*Psychological Non-support*" profile was below the norm mean score compared to the hostility scores. Other profiles were all above the mean scores. All the profiles showed significant differences compared with other profiles.

When compared the self-esteem levels, samples in the "*Low-Maltreated*" profiles showed a higher level of self-esteem, while other profiles were within the normal ranges. There was no difference between the "*Psychological Non-support*" and "*Low-Maltreated*" profiles; however, the differences between other profiles were significant.

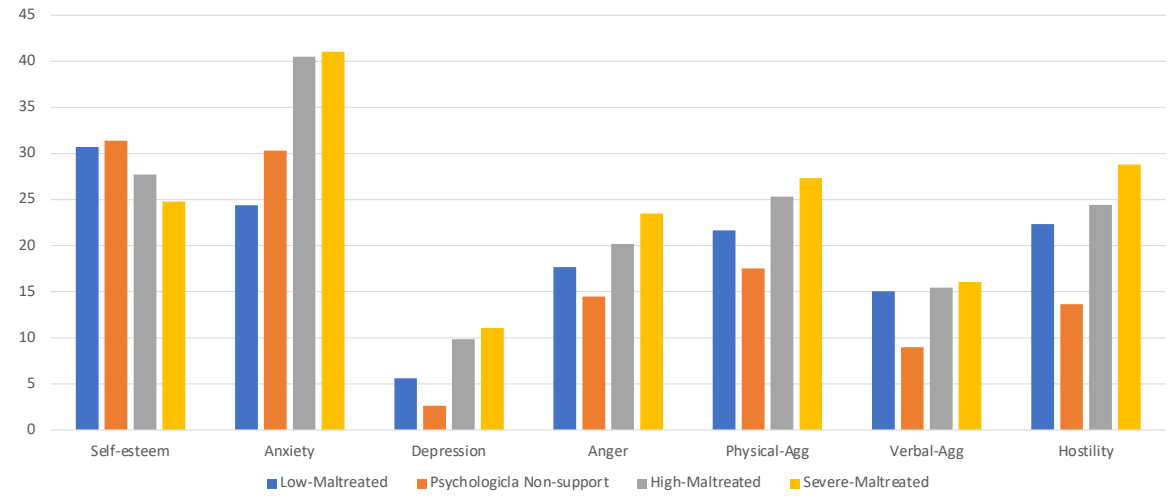

Figure 5.3. The outcomes for each profile (China)

The Associations between Profiles and Mental Health – UK Samples

The relationships between four latent profiles of mental health outcomes for the UK samples are displayed in Table S5.11 in the Supplementary Material, and Figure 5.4 presents the outcomes for each profile. The results indicated that the sample in the "*Low-Maltreated*" profile exhibited better mental health outcomes, such as higher levels of self-esteem and lower levels of anxiety, depression, and aggression. Moreover, the "*Severe-Maltreated*" profile displayed poorer mental health outcomes, with the highest level of depression, anxiety, and aggression and the lowest level of self-esteem.

When compared on depression levels, the "*Low-Maltreated*" profile was categorised as showing minimal depression, "*Moderate-Maltreated*" and "*High-Maltreated*" were

categorised as showing mild and moderate depression, while the "*Severe-Maltreated*" profile was categorised as showing moderately severe depression. The difference between profiles was significant, except for the "*High-Maltreated*" and "*Severe-Maltreated*" profiles. Only the "*Low-Maltreated*" profile was below the clinical cut-off point when compared to anxiety levels. Other profiles were all above the clinical cut-off point. Except for the difference between the "*Moderate-Maltreated*" and "*Severe-Maltreated*" profiles being non-significant, differences between other profiles were all significant.

Regarding anger scores, the "*Low-Maltreated*" profile was below the norm mean score, while other profiles were all above the norm mean score. Differences between "*Moderate-Maltreated*", "*High-Maltreated*," and "*Severe-Maltreated*" were non-significant, while the difference between the "*Low-Maltreated*" profile and other profiles was significant. When compared to physical aggression, all the profiles were below the norm mean score. Like anger, the difference between the "*Low-Maltreated*" and other profiles was significant, while the differences between the other three profiles were non-significant. When compared to verbal aggression scores, all profiles were above the norm mean scores except the "*Low-Maltreated*" profile. Differences between all profiles were non-significant except for the difference between the "*Low-Maltreated*" and "*Moderate-Maltreated*" profiles. Compared to hostility scores, all the profiles were above the norm mean scores. Differences between all profiles were significant. All the profiles were within the normal range when compared to self-esteem scores. The differences between "*Moderate-Maltreated*" and "*High-Maltreated*" and "*High-Maltreated*" and "*Severe-Maltreated*" profiles were non-significant. Other profiles showed significant differences from each other.

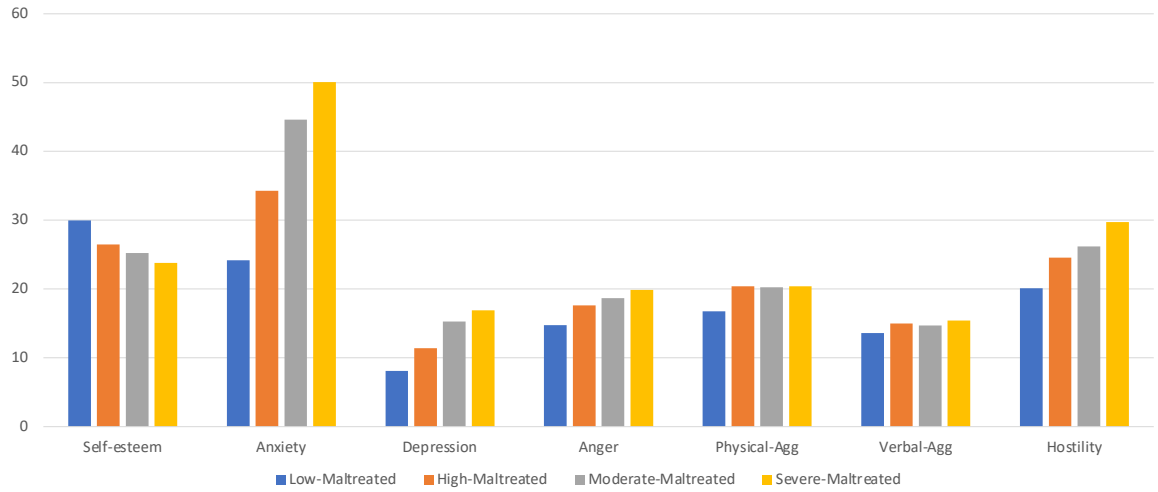

Figure 5.4. The outcomes for each profile (UK)

Discussion

The current study aimed to identify latent profiles of childhood psychological maltreatment experiences in a Chinese and UK sample and explore which profiles were associated with poorer mental health outcomes. Results from the Chinese sample suggested a four-profile optimal solution for childhood psychological maltreatment comprising the profiles: "*Psychological Non-support*", "*Low-Maltreated*", "*High-Maltreated*", and "*Severe-Maltreated*". Results from the UK sample supported a four-profile solution for childhood psychological maltreatment, but the profiles differed from those in the Chinese sample. The profiles were: "*Low-Maltreated*", "*Moderate-Maltreated*", "*High-Maltreated*", and "*Severe-Maltreated*". Individuals in the "*Severe-Maltreated*" profile in China and the UK demonstrated the worst mental health outcomes, including higher levels of depression, anxiety, aggression, and lower self-esteem. In addition, individuals in the "*Psychological Non-support*" profile in the Chinese sample and the "*Low-Maltreated*" profiles in the UK sample showed better mental health status, for instance, lower levels of depression, anxiety, and aggression, with a higher level of self-esteem.

In the current study, the pattern of childhood psychological maltreatment differed between the Chinese and UK sample. In the UK sample, the four profiles of psychological maltreatment only differed in severity; however, in the Chinese sample, there was a "Psychological Non-support" profile characterised by a low level of psychological abuse and neglect but with a high level of psychological non-support. According to previous studies (Li et al., 2020), in Chinese culture, caregivers are more likely to show their support through an implicit approach instead of a direct or explicit approach. This might explain the low level of psychological abuse and neglect accompanied by higher psychological non-support in Chinese samples. Besides the "*Psychological Non-support*" profile, the other Chinese profiles only differed in severity, similar to the UK profiles. In addition, both samples had a similar severity pattern characterised by a clustering of different types of psychological maltreatment (i.e., higher psychological abuse, with higher psychological neglect). This means that children experiencing psychological abuse (or adults who experienced psychological abuse in childhood) may also be experiencing (or have experienced) psychological neglect, a possibility that clinicians or therapists should be aware of.

In addition, we found that the numbers of participants in the "*Low-Maltreated*" and "*Moderate-Maltreated*" in the UK sample were larger than in the Chinese sample. Indeed, a recent systematic review (Wang et al., 2020) demonstrated a high pooled prevalence of child maltreatment in China (physical abuse: 20%; emotional abuse: 30%; emotional neglect; 44%; sexual abuse: 12%; physical neglect: 47%). Another review (Hanlon et al., 2020) explored the prevalence of child maltreatment in the UK and suggested that the prevalence is somewhat lower in this context, with physical abuse, emotional abuse, sexual abuse, and neglect prevalence rates of approximately 18.9%, 15.6%, 8.7%, and 5.7% respectively. A possible reason for this is that Chinese cultures emphasise an adult-centric perspective instead of a child-centric perspective, and a cited Chinese proverb states that 'Beating and scolding is the emblem

of love'. Some verbal or physical aggression may thus be viewed as 'discipline' or parenting rather than maltreatment by their caregivers (Liu & Wang, 2018). Further, verbal aggression (e.g., scolding) – a form of psychological abuse – may be more culturally accepted in this cultural context. Taken together, this may explain the observation that the scores of childhood psychological maltreatment were relatively higher than in the UK; however, the level of depression and anxiety was lower than in the UK samples.

The current study found that all the profiles (in both Chinese and the UK) had higher scores in the psychological abuse sub-dimension compared to the others, except the "*Severe-Maltreated*" profiles in the UK population, in which the psychological neglect levels were higher than the psychological abuse and psychological non-support levels. The results suggested that individuals with this profile had the highest level of depression, anxiety, and aggression, with the lowest level of self-esteem. The prevalence of psychological neglect was high and significantly related to mental health. Taillieu et al. (2016) investigated the data from the National Epidemiological Survey and found that the most prevalent child maltreatment was psychological neglect (6.2%). They also found that psychological neglect was significantly related to personality disorders such as antisocial personality disorder, mood disorders such as major depression, and anxiety disorders such as generalised anxiety disorder. These findings are in line with the recent study, giving a potential explanation that individuals within "*Severe-Maltreated*" had the poorest level of mental health.

Moreover, the results also suggested that in Chinese and the UK profiles, the "*High-Maltreated*" and "*Severe-Maltreated*" profiles did not have significant differences on multiple tests, which may be able to explain by the plateau effect. Previous studies suggested that the plateau effect was seen beyond two adverse childhood experiences (Chung et al., 2009), some suggested that there was a plateau effect for the risky behaviours after three or more adverse childhood experiences (Chung et al., 2010). Our study provides an insight that different forms

(i.e., psychological abuse, neglect, and non-support) of a specific child maltreatment (i.e., psychological maltreatment) might have the plateau effect.

This study offered a novel investigation into childhood psychological maltreatment using LPA, a person-centric research strategy. Most of the past research using LPA has focused on different childhood adversity experiences (Dobson et al., 2021). The majority of other research in this field has relied upon variable-centric research approaches such as correlation or multiple regression and the associations between a focal adverse childhood experience and an outcome of interests (Edwards al., 2003). In contrast, the person-centric research approach (i.e., latent profile analyses) provides a means to examine different forms of childhood psychological maltreatment as they cluster. By taking a more integrated perspective of childhood psychological maltreatment and acknowledging the potential interdependence between different forms of psychological maltreatment, it is possible to characterise and investigate the impact of the co-occurrence of different forms of psychological maltreatment. It can, for example, provide insights into the combined effect of childhood psychological maltreatment on mental health without the assuming additive effects of different types of psychological maltreatment.

Previous research has suggested that childhood psychological maltreatment is associated with long-term detrimental effects on adult mental health, including major depression, anxiety, suicidality, non-suicidal self-injury, substance abuse, and personality disorder (see Xiao et al., 2022 for review). The current study results contribute to the growing evidence for the associations between childhood psychological maltreatment and adult mental health. They thus underline the importance of preventing psychological maltreatment and providing mental health support to those affected. However, they also illuminate the impact of combinations of experiences of childhood psychological maltreatment on depression, anxiety, self-esteem, and aggression. Here we found, for example, that while three of the classes that

emerged from the analysis in the Chinese sample differed primarily on the severity of psychological maltreatment, one class differed in its pattern from the others and was characterized primarily by a lack of psychological support. This class had elevated levels of issues relative to the low maltreatment class on a range of outcomes pointing to the fact that it is not only psychological neglect and abuse that may be harmful to psychosocial development but also a lack of psychological support occurring in the absence of any abuse. As such, interventions such as parenting programmes should take a broader focus to encompass all forms of psychological maltreatment (i.e., psychological abuse, psychological neglect, and psychological non-support) prevention and ensure that they equip parents to provide practical psychological support.

The primary limitations of our study relate to measurement. Self-report measurements may have some biases; however, previous evidence suggests that they provide valuable information. Hardt and Rutter (2004) reviewed the validity of retrospective reports of childhood adversity and suggested that there were false-negative and substantial measurement errors. These errors or biases were not significant enough to invalidate retrospective measurement, though. However, another recent meta-analysis on the agreement between prospective and retrospective measures of childhood maltreatment (Baldwin et al., 2019) found that the agreement between prospective and retrospective reports of childhood maltreatment was poor. In addition, compared to the questionnaire, the agreement was higher when retrospective reports were based on interviews. Reuben et al. (2016) found that retrospective adverse childhood experiences measurements were robust and associated with subjective life outcomes (e.g., physical health, cognitive impairment, general psychopathology, poor partner relationship quality); however, the agreement between prospective and retrospective emotional abuse was poor. Given the challenges of gathering prospective data, retrospective measurements of childhood adversity still have an important place in research. Nevertheless, it

will be important for future studies to examine childhood psychological maltreatment profiles and their mental health outcomes using alternative measurement approaches to examine the robustness of findings across different methods.

Another limitation is the absence of age of onset of childhood psychological maltreatment. We did not measure during which developmental stages or ages the sample were exposed to psychological maltreatment in the current study because it was a retrospective study, and we did not expect that participants would be able to recall this accurately. However, previous studies have suggested that the age of onset of child maltreatment matters. For instance, Kaplow and Widom (2007) found that earlier onset of physical and sexual abuse and neglect predicted more depression and anxiety symptoms, while the later onset of maltreatment predicted more behavioural problems in adulthood. Dunn et al. (2013) similarly found that exposure to maltreatment during early childhood was most strongly associated with depression. Moreover, emotional neglect at ages 4-5 was found to be related to increased symptoms of dissociation, while emotional neglect at 8-9 enhanced symptoms of depression (Schalinski et al. (2016). This suggests that the timing and/or chronicity of exposure to child abuse during childhood influences later mental health outcomes. For future studies, researchers should investigate exposure to psychological maltreatment by caregivers during different periods of childhood.

Conclusion

The profiles of the Chinese and the UK suggest country context differences in psychological maltreatment profiles. The current paper suggested four profiles for both the Chinese and the UK populations. For the Chinese population, the profiles are divided into "*Psychological Non-support*", "*Low-Maltreated*", "*High-Maltreated*", and "*Severe-Maltreated*". For the UK population, the profiles are divided into "*Low-Maltreated*", "*High-Maltreated*", "Moderate-Maltreated", and "*Severe-Maltreated*". In both populations,

individuals within the “Severe-Maltreated” profiles had the poorest mental health outcomes, with the highest depression, anxiety, and aggression level and the lowest level of self-esteem.

Childhood psychological maltreatment is associated with adult mental health outcomes. Taking a newer approach to examining the profiles and configuration of psychological maltreatment, the current study explored psychological abuse, psychological neglect, and psychological non-support and their joint associations with adult mental health demonstrating the associations between combined forms of psychological maltreatment and mental health outcomes. The LPA approach reveals a difference in patterns between China and the UK, which would not have been evident if applied variable-centric approach. This study underscores the importance of using targeted intervention or prevention to prevent psychological maltreatment and improve mental health outcomes in individuals with a history of psychological maltreatment. It also underlines the importance of equipping parents to provide practical psychological support as a lack of psychological support, even in the absence of psychological abuse and neglect, may be associated with poorer mental health and wellbeing outcomes.

Chapter 6: General Discussion

Synopsis

This chapter summaries findings from Chapters 2-5 and provides an overall discussion of their implication. Synthesising the existing literature on the topic, Chapter 2 suggested significant associations between childhood psychological maltreatment and various mental health outcomes. Chapter 3 suggested that the Psychological Maltreatment Review (PMR) could be seen as a reliable measurement for examining childhood psychological maltreatment experiences in China. Chapter 4 suggested that childhood psychological abuse and neglect were associated with general psychopathology, rather than specific disorders. Chapter 5 indicated different profiles of childhood psychological maltreatment between UK and Chinese populations, as well as different levels of mental health associated with the different profiles in each context. Finally, Chapter 6 highlights the limitations of the presented analyses, outlines the research and practice implications, and provides the direction for future research.

This thesis aimed to (1) synthesise previous empirical research exploring the associations between childhood psychological maltreatment and mental health outcomes; (2) translate and validate an existing measure for assessing childhood psychological maltreatment in Chinese populations; (3) explore the associations between different types of childhood psychological maltreatment and general psychopathology; and (4) investigate different profiles of childhood psychological maltreatment and their associations with adult well-being in Chinese and English-speaking populations.

General Summary of Chapters 2-5

Chapter 2 conducted a systematic-review and meta-analysis on previous literature which exploring the associations between childhood psychological maltreatment and adult mental health. The mental health outcomes were divided into six categories – eating disorder, personality disorder, substance abuse, depression and anxiety, and other psychological symptoms. The review also examined reported psychological maltreat rates in clinical populations. A total of 79 English and 11 Chinese papers were reviewed in Chapter 2, and the findings suggested that childhood psychological abuse and psychological neglect are associated with poorer adult mental health. The aims of Chapter 2 were to (1) review and synthesize evidence that illuminated the long-term impacts of childhood psychological maltreatment on adult mental health; (2) investigate whether there were unique effects of childhood psychological abuse and neglect after adjusting for other forms of child abuse (i.e., physical and sexual abuse); (3) explore whether study-level moderators such as publication year, study location and study methodological quality affect these associations; and (4) explore whether there are differences between Chinese and English language paper in these associations. Our findings not only suggested positive and significant associations between childhood psychological maltreatment and poorer adult mental health but also suggested these

associations (i.e., the association between childhood psychological maltreatment and eating disorder, personality disorder, depression and anxiety, suicidal ideation, and other psychological symptoms) were no different between the Chinese and English language papers.

Chapter 2 included serval meta-analyses for the mental health outcomes with sufficient studies, namely, depression, anxiety, and suicidal ideation. The results showed that the pooled estimates suggested a small to medium effect in the expected direction. Furthermore, the results also suggested that the effects of childhood psychological abuse and neglect remained significant after adjusting the other forms of child abuse. The study-level moderators, such as year of publication, study location and study quality, did not affect these associations. Taken together, findings from Chapter 2 emphasize the negative impacts of childhood psychological abuse and neglect on adult mental health.

Chapter 3 translated and validated the Chinese version of the Psychological Maltreatment Review (PMR) in a group of Chinese adults from the general population and explored the gender invariance of the PMR model in this sample. The aims of Chapter 3 were to examine (1) factorial validity and internal consistency, (2) convergent validity, (3) divergent validity, and (4) gender measurement invariance. A confirmatory factor analysis was conducted on the hypothesized three-factor model to test the proposed factor structure of the PMR in this new setting. The items loaded onto the factors well; however, two items did not fit the model structure (i.e., “Said they love you” and “Hugged you”). Therefore, I removed these items to fit the model structure. The internal consistency reliability of the three sub-scales was excellent. I also explored construct validity through associations between the three sub-scales and other variables. As hypothesized, anxiety, depression, and ACE scores, as convergent variables, were positively associated with psychological abuse and neglect while negatively associated with psychological support. Cognitive failure and imagination as divergent variables showed nonsignificant or weak associations with psychological abuse and neglect. However, the

psychological support significantly correlated with cognitive failure and imagination in the current sample. The gender measurement variance was possible due to the poor model fit for males when the sample was stratified by female and male.

Chapter 4 explored the relationship between childhood psychological maltreatment and mental health dimension within a higher-order model. The chapter aimed to examine the assumptions of: (1) whether the associations between different types of childhood psychological maltreatment (i.e., psychological abuse, neglect, and non-support) are the same on domains of psychopathology; (2) whether these associations are unique to specific domains of psychopathology (i.e., depression, anxiety, anger, hostility, and physical aggression), or act at the level of broader domains (i.e., internalising or externalising), up to the most generalised broadband risks for psychopathology; (3) dose gender moderator the strength the associations between psychological maltreatment and psychopathology. As hypothesised, the results showed consistent Vachon et al. (2015) assumptions, suggested that psychological abuse and psychological neglect were more strongly associated with psychopathology than psychological non-support. In addition, the results indicated that psychological abuse and psychological neglect had broadband associations across all common domains of psychopathology, including at all levels of a hierarchical model of psychopathology after adjusting for adverse childhood experiences. Psychological non-support, on the other hand, was only associated with general psychopathology, internalising problems, and anxiety after controlling for adverse childhood experiences, supporting the non-equivalence assumption. Finally, the results suggested that these associations were invariant by gender, with the exception of the associations between psychological non-support and hostility – males showed negative but significant associations between psychological non-support and hostility, while females did not show any significant association.

Chapter 4 built a higher-order model in which depression and anxiety were loaded on internalising, anger, physical aggression, and hostility were loaded on externalising, while internalising and externalising were loaded on general psychopathology. The results suggested that psychological abuse and neglect were more strongly associated with psychopathology than psychological non-support, which fitted our hypothesis. In addition, psychological abuse and neglect had broadband associations across all common domains of psychopathology, including all levels of a hierarchical model of psychopathology after adjusting ACE. Psychological non-support, on the other hand, was only associated with general psychopathology, internalising problems, and anxiety after controlling for ACE which supported the assumptions of non-equivalence of harm. Moreover, the results suggested that the associations between types of psychological maltreatment and psychopathology are not unique to specific domains but associated with all symptom domains captured by an associated with internalising, externalising, and general psychopathology, which supports the outcome non-specificity assumption. Finally, gender was examined as a moderator in all analyses using an approach that compared models with regression paths constrained verse unconstrainted across females and males. Results suggested that all models were invariant by gender, except the associations between psychological non-support and hostility – males showed negative but significant associations, while females did not show any significant associations.

Chapter 5 examined different profiles of psychological maltreatment in two populations (i.e., Chinese and the UK), as well as their associations between a wide range of mental health outcomes (i.e., depression, anxiety, anger, physical aggression, verbal aggression, and hostility) and broader well-being (i.e., self-esteem). The aims of Chapter 5 were to (1) identify different sub-populations (i.e., profiles) within the sample based on their combined levels of childhood psychological abuse, neglect, and non-support; and (2 investigate the associations between these profiles and mental health outcomes. The results suggested that

there were four profiles of the optimal solution for childhood psychological maltreatment in the Chinese population, comprising "*Psychological Non-support*", "*Low-Maltreated*", "*High-Maltreated*", and "*Sever-Maltreated*". Results from the UK sample supported a four-profile of solutions for childhood psychological maltreatment as well; however, the profiles have differed from the Chinese sample, which comprised "*Low-Maltreated*", "*Moderate-Maltreated*", "*High-Maltreated*", and "*Sever-Maltreated*". Individuals under the "*Sever-Maltreated*" profile in both Chinese and the UK samples presented the poorest mental health outcomes, such as higher levels of depression, anxiety, and aggression, with a lower level of self-esteem. Moreover, individuals under "*Psychological Non-support*" and "*Low-Maltreated*" profiles presented better mental health outcomes, including lower levels of depression, anxiety, and aggression and higher self-esteem.

Implications

Taken together, the results of this thesis have several important implications.

Chapter 2 has implications for future research, policy or practices related to childhood psychological maltreatment and adult mental health. First, it highlighted the need for more research studying the associations between childhood psychological abuse and neglect in elder populations, clinical populations, and contexts beyond the United States or other developed countries, which could enhance understanding of the associations between childhood psychological maltreatment on adult mental health. Moreover, the review found that cross-sectional studies dominate this area and there is a need for more longitudinal research. This could help better inform develop prevention, intervention, and training programs across the lifespan that would aim to prevent and alleviate the associations between childhood psychological maltreatment and individuals of different ages. In addition, the widespread prevalence, and associations with a range of negative impacts suggests that policies that better

address the issues of childhood psychological maltreatment are needed. Unlike physical and sexual abuse, policies, and laws on psychological maltreatment lag behind. Parents need to be aware of their behaviours towards children and implement strategies such as adaptive emotional regulation strategies when children misbehave to avoid behaviours consistent with psychological maltreatment.

Chapter 3 provided evidence that PMR can be seen as a reliable measurement of retrospectively assessed childhood psychological maltreatment in the Chinese populations Evaluation of childhood trauma can be important for general and clinical populations when delivering intervention or therapy. A reliable and valid assessment is, for example, vital for measuring childhood experiences through retrospective assessment and could help clinicians or therapists gain a fundamental insight into an individual's history as it related to current mental health problems. Further, the availability of a valid and reliable measure of psychological maltreatment for use in a Chinese context will facilitate more research into this topic. The findings from Chapter 2 suggested that the measure most commonly used to study psychological maltreatment in China do not capture important measures of psychological maltreatment, signalling a need for the availability of measure such as the PMR.

Chapter 4 further built on Chapter 2, which found widespread associations between psychological maltreatment and mental health outcomes, to explore the extent to which the effects of psychological maltreatment are transdiagnostic or disorder-specific. It also addressed whether the effect of sub-domains of psychological maltreatment have similar effects. Findings indicated that childhood psychological abuse and neglect had similar, small to moderate relationships with all symptom domains of psychopathology (i.e., depression, anxiety, physical aggression, anger, and hostility) examined, which support the equivalence of harm. Previous studies (Vahl et al., 2016) suggested that psychological abuse showed stronger associations than psychological neglect on internalising behaviours. The current study also showed stronger

associations between psychological neglect and internalising problems than psychological abuse and internalising problems. The comparisons of harmfulness between childhood psychological abuse and neglect have been rare in previous studies, therefore, this addressed a key research gap. Moreover, compared to psychological abuse, psychological neglect receives less attention. The relative lack of prevention and intervention efforts related to psychological neglect may be because acts of omission (psychological neglect) are more challenging to identify than acts of commission (psychological neglect) (Chamberland et al., 2011). Recognising and responding to psychological maltreatment is essential and a priority for public health. Given the potential harm of psychological abuse and neglect during childhood, parents and caregivers need to be aware of the consequences of psychological maltreatment towards a child and its possible long-term harmfulness to mental health.

Building on Chapter 4, which compared the effects of sub-dimensions of psychological maltreatment, **Chapter 5** considered the effects of different profiles of psychological maltreatment. It offered a novel investigation into childhood psychological maltreatment using latent profile analyses (LPA), a person-centric research strategy. The majority of previous research using LPA has focused on different adversity childhood experiences (Dobson et al., 2021), and the majority of other research in this field has relied upon variables-centric research approaches such as correlations or multiple regression and the associations between a focal adverse childhood experience and an outcome of interests (Edward et al., 2003). In contrast, the person-centric research approach (i.e., LPA) provided a means to examine different forms of childhood psychological maltreatment as they cluster. Previous reviews (Xiao et al., 2022) showed significant associations between childhood psychological maltreatment and adult mental health. Chapter 5 contributed to growing evidence for the impacts on these associations. They thus underlined the importance of preventing psychological maltreatment and providing mental health support to those affected. In addition, it illuminated the associations between a

combination of experiences of psychological maltreatment and its impacts on depression, anxiety, self-esteem, and aggression.

Moreover, **Chapter 5** also found that while three of the classes that emerged from the analyses in the Chinese sample differed primarily on the severity of psychological maltreatment, one class differed in its pattern from the others and was characterised primarily by a lack of psychological support. This class had elevated levels of issues relative to the low maltreatment class on a range of outcomes, pointing to the fact that it is not only psychological abuse and neglect that may be harmful to psychosocial development but also a lack of psychological support occurring in the absence of any abuse.

It emphasised the importance of developing prevention and intervention for childhood psychological maltreatment. Interventions such as parenting programmes should take a broader focus to encompass all forms of psychological maltreatment (i.e., psychological abuse, neglect and non-support) prevention and ensure that they equip parents to provide adequate psychological support.

Psychological maltreatment poses unique challenges in terms of detection, measurement, and legal protection compared to other forms of child abuse. Unlike physical or sexual abuse, which may leave visible evidence or have specific legal definitions, psychological maltreatment is often characterized by covert and subtle behaviours that are harder to identify and quantify. It encompasses a wide range of harmful actions, including emotional abuse, psychological neglect, and the withholding of affection or support, which can have profound and long-lasting effects on a child's mental and emotional well-being.

Moreover, the subjective nature of psychological maltreatment further complicates matters. Different cultural, social, and familial contexts may influence perceptions of what constitutes harmful psychological treatment. For instance, behaviours that are considered acceptable or even encouraged in some cultural settings may be seen as abusive in others.

Additionally, the interpretation of psychological maltreatment can vary among professionals working in different fields, such as researchers, clinicians, social workers, caregivers, healthcare providers, and teachers.

To address these complexities, it is crucial to foster collaboration and interdisciplinary dialogue among experts from various disciplines and stakeholders involved in child protection. By drawing upon diverse perspectives, experiences, and expertise, comprehensive guidelines, and criteria for identifying and addressing psychological maltreatment can be developed and refined. This collaborative effort can help establish a clearer understanding of the behaviours that constitute psychological maltreatment, as well as provide a foundation for effective prevention, intervention, and legal protection for children who experience such harm.

In conclusion, while psychological maltreatment presents unique challenges in terms of detection, measurement, and legal thresholds, concerted efforts involving multiple stakeholders are necessary to overcome these challenges. By enhancing our understanding of psychological maltreatment and its impact, we can improve the identification, prevention, and intervention strategies aimed at safeguarding the well-being of children.

Limitations and Future Directions

There are several limitations of this thesis that need to be mentioned. In Chapter 2, although the review covered a wide geographic range, information such as sexual orientation, religion, and the elderly population was generally under-represented. In addition, due to limited number of several themes, such as eating disorder, personality disorders, substance abuse, and other psychological symptoms, I could not conduct meta-analyses to explore the effect size and publication biases of these mental health outcomes. Furthermore, the lack of studies conducted in non-Western countries would be another limitation. Most of the reviewed studies were conducted in the USA or Europe; religion and countries such as Africa, India, and South Asia

were rarely. Therefore, I could not fully explore these associations and their differences across different regions.

The main limitations of the studies were regarding measurements. First, retrospective self-report of childhood psychological maltreatment experiences may have biases. Several empirical studies investigated the bases of adults who recalled childhood adversity experiences. For instance, Colman et al. (2016) used 7,466 adults and measured their adverse childhood experiences in 1994/1995 and 2006/2007. The results suggested that 39% were inconsistent in their report of these experiences.

Moreover, researchers also found that current mental health status would affect adults recalling childhood experiences – the development of depressed mood, increased psychological stress, chronic stress, and increased workload increased the likelihood of reporting more adverse childhood experiences. In contrast, Reuben et al. (2016) compared the prospective (at age 3, 5, 7, 9, 11, and 15) and retrospective (at age 38) assessments for adverse childhood experiences. They found there was moderate agreement between these two measures ($r = .47$, weighted Kappa = .31). Interestingly, researchers also found that retrospective adverse childhood experiences measurements were stronger associated with subjective life outcomes (e.g., physical health, cognitive impairment, general psychopathology, poor partner relationship quality) which showed similar findings with Colman et al. (2016). Hardt and Rutter (2004) reviewed the validity of retrospective reports of childhood adversity and suggested that there were false negative experiences and substantial measurement errors; however, these errors or biases were not significant to invalidate retrospective measurement, and we generally find pretty good text-retest reliability.

Retrospective measurements of childhood adversity still has a worthwhile place in research. However, Stoltenborgh et al. (2012) reviewed the prevalence of psychological abuse and found that the report rate from the informant was only 0.3%, significantly lower than the

self-reported rate from participants (36.3%). For future studies, researchers need to be cautious or use different approaches to examine childhood psychological maltreatment experiences. For instance, research could collect data from participants and their caregivers; therefore, I could compare data between self-report and informants' consistency. In addition, research could also collect participants' childhood psychological maltreatment experiences, as well as their thought on these experiences, and mental health outcomes. I could then explore how meta-cognition could affect individuals' mental health.

Furthermore, I utilised the 'Psychological Maltreatment Review' to evaluate childhood psychological maltreatment in these projects, although it had certain shortcomings. The items for each domain (i.e., psychological abuse, psychological neglect, and psychological support) failed to encompass the full range of psychological maltreatment experienced in the Chinese context. During a side project conducted as part of my PhD, I conducted qualitative interviews, and the findings revealed that Chinese participants identified similar items for each domain. For instance, within the psychological abuse, participants mentioned, 'Caregivers frequently compare me to other children'. Both Chinese and the UK participants also highlighted those nonverbal cues, such as rolling eyes and displaying disgusted towards me, could constitute psychological maltreatment. In future studies, it is crucial for researchers to carefully select measurements that effectively capture diverse forms of psychological maltreatment. Additionally, researchers could consider including an open-ended section where participants can share any past experiences related to psychological maltreatment that may not be covers by the current measurement tools.

The second limitation relates to the global generalisability of the findings of the empirical studies. In the current thesis, we recruited participants from different regions of China and the UK; however, the prevalence of psychological abuse and psychological neglect in the current sample size was relatively low. In addition, we did not screen for clinical diagnoses.

Previous literature suggested that the clinical population may suffer more childhood psychological maltreatment than the general population, such as major depression disorder (de Mattos Souza et al., 2016), personality disorder (Zhang et al., 2013), eating disorder (Amianto et al., 2018), or PTSD (Evren et al., 2016). A systematic review by Xiao et al. (2021) showed a small to moderate effect size of the associations between childhood psychological maltreatment and having a clinical diagnosis. For the future direction, it would be worthwhile to recruit high-risk or clinical populations so that the results can be applied to a more general context.

The third limitation would be the absence of age of onset of childhood psychological maltreatment. I did not measure which developmental stages or ages the sample were exposed to psychological maltreatment in the current thesis. Previous studies suggested that the age of onset of child maltreatment matters. For instance, Kaplow and Widom (2007) found that earlier onset of physical and sexual abuse and neglect predicted more depression and anxiety symptoms, while the later onset of maltreatment predicted more behavioural problems in adulthood. Dunn et al. (2013) found similar results that exposure to maltreatment during early childhood was most strongly associated with depression. Moreover, Schalinski et al. (2016) found that emotional neglect at aged 4-5 were related to increased symptoms of dissociation, while emotional neglect at 8-9 enhanced symptoms of depression. This suggests that the timing of exposure to child abuse during childhood would influence later mental health outcomes. For future studies, researchers could investigate caregivers' psychological maltreatment behaviours in different periods during childhood or use multiple measurements to measure samples' psychological maltreatment experiences during childhood for developmental stages.

The fourth limitation was that I did not measure substance abuse in this thesis. Substance abuse is a common expression of externalising behaviours, which has been well-investigated as an outcome of childhood psychological maltreatment. Previous research has

indicated that participants with childhood psychological abuse experiences were more likely to be engaged in different kinds of substance abuse, such as alcohol (Crouch et al., 2012). Xiao et al. (2022) reviewed the associations between childhood psychological maltreatment and adult substance abuse. They found the effect size for this association was moderate to strong for childhood psychological abuse (from 0.30 to 0.85), while the effect size for childhood psychological neglect was small to strong (from 0.15 to 0.66). For future research, researchers could include the measurements on substance abuse such as alcohol, drug, and cigarette use.

Conclusion

The findings presented in this thesis contribute to understanding the associations between childhood psychological maltreatment and adult mental health. Results indicated that childhood psychological maltreatment levels and profiles show significant associations with a wide range of developmental psychopathological outcomes. Moreover, there were differences between childhood psychological maltreatment profiles in the UK and Chinese population, emphasizing the value of a more global comparative approach to illuminating psychological maltreatment. Overall, the empirical findings of this thesis emphasize that there is a clear need for developing a more encompassing theory on the associations between psychological maltreatment and developmental psychopathology, having policies that prevent psychological maltreatment, as well as interventions that can address its psychological harms.

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Appendix A – Supplementary Materials – Chapter 2

Table S2.1. String Examples for Searching

Psychological Maltreatment* Child	AND	Mental Health* Adult
- child abuse [Title/Abstract] OR - childhood psychological maltreatment [Title/Abstract] OR - childhood emotional abuse [Title/Abstract] OR - childhood emotional neglect [Title/Abstract] OR - psychological aggression [Title/Abstract] OR - psychological violence* [Title/Abstract] OR - psychological domestic violence* [Title/Abstract] OR - childhood psychological victimisation [Title/Abstract] OR	AND	- mental health* [Title/Abstract] OR - generalized anxiety disorder* [Title/Abstract] OR - depression* [Title/Abstract] OR - major depression disorder* [Title/Abstract] OR - PTSD* [Title/Abstract] OR - Personality disorder* [Title/Abstract] OR - Eating disorder* [Title/Abstract] OR - Bipolar disorder* [Title/Abstract] OR - Schizophrenia* [Title/Abstract] OR - Panic disorder* [Title/Abstract] OR - Psychosis* [Title/Abstract] OR - Social anxiety disorder* [Title/Abstract] OR - Suicide attempt* [Title/Abstract] OR - Suicide ideation* [Title/Abstract] OR - Non-suicidal self-injury* [Title/Abstract] OR - Substance abuse* [Title/Abstract] OR

Table S2.2. Main Character of Study and Study Population and Study Effect Size for English Studies

Author (Year)	Location	Sample Size & Characteristic	Abuse Types	Abuse Measurements	Mental Health Measurements	Perpetrator	Effect Size
Personality Disorder							
Bernstein et al. (1998)	USA	378 Substance User, 85.6% male, M = 40.2	SA, PA, PN, EA, EN	CTQ-SF	PDQ-R	Parents/Caregivers	0.953 (EA) 0.430 (EN)
Cohen et al. (2013)	USA	156 Nonpsychotic Psychiatric Patient, 49.4% male	SA, PA, PN, EA, EN	CTQ-SF, MNBS, CTSPC-CA	PDQ	Parents/Caregivers	0.737
Cohen et al. (2014)	USA	231 Patient, 45.5% male, M = 39.32	SA, PA, PN, EA, EN	CTQ-SF, MNBS, CTSPC-CA	PDQ	Parents/Caregivers	N/A
Goodman et al. (2014)	USA	133 Undergraduates, 36.8% male, M = 19	SA, PA, PN, EA, EN	CTQ-SF	RSQ, SCID-II	Parents/Caregivers	0.588
Waxman et al. (2014)	USA	34,653 General Population, age over 18	SA, PA, PN, EA, EN	CTQ	AUDADIS-IV, NESARC	Parents/Caregivers	0.309
Eating Disorder							
Amianto et al. (2018)	Italy	172 Patient (BED and obese) & Healthy, 22.1% male, M = 42.68	SA, PA, PN, EA, EN	CTQ-SF	TCI, EDI-2, BES, STAXI, SCL-90, BDI-II, ASQ, PBI	Parents/Caregivers	N/A
Kent et al. (1997)	USA	236 Undergraduates,	SA, PA, EA	CATS	HADS, DES, EDI	Parents	N/A

		all female, M = 22.8					
Psychological Symptoms							
Abajobir et al. (2017)	Australia	3,752 General Population, M = 20.6	SA, PA, PN, EA, EN	FYCCQ	Achenbach's YASR Behaviours Checklist, CBCL	Parents/Caregivers	0.552 (EA) 0.652 (EN)
Dias et al. (2015)	Portuguese	1,200 General Population, 54% male, M = 37.43	SA, PA, PN, EA, EN	CTQ-SF	BSI	Parents or adults in the same household	N/A
Fung et al. (2020)	Hongkong	418 General Population, 31.6% male, M = 27.3	PA, SA, PN, EA, EN	ACE	PHQ-9, GAD-7, PCT, DDIS-BPD, SDQ-5	Parents/Caregivers	0.250 (EA) 0.320 (EN)
Haferkamp et al. (2015)	Germany	203 Patients, all female, M = 38.26	SA, PA, EA, EN	CTQ	PTSD, DES	Parents/Caregivers	N/A
O Laoide et al. (2018)	USA	761 General Population, 30.4% male, M = 21.46	SA, PA, PN, EA, EN	CTQ-SF	CDS, ECR-RS, AEE, DASS-21	Parents/Caregivers	0.747 (EA) 0.797 (EN)
Sheikh et al. (2016)	Norway	12,981 General Population, 46.6% male	Psychological abuse, PA	CTEs	SCL-10, EQ-5D, SWLS	Parents/Caregivers	N/A
Taillieu et al. (2016)	USA	34,653 General Population, age over 20	SA, PA, PN, EA, EN	ACE	AUDADIS	Parents/Caregivers	0.186 (EA) 0.101 (EN)

van Duin et al. (2019)	Netherland	643 Multiple-problem Young Adult, M = 22.1	SA, PA, PN, EA, EN	CTQ-SF, ACE	ASR	Parents/Caregivers	N/A
Suicide Ideation							
Allen et al. (2013)	N/A	260 Students, 43.5% male, M = 19.3	PA, psychological abuse, neglect	CCMS	IASC, PAI	Primary maternal / paternal caregivers, another older adolescent / adult	2.726
Gibb et al. (2001)	USA	209 College Students, aged over 18y	PA, SA, EA	LEQ	CSQ, ASD, BDI, HS, SCL-90, SADS-C	Parents/Caregivers	N/A
Briere et al. (2016)	USA	387 General Population, 57.6% male, M = 49.3	SA, PA, EA	TES	DAPS	Parents/Caregivers	N/A
Buser & Hackney (2012)	USA	390 General Population, 34% male, M = 20.3	EA	EASE-PI	ASQ-GU, FASM	Parents/Caregivers	0.652
de Mattos Souza et al. (2016)	Brazil	473 MDD, 18.2% male	SA, PA, PN, EA, EN	CTQ-SF	MINI Plus, ASSIST	Parents/Caregivers	0.037
Janiri et al. (2015)	Italy	207 BD + HC, 56% male, M = 44.83	SA, PA, PN, EA, EN	CTQ-SF	YMRS, HDRS, HARS	Parents/Caregivers	0.149
Falgares et al. (2018)	Italy	293 General Population,	PA, SA, EA	CECA	DEQ, SHSS	Parents	1.283

		16.72% male, M = 21.57					
Harford et al. (2014)	USA	34,653 General Population, aged over 18y	PA, SA, EA	ACE	Violence Indicators, Suicidal attempt, AUDADIS-IV	Parents or adults in the same household	0.193 (EA) 0.178 (EN)
Lee (2015)	Korea	1,396 General Population	SA, PA, EA	ETISR-SF	PHQ-9, MINI	Parents/Caregivers	0.477
Thompson et al. (2000)	USA	335 Africa American, all female, M = 32.17	SA, PA, PN, EA, EN	CTQ	NWS PTSD Module	Parents	0.957
Puzia et al. (2013)	USA	189 Undergraduate, 15.8% male	SA, PA, PN, EA, EN	CTQ-SF	INQ, BSS	Parents/Caregivers	0.110
Saracli et al. (2016)	Turkey	897 General Population, 47.3% male	SA, PA, PN, EA, EA	CTQ-SF	SPS, BDI, BAI	Parents/Caregivers	0.685 (EA) 0.655 (EN)
Smith et al. (2018)	USA	91 General Population, M = 21.72	PA, SA, EA	CTQ-SF	INQ, ACSS, BDI-II, SITBI	Parents or adults in the same household	1.907
Substance Abuse							
Aas et al. (2014)	Norway & France	587 BD, 39.9% male, M = 40.6	SA, PA, PN, EA, EN	CTQ-SF	DIGS, SCID-I	Parents or adults in the same household	N/A
Abajobir et al. (2017)	Australia	3,750 General Population,	SA, PA, PN, EA, EN	FYCCQ	Asking whether the	Parents/Caregivers	0.507 (male) 0.609 (female)

		47.2% male, M = 20.6			respondents had ever injected illicit drug		
Afifi et al. (2012)	USA	34,653 General Population, aged over 20y	SA, PA, PN, EA, EN	CTQ	AUDADIS-IV	Parents/Caregivers	0.409 (EA both male & female) 0.145 (EN male) 0.224 (EN female)
Can et al. (2019)	Istanbul	328 Alcohol-dependent Inpatient + Healthy, all male, M = 38.88	SA, PA, PN, EA, EN	CTQ-SF	YSQ-SF, MAST	Parents or adults in the same household	0.449
Crouch et al. (2018)	South Carolina	7,934 General Population, 49.6% male	PA, SA, EA	ACE	Asking "Considering all types of alcoholic beverages, how many times during the past 30 days did you have five or more drinks for men or four or more	Parents or adults in the same household	0.193 (male) 0.016 (female)

					drinks for women on occasion?"		
Elliott et al. (2014)	USA	5,189 Adult Alcohol and Nicotine Dependence	SA, PA, PN, EA, EN	AUDADIS-IV	AUDADIS-IV	Parents/Caregivers	0.374 (EA) 0.149 (EN)
Florez et al. (2020)	USA	172 Low-income African American Women, M = 34.49	PA; SA; EA	CTQ-SF	DTS, bMAST	Parents or adults in the same household	N/A
Junglen et al. (2019)	USA	study 1: 368 Community-based Alcohol and Drug Detoxification Centre, 59.1% male, M = 34.68 study 2: 274, 62.5% male, M = 34.68	Study 1: EA Study 2: SA, PA, PN, EA, EN	Study 1: LSC-R Study 2: CTQ-SF	PCL-C, SIP-AD, UPPS Impulsive Behaviour Scale	Parents/Caregivers	N/A
Mandavia et al. (2016)	USA	2,014 General Population, 28.1% male, M = 39.54	SA, PA, EA	CTQ, TEI	EDS, AUDIT	Parents/Caregivers	N/A
Potthast et al. (2014)	Germany	75 Alcohol Dependence	SA, PA, PN, EA, EN	CTQ	AUDIT, PDS, BDI, SCID-I,	Parents/Caregivers	1.186

		Patient, 69.3% male, M = 42.33			SPS/SIAS, BSL-23		
Yuan et al. (2014)	USA	447 LGBT AI/AN (American Indian and Alaska Native), 39.6% male, M = 38.47	SA, PA, PN, EA, EN	CTQ-SF	MINI	Parents or adults in the same household	0.753
Depression & Anxiety							
Arnow et al. (2011)	USA	5,673 Patient, 42.3% male, M = 53.3	SA, PA, PN, EA, EN	CTQ-SF	PHQ	Parents/Caregivers	1.84
Balsam et al. (2010)	USA	669 LGB, 38.3%, M = 36.5	PA, SA, EA	CTQ-SF	ESDC, PHQ, GAD-7, PSS-SF, PTSD-CV	Parents or adults in the same household	1.404
Brown et al. (2016)	USA	339 College Students, 51.3% male, M = 19	SA, PA, PN, EA, EN	CTQ-SF	TAS-20, SMFQ, GAD-7, UCLA Loneliness Scale	Parents or adults in the same household	N/A
Christ et al. (2019)	Netherland	276 College Students, all female, M = 21.7	SA, PA, EA	CTQ-SF	QIDS-SR, DERS, IIP-32	Parents/Caregivers	0.703
Crow et al. (2014)	USA	3,902 General Population, M = 39.34	SA, PA, PN, EA, EN	CTQ-SF	EDS, BDI-II	Parents/Caregivers	1.008 (EA) 0.797 (EN)
Ferguson & Dacey (1997)	USA	110 Health Care Professionals, M = 35.65	Physical trauma, sexual trauma,	CEQ	STAI, BDI, DES	Parents	N/A

			psychological trauma				
Gong & Chan (2018)	China	1102 College Students, 26.9% male, M = 20.46	SA, PA, PN, EA, EN	CTQ-SF	EMSs, SDS, SAS	Parents/Caregivers	N/A
Huh et al. (2017)	Korea	585 Depression Patients, 38.6% male, M = 36.94,	SA, PA, PN, EA, EN	CTQ-SF	CERQ, BDI, STAI, MINI	Parents/Caregivers	N/A
Massing-Schaffer et al. (2015)	USA	185 Undergraduates, 24.9% male, M = 19.65	SA, PA, PN, EA, EN	CTQ-SF	SADS-I, BDI, FSQ, RSS, RSQ	Parents/Caregivers	0.559
McCabe et al. (2018)	Latinas	548 General Population, M = 38.48	PA, SA, EA	Violence Assessment developed for a previous randomized trial with Latinas	ESDC, RCTS-SF	Parents or adults in the same household	0.432
Novelo et al. (2018)	Brazil	449 Elder People, 35.9% male	SA, PA, PN, EA, EN	CTQ-SF	GDS	Parents/Caregivers	0.811 (EA) 0.617 (EN)
O'Mahen et al. (2015)	UK vs. USA	140 Pregnant, primarily low-income women, all female, M = 23.27	SA, PA, PN, EA, EN	CTQ-SF	SCID, EPDS, BDI, RRS, BADS	Parents/Caregivers	-0.083 (EA) 0.016 (EN)
Ross et al. (2019)	USA	244 General Population,	SA, PA, PN, EA, EN	CTQ-SF	26-items Self-Compassion	Parents/Caregivers	N/A

		21.7% male, M = 20.80			Scale, ISS, CESD-R		
Sunley et al. (2020)	Netherland	22,551 General Population, 42.7% male, M = 43.68	SA, PA, EN, psychological abuse	4-items NEMESIS Childhood Trauma Scale	PHQ-9	Parents/Caregivers	0.447 (EN) 0.299 (psychological abuse)
Wright et al. (2009)	USA	301 College Students, 47.5% male, M = 20.37	SA, PA, PN, EA, EN	LEQ	CAST-6, TSC-40, YSQ	Parents/Caregivers	0.797 (EA) 0.699 (EN)
Wu et al. (2018)	China	358 College Students, M = 19.18	SA, PA, PN, EA, EN	CTQ-SF	SCS, TDS, Gratitude Questionnaire-Six	Parents	N/A
Psychological Maltreatment in Clinical Population							
Bruni et al. (2018)	Italy	333 Patient + HC, 45.3% male	Psychological abuse, SA, PA	CECA	SCID-I	Parents/Caregivers	N/A
Etain et al. (2010)	France	300 BD + HC, 41.25% male, aged over 18y	SA, PA, PN, EA, EN	CTQ-SF	MADRS, MRS	Parents/Caregivers	0.419
Evren et al. (2010)	Turkey	156 AD, aged over 18	SA, PA, PN, EA, EN	CTQ-SF	CAPS, DES, MAST, The SF-36	Parents/Caregivers	N/A
Evren et al. (2016)	Turkey	190 AUD, all male, M = 44.69	SA, PA, PN, EA, EN	CTQ-SF	ASRS, PCL-C	Parents/Caregivers	0.839
Fowke et al. (2012)	UK	70 BD + HC, 18.6% male, M = 45.86	SA, PA, PN, EA, EN	CTQ-SF	HADS, ISS	Parents/Caregivers	N/A

Hariri et al. (2015)	Turkey	250 BD + HC, 35.2% male, M = 39.15	SA, PA, PN, EA, EN	CTQ-SF	HDRS, YMRS, HARS, DSM-IV for BD	Parents/Caregivers	N/A
Jaworska-Andryszewska et al. (2018)	Poland	52 BD, 44.2% male, M = 47	SA, PA, PN, EA, EN	CTQ-SF	HDRS, YMRS	Parents/Caregivers	0.072 (EA) 0.116 (EN)
Kefeli et al. (2018)	Turkey	80 BD + HC, 52.5% male, M = 33.41	SA, PA, PN, EA, EN	CTQ-SF	DES, SDQ, TAS-20, DASS-21, ECR-R	Parents/Caregivers	0.016
Khosravani, et al. (2019)	Iran	350 Substance Abuse Patient, all male, M = 32.3	SA, PA, PN, EA, EN	CTQ-SF	DERS, OCDUS, BDI-II	Parents/Caregivers	N/A
Kounou et al. (2013)	France	181 MDD = HC, 33.7% male, M = 28.97	SA, PA, PN, EA, EA	CTQ-SF	PDQ	Parents/Caregivers	0.721
Kruger et al. (2017)	South Africa	116 Patient with Psychiatric Disorder, aged over 18y	EA, EN, SA, bodily threat, sexual harassment	TEC	DES, MID	Multiple Perpetrators	N/A
Kulacaoglu et al. (2017)	Turkey	330 BPD + HC, 22.4% male, M = 23.02	SA, PA, PN, EA, EN	CTQ-SF	ASRS, BIS-11, DIS-Q	Parents/Caregivers	N/A
Mirhashem et al. (2017)	USA	84 Opioid Use Patient, 53.6% male, M = 35.27	SA, PA, PN, EA, EN	CTQ-SF	SIPS-R, ASI-Lite, SUPPS-P, PCL, SCID, MINI	Parents/Caregivers	N/A

Neumann (2017)	Germany	191 Depression + HC, 36.6% male, M = 39.45	SA, PA, PN, EA, EN	CTQ-SF	SCL-90-R, ECR	Parents/Caregivers	0.539
Ostefjells et al. (2017)	Norway	261 BD + Psychotic Disorder	SA, PA, PN, EA, EN	CTQ-SF	PANSS, GAF, MCQ-30	Parents/Caregivers	1.216
Pavlova et al. (2015)	Switzerland	174 BD, 44.3% male, M = 41.79	SA, PA, PN, EA, EN	CTQ-SF	MINI	Parents/Caregivers	0.379 (EA) 0.348 (EN)
Price et al. (2017)	USA	84 SUD, 53.6% male, M = 35.27	SA, PA, PN, EA, EN	CTQ-SF	ASI-Lite, PCL, SCID-I	Parents/Caregivers	N/A
Russo et al. (2013)	USA	56 BD, 60.7% male, M = 43.88	SA, PA, PN, EA, EN	CTQ-SF	SCID-I, IGT, AGNG	Parents/Caregivers	N/A
Sar et al. (2009)	Turkey	32 Outpatient, 15.6% male	SA, PA, PN, EA, EN	CTQ-SF	DDIS, DES, SDQ, CADSS, STAI	Parents/Caregivers	N/A
Schulz et al. (2017)	Germany	123 MDD, 59.3% male, M = 40.3	SA, PA, PN, EA, EN	CTQ	BDI-II, PSDI, EAQ, MADRS	Parents/Caregivers	0.583
Ventimiglia et al. (2020)	South Africa	107 Mood Disorder Patient, 24.3% male, M = 37.04	SA, PA, PN, EA, EN	CTQ-SF	LEC, QIDS, ASRM	Parents or adults in the same household	N/A
Watson et al. (2014)	UK + New Zealand	115 BD + HC, 53.9% male, M = 46.5	SA, PA, PN, EA, EN	CTQ-SF	NART, HDRS-17	Parents/Caregivers	N/A
Xie et al. (2018)	China	679 Patient, 35.8% male, M = 27.26	SA, PA, PN, EA, EN	CTQ-SF	SSRS, SIOSS, ICD-10	Parents/Caregivers	0.417 (depression) 1.270 (bipolar)

Zhang et al. (2013)	China	2,090 Patient, 64.8% male, M = 32	SA, PA, PN, EA, EN	CTQ-SF	DSM-IV	Parents/Caregivers	1.133 (schizophrenia) 0.414 (EA) 0.321 (EN)

Notes. M = Mean Age, SA = Sexual Abuse, PA = Physical Abuse, PN = Physical Neglect, EA = Emotional Abuse, EN = Emotional Neglect, CTQ-SF = Childhood Trauma Questionnaire-Short Form, PDQ-R = Personality Diagnostic Questionnaire-revised, MNBS= Multidimensional Neglectful Behavior Scale, CTSPC-CA= Conflict Tactics Scale Parent Child-Child Adult, PDQ = Personality Disorder Questionnaire, RSQ = Adult Rejection Sensitivity Questionnaire, SCID-II = Structured Clinical Interview for DSM-IV Axis Personality Disorder-Self Report, CTQ = Childhood Trauma Questionnaire, AUDADIS-IV = The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV, NESARC = The National Epidemiological Survey on Alcohol and Related Condition, BED = Binger Eating Disorder, TCI = Temperament and Character Inventory, EDI-2 = Eating Disorder Inventory-2, BES = Binge Eating Scale, STAXI = State-Trait Anger Expression Inventory, SCL-90 = Symptom Checklist, BDI-II = Beck Depression Inventory-II, ASQ = Attachment Style Questionnaire, PBI = Parental Bonding Instrument, CATS = Childhood Abuse and Trauma Scale, HADS = Hospital Anxiety and Depression Scale, DES = Dissociative Experiences Scale, EDI = Eating Disorder Inventory, CBCL = Child Behavior Checklist, BSI = Brief Symptom Inventory, ACE = Adverse Childhood Experiences, PHQ-9 = Patient Health Questionnaire, GAD-7 = Generalized Anxiety Disorder 7-items, PCL = Post Traumatic Stress Disorder Checklist, BPD = Borderline Personality Disorder, SDQ-5 = Somatoform Dissociation Questionnaire, CDS = Cambridge Depersonalization Scale, ECR-RS = The Experience in Close Relationships-Relationship Structures Questionnaire, AEE = The Attitudes toward Emotional Expression, DASS-21 = The Depression, Anxiety, and Stress Scale, CTEs = Childhood Traumatic Experiences, SCL-10 = Hopkins Symptoms Checklist-10, EQ-5D = included mobility; self-care; usual activities; pain/discomfort; and anxiety/depression, SWLS = *The Satisfaction With Life Scale,* ASR = Adult Self-Reporting, CCMS = Comprehensive Child Maltreatment Scale , IASC = Inventory of Altered Self-Capacities, PAI = Personality Assessment Inventory, LEQ = Lifetime Experiences Questionnaire, CSQ = Cognitive Style Questionnaire, ASD = Attributional Style Questionnaire, BDI = Beck Depression Inventory, HS = Beck Hopelessness Scale, , SADS-C = Schedule for Affective Disorder and Schizophrenia-Change version, TES = Traumatic Experiences Scale, DAPS = Detailed Assessment of Posttraumatic Stress, EASE-PI = Exposure to Abusive and Supportive Environments Parenting Inventory, ASQ-GU = Attributional Style Questionnaire for General Use, FASM = Functional Assessment of Self-Mutilation, MDD = Major Depressive Disorder, MINI-Plus = *Mini*-International Neuropsychiatric Interview-Plus (included panic disorder, social phobia, OCD, PTSD, and/or generalized anxiety disorder, suicide attempting, suicidal ideation), ASSIST = Alcohol, Smoking, and Substance Involvement Screening Test, BD = Bipolar Disorder, HC = Healthy Subjects,

YMRS = Young Mania Rating Scale, HDRS = Hamilton Depression Rating Scale, HARS = Hamilton Anxiety Rating Scale, CECA = Childhood Experience of Care and Abuse Questionnaire, DEQ = Depressive Experience Questionnaire, SHSS = Suicidal History Self-Rating Screening Scale, ETISR-SF = Early Trauma Inventory Self Report-Short Form, MINI = Mini International Neuropsychiatric Interview, NWS = National Women's Study, PTSD = Posttraumatic Stress Disorder, INQ = The interpersonal Needs Questionnaire, BSS = Beck Scale for Suicide Ideation, SPS = Suicide Probability Scale, BAI = Beck Anxiety Inventory, BAI = Beck Anxiety Inventory, ACSS = Acquired Capability foe Suicide Scale, SITBI = Self-Injurious Thoughts and Behaviours Interview, DIGS = Diagnostic Interview for Genetic Studies, SCID-I = Structured Clinical Interview for DSM-IV Axis I Disorder, FYCCQ = Youth and Community Care Queensland, YSQ-SF = Young Schema Questionnaire-Short Form, MAST = Michigan Alcoholism Screening Test, DTS = Davidson Trauma Scale, bMAST = Brief Michigan Alcoholism Screening Test, LSC-R = Life Stressor Checklist-Revised, SIP-AD = Short Inventory of Problem-Alcohol and Drugs, PCL-C = PTSD checklist-Civilian, **UPPS**-P Impulsive Behavior Scale, TEI = Traumatic Events Inventory, EDS = Emotional Dysregulation Scale, AUDIT = Alcohol Use Disorder Identification Test, , PDS = Posttraumatic Stress Diagnostic Scale, SCID-II = Structured Clinical Interview for DSM-IV Axis Personality Disorder-Self Report SPS/SIAS = Social Phobia Scale/Social Interaction Scale, BSL-23 = Borderline Symptom List, PHQ = Patient Health Questionnaire, ESDC = Epidemiological Studies Depression Scale, PTSD-CV = PTSD Checklist-Civilian Version, PSS-SF = Perceived Stress Scale-Short Form, TAS-20 = Toronto Alexithymia Scale, SMFQ = Short Mood and Feeling Questionnaire, QIDS-SR = Quick Inventory of Depressive Symptoms, DERS = Difficulties in Emotion Regulation Scale, IIP-32 = Inventory of Interpersonal Problems, , CEQ = Childhood Experiences Questionnaire, SATI = State-Trait Anxiety Inventory Form, EMSs = Early Maladaptive Schemas, SDS = The Zung Self-Rating Depression Scale, SAS = The Zung Self-Rating Anxiety Scale, CERQ = The Cognitive Emotion Regulation Questionnaire, SADS-I = The Schedule for Affective Disorders and Schizophrenia-Lifetime Interview, FSQ = Feedback Seeking Questionnaire, RSS = Reassurance-Seeking Scale, RCTS-SF = Revised Conflict Tactics Scale-Short Form, GDS = the 15-items Geriatric Depression Scale, EPDS = *Edinburgh Postnatal Depression Scale,* RRS = Ruminative Responses Scales, BADS = Behavioral Activation for depression Scale, ISS = Internalized Shame Scale, CESD-R = the Centre for Epidemiological Studies Depression Scale-Revised, CAST-6 = Children of Alcoholics Screening Test, TSC-40 = Trauma Symptom Checklist-40, YSQ = Young's Schema Questionnaire, SCS = Self-Compassion Scale, TDS = Trait Depression Subscale, AD = Alcohol Dependent, MADRS = Montgomery Asberg Depression Rating Scale, MRS = Mania Rating Scale, CAPS = Clinician Administered PTSD Scale, The SF-36 = The Short-Form 36 including general health, physical functioning, role limitation due to physical health, bodily pain, mental health, role limitation due to emotional problems, energy fatigue and social functioning, ASRS = Adult ADHD Self-report Scale, ISS = Internalized Shame Scale, SUD = Substance Use Disorder, OCDUS = Obsessive Compulsive Drug Use Scale, TEC = Traumatic Experiences Checklist, MID = Multidimensional Inventory of Dissociation, SUPPS-P = Short Form of the UPPS-P Impulsive Behaviour Scale, SCL-90-R = Symptoms

Checklist-90-Revised, PANSS= Positive and Negative Syndrome Scale Score, GAF = Global Assessment of Functioning, ASI-Lite = Addiction Severity Index Lite, SUPPS-P = Short Form of the UPPS-P Impulsive Behaviour Scale, IGT = evaluates processes underlying emotional decision-making, AGNG = measure inhibitory control in response to emotional stimuli, CADSS = Clinician-Administered Dissociative State Scale, DDIS = Dissociative Disorder Interview Schedule, STAI = Spielberger State-Trait Anxiety Scale, PSDI = Personality Style and Disorder Inventory, EAQ = Emotion Acceptance Questionnaire, LEC = Life Event Checklist, QIDS = Quick Inventory of Depressive Symptoms, ASRM = Altman Self-rating Mania Scale, NART = National Adult Reading Test (including BMI, pre-morbid IQ), SSRS = Social Support Rating scale, SIOSS = Self-rating Idea of Suicide Scale, ICD-10 = International Statistical Classification of Diseases and Related Health Problems-10, DSM-5 = The Diagnostic and Statistical Manual of Mental Disorders.

Table S2.3 Main Character of Study and Study Population and Study Effect Size for Chinese Studies

Author (Year)	Location	Sample Size & Characteristic	Abuse Types	Abuse Measurements	Mental Health Measurements	Perpetrator	Effect Size
Chang & Wang (2008)	Zhengjiang	230 General Population, 58.7%male, M = 32.3	EA, EN	CPANS	SCL-90	Parents/Caregivers	0.539(EA) 0.772 (EN)
Dai et al. (2016)	Liaoning	730 College students, 26% male, M = 19.8	EM	CPANS	Adolescent Self-injury Scale	Parents/Caregivers	0.494 (EA) 0.345 (EN)
Deng et al. (2018)	Beijing	407 College students, 31.7% male	EM	Childhood Emotional Abuse Questionnaire	CD-RISE, SDS	Parents/Caregivers	0.387
Guo (2018)	Shandong	262 College students, 35.1% male, M = 20.62	EM	CTSPC	SCL-90	Parents/Caregivers	0.699
Han et al. (2018)	Yantai	395 College students, 38.2% male	EA, EN	CPANS	BPAQ, RSE	Parents/Caregivers	1.424
Wang & Lui (2017)	Haerbin	427 College students, M = 20.99	EM	Childhood Emotional Abuse Scale	CFI, CES-D	Parents/Caregivers	1.022
Xie et al. (2008)	Changsha	457 College students, 52.1% male, M = 20.2	EA, EN	CPANS	SCL-90	Parents/Caregivers	N/A
Yang et al. (2019)	Jiangxi	941 College students, 48.4% male, M = 20.32	EA, EN	CPANS	RRS, PANSI Being Bullied Questionnaire	Parents/Caregivers	1.155
Zeng et al. (2016)	Haerbin	603 College students, 15.3% male	EM	Childhood Emotional Abuse Scale	STDEP, RRS	Parents/Caregivers	0.980

Zhang et al. (2017)	Liaoning	1502 College students, 40.7% male, M = 18.43	EM	CPANS	Adolescent Self-injury Scale, Social Support Scale	Parents/Caregivers	0.430 (EA) 0.606 (EN)
Zhang et al. (2018)	Jiang Su	110 OCD + HC, 44.5% male, M = 31.88	EM	CPMS	IUS-12, YBOCS	Parents/Caregivers	N/A

Notes. M = Age Mean, Range = Age Range, OCD = Obsessive Compulsive Disorder, HC = Healthy Controls, SCL-90 = Symptoms Checklist 90, EM = Emotional Maltreatment, Childhood Emotional Abuse Questionnaire = included three questions: 1) during childhood, your parents called you 'stupid', 'ugly', 2) your parents humiliated you in public during your childhood, 3) your parents told you wished you are not there during childhood, CD-RISE = Connor-Davidson Resilience Scale, SDS = Self-Rating Depression Scale, CTSPC = Parent-Child Conflict Tactics Scales, BPAQ = Buss-Perry Aggression Questionnaire, RSE = Rosenberg Self Esteem Scale, CFI = Cognitive Flexibility Inventory, CES-D = Centre for Epidemiologic Studies Depression Scale, Childhood Emotional Abuse Scale = developed by Pan et al., (2010), RRS = Rumination Response Scale, PANSI = Positive and Negative Suicide Ideation, Being Bullied Questionnaire = developed by Lui et al., (2006), STDEP = State-Trait Depression Scale, CPMS = Child Psychological Maltreatment Scale, IUS-12 = Intolerance of uncertain Scale – 12, YBOCS = Yale-Brown Obsessive-Compulsive Scale.

Table S2.4. Population Data on Childhood Psychological Maltreatment and Adult Mental Health Outcomes in English Studies

Authors (Year)	Location	Setting	Sample Population	Sample Size	Sample Population Demographic
Personality Disorder					
Bernstein et al. (1998)	USA	Clinical	Substance User	378	85.6% male, M = 40.2, range = 24-68
Cohen et al. (2013)	USA	Clinical	Nonpsychotic Psychiatric Patient	156	Low personality pathology (50 male, 52 female), High personality pathology (27 male, 27 female); range = 18-65
Cohen et al. (2014)	USA	Clinical	Patient	231	105 males, 126 females M = 39.32; range =18-65
Goodman et al. (2014)	USA	Community	Undergraduate	133	84 females, 49 males; M = 19
Waxman et al. (2014)	USA	Community	General Population	34,653	age over 18y
Eating Disorder					
Amianto et al. (2018)	Italy	Clinical vs. Community	Patient (BED and obese) & healthy	172	134 females, 38 males M (BED) = 42.81 M (OB) = 43.71 M (HS) = 41.53
Kent et al. (1997)	USA	Community	Psychology and nursing students	236	All females; M = 22.8
Psychological Symptoms					
Abajobir et al. (2017)	Australia	Community	General Population	3,752	Age over 21y M = 20.6
Dias et al. (2015)	Portuguese	Community	General Population	1,200	648 males; 533 females; M = 37.43, range = 18-65

Fung, Chung, & Ross (2020)	Hongkong	Community	General Population	418	67.5% female, 31.6% male, 1% transgender; M = 27.3, range = 18-64
Haferkamp et al. (2015)	Germany	Clinical	Patient	203	All female M = 38.26, range = 19-66
O Laoide et al. (2018)	USA	Community	General Population	761	69.6% female, 30.4% male; M = 21.46, range = 18-25
Sheikh, Abelsen, & Olsen (2016)	Norway	Community	General Population	12,981	6,054 males, 6,930 females; born between 1920 and 1977
Taillieu et al. (2016)	USA	Community	General Population	34,653	aged 20 or older
van Duin et al. (2019)	Netherland	Community	Multiple-problem Young Adult	643	M = 22.1
Suicide Ideation/Attempts					
Allen et al. (2013)	N/A	Community	Students	260	147 females, 113 males; M = 19.3
Gibb et al. (2001)	USA	Community	College Students	209	Aged over 18y
Briere et al. (2016)	USA	Community	General Population	387	223 males, 164 females; M = 49.3, range = 18-91
Buser & Hackney (2012)	USA	Community	General Population	390	66% female; M = 20.3, range = 18-25
de Mattos Souza et al. (2016)	Brazil	Clinical	MDD Patient	473	MMD: 396 females, 77 males; suicide risk MMD: 68 females, 9 males; range = 18-60
Janiri et al. (2015)	Italy	Clinical vs. Community	BD + HC	207	BD I (39 males, 19 females; M = 43.93) BD II (23 males, 23 females; M = 46.32)

					HC (54 males, 49 females; M = 44.26)
Falgares et al. (2018)	Italy	Community	General Population	293	83.28% female; M = 21.57, range = 18-27
Harford et al. (2014)	USA	Community	General Population	34,653	Aged over 18y
Lee (2015)	Korea	Community	General Population	1,396	M = 52.763
Thompson et al. (2000)	USA	Community	African American	335	All females; M = 32.17, range = 18-64
Puzia et al. (2013)	USA	Community	Undergraduates	189	84.2% females
Saracli et al. (2016)	Turkey	Community	General Population	897	424 males, 467 females; range = 18-65
Smith et al. (2018)	USA	Community	General Population	91	M = 21.72, range = 18-47
Substance Abuse					
Aas et al. (2014)	Norway & France	Clinical	Bipolar Disorder Patient	587	234 males, 353 females M = 40.6
Abajobir et al. (2017)	Australia	Community	General Population	3,750	1,769 males; 1,981 females; M = 20.6
Afifi et al. (2012)	USA	Community	General Population	34,653	age over 20y
Can et al. 2019)	Istanbul	Clinical vs. Community	Alcohol-dependent Inpatient + Healthy	328	All males; 220 inpatients (M = 43.57), 108 healthy (M = 35.19)
Crouch et al. (2018)	South Carolina	Community	General Population	7,934	3934 men; 4000 women 22% aged 18-29 18.6% aged 30-39 18.3% aged 40-49 17.1% aged 50-59 14.7% aged 60-69 7.3% aged 70-79 2.1% aged over 80

Elliott et al. (2014)	USA	Community	Adult Alcohol and Nicotine Dependence	5,189	1,172 alcohol dependence, 4,017 nicotine dependence; range =18-24
Florez et al. (2020)	USA	Community	Low-income African American Women	172	M = 34.49
Junglen et al. (2019)	USA	Community	Community-based Alcohol and Drug Detoxification Center	study 1: 368 study 2: 274	study 1: 59.1% male. M = 34.68 study 2: 62.5% male. M = 34.68
Mandavia et al. (2016)	USA	Community	General Population	2,014	71.9% females. M = 39.54, range = 18-65
Potthast et al. (2014)	Germany	Clinical	Alcohol Dependence Patient	75	52 males, 20 females; M = 42.33
Yuan et al. (2014)	USA	Community	LGBT AI/AN (American Indian and Alaska Native)	447	177 males; M = 37.97, range = 20-63 117 females; M = 38.98, range = 18-62
Depression and Anxiety					
Arnow et al. (2011)	USA	Clinical	Patient	5,673	2,402 males (M = 54.5), 3,271 females (M = 52.1), range = 21-75
Balsam et al. (2010)	USA	Community	LGB	669	256 males, 413 females; M = 36.5, range = 18-74
Brown et al. (2016)	USA	Community	College student	339	174 males, 164 females; M = 19, range = 18-25
Christ et al. (2019)	Netherland	Community	College student	276	All females; M = 21.7
Crow et al. (2014)	USA	Community	General Population	3,902	M = 39.34, range = 18-81

Ferguson & Dacey (1997)	USA	Community	Health Care Professionals	110	Maltreated: M = 36.7, range = 20-61 Control: M = 34.6, range = 22-58
Gong & Chan (2018)	China	Community	College students	1102	296 males, 806 females; M = 20.46
Huh et al. (2017)	Korea	Clinical	Depression Patient	585	226 males, 316 females; M = 36.94, range = 18-65
Massing-Schaffer et al. (2015)	USA	Community	Undergraduates	185	75.1% female; M = 19.65
McCabe et al. (2018)	Latinas	Community	General Population	548	M = 38.48, range = 18-50
Novelo et al. (2018)	Brazil	Community	Elder people	449	161 males, 288 females; range = 60-103
O'Mahen et al. (2015)	UK vs. USA	Community	Pregnant, primarily low-income women	140	All women; M = 23.27
Ross & Kaminski, & Herrington (2019)	USA	Community	General Population	244	187 females,53 males, 2 transgenders, 2 gender-fluids; M = 20.80
Sunley et al. (2020)	Netherland	Community	General Population	22,551	12,932 females, 9,619 males; M = 43.68, range = 18-70
Wright & Crawford, & Del Castillo (2009)	USA	Community	College students	301	143 males, 158 females; M = 20.37
Wu et al. (2018)	China	Community	College students	358	M = 19.18, range = 18-34
Psychological Maltreatment in Clinical Population					
Bruni et al. (2018)	Italy	Clinical vs. Community	Patients + HC	333	151 males, 182 females
Etain et al. (2010)	France	Clinical vs. Community	BD + HC	300	BD (40.8% male); HC (61.7% male); aged over 18y
Evren et al. (2010)	Turkey	Clinical	AD Patient	156	Aged over 18y

Evren et al. (2016)	Turkey	Clinical	AUD Patient	190	All male; M = 44.69
Fowke, Ross, & Ashcroft (2012)	UK	Clinical vs. Community	BD + HC	70	22 females, 13 males in both group BD (M = 45.57); HC (M = 46.20)
Hariri et al. (2015)	Turkey	Clinical vs. Community	BD + HC	250	BD: 71 men (M = 39), 129 women (M = 38.2) HC: 17 men (M = 40.6), 33 women (M = 38.8)
Jaworska-Andryszewska et al. (2018)	Poland	Clinical	BD	52	23 males, 29 females; M = 47
Kefeli et al. (2018)	Turkey	Clinical vs. Community	BD + HC	80	47.5% female; M = 33.41, range = 18-54
Khosravani et al. (2019)	Iran	Clinical	Substance Abuse Patient	350	All male (M = 32.3, range = 18-61)
Kounou et al. (2013)	France	Clinical vs. Community	MDD + HC	181	MMD: 60 females (M = 29.21) HC: 60 females (M = 28.73)
Kruger et al. (2017)	South Africa	Clinical	Patient with Psychiatric Disorder	116	aged over 18y
Kulacaoglu et al. (2017)	Turkey	Clinical vs. Community	BPD + HC	330	HC: 37 males, 128 females (M = 23.58) BPD: 37 males, 128 females (M = 22.46)
Mirhashem et al. (2017)	USA	Clinical	Opioid Use Patient	84	45 males, 39 females; M = 35.27
Neumann (2017)	Germany	Clinical vs. Community	Depression + HC	191	HC: 41 males, 70 females; M = 38.48

					depressed: 29 males, 51 females; M = 40.39
Ostefjells et al. (2017)	Norway	Clinical	BD + Psychotic Disorder	261	Range = 18-65
Pavlova et al. (2015)	Geneva	Clinical	BD	174	98 females, 77 males; M = 41.79
Price, Connor, & Allen (2017)	USA	Clinical	SUD	84	45 males, 39 females; M = 35.27
Russo et al. (2013)	USA	Clinical	BD	56	34 males (M = 42.12); 22 females (M = 45.65)
Sar, Islam, & Ozturk (2009)	Turkey	Clinical	Outpatient	32	27 females, 5 males; M = 33.3, range = 18-65
Schulz et al. (2017)	Germany	Clinical	MDD patient	123	73 males, 50 females; M = 40.3, range = 18-64
Ventimiglia et al. (2020)	South Africa	Clinical	Mood Disorder Patients	107	26 males, 81 females; M = 37.04
Watson et al. (2014)	UK + New Zealand	Clinical vs. Community	BD + HC	115	BD: 53.3% male; M = 47.9; HC: 54.5% male; M = 45.1
Xie et al. (2018)	China	Clinical vs. Community	Patient + HC	679	Depression: 27 males, 102 females; M = 27.78 Bipolar: 54 males, 48 females; M = 25.5 Schizophrenia: 108 males, 108 females; M = 27.91 HC: 54 males, 78 females; M = 27.86

Zhang et al. (2013)	China	Clinical	Patient	2,090	1354 males, 1721 females; M = 32

Notes. M = mean age, range = age range, BED = Binger Eating Disorder, OB = Obesity patient without BED, MMD = Major Depressive Disorder, BD = Bipolar Disorder, HC = Healthy Control. LGB = Lesbian Gay Bisexual, AD = Alcohol Dependent, AUD = Alcohol Use Disorder, BPD = Borderline Personality Disorder, SUD = Substance Use Disorder.

Tables S2.5. Study Data on Childhood Psychological Maltreatment and Adult Mental Health Outcomes in English Studies

Authors (Year)	Methodology	Types of Abuse	Measurement of Emotional Abuse/Neglect	Measurement of Various Mental Health Outcomes	Perpetrator of the Maltreatment	Age at Exposure to Maltreatment
Personality Disorder						
Bernstein et al. (1998)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	PDQ-R	Parents / Caregivers	Before 18y
Cohen et al. (2013)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF, MNBS, CTSPC-CA	PDQ	Parents / Caregivers	Before 18y
Cohen et al. (2014)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF, MNBS, CTSPC-CA	PDQ	Parents / Caregivers	Before 18y
Goodman et al. (2014)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	RSQ, SCID-II	Parents / Caregivers	Before 18y
Waxman et al. (2014)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ	AUDADIS-IV, NESARC, DSM-IV	Parents / Caregivers	Before 18y
Eating Disorder						
Amianto et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	TCI, EDI-2, BES, STAXI, SCL-90, BDI-II, ASQ, PBI	Parents / Caregivers	Before 18y
Kent et al. (1997)	Questionnaire	SA, PA, EA	CATS	HADS, DES, EDI	Parents	Before 14y
Psychological Symptoms						
Abajobir et al. (2017)	Questionnaire & Interview	SA, PA, PN, EA, EN	FYCCQ	Achenbach's YASR Behaviours Checklist, CBCL	Parents / Caregivers	Before 14y

Dias et al. (2015)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	BSI	Parents or adults in the same household	Before 18y
Fung, Chung, & Ross (2020)	Questionnaire	PA, SA, PN, EA, EN, parental separation or divorce, mother treated violently, household substance abuse, mental illness in household, criminal house member	ACE	PHQ-9, GAD-7, PCT, DDIS-BPD, SDQ-5	Parents / Caregivers	Before 18y
Haferkamp et al. (2015)	Questionnaire	SA, PA, EA, EN	CTQ	PTSD (DSM-IV), DES	Parents / Caregivers	Before 18y
O Laoide et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	CDS, ECR-RS, AEE, DASS-21	Parents / Caregivers	Before 18y
Sheikh, Abelsen, & Olsen (2016)	Questionnaire	Psychological abuse, PA	CTEs	SCL-10, EQ-5D, SWLS	Parents / Caregivers	Before 18y
Taillieu et al. (2016)	Questionnaire & Interview	SA, PA, PN, EA, EN	ACE	AUDADIS	Parents / Caregivers	Before 18y
van Duin et al. (2019)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	ACE, ASR	Parents / Caregivers	Before 18y
Suicide Ideation / Attempts						
Allen et al. (2013)	Questionnaire	PA, psychological abuse, neglect	CCMS	ILASC, PAI	Primary maternal / paternal caregivers,	Before 18y

					another older adolescent / adult	
Gibb et al. (2001)	Questionnaire	PA, SA, EA	LEQ	CSQ, ASD, BDI, HS, SCL-90, SADS-C	Parents / Caregivers	Before 15y
Briere et al. (2016)	Questionnaire	SA, PA, EA	TES	DAPS	Parents / Caregivers	Before 18y
Buser & Hackney (2012)	Questionnaire	EA	EASE-PI	ASQ-GU, FASM	Parents / Caregivers	Before 18y
de Mattos Souza et al. (2016)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	MINI Plus, ASSIST	Parents / Caregivers	Before 18y
Janiri et al. (2015)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	YMRS, HDRS, HARS	Parents / Caregivers	Before 18y
Falgares et al. (2018)	Questionnaire + Screening	Parental loss, reference figures in childhood, parental care (antipathy and neglect), PA, SA, EA	CECA	DEQ, SHSS	Parents	Before 17y
Harford et al. (2014)	Questionnaire + Interview	PA, SA, EA	ACEs	Violence Indicators, Suicidal attempt, AUDADIS-IV	Parents or adults in the same household	Before 18y
Lee (2015)	Questionnaire & Interview	SA, PA, EA	ETISR-SF	PHQ-9, MINI	Parents / Caregivers	Before 18y
Thompson et al. (2000)	Questionnaire	SA, PA, PN, EA, EN	CTQ	NWS PTSD Module	Parents	Before 18y

Puzia et al. (2013)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	INQ, BSS	Parents / Caregivers	Before 18y
Saracli et al. (2016)	Questionnaire	SA, PA, PN, EA, EA	CTQ-SF	SPS, BDI, BAI	Parents / Caregivers	Before 18y
Smith et al. (2018)	Questionnaire & Interview	PA, SA, EA	CTQ-SF	INQ, ACSS, BDI-II, SITBI	Parents or adults in the same household	Before 18y
Substance Abuse						
Aas et al. (2014)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	DIGS for French patient, Structured Clinical SCID-I for Norwegian patient	Parents or adults in the same household	Before 18y
Abajobir et al. (2017)	Questionnaire + Interview	SA, PA, PN, EA, EN	FYCCQ	Asking whether the respondents had ever injected illicit drug	Parents / Caregivers	Before 14y
Afifi et al. (2012)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ	AUDADIS-IV	Parents / Caregivers	Before 18y
Can et al. (2019)	Questionnaire + Screening	SA, PA, PN, EA, EN	CTQ-SF	YSQ-SF, MAST	Parents or adults in the same household	Before 18y
Crouch et al. (2018)	Questionnaire	Household mental illness, Household substance abuse,	ACE	Asking "Considering all types of alcoholic	Parents or adults in the same household	Before 18y

		household incarceration, parental separation/divorce, witnessing household violence, PA, SA, EA		beverages, how many times during the past 30 days did you have five or more drinks for men or four or more drinks for women on occasion?"		
Elliott et al. (2014)	Interview	SA, PA, PN, EA, EN	AUDADIS-IV	AUDADIS-IV	Parents / Caregivers	Before 18y
Florez et al. (2020)	Questionnaire + Screening	PA; SA; EA	CTQ-SF	DTS, bMAST	Parents or adults in the same household	Before 18y
Junglen et al. (2019)	Questionnaire	Study 1: EA Study 2: SA, PA, PN, EA, EN	Study 1: LSC-R Study 2: CTQ-SF	PCL-C, SIP-AD, UPPS Impulsive Behaviour Scale	Parents / Caregivers	study 1: EA was 14.39y (SD = 10.28)
Mandavia et al. (2016)	Questionnaire	SA, PA, EA	CTQ, TEI	EDS, AUDIT	Parents / Caregivers	Before 18y
Potthast et al. (2014)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ	AUDIT PDS, BDI, SCID-I, SPS/SIAS, BSL-23	Parents / Caregivers	Before 18y
Yuan et al. (2014)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	M.I.N.I version 5.0	Parents or adults in the same household	Before 18y

Arnow et al. (2011)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	PHQ	Parents / Caregivers	Before 18y
Balsam et al. (2010)	Questionnaire	PA, SA, EA	CTQ-SF	ESDC, PHQ, GAD-7, PSS-SF, PTSD-CV	Parents or adults in the same household	Before 18y
Brown et al. (2016)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	TAS-20, SMFQ, GAD-7, UCLA Loneliness Scale	Parents or adults in the same household	Before 18y
Christ et al. (2019)	Questionnaire	SA, PA, EA	CTQ-SF	QIDS-SR, DERS, IIP-32	Parents / Caregivers	Before 18y
Crow et al. (2014)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	EDS, BDI-II	Parents / Caregivers	Before 18y
Ferguson & Dacey (1997)	Questionnaire	Physical trauma, sexual trauma, psychological trauma	CEQ	STAI, BDI, DES	Parents	Before 18y
Gong & Chan (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	EMSs, SDS, SAS	Parents / Caregivers	Before 18y
Huh et al. (2017)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	CERQ, BDI, STAI, MINI	Parents / Caregivers	Before 18y
Massing-Schaffer et al. (2015)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	SADS-I, BDI, FSQ, RSS, RSQ	Parents / Caregivers	Before 18y
McCabe et al. (2018)	Questionnaire	PA, SA, EA	Violence Assessment developed for a previous randomized trial with Latinas	ESDC, RCTS-SF	Parents or adults in the same household	Before 18y

Novelo et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	GDS	Parents / Caregivers	Before 18y
O'Mahen et al. (2015)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	SCID, EPDS, BDI, RRS, BADS	Parents / Caregivers	Before 18y
Ross & Kaminski, & Herrington (2019)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	26-items Self-Compassion Scale, ISS, CESD-R	Parents / Caregivers	Before 18y
Sunley et al. (2020)	Questionnaire	SA, PA, EN, psychological abuse	4-items NEMESIS Childhood Trauma Scale	PHQ-9	Parents / Caregivers	Before 16y
Wright, Crawford, & Del Castillo (2009)	Questionnaire + Screening	SA, PA, PN, EA, EN	LEQ	CAST-6, TSC-40, YSQ	Parents / Caregivers	Before 15y
Wu et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	SCS, TDS, Gratitude Questionnaire-Six	Parents	Before 18y
Psychological Maltreatment in Clinical Population						
Bruni et al. (2018)	Questionnaire & Interview	Psychological Abuse, SA, PA	CECA	SCID-I	Parents / Caregivers	Before 17y
Etain et al. (2010)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	MADRS, MRS	Parents / Caregivers	Before 18y
Evren et al. (2010)	Questionnaire + Screening + Interview	SA, PA, PN, EA, EN	CTQ-SF	CAPS, DES, MAST, The SF-36	Parents / Caregivers	Before 18y

Evren et al. (2016)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	ASRS, PCL-C	Parents / Caregivers	Before 18y
Fowke, Ross, & Ashcroft (2012)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	HADS, ISS	Parents / Caregivers	Before 18y
Hariri et al. (2015)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	HDRS, YMRS, HARS, DSM-IV for BD	Parents / Caregivers	Before 18y
Jaworska-Andryszewska et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	HDRS, YMRS	Parents / Caregivers	Before 18y
Kefeli et al. (2018)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	DES, SDQ, TAS-20, DASS-21, ECR-R	Parents / Caregivers	Before 18y
Khosravani, et al. (2019)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	DERS, OCDUS, BDI-II	Parents / Caregivers	Before 18y
Kounou et al. (2013)	Questionnaire	SA, PA, PN, EA, EA	CTQ-SF	PDQ	Parents / Caregivers	Before 18y
Kruger et al. (2017)	Questionnaire	EA, EN, SA, bodily threat, sexual harassment	TEC	DES, MID	Multiple Perpetrators	Before 18y
Kulacaoglu et al. (2017)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	ASRS, BIS-11, DIS-Q	Parents / Caregivers	Before 18y
Mirhashem et al. (2017)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF	SIPS-R, ASI-Lite, SUPPS-P, PCL-5, SCID, MINI	Parents / Caregivers	Before 18y

Neumann (2017)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	SCL-90-R, ECR	Parents / Caregivers	Before 18y
Ostefjells et al. (2017)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	PANSS, GAF, MCQ-30	Parents / Caregivers	Before 18y
Pavlova et al. (2015)	questionnaire	SA, PA, PN, EA, EN	CTQ-SF	MINI	Parents / Caregivers	Before 18y
Price & Connor, & Allen (2017)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	ASI-Lite, PCL-5, SCID-I	Parents / Caregivers	Before 18y
Russo et al. (2013)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	SCID-I, IGT, AGNG	Parents / Caregivers	Before 18y
Sar & Islam, & Ozturk (2009)	Questionnaire + Interview	SA, PA, PN, EA, EN	CTQ-SF	DDIS, DES, SDQ, CADSS, STAI	Parents / Caregivers	Before 18y
Schulz et al. (2017)	Questionnaire	SA, PA, PN, EA, EN	CTQ	BDI-II, PSDI, EAQ, MADRS	Parents / Caregivers	Before 18y
Ventimiglia et al. (2020)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	LEC, QIDS, ASRM	Parents or adults in the same household	Before 18y
Watson et al. (2014)	Questionnaire	SA, PA, PN, EA, EN	CTQ-SF	NART, HDRS-17, diagnosis of DSM-IV melancholia, length of the current depression episode (weeks),	Parents / Caregivers	Before 18y

					number of previous hospitalisations, current alcohol intake, diagnosis of rapid cycling BD, history of suicide attempt, and any form of current suicidal ideation reported to the assessor		
Xie et al. (2018)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF		SSRS, SIOSS, ICD-10	Parents / Caregivers	Before 18y
Zhang et al. (2013)	Questionnaire & Interview	SA, PA, PN, EA, EN	CTQ-SF		DSM-IV	Parents / Caregivers	Before 18y

Notes. Notes. M = Mean Age, Range = Age Range, SA = Sexual Abuse, PA = Physical Abuse, PN = Physical Neglect, EA = Emotional Abuse, EN = Emotional Neglect, CTQ-SF = Childhood Trauma Questionnaire-Short Form, PDQ-R = Personality Diagnostic Questionnaire-revised, CTQ = Childhood Trauma Questionnaire, MNBS= Multidimensional Neglectful Behaviour Scale, CTSPC-CA= Conflict Tactics Scale Parent Child-Child Adult, PDQ = Personality Disorder Questionnaire, RSQ = Adult Rejection Sensitivity Questionnaire, SCID-II = Structured Clinical Interview for DSM-IV Axis Personality Disorder-Self Report, AUDADIS-IV = The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV, NESARC = The National Epidemiological Survey on Alcohol and Related Condition, DSM-IV = The Diagnostic and Statistical Manual of Mental Disorders, BPD = Borderline Personality Disorder, BED = Binger Eating Disorder, HC = Healthy Subjects, TCI = Temperament and Character Inventory, EDI-2 = Eating Disorder Inventory-2, BES = Binge Eating Scale, STAXI = State-Trait Anger Expression Inventory, SCL-90 = Symptom Checklist, BDI-II = Beck Depression Inventory-II, ASQ = Attachment Style Questionnaire, PBI = Parental Bonding Instrument, CATS = Childhood Abuse and Trauma Scale, HADS = Hospital Anxiety and Depression Scale, DES = Dissociative Experiences Scale, EDI = Eating Disorder Inventory, FYCCQ = Youth and Community Care Queensland, CBCL = Child Behaviour Checklist, BSI = Brief Symptom Inventory, ACE = Adverse Childhood Experiences, PHQ-9 =

Patient Health Questionnaire, GAD-7 = Generalized Anxiety Disorder 7-items, PCL = Post Traumatic Stress Disorder Checklist, DDIS-BPD = Borderline Personality Disorder Section of the Dissociative Disorders Interview Schedule, SDQ-5 = Somatoform Dissociation Questionnaire, CDS = Cambridge Depersonalization Scale, ECR-RS = The Experience in Close Relationships-Relationship Structures Questionnaire, AEE = The Attitudes toward Emotional Expression, DASS-21 = The Depression, Anxiety, and Stress Scale, CTEs = Childhood Traumatic Experiences, SCL-10 = Hopkins Symptoms Checklist-10, EQ-5D = included mobility; self-care; usual activities; pain/discomfort; and anxiety/depression, SWLS = The *Satisfaction With Life Scale,* ASR = Adult Self-Reporting, MDD = Major Depressive Disorder, BD = Bipolar Disorder, CCMS = Comprehensive Child Maltreatment Scale, LASC = Inventory of Altered Self-Capacities, PAI = Personality Assessment Inventory, LEQ = Lifetime Experiences Questionnaire, CSQ = Cognitive Style Questionnaire, ASD = Attributional Style Questionnaire, BDI = Beck Depression Inventory, HS = Beck Hopelessness Scale, SADS-C = Schedule for Affective Disorder and Schizophrenia-Change version, TES = Traumatic Experiences Scale, DAPS = Detailed Assessment of Posttraumatic Stress, EASE-PI = Exposure to Abusive and Supportive Environments Parenting Inventory, ASQ-GU = Attributional Style Questionnaire for General Use, FASM = Functional Assessment of Self-Mutilation, MINI-Plus = *Mini*-International Neuropsychiatric Interview-Plus (included panic disorder, social phobia, OCD, PTSD, and/or generalized anxiety disorder, suicide attempting, suicidal ideation), ASSIST = Alcohol, Smoking, and Substance Involvement Screening Test, YMRS = Young Mania Rating Scale, HDRS = Hamilton Depression Rating Scale, HARS = Hamilton Anxiety Rating Scale, CECA= Childhood Experience of Care and Abuse Questionnaire, DEQ = Depressive Experience Questionnaire, SHSS = Suicidal History Self-Rating Screening Scale, ETISR-SF = Early Trauma Inventory Self Report-Short Form, MINI = Mini International Neuropsychiatric Interview, NWS = National Women's Study, PTSD = Posttraumatic Stress Disorder, INQ = The interpersonal Needs Questionnaire, BSS = Beck Scale for Suicide Ideation, SPS = Suicide Probability Scale, BAI = Beck Anxiety Inventory, ACSS = Acquired Capability foe Suicide Scale, SITBI = Self-Injurious Thoughts and Behaviours Interview, DIGS = Diagnostic Interview for Genetic Studies, SCID-I = Structured Clinical Interview for DSM-IV Axis I Disorder, YSQ-SF = Young Schema Questionnaire-Short Form, MAST = Michigan Alcoholism Screening Test, DTS = Davidson Trauma Scale, bMAST = Brief Michigan Alcoholism Screening Test, LSC-R = Life Stressor Checklist-Revised, SIP-AD = Short Inventory of Problem-Alcohol and Drugs, PCL-C = PTSD checklist-Civilian, TEI = Traumatic Events Inventory, EDS = Emotional Dysregulation Scale, AUDIT = Alcohol Use Disorder Identification Test, PDS = Posttraumatic Stress Diagnostic Scale, SPS/SIAS = Social Phobia Scale/Social Interaction Scale, BSL-23 = Borderline Symptom List, PHQ = Patient Health Questionnaire, ESDC = Epidemiological Studies Depression Scale, PTSD-CV = PTSD Checklist-Civilian Version, PSS-SF = Perceived Stress Scale-Short Form, TAS-20 = Toronto Alexithymia Scale, SMFQ = Short Mood and Feeling Questionnaire, QIDS-SR = Quick Inventory of Depressive Symptoms, DERS = Difficulties in Emotion Regulation Scale, IIP-32 = Inventory of Interpersonal Problems, CEQ = Childhood Experiences Questionnaire, SATI = State-Trait Anxiety Inventory Form, EMSs =

Early Maladaptive Schemas, SDS = The Zung Self-Rating Depression Scale, SAS = The Zung Self-Rating Anxiety Scale, CERQ = The Cognitive Emotion Regulation Questionnaire, SADS-I = The Schedule for Affective Disorders and Schizophrenia-Lifetime Interview, FSQ = Feedback Seeking Questionnaire, RSS = Reassurance-Seeking Scale, RCRS-SF = Revised Conflict Tactics Scale-Short Form, GDS = the 15-items Geriatric Depression Scale, EPDS = *Edinburgh Postnatal Depression Scale,* RRS = Ruminative Responses Scales, BADS = Behavioural Activation for depression Scale, ISS = Internalized Shame Scale, CESD-R = the Centre for Epidemiological Studies Depression Scale-Revised, LEQ = Lifetime Experiences Questionnaire, CAST-6 = Children of Alcoholics Screening Test, TSC-40 = Trauma Symptom Checklist-40, YSQ = Young's Schema Questionnaire, SCS = Self-Compassion Scale, TDS = Trait Depression Subscale, AD = Alcohol Dependent, AUD = Alcohol Use Disorder, SUD = Substance Use Disorder, MADRS = Montgomery Asberg Depression Rating Scale, MRS = Mania Rating Scale, CAPS = Clinician Administered PTSD Scale, The SF-36 = The Short-Form 36 including general health, physical functioning, role limitation due to physical health, bodily pain, mental health, role limitation due to emotional problems, energy fatigue and social functioning, ASRS = Adult ADHD Self-report Scale, SDQ = Somatoform Dissociation Questionnaire, DASS = Depression Anxiety Stress Scale, ECR-R = Experiences in Close relationships-Revised, OCDUS = Obsessive Compulsive Drug Use Scale, TEC = Traumatic Experiences Checklist, MID = Multidimensional Inventory of Dissociation, BIS-11 = Barratt Impulsivity Scale-11, DIS-Q = Dissociation Questionnaire, SIPS-R = Short Inventory of Problems-Revised, ASI-Lite = Addiction Severity Index Lite, SUPPS-P = Short Form of the UPPS-P Impulsive Behaviour Scale, SCL-90-R = Symptoms Checklist-90-Revised, PANSS= Positive and Negative Syndrome Scale Score, GAF = Global Assessment of Functioning, MCQ-30 = Metacognition Questionnaire-30, IGT = evaluates processes underlying emotional decision-making, AGNG = measure inhibitory control in response to emotional stimuli, CADSS = Clinician-Administered Dissociative State Scale, DDIS = Dissociative Disorder Interview Schedule, STAI = Spielberger State-Trait Anxiety Scale, PSDI = Personality Style and Disorder Inventory, EAQ = Emotion Acceptance Questionnaire, LEC = Life Event Checklist, QIDS = Quick Inventory of Depressive Symptoms, ASRM = Altman Self-rating Mania Scale, NART = National Adult Reading Test (including BMI, pre-morbid IQ), SSRS = Social Support Rating scale, SIOSS = Self-rating Idea of Suicide Scale, ICD-10 = International Statistical Classification of Diseases and Related Health Problems-10, DSM-5 = The Diagnostic and Statistical Manual of Mental Disorders.

Table S2.6. Study Findings and Statistical Information of Childhood Psychological Maltreatment and Adult Mental Health Outcomes in English Studies

Author (Year)	Findings	Odd Ration / Adjusted odd ratio / Risk Ratio	Other Statistical Information
Personality Disorder			
Bernstein et al. (1998)	EA and EN predicted personality pathology among adult patient with substance use disorders.	N/A	*EA* significantly related with *PD* variables: Cluster A: r = .43, p ≤ .001. Cluster B1: r = .33, p ≤ .001 Cluster B2: r = .31, p ≤ .001 Cluster C: r = .36, p ≤ .001 Schizoid: r = .25, p ≤ .001 *EN* significantly related with *PD* variables: Cluster A: r = .21, p ≤ .001. Cluster B1: r = .26, p ≤ .001 Cluster B2: r = .13, p ≤ .05 Cluster C: r = .23, p ≤ .001 Schizoid: r = .27, p ≤ .001
Cohen et al. (2013)	Bivariate logistic regression analyses revealed each maltreatment types to significantly correlated with adult personality pathology.	There were significant differences between *low* and *high personality pathology* scores in *EA* (OR = 3.57, 95%CI = 1.75-7.28); when controlling for education and intercorrelations among trauma variables, only *EA* were significant predictor of	N/A

		adult personality pathology (aOR = 3.81, 95%CI = 1.62-8.96).	
Cohen et al. (2014)	EA was associated with Cluster C personality disorder trait.	N/A	EA was associated with Cluster C personality disorder trait (*Beta* = 0.22, p =.001).
Goodman et al. (2014)	Greater ENA and rejection sensitivity have been independently associated with more BPD symptomatology.	A one-unit increase in *ENA* predicted *BPD* was .02 (RR = 1.02, 95%CI = .002-.03), a one-unit increase in *RS* predicted *BPD* was .04 (RR = 1.04, 95%CI = .01-.07). The *interaction term* was also significant predictors for BPD (RR = .007, 95%CI = -.005--.001).	ENA correlated with BPD symptoms (r = .282, p < .01)
Waxman et al. (2014)	EA and EN related to different types of personality disorders.	*EA* was associated with *borderline* (OR[1] = 1.53, 95%CI = 1.79), *narcissistic* (OR[1] = 1.49, 95%CI = 1.17-1.89) and *schizotypa*l (OR[1] = 1.40, 95%CI = 1.06-1.84) PDs. *EN* was associated with *avoidant* (OR[1] = 1.75, 95%CI = 1.26-2.42), *paranoid* (OR[1] = 1.33, 95%CI = 1.05-1.60) and *schizoid* (OR[1] = 1.66, 95%CI = 1.15-1.91) PDs.	N/A
Eating Disorder			
Amianto et al. (2018)	The relationships between EA and EN as independent variable	N/A	SCL-90 total score related to EA (B = 0.474; t = 3.445; p < 0.001)

	with SCL-90 were significant in linear regression analysis for obese patient.		and EN (B = 0.342; t = 3.291; p < 0.001).
Kent et al. (1997)	EA significantly associated with eating psychopathology, anxiety, dissociation and depression.	N/A	EA significantly associated with eating psychopathology (t = 1.91; p < .03), depression (t = 1.93; p < .03), anxiety (t = 1.79, p < .04) and dissociation (t = 3.82, p < .0001).
Psychological Symptoms			
Abajobir et al. (2017)	Those who were EA and EN are more likely to have auditory and visual hallucinations.	EA (crude OR = 2.73, 95%CI = 1.55-4.83) and EN (crude OR = 3.26, 95%CI = 1.79-5.92) consistently showed increased risk of experiencing auditory hallucination in unadjusted analyses. Participants who reported to have experienced EA were more likely to are more likely to have 12-months (aOR[1] = 5.83, 95%CI = 1.16-29.37) and lifetime (aOR[1] = 4.26, 95%CI = 1.17-15.54) psychotic.	N/A
Dias et al. (2015)	EA overlapped with the exposure to all other CM forms, and interacted with PA, PN, and EN to predict psychological distress.	N/A	EA was the strongest predictor for psychological symptoms, namely for paranoid ideation (β = .357, p < .000), phobic anxiety (β = .185, p < .000), depression

			(β = .318, p < .000), interpersonal sensitivity (β = .353, p < .000), psychological distress (β = .324, p < .000), somatization (β = .193, p < .000), obsession (β = .257, p < .000), hostility (β = .266, p < .000) and psychosis (β =. 292, p < .000).
Fung, Chung, & Ross (2020)	Mental health screening scores: EA and EN > EA or EN, EA or EN > no EA and EN.	N/A	When controlling PA, SA and PN, EA correlated with PHQ-9 (r = .165), GAD-7 (r = .170), PCL (r = .246), DDIS-BPD (r = .224) and SDQ-5 (r = .124), while EN correlated with PHQ-9 (r = .350), GAD-7 (r = .319), PCL (r = .366), DDIS-BPD (r = .359) and SDQ-5 (r = .158).
Haferkamp et al. (2015)	A significant relationship with dissociative symptoms was found for EA.	N/A	EA correlated with dissociative symptoms (b = .91, SD = .29, β = .30, t = 3.15, p < .01).
O Laoide et al. (2018)	EM correlated with psychological distress. Depersonalization correlated with EA and EN.	The association between EM and DP was significant (OR = 1.06, 95%CI = 1.04-1.09).	EM correlated with depression (r = .43), anxiety (r = .38) and stress (r = .38). DP correlated with EN (r = .37) and EA (r = .35). In multiple regression, the overall model was significant, F (5, 760) = 28.68, p = .00. EN and EA were the only two significant

			predictors of DP, where EN predicted 22% of the variance (β = .22, t = 4.33, p = .00) and EA predicted 21% (β = .21, t = 4.15, p = .00).
Sheikh, Abelsen, & Olsen (2016)	Psychological abuse was most important for mental health in adulthood.	N/A	Independent association between psychological abuse and mental health (β = .05, 95%CI = 0.036-0.063).
Taillieu et al. (2016)	Experiencing EA and EN increased the likelihood for mental health problem.	Experiencing EN was associated with increased odds for depression (aOR[1] = 1.3, 99%CI = 1.1-1.6), dysthymia (aOR[1] = 1.2, 99%CI = 1.0-1.5) and social phobia (aOR[1] = 1.4, 99%CI = 1.1-1.7). Experiencing EA was associated with significantly higher odds of a lifetime diagnoses borderline personality disorder (aOR[1] = 1.6, 99%CI = 1.1-2.4), narcissistic personality disorder (aOR[1] = 1.5, 99%CI = 1.1-2.2), any Cluster B disorder (aOR[1] = 1.4, 99%CI = 1.1-1.9), OCD (aOR[1] = 1.5, 99%CI = 1.0-2.1) and any Axis II disorder (aOR[1] = 1.4, 99%CI = 1.1-1.8).	N/A

van Duin et al. (2019)	EN and EA correlated with internalizing problems.	N/A	EN (B = 9.372, p < .001, SE B = 2.639) and EA (B = 7.025, p < .001, SE B = 2.363) correlated with internalizing problems.
Suicide Ideation / Attempts			
Allen et al. (2013)	The overall EA mediation model on adult suicide potential was significant.	N/A	The overall EA mediation model was significant, F (9,249) = 52.96, p < .001, R^2 = .65. EA was positively associated with suicide risk (β = 1.39, p < .001) and SPI (r = .35, p < .001) and aggression (r = .33, p < .001).
Gibb et al. (2001)	Participants who reported more EA in childhood also endorsed higher average level of suicidal ideation during 2.5y follow-up study.	N/A	EA associated with suicidal ideation [t (293) = 3.71, p < .001, β = .25].
Briere et al. (2016)	Only EA is associated with suicidal ideation.	N/A	In multinomial logistic regression analysis, as compared with non-suicidal participants, EA were associated with recent suicide attempts (x^2 = 15.60, p < .001), whereas recent suicidal ideation without attempts was predicted solely by EA.
Buser & Hackney (2012)	EA was significantly related to frequency of NSSI.	N/A	EA was significant associated with the frequency of NSSI (r = .31, p < .001), while age was

			found in a significant relationship only with EA ($r = -.153$, $p < .01$) and NSSI frequency ($r = -.21$, $p < .001$).
de Mattos Souza et al. (2016)	Suicide risk presented significant association with EA and EN.	Logistic regression present *EA* associated with *suicide risk* in MDD patient (OR = 1.07, 95%CI = 1.03-1.12, p = .003).	*MDD patients* also reported mean scores of higher scores of *EN* (p = .004) and *EA* (p = .001), 2.6 and 2.1 respectively.
Janir et al. (2015)	BD have higher scores on EA than HC and suicide attempts was linked to EA in BD groups.	In the multivariate logistic regression only *EA* significantly predicted *lifetime suicide attempts*. Specifically, the odds (OR = 1.31, 95%CI = 1.10-1.57, p = .0019) of belonging to the group of BD patients who attempted suicide explained 18.5% of the variance (R^2) of the dependent variable.	*BD I* (M = 39.12, SD = 12.12) and *BD II* (M = 40.89, SD = 10.75) have higher *EA scores* than healthy control group (M = 33.09, SD = 7.34) (F = 13.27, df =2, p = .02). *Suicide attempt* was linked to *EA* in both BD I (F = 8.42, df = 1, p = .0053) and BD II (F = 17.13, df = 1, p = .0002).
Falgares et al. (2018)	Psychological abuse related to propensity for suicide.	N/A	Psychological abuse related to propensity for suicide ($r = .54$, $p < .001$)
Harford et al. (2014)	EN was significantly related to SA EN related to SA with IP.	EN was significantly related to SA (OR = 1.72, 95%CI = 1.39-2.12, p < .01), while EN related to SA with IP (OR = 1.38, 95%CI = 1.11-1.72, p < .01). When adjusted for gender, age, race/ethnicity and marital status:	N/A

		For SA only: EA (OR = 1.42, 95%CI = 1.08-1.88), EN (OR = 1.72, 95%CI = 1.39-2.12). For SA with IP: EA (OR = 1.56, 95%CI = 1.14-2.14, $p < .01$), EN (OR = 1.38, 95%CI = 1.11-1.72).	
Lee (2015)	EA had significantly positive correlations with suicidality and depressive symptoms.	N/A	EA had significantly positive correlations with suicidality ($r = .232$, $p < .001$), and depressive symptoms ($r = .236$, $p < .001$).
Thompson et al. (2000)	There were significant differences between suicide attempt group and control group on emotional abuse ($x^2=26.75$, $p<.001$) and emotional neglect ($x^2=30.54$, $p<.001$).	Women with both EM and PTSD predicted SA (OR = 5.67, 95%CI = 2.74-11.74). Women with no PTSD and history of EM predicted SA (OR = 2.22, 95%CI = 1.19-4.11). Women with PTSD and no EM predicted SA (OR = 2.90, 95%CI = 1.24-6.78). Women with EN and PTSD predicted SA (OR = 6.77, 95%CI = 3.12-14.64).	There were significant differences between suicide attempt group and control group on emotional abuse ($x^2 = 26.75$, $p < .001$) and emotional neglect ($x^2 = 30.54$, $p < .001$).
Puzia et al. (2013)	EA was found to be prospectively associated with suicidal ideation.	EA was associated with suicidal ideation (OR = 1.22, 95%CI = 1.11-1.35).	EA was positively associated with perceived burdensomeness, even after accounting for the presence of PA and SA. ($B = .091$, $p < .001$, $R_{effect\ size} = .348$).

Saracli et al. (2016)	Participants who experienced EA or EN are more likely to had suicide ideation or suicide attempts.	Only EA exhibited a significantly high odds ratio for lifetime suicidal ideations (OR = 3.168, 95%CI = 1.73–5.80) and attempts (OR = 3.467, 95% CI = 1.34–8.95). EN showed a high odds ratio only for lifetime suicidal attempts (OR = 3.282, 95% CI = 1.29–8.37).	N/A
Smith et al. (2018)	EA did not associate with acquired capability for suicide.	N/A	EA was significantly associated with thwarted belongingness ($r = .69$, $p < .001$), depressive symptoms ($r = .79$, $p < .001$), perceived burdensomeness ($r = .72$, $p < .001$).
Substance Abuse			
Aas et al. (2014)	Cannabis abuse was significantly associated with childhood emotional abuse in bipolar disorder patient. No statistically significant association between alcohol dependence and childhood abuse.	Frequently of report *rapid cycling* (OR = 1.61, 95%CI = 1.13-2.30) and report of a history of at least one *suicide attempt* (OR = 1.88, 95%CI = 1.34-2.63) in the group of childhood emotional abuse compared with all other groups.	Cannabis abuse and EA ($x^2 = 8.63$, $df = 1$, $p = .003$).
Abajobir et al. (2017)	EA in both male and female were associated with injecting drug use.	EA were significantly associated with *male IDU* ($aOR^a = 2.51$, 95%CI = 1.05-5.98) and *female IDU* ($aOR^a = 3.02$, 95%CI = 1.30-6.97).	EA (male) and IDU ($x^2 = 7.71$, $p < .001$). EA (female) and IDU ($x^2 = 17.59$, $p < .0001$).

Afifi et al. (2012)	EA increased the likelihood of all substance use disorders. EN associated with all substance abuse disorders after adjusting for sociodemographic variables.	Male (emotional abuse vs. non-EA) *Alcohol* (aOR[b] = 2.1, 99%CI = 1.7-2.6) *Cannabis* (aOR[b] = 2.6, 99%CI = 1.7-2.5) *Heroin* (aOR[b] = 4.7, 99%CI = 2.7-12.8) *Nicotine* (aOR[b] = 2.2, 99%CI = 1.8-2.8) Female (emotional abuse vs. non-EA) *Alcohol* (aOR[b] = 2.1, 99%CI = 1.7-2.5) *Cannabis* (aOR[b] = 2.4, 99%CI = 1.8-3.0) *Heroin* (aOR[b] = 3.0, 99%CI = 0.9-9.5) *Nicotine* (aOR[b] = 2.4, 99%CI = 2.0-2.9) Male (emotional neglect vs. non-EN) *Alcohol* (aOR[b] = 1.3, 99%CI = 1.0-1.6) *Cannabis* (aOR[b] = 1.7, 99%CI = 1.7-2.2)	N/A

		Heroin (aOR[b] = 2.9, 99%CI = 1.0-8.3) *Nicotine* (aOR[b] = 1.5, 99%CI = 1.2-1.8) Female (emotional neglect vs. non-EN) *Alcohol* (aOR[b] = 1.5, 99%CI = 1.3-1.8) *Cannabis* (aOR[b] = 2.0, 99%CI = 1.5-2.5) *Heroin* (aOR[b] = 3.3, 99%CI = 1.0-11.0) *Nicotine* (aOR[b] = 1.4, 99%CI = 1.2-1.6)	
Can et al. (2019)	EA scores were higher in alcohol use disorder group, the mediating role of enmeshment, emotional inhibition, dependence, and insufficient self-control schemas in the relationship between EA and AUD was determined. However, EN did not associated with AUD.	The relation between *EA* and *AUD* was statistically significant (OR = 0.186, 95%CI = 0.085-0.267). When added *dependence* into the model, *EA* and *AUD* was still significant (OR = 0.107, 95%CI = 0.016-0.199).	The relationship between EA and AUD (r = .219, p < .01). EA scores in AUD (Partial η^2 = 0.07, p < .001).
Crouch et al. (2018)	Both men and women EA associated with alcohol abuse (heavy drinking and binge drinking), EA increase the	*Binge drinking* associated with *women EA* (aOR[c] =1.42, 95% CI=1.40-1.43) and *men EA* (aOR[c] = 1.03, 95%CI = 1.02-1.04). *Heavy drinking* associated with	N/A

	likelihood of adulthood alcohol abuse.	*women EA* (aOR[c] = 1.83, 95%CI = 1.79-1.87) and m*en EA* (aOR[c] = 0.68, 95%CI = 0.67-0.69).	
Elliott et al. (2014)	Controlling for demographics the association between EA and EN and persistence of alcohol dependence and nicotine dependence was significant. With other childhood adversities controlled, the association between EA and EN and persistence of alcohol dependence was also significant.	Controlling for demographic: *Persistence of alcohol dependence* associated with *EA* (aOR = 1.90, 95%CI = 1.30-2.79) and *EN* (aOR = 1.30, 95%CI = 0.80-2.10). *Persistence of nicotine dependence* associated with *EA* (aOR = 1.74, 95%CI = 1.44-2.11) and *EN* (aOR = 1.00, 95%CI = 0.79-1.27). Controlling for demographic and other childhood adversities: *Persistence of alcohol dependence* associated with *EA* (aOR = 1.97, 95%CI = 1.33-2.90) and *EN* (aOR = 1.31, 95%CI = 0.81-2.12). *Persistence of nicotine dependence* associated with *EA* (aOR = 1.72, 95%CI = 1.42-2.09) and *EN* (aOR = 0.99, 95%CI = 0.78-1.25).	N/A

Florez et al. (2020)	EA did not have a total or a direct effect on alcohol misuse; however, childhood emotional abuse was a significant predictor of PTSS in several model.	N/A	*EA* was a significant predictor of this *PTSS* indicator in the model in which *PTSS* severity served as mediator (*B* = 3.59, SE = 1.04, 95%CI = 1.53-5.66); *avoidance* as mediator (*B* = 1.26, SE = 0.47, 95%CI = 0.33-2.19); *hyperarousal* as mediator (*B* = 1.02, SE = 0.36, 95%CI = 0.30-1.74); and *re-experiencing/intrusion* as mediator (*B* = 1.27, SE = 0.34, 95%CI = 0.60-1.94).
Junglen et al. (2019)	EA was associated substance use problems and PTSD symptom severity.	N/A	*EA* associated with *substance use problem* (b = 2.09, CI [0.21, 4.10]) and *PTSD symptoms severity* (b = 10.61, CI [7.03, 14.54]). On the relationship between *EA* and *substance use*, negative urgency (b = 0.81, CI [0.34, 1.56]) and *PTSD symptoms severity* (b = 1.57, CI [0.89, 2.40]) was found to be a significant indirect effect.
Mandavia et al. (2016)	Lifetime alcohol use and lifetime drug use were correlated with emotional abuse severity. EA	N/A	*Lifetime alcohol use* and *lifetime drug use* were correlated with *EA severity. EA* predicted *higher alcohol* use scores in linear

	predicted higher alcohol use scores in linear regression model.		regression model (β = .20, t = 6.48, p < .001).
Potthast et al. (2014)	EM contributed significantly to the severity of alcohol dependence.	N/A	Relationships between *EM* and *age at onset of alcohol dependence* (r = .51, p < .001, B = -.46, SE B = .15, β = -.35, p < .01), *lifetime maximal amount of alcohol intake* (r = .37, p < .01, B = 9.74, SE B = -173.95, β = .36, p < .01), *alcohol treatment lifetime* (r = .36, p < .001, B =.28, SE B=.08, β = .49, p < .001) were significant.
Yuan et al. (2014)	EA was significantly associated with increased risks of past-year drinking binger or spree for women.	*EA* associated with *drinking binge/spree* in women (OR^d = 3.92, 95% CI = 1.22-12.62).	N/A
Depression & Anxiety			
Arnow et al. (2011)	EA associated with depression severity.	N/A	The effect size for the association between EA and depression was 1.84; thus, for every increase in EA severity, there was a corresponding 84% increase in the odds of depression.
Balsam et al. (2010)	EA and EN correlated with depression and anxiety among ethnically diverse lesbian, gay, and bisexual adults.	N/A	EA correlated with PTSD (rs = .45), anxiety (rs = .33), depression (rs = .33) and perceived stress (rs = .22).

			EA was the only predictor for perceived stress (Beta = .12, 95%CI = .05-.20) and depression (Beta = .40, 95%CI = .23-.57). EA was stronger predictor for anxiety (Beta = .45, 95%CI= .06- .84) and PTSD (Beta = 1.5, 95%CI = .32-2.68) for African American. EA was more strongly related to PTSD symptoms for African American (Beta = .73) than for Whites (Beta = .30).
Brown et al. (2016)	EA and EN associated with depression and anxiety.	N/A	EA was the only form of maltreatment directly uniquely associated with symptoms of depression (path estimate = .18, $p < .05$) and anxiety (path estimate = .22, $p < .05$) when controlling for the variance associated with the other forms of abuse and alexithymia. EN was the only form of maltreatment uniquely associated with alexithymia (path estimate = .15, $p < .05$). The bias corrected bootstrap test of the indirect effects revealed that alexithymia partially accounted

			for the association between EN and depressive symptoms (B = .04, 95% CI = .003-.07), anxiety symptoms (B = .07, 95% CI = .01-.13).
Christ et al. (2019)	EA was significantly associated with depressive symptoms, emotion regulation and interpersonal problems.	N/A	EA was significantly associated with depressive symptoms (b = 0.38, t = 5.72, p < .001, R^2 = .11), emotion dysregulation (b = 1.14, t = 3.33, p = .001, R^2 = .04), and interpersonal problems (b = 1.13, t = 4.81, p < .001, R^2 = .08).
Crow et al. (2014)	EA and EN strongly related to adulthood depression.	N/A	EA was moderately correlated with both current emotion dysregulation (r = .39, p < .001) and current depression symptoms (r = .45, p < .001). EN was moderately correlated with both current emotion dysregulation (r = .30, p < .001) and current depression symptoms (r = .37, p < .001).
Ferguson & Dacey (1997)	Abused women reported higher level of depression and anxiety than non-abused women.	N/A	Abused women reported higher levels of anxiety (d = 1.581) and depression (d = 1.55) and greater frequency of dissociative experiences (d = .771) than non-abused women.

Gong & Chan (2018)	EA and EN had significant overall effect on depression and anxiety.	N/A	In the model with estimated standardized regression coefficient for the paths between childhood maltreatment and psychological distress, EA (0.322) had the strongest overall effect on depression and anxiety of the five types of child maltreatment. It was followed in descending magnitude by EN (0.312), physical neglect (0.282), PA (0.122) and SA (0.114).
Huh et al. (2017)	EA and EN associated with depression.	N/A	Multiple mediation analysis of maladaptive and adaptive cognitive emotion regulation in relationship between EA→ maladaptive → anxiety severity (estimate = .120, $p < .01$, 95%CI = .037-.230), EN → maladaptive → anxiety severity (estimate = .091, $p < .01$, 95%CI = .027-.166); EN → adaptive → anxiety severity (estimate = .037, $p < .01$, 95%CI = .016-.070), and EN → adaptive → depression (estimate = .04, $p < .01$, 95%CI = .02-.081) was significant.

Massing-Schaffer et al. (2015)	EA was correlated with clinical depression among undergraduates.	N/A	EA was correlated with Time 1 history of clinical depression (r = .269, p < .001), Time 1 BDI-II (r = .302, p < .001), and Time 2 BDI-II (r = .444, p < .001).)
McCabe et al. (2018)	EA related to adulthood depression.	EA was significantly related to adulthood depression (OR = 2.19, 95%CI = .77-4.12, p = .015, Beta = .15, b = .79, SE = .32).	N/A
Novelo et al. (2018)	EA and EN were associated with depression.	EA was significant associated with depression: cases (aOR[1] = 2.25, 95%CI = 1.35-3.75), mild to severe (aOR[1] = 1.74, 95%CI = 1.02-3.00), severe (aOR[1] = 4.35, 95%CI = 1.99-9.52). EN was significant associated with depression: cases (aOR[1] = 2.82, 95%CI = 1.70-4.69), mild to severity (aOR[1] = 2.82, 95%CI = 1.64-4.85), severe (aOR[1] = 3.06, 95%CI = 1.40-6.66).	N/A
O'Mahen et al. (2015)	A path from EA to depressive symptoms that was mediated by brooding.	Behavioural activation completely mediated the relationship between EN and	The overall model was significant, F (5, 126) = 4.37, p <.001. Of the five maltreatment

		depression status (OR = 1.03, 95%CI = .91-1.16) and partially mediated the relationship between EA and depression status (OR = .86, 95%CI = .75-.98).	factors considered in the model, emotional abuse was the only variable that predicted unique variance in brooding, β (1) = .404, p = .005. Greater childhood emotional abuse was related to greater brooding.
Ross, Kaminski, & Herrington (2019)	EA was significantly correlated with depression among adults.	N/A	EA positively predicted symptoms of depression (β = .680, p < .001, 95%CI = 0.54-0.73). A significant indirect path beginning with EA passing through self-compassion and shame and ending in adult symptoms of depression (β = .084, p = .008, 95%CI = 0.03-0.13). An indirect path from emotional abuse to depression through shame (β = .089, p = .008, 95%CI = 0.01-0.15).
Sunley et al. (2020)	Psychological abuse and EN were found to be significant predictors for depressed mood.	EN (OR = 2.25, 95%CI = 2.01-2.52) and psychological abuse (OR = 1.72, 95%CI = 1.50-1.98) were found to be significant predictors of depressed mood in the main model. EN (OR = 2.41, 95%CI = 1.78-3.25) and psychological abuse (OR = 2.13,	N/A

		95%CI = 1.52-2.98) were found to be significant predictors of depressed mood in the main and interaction model.	
Wright, Crawford, & Del Castillo (2009)	EA and EN correlated with depression/anxiety and dissociation.	N/A	EA correlated with anxiety/depression (r = .37, p < .01), and dissociation (r = .29, p < .01). EN correlated with anxiety/depression (r = .33, p < .01) and dissociation (r = .26, p < .01).
Wu et al. (2018)	EA was associated with depressive symptoms in both direct and indirect pathway.	N/A	EN was associated with adult depressive symptoms indirectly through self-compassion (*β* =.088, p = .029, 95%CI = .02-.173) and 20 (*β* = .133, p < .001, 95%CI = .07-.21).
Psychological Maltreatment in Clinical Population			
Bruni et al. (2018)	Psychological abuse showed more frequently in SSD patient.	N/A	*Psychological abuse* was more frequent in *SSD* patient (x^2 = 29.986, p < .001).
Etain et al. (2010)	Frequency distributions between BD and controls were significantly different only for EA & EN	*EA* was associated with bipolar status when considering the most parsimonious model (OR = 2.14, 95%CI = 1.51–3.02, p < .001).	N/A
Evren et al. (2010)	Among childhood trauma types, EN and EA scores were higher in the current PTSD group.	N/A	There were significant differences between *PTSD* group and other patients' group in both

			EA (15.65 ± 4.50 vs. 12.17 ± 4.56) and *EN* (10.48 ± 5.00 vs. 7.71 ± 3.54), t = − 2.97, p = 0.003 and t = − 2.21, p = 0.041 respectively.
Evren et al. (2016)	EN was not correlated with PTSD and ADHD symptoms while EA was correlated with PTSD and ADHD symptoms.	N/A	*EA* was correlated with *PTSD* (r = .387, p < .001) and *ADHD* symptoms (r = .339, p < .001).
Fowke, Ross, & Ashcroft (2012)	BD group have higher scores on EA and EN.	N/A	More *EA* (U-test = 254.4, p < .001) and *EN* (U-test = 338.5, p = .001) in *BD* group.
Hariri et al. (2015)	All BD subjects, EN was the highest scores among other CTQ items.	N/A	Comparison of the *EA* (F = 4.081, p = .018) and *EN* (F = 3.997, p = .020) scores between *BD* and *HC*.
Jaworska-Andryszewska et al. (2018)	The connection between EN and suicidal attempts in female was significant.	*EA* correlated with *psychotic symptoms* (OR = 1.22, 95%CI = 1.04-1.43, p = .047), *suicidal attempts* (OR = 1.14, 95%CI = 1.0-1.29, p = .047), *rapid cycling* (OR = 1.24, 95%CI = 1.07-1.43, p = .004), *anxiety symptoms* (OR = 1.16, 95%CI = 1.07-1.43), *hypertension* (OR = 0.78, 95%CI = 0.63-0.93, p = .007). *EN* correlated with *psychotic symptoms* (OR = 1.16, 95%CI =	N/A

		1.02-1.32, p=.026), *suicidal attempts* (OR = 1.21, 95%CI = 1.06-1.38, p = .005), *rapid cycling* (OR = 1.24, 95%CI = 1.03-1.35, p = .017).	
Kefeli et al. (2018)	Emotional trauma significantly related to BD-I.	*Emotional trauma* (OR = 1.03, 95%CI = 0.78-1.36, p = .05) were significant predictors of having *BD-I.*	N/A
Khosravani, et al. (2019)	EA and EN significantly related to depression and emotional dysregulation.	N/A	Direct effects of *EA* severity (*β* = .19, p < .01) and *EN* severity (*β* = .15, p < .01) on *depressive symptoms* as measured by the BDI-II. EA (*β* = .27, p < .001) and *EN* (*β* = .24, p < .001) were significantly related to *emotional dysregulation*. EA and EN severity and emotion dysregulation together explained 48% of the total variance in depressive symptoms. Tests of mediation showed that *EA* severity (*β* = .22, SE boot = .06, 95%CI = .12-.36, p < .001) and *EN* severity (*β* = .19, SE boot = .06, 95%CI = .08-.31), p < .01) had significant indirect effects on

			depressive symptoms through emotion dysregulation.
Kounou et al. (2013)	EA related to an increased risk of current MDD.	*EA* (OR = 3.7, 95%CI = 1.45-9.40) was significantly and independently associated with an *increased risk of current MDD*.	A significant association between severe *EA* and probable *PD* presence ($x^2 = 13.62$, df = 1, $p < .001$).
Kruger et al. (2017)	All patient with dissociative disorder reported higher EN most frequently perpetrated by biological parents.	N/A	*EN* and *EA* were the most reported form of abuse by *dissociative disorder patient*, thus possibly exaggerating the strength of their predictive role. *EN* was strongly associated with a *DD* diagnosis ($p = 0.003$), patients had higher frequencies ($p < 0.001$) of "EN (e.g., being left alone, insufficient affection) by your [biological] parents, brothers or sisters" than non-DD patients.
Kulacaoglu et al. (2017)	EA and EN scores were higher in BPD patient group.	N/A	*EA* ($U = 5440.500$, $z = -9.851$, $p = .000$), and *EN* ($U = 5008.500$, $z = -10.078$, $p = .000$) subscale scores were significantly higher in the *BPD patient group*.
Mirhashem et al. (2017)	EA and negative urgency were related to the PCL-5.	N/A	*EA* ($\beta = 0.37$, $p < 0.001$) and *negative urgency* ($\beta = -0.41$, $p < 0.001$) were related to the *PCL-5*.

Neumann (2017)	EA scores higher in the depressed group only and both EA and EN related in both depressed and control group.	N/A	Mean difference between *control* and *depressed* group: *EA* (U = 1474.50, Z = -7.87, p < .001), *EN* (U = 1500.50, Z = -7.83, p < .001). Correlations: Control group: *EA* and *depression* (r = .29, p < .001), *EA* and *anxiety* (r = .38, p < .001). Depressed group: *EA* and *depression* (r = .25, p < .001), *EA* and *anxiety* (r = .26, p < .001), *EN* and *anxiety* (r = .23, p < .001), and *EN* and *depression* (r = .26, p < .001).
Ostefjells et al. (2017)	Early EA is relevant to depression/anxiety and positive symptoms in bipolar and psychotic disorder and suggest that metacognitive beliefs could play a role in an affective pathway to psychosis.	N/A	Weak but significant positive relationships between levels of *EA* and *metacognitive beliefs* (r s = 0.37), symptoms of *depression/anxiety* (r s = 0.27) and *positive symptoms* (r s = 0.23). All subtypes of trauma correlated significantly with metacognitive beliefs, but only emotional abuse and neglect showed additional relationships with both depression/anxiety and positive symptoms.

Pavlova et al. (2015)	EA was significantly associated with lifetime anxiety.	EA correlated with *anxiety disorder* (OR = 1.58, 95%CI = 1.12-2.21, p = .008), *panic disorder* (OR = 1.99, 95%CI = 1.21-3.27, p = .007), and *agoraphobia* (OR = 1.64, 95%CI = 1.02-2.64, p = .04). EN correlated with *panic disorder* (OR = 1.88, 95%CI = 1.13-3.12, p = .015).	N/A
Price & Connor, & Allen (2017)	EA significantly related with PTSD.	N/A	PTSD and EA were significantly correlated (B = 1.44, p < .01, SE = .36, 95%CI = .73-2.14), as well as the interaction (B = .31, p < .05, SE = .13, 95%CI = .04-.57).
Russo et al. (2013)	EA showed the highest mean scores in both male and female BDP patient.	N/A	When grouped by presence vs. absence of significant trauma, Chi^2 analyses revealed significant differences by *sex* for *EA* (x^2 = 4.492, p = 0.049) and *EN* (x^2 = 6.612, p = 0.017).
Sar & Islam, & Ozturk (2009)	EA and EN correlated with dissociative symptoms in patient with conversion symptoms.	N/A	EA predicted *DES* (β = .54, t = 3.48, p = .002) and *SDQ* scores (β = .44, t = 2.65, p = .013). *CADSS* scores were predicted both by EA (β = .86, t = 4.78, p = .001) and EN (β = -.47, t = 2.63, p = .014).

Schulz et al. (2017)	EA related to adult major depressive disorder	N/A	EA was found to be significantly and positively associated with self-rated baseline *depression* severity ($r = .28$, $p < .001$) and negatively associated with *symptom improvement* ($r = -.19$, $p < .05$).
Ventimiglia et al. (2020)	EA scores showed the most persistent association with depression scores over time.	N/A	There was a greater reduction over time in *depression* scores for the high EN exposure group (differences = 3.29), compared to the low EN exposure group (differences = 1.63).
Watson et al. (2014)	EA and EN were significantly greater in BD group.	N/A	*BD*'s EA ($U = 780$, $p < .001$) and *EN* ($U = 767$, $p < .001$) scores were significantly greater than control; *BD* patient's CTQ scores did not differ between those with and without suicidal ideation, although scores for *EN* subscale showed a tread towards significance ($p > .05$).
Xie et al. (2018)	The correlations between EA and suicide scores were significant in all the patient groups.	N/A	Correlations between the *SIOSS* scores and results from the scales: *Depression* group: EA ($r = .204$, $p < .01$), EN ($r = .168$, $p < .05$).

			Bipolar group: EA (r = .536, p < .01), EN (r = .345, p < .01). *Schizophrenia*: EA (r = .493, p < .01), EN (r = .234, p < .01).
Zhang et al. (2013)	There was a high prevalence of emotional maltreatment in PD patient.	The frequency of EA: *Any PD*: OR = 2.12, 95%CI = 1.72-2.61, *Cluster A*: OR = 2.90, 95%CI = 2.20-3.81, *Cluster B*: OR = 2.90, 95%CI = 2.20-3.82, *Cluster C*: OR = 1.98, 95%CI = 1.54-2.54, The frequency of EN: *Any PD:* OR = 1.79, 95%CI = 1.49-2.15, *Cluster A*: OR = 2.03, 95%CI = 1.57-2.62, *Cluster B*: OR = 1.99, 95%CI = 1.54-2.59, *Cluster C*: OR = 1.54, 95%CI = 1.23-1.92.	N/A

Note. EA = Emotional Abuse, OR = Odd Ratio, CI = Confidence Interval, PD = Personality Disorder, Cluster A = Paranoid & Schizotypal, Cluster B1 = Sadistic & Anti-social, Cluster B2 = Borderline, Histrionic, & Narcissistic, Cluster C = Obsessive-Compulsive, Passive-aggressive, & Self-Defeating, aOR = Adjusted Odd Ratio, ENA = Emotional Abuse and Neglect, BPD = Borderline Personality Disorder, RR = Risk Ratio, RS = Rejection Sensitivity, EN = Emotional Neglect, OR^1 = Adjusted for demographics (age, gender, race-ethnicity and education), other maltreatment types, parental psychopathology and co-occurring personality disorders, SCL-90 = The Symptoms Checklist-

90, EA = Emotional Abuse, EN = Emotional Neglect, aOR[1] = Adjusted for youth gender, attention deficit hyperactivity disorder at 5y, alcohol use at 14y, smoking at 14y, aggressive behavior at 14y, receiving benefits, educational levels, marital status, residential problem area at 21y, familial income over the first 5y, chronic stress over first 6-month, and maternal reports of violence in homes at 14y, CM = Child Maltreatment, PA = Physical Abuse, PN = Physical Neglect, SA = Sexual Abuse, PHQ-9 = Patient Health Questionnaire, GAD-7 = Generalized Anxiety Disorder 7-items, PCL = Post Traumatic Stress Disorder Checklist, DDIS-BPD = Borderline Personality Disorder Section of the Dissociative Disorders Interview Schedule, SDQ-5 = Somatoform Dissociation Questionnaire, EM = Emotional Maltreatment, DP = Depersonalization, aOR[1] = Odds ratios adjusted for sex, age, race, marital status, education, and income as well as childhood physical neglect, harsh physical punishment, physical abuse, sexual abuse, exposure to intimate partner violence, and family history of dysfunction, OCD = Obsessive-Compulsive Personality disorder, MDD = Major Depressive Symptoms, BD = Bipolar Disorder, HC = Healthy Control, SA = Suicidal Attempt, IP = Interpersonal Aggression, PTSD = Post-Traumatic Stress Disorder, PA = Physical Abuse, aOR[a] = adjusted for receiving social security benefits, educational level, marital status at 21 years and paternal or maternal racial origin at pregnancy, maternal alcohol use at 3–6 months and chronic depressive symptoms from pregnancy to 3–6 months postpartum, EN = Emotional Neglect, aOR[c] = adjusted for age group, race/ethnicity, educational attainment, income, and rurality, AUD = Alcohol Use Disorder, aOR[b] = adjusted for age, ethnicity, marital status, income, education, aOR = Adjusted Odd Ratio, PTSD = Post-Traumatic Stress Disorder, PTSS = post-traumatic stress symptoms severity, OR[d]= adjusted for education level and household income, aOR[1] = Adjusted for sex, age, skin color/ethnicity, education, income and marital status, SSD = Schizophrenic Spectrum Disorder, OR = Odd Ratio, CI = Confidence Interval, BD = Bipolar Disorder, ADHD = Attention Deficit Hyperactivity Disorder, MDD = Major Depressive Symptoms, PD = Personality Disorder, BPD = Borderline Personality Disorder, PCL-5 = PTSD Checklist for DSM-5, PTSD = Post Traumatic Stress Disorder, DD = Dissociative Disorder, DES = Dissociative Experiences Scale, SDQ = Somatoform Dissociation Questionnaire, CADSS = Clinical Administered Dissociative State Scale, aOR = Adjusted for demographic characteristic (age, years of education, marital status, and family history), SIOSS = Self-rating Idea of Suicide Scale, Cluster B = Histrionic, Narcissistic, Borderline and Anti-social.

Table S2.7. Population Data on Childhood Psychological Maltreatment and Adult Mental Health in Chinese Studies

Authors (Year)	Location	Setting	Sample Population	Sample Size	Sample Population Demographic
Chang & Wang (2008)	Zhengjiang	Community	General Population	230	135 males, 95 females; M = 32.3, range = 18 - 44
Dai et al. (2016)	Liaoning	Community	College student	730	190 males, 540 females; M = 19.8
Deng et al. (2018)	Beijing	Community	College student	407	129 males, 278 females
Guo (2018)	Shandong	Community	College student	262	92 males, 170 females; M = 20.62
Han et al. (2018)	Yantai	Community	College student	395	151 males, 244 females
Wang & Lui (2017)	Haerbin	Community	College student	427	M = 20.99
Xie et al. (2008)	Changsha	Community	College student	457	238 males, 291 females; M = 20.2
Yang et al. (2019)	Jiangxi	Community	College student	941	455 males, 86 females; M = 20.32
Zeng et al. (2016)	Haerbin	Community	College student	603	92 males, 511 females
Zhang et al. (2017)	Liaoning	Community	College students	1502	612 males, 890 females; M = 18.43
Zhang et al. (2018)	Jiang Su	Clinical vs. Community	OCD vs. HC	110	60 OCD (26 males, 34 females; M = 31.2, range = 26 - 54); 50 HC (23 males, 27 females; M = 32.57, range = 21 - 49)

Note. M = Age Mean, Range = Age Range, OCD = Obsessive Compulsive Disorder, HC = Healthy Controls.

Table S2.8. Study Data on Childhood Psychological Maltreatment and Adult Mental Health in Chinese Studies

Authors (Year)	Methodology	Types of Abuse	Measurement of Emotional Abuse/Neglect	Measurement of Various Mental Health Outcomes	Perpetrator of the Maltreatment	Age at Exposure to Maltreatment
Chang & Wang (2008)	Questionnaire	EA, EN	CPANS	SCL-90	Parents / Caregivers	Before 18y
Dai et al. (2016)	Questionnaire	EM	CPANS	Adolescent Self-injury Scale	Parents / Caregivers	Before 18y
Deng et al. (2018)	Questionnaire	EM	Childhood Emotional Abuse Questionnaire	CD-RISE, SDS	Parents / Caregivers	N/A
Guo (2018)	Questionnaire	EM	CTSPC	SCL-90	Parents / Caregivers	Before 18y
Han et al. (2018)	Questionnaire	EA, EN	CPANS	BPAQ, RSE	Parents / Caregivers	Before 18y
Wang & Lui (2017)	Questionnaire	EM	Childhood Emotional Abuse Scale	CFI, CES-D	Parents / Caregivers	N/A
Xie et al. (2008)	Questionnaire	EA, EN	CPANS	SCL-90	Parents / Caregivers	Before 18y
Yang et al. (2019)	Questionnaire	EA, EN	CPANS	RRS, PANSI Being Bullied Questionnaire	Parents / Caregivers	N/A
Zeng et al. (2016)	Questionnaire	EM	Childhood Emotional Abuse Scale	STDEP, RRS	Parents / Caregivers	N/A
Zhang et al. (2017)	Questionnaire	EM	CPANS	Adolescent Self-injury Scale, Social Support Scale	Parents / Caregivers	Before 18y

Zhang et al. (2018)	Questionnaire	EM	CPMS	IUS-12, YBOCS	Parents / Caregivers	N/A

Note. EA = Emotional Abuse, EN = Emotional Neglect, CAPNS = Child Psychological Abuse and Neglect Scale, SCL-90 = Symptoms Checklist 90, EM = Emotional Maltreatment, Childhood Emotional Abuse Questionnaire = included three questions: 1) during childhood, your parents called you 'stupid', 'ugly', 2) your parents humiliated you in public during your childhood, 3) your parents told you wished you are not there during childhood, CD-RISE = Connor-Davidson Resilience Scale, SDS = Self-Rating Depression Scale, CTSPC = Parent-Child Conflict Tactics Scales, BPAQ = Buss-Perry Aggression Questionnaire, RSE = Rosenberg Self Esteem Scale, CFI = Cognitive Flexibility Inventory, CES-D = Center for Epidemiologic Studies Depression Scale, Childhood Emotional Abuse Scale = developed by Pan et al., (2010), RRS = Rumination Response Scale, PANSI = Positive and Negative Suicide Ideation, Being Bullied Questionnaire = developed by Lui et al., (2006), STDEP = State-Trait Depression Scale, CPMS = Child Psychological Maltreatment Scale, IUS-12 = Intolerance of uncertain Scale – 12, YBOCS = Yale-Brown Obsessive-Compulsive Scale.

Table S2.9. Study Findings and Statistical Information Childhood Psychological Maltreatment and Adult Mental Health in Chinese Studies

Author (Year)	Findings	Odd Ration / Adjusted odd ratio / Risk Ratio	Other Statistical Information
Chang & Wang (2008)	Comparing to the control group, the group who have been psychologically abused and neglected in their childhood has got higher scores in each factor of the SCL-90.	N/A	The correlations suggested that EN correlated with depression (r = .39) and anxiety (r = .36), EA correlated with depression (r = .31) and anxiety (r = .26) as well.
Dai et al. (2016)	EM & EN related to self-injury.	N/A	The correlations showed that self-injury correlated with EA (r = .24) and EN (r = .17).
Deng et al. (2018)	EM related to depression.	N/A	EM related to depression (r=.19, p<.01). The mediation effect: - resilience played a mediating role between college students' childhood EA experience and depression (β = .632, t = 3.111, p < .01). - EA related with depression (β = .894, t = 3.895, p < .01).
Guo (2018)	Parental EM related to mental health problems such as depression and anxiety.	N/A	Maternal EM related to higher scores on mental health problems (r = .32, p < .01). maternal EM related to depression (r = .20, p < .05) and anxiety (r = .33, p < .01). Paternal EM related to depression (r = .20, p < .05) and anxiety (r = .33, p < .01).

Han et al. (2018)	EM related to aggression and self-esteem.	N/A	EM related to aggression ($r = .58$, $p < .01$) and self-esteem ($r = -.254$, $p < .01$).
Wang & Lui (2017)	EM related to depression.	N/A	EM related to depression ($r = .455$, $p < .01$). Cognitive flexibility played an important role on mediating the relations between EA and adult depression ($\beta = .357$, $p < .001$).
Xie et al. (2008)	EM & EN related to higher risk on mental health.	N/A	Male higher than female in EM occurrence rate: Scold: $t = 4.222$, $p = .000$, Threaten: $t = 4.306$, $p = .000$. EN occurrence rate: male higher than female; $t = 2.884$, $p = .004$.
Yang et al. (2019)	EA and EN related to suicide ideation.	N/A	EA & EN positively related with suicide ideation ($r = .50$, $p < .01$). Rumination as a mediator between EA & EN and suicide ideation ($\beta = .65$, $t = 14.67$, $p < .001$). EA & EN positively predict suicide ideation ($\beta = .73$, $t = 17.79$, $p < .001$).
Zeng et al. (2016)	EM related to depression.	N/A	EM related to depression ($r = .44$, $p < .01$).
Zhang et al. (2017)	EA & EN related to self-injury.	N/A	Self-injury related to EA ($r = .21$) and EN ($r = .29$).

Zhang et al. (2018)	OCD patients have experienced more psychological abuse in childhood.	N/A	The mean differences between control and OCD groups were significant: Threaten: t = 3.51, p = .001, Neglect: t = 4.98, p = .000, Humiliate: t = 3.14, p = .002.

Note. SCL-90 = Symptoms Checklist 90, EN = Emotional Neglect, EA = Emotional Abuse, EM = Emotional Maltreatment, OCD = Obsessive Compulsive Disorder.

Table S2.10. Summary of Quality Assessment (Newcastle-Ottawa Scale): Case-Control Studies (English Studies)

Study (Year)	Selection				Comparability		Exposure			Total No. of Stars
	Case Definition Adequate	Case Representativeness	Selection of Controls	Definition of Controls	Gender	Age	Ascertainment of Exposure	Same Method	Non-response Rate	
Aas et al. (2014)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Allen et al. (2013)	b	b	a*	a*	Y*	N	d	a*	a*	5
Amianto et al. (2018)	b	a*	a*	a*	N	N	d	a*	a*	5
Balsam et al. (2010)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Bernstein et al. (1998)	a*	a*	b	a*	N	N	d	a*	a*	5
Gibb et al. (2001)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Briere et al. (2016)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Brown et al. (2016)	b	a*	a*	a*	N	N	d	a*	a*	5
Bruni et al. (2018)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Buser & Hackney (2012)	b	a*	a*	a*	N	Y*	d	a*	a*	6
Can et al. (2019)	a*	b	a*	b	Y*	N	d	a*	a*	5

Christ et al. (2019)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Cohen et al. (2013)	a*	a*	b	b	Y*	N	d	a*	a*	5
Cohen et al. (2014)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Crouch et al. (2018)	a*	a*	a*	a*	Y*	N	d	a*	a*	7
Crow et al. (2014)	b	a*	a*	a*	N	N	d	a*	a*	5
de Mattos Souza et al. (2016)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Janiri et al. (2015)	a*	a*	a*	a*	Y*	N	d	a*	a*	7
Dias et al. (2015)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Etain et al. (2010)	a*	a*	a*	a*	N	N	d	a*	a*	6
Evren et al. (2010)	a*	a*	b	a*	N	N	d	a*	a*	5
Evren et al. (2016)	a*	a*	b	a*	N	N	d	a*	a*	5
Falgares et al. (2018)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Ferguson & Dacey (1997)	b	b	a*	a*	Y*	N	d	a*	a*	5

Florez et al. (2020)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Fowke, Ross, & Ashcroft (2012)	a*	a*	a*	a*	N	N	d	a*	a*	6
Fung, Chung, & Ross (2020)	a*	a*	a*	a*	Y*	Y*	d	a*	a*	8
Gong & Chan (2018)	a*	a*	a*	a*	Y*	Y*	d	a*	a*	8
Goodman et al. (2014)	b	a*	a*	a*	N	N	d	a*	a*	5
Haferkamp et al. (2015)	a*	a*	b	b	Y*	Y*	d	a*	a*	5
Hariri et al. (2015)	a*	a*	a*	a*	Y*	N	c	a*	a*	7
Huh et al. (2017)	a*	a*	b	b	N	N	d	a*	a*	4
Jaworska-Andryszewska et al. (2018)	b	a*	b	b	Y*	Y*	d	a*	a*	5
Junglen et al. (2019)	b	a*	b	a*	Y*	Y*	d	a*	a*	6
Kefeli et al. (2018)	a*	a*	a*	a*	N	N	d	a*	a*	6
Kent et al. (1997)	b	b	a*	a*	Y*	Y*	d	a*	a*	6

Khosravani et al. (2019)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Kounou et al. (2013)	a*	a*	a*	a*	Y*	N	d	a*	a*	7
Kruger et al. (2017)	a*	a*	b	b	N	N	d	a*	a*	4
Kulacaoglu et al. (2017)	a*	a*	a*	a*	Y*	Y*	d	a*	a*	8
Lee (2015)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Mandavia et al. (2016)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
Thompson et al. (2000)	a*	a*	b	b	N	N	d	a*	a*	4
McCabe et al. (2018)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Mirhashem et al. (2017)	a*	a*	b	a*	N	N	d	a*	a*	5
Neumann et al. (2017)	a*	a*	a*	a*	Y*	N	d	a*	a*	7
Novelo et al. (2018)	b	a*	a*	a*	Y*	Y*	d	a*	a*	7
O Laoide et al. (2018)	b	a*	a*	a*	Y*	N	d	a*	a*	6
O'Mahen et al. (2015)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Ostefjells et al. (2017)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Pavlova et al.	a*	a*	b	b	N	N	d	a*	a*	4

(2015)										
Potthast et al. (2014)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Price, Connor, & Allen, (2017)	a*	a*	b	a*	Y*	Y*	d	a*	a*	7
Ross, Kaminski, & Herrington (2019)	b	a*	a*	a*	N	N	d	a*	a*	5
Russo et al. (2013)	a*	a*	b	b	Y*	Y*	d	a*	a*	6
Sar, Islam, & Ozturk (2009)	b	a*	b	a*	Y*	Y*	d	a*	a*	6
Saracli et al. (2016)	b	a*	a*	a*	N	N	d	a*	a*	5
Smith et al. (2018)	b	a*	a*	a*	N	N	d	a*	a*	5
van Duin et al. (2019)	b	a*	a*	a*	N	Y*	d	a*	a*	6
Watson et al. (2014)	a*	a*	b	b	N	N	d	a*	a*	4
Wright, Crawford, & Del Castillo (2009)	b	a*	a*	a*	Y*	N	d	a*	a*	6
Wu et al.	b	a*	a*	a*	N	N	d	a*	a*	5

(2018)										
Xie et al. (2018)	a*	a*	a*	a*	Y*	Y*	d	a*	a*	8
Yuan et al. (2014)	a*	a*	a*	a*	Y*	N	d	a*	a*	7
Zhang et al. (2013)	a*	a*	b	b	Y*	Y*	d	a*	a*	6

Note.

Selection:

1) Is the case definition adequate: a) yes, with independent validation* b) yes, e.g., record, linkage or based on self-report c) no description.
2) Representativeness of the cases: a) consecutive or obviously representative series of cases* b) potential for selection biases or not state
3) Selection of Controls: a) community controls* b) hospital controls c) no description
4) Definition of Controls: a) no history of disease (endpoint)* b) no description

Comparability:

1) Study controls for Gender
2) Study controls for Age

Exposure:

1) Ascertainment of exposure: a) secure record (e.g., surgical records)* b) structured interview based where blind to case/control status* c) interview not blinded to case-control status c) written self-report or medical record only d) no description
2) Same method of ascertainment for cases and controls: a) yes* b) no
3) Non-response rate: a) same rate for both groups* b) non respondents described c) rate different and no designation

Table S2.11. Summary of Quality Assessment (Newcastle-Ottawa Scale): Cohort Studies (English Studies)

Study (Year)	Selection				Comparability		Outcomes			Total No. of Stars
	Exposed Cohort Representativeness	Non-exposed Cohort Selection	Exposure Ascertainment	Outcome not present at start	Gender	Age	Assessment	Follow-up Length	Follow Up Adequacy	
Abajobir et al. (2017)	a*	a*	c	a*	Y*	N	c	a*	c (51.9)	5
Abajobir et al. (2017)	b*	a*	c	a*	Y*	Y*	c	a*	d	6
Afifi et al. (2012)	a*	a*	b*	a*	Y*	N	c	a*	b* (86.7%)	7
Arnow et al. (2011)	c	a*	a*	a*	Y*	N	a*	a*	b* (97.7%)	7
Elliott et al. (2014)	c	a*	b*	a*	Y*	Y*	c	a*	b* (70.2%)	7
Harford et al. (2014)	b*	a*	b*	a*	Y*	Y*	c	a*	b* (86.7%)	8
Massing-Schaffer et al. (2015)	c	a*	b*	a*	N	N	c	a*	a*	5
Puzia et al. (2013)	c	a*	c	a*	N	N	c	a*	a*	4
Schulz et al. (2017)	c	a*	b*	a*	Y*	N	c	a*	a*	6
Sheikh, Abelsen, & Olsen	a*	a*	c	a*	Y*	Y*	c	b	d	5

(2016)										
Sunley et al. (2020)	a*	a*	c	a*	Y*	Y*	c	a*	d	6
Taillieu et al. (2016)	a*	a*	b*	a*	Y*	N	c	b	d	5
Ventimiglia et al. (2020)	c	a*	b*	a*	Y*	Y*	c	a*	b* (78.5)	7
Waxman et al. (2014)	a*	a*	b*	a*	Y*	N	c	a*	b* (70.2%)	7

Notes.

Selection:

1) Representativeness of the exposed cohort: a) truly representative of the average General population (for community) / Clinical population (for clinical) in the community* b) somehow representative of the average General population (for community) / Clinical population (for clinical) in the community* c) selected group of users e.g., nurses, volunteers d) no description of the derivation of the cohort
2) Selection of the non-exposed cohort: a) drawn from the same community as the exposed cohort* b) drawn from a different source c) no description of the derivation of the non-exposed cohort
3) Ascertainment of exposure: a) secure record (e.g., surgical records)* b) structured interview* c) written self-report d) no description
4) Demonstration that outcome of interest was not present at start of study: a) yes* b) no

Comparability:

1) Comparability of cohorts on the basis of the design or analysis: a) study controls for Gender* b) study controls for Age*

Outcomes:

1) Assessment of outcome: a) independent blind assessment* b) record linkage* c) self-report d) no description
2) Was follow-up long enough for outcomes to occur: a) yes* b) no
3) Adequacy of follow up of cohorts: a) complete follow up - all subjects accounted for* b) subjects lost to follow up unlikely to introduce bias - small number lost - > 70 %* c) follow up rate < 70% and no description of those lost d) no statement

Table S2.12. Summary of Quality Assessment (Newcastle-Ottawa Scale): Case-Control Studies (Chinese Studies)

Study (Year)	Selection				Comparability		Exposure			Total No. of Stars
	Case Definition Adequate	Case Representativeness	Selection of Controls	Definition of Controls	Gender	Age	Ascertainment of Exposure	Same Method	Non-response Rate	
Chang & Wang (2008)	b	b	a*	a*	Y*	Y*	d	a*	N/A	5
Dai et al. (2016)	b	b	a*	a*	N	N	d	a*	N/A	3
Deng et al. (2018)	b	b	a*	a*	N	N	d	a*	N/A	3
Guo (2018)	b	b	a*	a*	N	N	d	a*	N/A	3
Han et al. (2018)	b	b	a*	a*	Y*	Y*	d	a*	N/A	5
Wang & Lui (2017)	b	b	a*	a*	N	N	d	a*	N/A	3
Xie et al. (2008)	b	b	a*	a*	Y*	N	d	a*	c	4
Yang et al. (2019)	b	b	a*	a*	Y*	Y*	d	a*	N/A	5
Zeng et al. (2016)	b	b	a*	a*	N	N	d	a*	N/A	3
Zhang et al. (2017)	b	b	a*	a*	Y*	N	d	a*	N/A	4
Zhang et al. (2018)	b	b	a*	a*	Y*	Y*	d	a*	N/A	5

Note.

Selection:

5) Is the case definition adequate: a) yes, with independent validation* b) yes, e.g., record, linkage or based on self-report c) no description.
6) Representativeness of the cases: a) consecutive or obviously representative series of cases* b) potential for selection biases or not state
7) Selection of Controls: a) community controls* b) hospital controls c) no description
8) Definition of Controls: a) no history of disease (endpoint)* b) no description

Comparability:

3) Study controls for Gender

4) Study controls for Age

Exposure:

4) Ascertainment of exposure: a) secure record (e.g., surgical records)* b) structured interview based where blind to case/control status* c) interview not blinded to case-control status c) written self-report or medical record only d) no description
5) Same method of ascertainment for cases and controls: a) yes* b) no

Non-response rate: a) same rate for both groups* b) non respondents described c) rate different and no designation

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Appendix B – Supplementary Materials - Chapter 3

Table S3.1. Factor loadings for the original three-factor structure

	PA	PN	PS
Item 1 - Yelled at you	0.527		
Item 4 - Insulted you	0.772		
Item 7 - Criticized you	0.489		
Item 10 - Said mean thing about you	0.801		
Item 13 - Called you names	0.548		
Item 16 - Said you were stupid	0.714		
Item 19 - Made fun of you	0.799		
Item 22 – Tried to make you feel guilty	0.612		
Item 25 – Ridiculed or humiliated you	0.807		
Item 28 – Embarrassed you in front of people	0.806		
Item 2 - Left you alone for long period of time when they shouldn't have		0.565	
Item 5 – Act like they didn't seem to care you		0.718	
Item 8 – Ignored you		0.754	
Item 11 – Didn't do things for you that they should have		0.466	
Item 14 – Act like you weren't there, even though you were		0.692	
Item 17 – Weren't around when you needed them		0.727	
Item 20 – Didn't do thing they said they would do for you		0.638	
Item 23 – Let you down		0.755	
Item 26 – Didn't seem to love you		0.776	
Item 29 – Didn't take care of you when they should have		0.683	
Item 3 – Were on your side when things were bad			0.635
Item 6 – Praised you when you did something good			0.721
Item 9 – Said 'I love you'			0.383

Item 12 – Did things that let you know they love you	0.732
Item 15 – Hugged you	0.588
Item 18 – Take your place or did thing with you	0.647
Item 21 – Encourage you to have friends	0.649
Item 24 – Tried to make you better when you were upset or hurt	0.717
Item 27 – Talked to you	0.729
Item 30 – Helped you with homework or other thing you had to do	0.532

Table S3.2. The endorsement of each of the items

	1 N (%)	2 N (%)	3 N (%)	4 N (%)	5 N (%)	6 N (%)	7 N (%)
PMR-1 (PA)	110 (20.3%)	93 (17.1%)	96 (17.1%)	80 (14.7%)	45 (8.3%)	24 (4.4%)	95 (17.5)
PMR-2 (PN)	266 (49.0%)	90 (16.6%)	60 (11.0%)	48 (8.8%)	27 (5.0%)	12 (2.2%)	39 (7.2%)
PMR-3 (PS)	60 (11.0%)	46 (8.5%)	58 (10.7%)	92 (16.9%)	73 (13.4%)	59 (10.9%)	155 (28.5%)
PMR-4 (PA)	289 (53.2%)	88 (16.2%)	52 (9.6%)	54 (9.6%)	26 (4.8%)	13 (2.4%)	21 (3.9%)
PMR-5 (PN)	295 (54.3%)	78 (14.4%)	66 (12.2%)	57 (10.5%)	22 (4.1%)	8 (1.5%)	16 (2.9%)
PMR-6 (PS)	41 (7.6%)	45 (8.3%)	66 (12.2%)	72 (13.3%)	70 (12.9%)	71 (32.6%)	177 (32.6%)
PMR-7 (PA)	40 (7.4%)	65 (12.0%)	78 (14.4%)	125 (23.0%)	84 (15.5%)	39 (7.2%)	111 (20.4%)
PMR-8 (PN)	248 (45.7%)	105 (19.3%)	72 (13.3%)	53 (9.8%)	36 (6.6%)	7 (1.3%)	21 (3.9%)
PMR-10 (PA)	202 (37.2%)	103 (19.0%)	71 (13.1%)	65 (12.0%)	45 (8.3%)	20 (3.7%)	36 (6.6%)
PMR-11 (PN)	230 (42.2%)	79 (14.5%)	68 (12.5%)	80 (14.7%)	22 (4.1%)	19 (3.5%)	43 (7.9%)
PMR-12 (PS)	44 (8.1%)	31 (5.7%)	62 (11.4%)	91 (16.8%)	89 (16.4%)	50 (9.2%)	175 (32.2%)
PMR-13 (PA)	193 (35.5%)	98 (18.0%)	59 (10.9%)	62 (11.4%)	53 (9.8%)	20 (3.7%)	58 (10.7%)
PMR-14 (PN)	268 (49.4%)	84 (15.5%)	61 (11.2%)	54 (9.9%)	37 (6.8%)	16 (2.9%)	23 (4.2%)
PMR-16 (PA)	219 (40.3%)	91 (16.8%)	76 (14.0%)	52 (9.6%)	49 (9.0%)	17 (3.1%)	39 (7.2%)
PMR-17 (PN)	191 (35.2%)	97 (17.9%)	76 (14.0%)	69 (12.7%)	53 (9.8%)	23 (4.2%)	34 (6.3%)
PMR-18 (PS)	32 (5.9%)	25 (4.6%)	43 (7.9%)	83 (15.3%)	79 (14.5%)	63 (11.6%)	218 (40.1%)
PMR-19 (PA)	270 (49.7%)	86 (15.8%)	65 (12.0%)	44 (8.1%)	35 (6.4%)	21 (3.9%)	22 (4.1%)
PMR-20 (PN)	126 (23.2%)	104 (19.2%)	96 (17.7%)	95 (17.5%)	56 (10.3%)	31 (5.7%)	34 (6.3%)
PMR-21 (PS)	58 (10.7%)	38 (7.0%)	58 (10.7%)	96 (17.7%)	84 (15.5%)	80 (14.7%)	129 (23.8%)
PMR-22 (PA)	144 (26.5%)	84 (15.5%)	55 (10.1%)	116 (21.4%)	66 (12.2%)	30 (5.5%)	47 (8.7%)
PMR-23 (PN)	162 (29.8%)	95 (17.5%)	92 (16.9%)	85 (15.7%)	51 (9.4%)	27 (5.0%)	30 (5.5%)
PMR-24 (PS)	54 (9.9%)	46 (8.5%)	79 (14.5%)	100 (18.4%)	82 (15.1%)	73 (13.4%)	108 (19.9%)
PMR-25 (PA)	288 (53.0%)	76 (14.0%)	67 (12.3%)	49 (9.0%)	25 (4.6%)	15 (2.8%)	22 (4.1%)
PMR-26 (PN)	307 (56.5%)	69 (12.7%)	60 (11.0%)	49 (9.0%)	31 (5.7%)	11 (2.0%)	16 (2.9%)
PMR-27 (PS)	32 (5.9%)	34 (6.3%)	61 (11.2%)	87 (16.0%)	78 (14.4%)	69 (12.7%)	182 (33.5%)
PMR-28 (PA)	224 (41.3%)	80 (14.7%)	84 (15.5%)	67 (12.3%)	42 (7.7%)	22 (4.1%)	23 (4.2%)

PMR-29 (PN)	293 (54.0%)	85 (15.7%)	48 (8.8%)	54 (9.9%)	25 (4.6%)	19 (3.5%)	18 (3.3%)
PMR-30 (PS)	79 (14.5%)	52 (9.6%)	86 (15.8%)	74 (13.6%)	68 (12.5%)	44 (8.1%)	140 (25.8%)

Notes. N = 540, 1 (never); 7 (over 20 times per year); PA = Psychological Abuse; PN = Psychological Neglect; PS = Psychological Support

Table S3.3. Correlation Matric

	PN	PS	ACE	Anxiety	Depression	Cognitive Failure	Imagination
PA	.752**	-.287**	.408**	.359**	.438**	.269**	-.04
PN		-.462**	.368**	.460**	.477**	.321**	-.164**
PS			-.180**	-.347**	-.189**	-.288*	.360**
ACE				.215**	.301**	.198**	-.013
Anxiety					.678**	.548**	-.484**
Depression						.452**	-.249**
Cognitive Failure							-.599*

Notes. PA = Psychological Abuse; PN = Psychological Neglect; PS = Psychological Support.

Table S3.4. Frequencies for Genders of Each Response for Each Item

	1	2	3	4	5	6	7

		N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
PMR-1 (PA)	Male	30 (15.2%)	33 (16.8%)	39 (19.8%)	36 (18.3%)	18 (9.1%)	9 (4.6%)	32 (16.2%)
	Female	79 (22.8%)	60 (17.3%)	57 (16.4%)	45 (13.0%)	26 (7.5%)	15 (4.3%)	64 (18.4%)
PMR-2 (PN)	Male	90 (45.7%)	37 (18.8%)	27 (13.7%)	19 (9.6%)	8 (4.1%)	6 (3.0%)	10 (5.1%)
	Female	177 (51.0%)	53 (15.3%)	33 (9.5%)	30 (8.6%)	17 (4.9%)	6 (1.7%)	29 (8.4)
PMR-3 (PS)	Male	26 (13.2%)	20 (10.2%)	27 (13.7%)	30 (15.2%)	37 (18.8%)	16 (8.1%)	41 (20.8%)
	Female	34 (9.8%)	26 (7.5%)	32 (9.2%)	62 (17.9%)	36 (10.4%)	43 (12.4%)	113 (32.6%)
PMR-4 (PA)	Male	101 (51.3%)	35 (17.8%)	19 (9.6%)	20 (10.2%)	11 (5.6%)	5 (2.5%)	6 (3.0%)
	Female	188 (54.2%)	54 (15.6%)	33 (9.5%)	35 (10.1%)	13 (3.7%)	8 (2.3%)	15 (4.3%)
PMR-5 (PN)	Male	102 (51.8%)	27 (13.7%)	32 (16.2%)	19 (9.6%)	5 (2.5%)	6 (3.0%)	6 (3.0%)
	Female	193 (55.6%)	51 (14.7%)	35 (10.1%)	38 (11.0%)	16 (4.6%)	2 (0.6%)	10 (2.9%)
PMR-6 (PS)	Male	20 (10.2%)	16 (8.1%)	22 (11.2%)	27 (13.7%)	30 (15.2%)	24 (12.2%)	58 (29.4%)
	Female	21 (6.1%)	29 (8.4%)	43 (12.4%)	45 (13.0%)	39 (11.2%)	47 (13.5%)	119 (34.3%)
PMR-7 (PA)	Male	18 (9.1%)	21 (10.7%)	30 (15.2%)	38 (19.3%)	28 (14.2%)	17 (8.6%)	45 (22.8%)
	Female	22 (6.3%)	44 (12.7%)	47 (13.5%)	86 (24.8%)	56 (16.1%)	22 (6.3%)	67 (19.3%)
PMR-8 (PN)	Male	81 (41.1%)	39 (19.8%)	35 (17.8%)	15 (7.6%)	16 (8.1%)	5 (2.5%)	6 (3.0%)
	Female	167 (48.1%)	64 (18.4%)	37 (10.7%)	38 (11.0%)	21 (6.1%)	2 (0.6%)	15 (4.3%)
PMR-9 (PS)	Male	87 (44.2%)	16 (8.1%)	19 (9.6%)	25 (12.7%)	16 (8.1%)	9 (4.6%)	25 (12.7%)
	Female	140 (40.3%)	41 (11.8%)	42 (12.1%)	38 (11.0%)	28 (8.1%)	13 (3.7%)	42 (12.1%)
PMR-10 (PA)	Male	65 (33.0%)	34 (17.3%)	33 (16.8%)	27 (13.7%)	17 (8.6%)	8 (4.1%)	13 (6.6%)
	Female	137 (39.5%)	68 (19.6%)	38 (11.0%)	37 (10.7%)	28 (8.1%)	12 (3.5%)	23 (6.6%)
PMR-11 (PN)	Male	80 (40.6%)	20 (10.2%)	35 (17.8%)	27 (13.7%)	13 (6.6%)	11 (5.6%)	10 (5.1%)
	Female	150 (43.2%)	58 (16.7%)	33 (9.5%)	52 (15.0%)	9 (2.6%)	8 (2.3%)	33 (9.5%)
PMR-12 (PS)	Male	23 (11.7%)	9 (4.6%)	20 (10.2%)	43 (21.8%)	29 (14.7%)	19 (9.6%)	54 (27.4%)
	Female	21 (6.1%)	22 (6.3%)	41 (11.8%)	48 (13.8%)	60 (17.3%)	31 (8.9%)	120 (34.6%)
PMR-13 (PA)	Male	57 (28.9%)	34 (17.3%)	29 (14.7%)	24 (12.2%)	20 (10.2%)	12 (5.1%)	21 (10.7%)
	Female	136 (39.2%)	65 (18.7%)	29 (8.4%)	37 (10.7%)	33 (9.5%)	7 (2.0%)	37 (10.7%)
PMR-14 (PN)	Male	88 (47.7%)	28 (14.2%)	27 (13.7%)	21 (10.7%)	15 (7.6%)	6 (3.0%)	12 (6.1%)

	Female	179 (51.6%)	56 (16.1%)	34 (9.8%)	33 (9.5%)	21 (6.1%)	10 (2.9%)	11 (3.2%)
PMR-15 (PS)	Male	51 (25.9%)	31 (15.7%)	23 (11.7%)	23 (11.7%)	28 (14.2%)	13 (6.6%)	28 (14.2%)
	Female	66 (19.0%)	57 (16.4%)	37 (10.7%)	47 (13.5%)	33 (9.5%)	28 (8.1%)	76 (21.9%)
PMR-16 (PA)	Male	75 (38.1%)	31 (15.7%)	27 (13.7%)	24 (12.2%)	23 (11.7%)	3 (1.5%)	14 (7.1%)
	Female	143 (41.2%)	60 (17.3%)	49 (14.1%)	27 (7.8%)	26 (7.5%)	14 (4.0%)	25 (7.2%)
PMR-17 (PN)	Male	75 (38.1%)	24 (12.2%)	32 (16.2%)	26 (13.2%)	21 (10.7%)	7 (3.6%)	12 (6.1%)
	Female	115 (33.1%)	73 (21.0%)	42 (12.1%)	44 (12.7%)	32 (9.2%)	16 (4.6%)	22 (6.3%)
PMR-18 (PS)	Male	14 (7.1%)	11 (5.6%)	22 (11.2%)	25 (12.7%)	37 (18.8%)	27 (13.7%)	61 (31.0%)
	Female	18 (5.2%)	15 (4.2%)	21 (6.1%)	56 (16.1%)	42 (12.1%)	36 (10.4%)	156 (45.0%)
PMR-19 (PA)	Male	89 (45.2%)	29 (14.7%)	29 (14.7%)	12 (6.1%)	20 (10.2%)	9 (4.6%)	9 (4.6%)
	Female	180 (51.9%)	58 (16.7%)	35 (10.1%)	31 (8.9%)	15 (4.3%)	12 (3.5%)	13 (3.7%)
PMR-20 (PN)	Male	49 (24.9%)	30 (15.2%)	37 (18.8%)	37 (18.8%)	19 (9.6%)	9 (4.6%)	15 (7.6%)
	Female	76 (21.9%)	73 (21.0%)	58 (16.7%)	58 (16.7%)	37 (10.7%)	22 (6.3%)	19 (5.5%)
PMR-21 (PS)	Male	19 (9.6%)	8 (4.1%)	24 (12.2%)	27 (13.7%)	43 (21.8%)	30 (15.2%)	46 (23.4%)
	Female	39 (11.2%)	29 (8.4%)	34 (9.8%)	69 (19.9%)	41 (11.8%)	50 (14.4%)	81 (23.3%)
PMR-22 (PA)	Male	49 (24.9%)	29 (14.7%)	25 (12.7%)	41 (20.8%)	25 (12.7%)	13 (6.6%)	15 (7.6%)
	Female	94 (27.1%)	54 (15.6%)	30 (8.6%)	75 (21.6%)	41 (11.8%)	17 (4.9%)	31 (8.9%)
PMR-23 (PN)	Male	61 (31.0%)	31 (15.7%)	37 (18.8%)	31 (15.7%)	19 (9.6%)	9 (4.6%)	9 (4.6%)
	Female	100 (28.8%)	64 (18.4%)	54 (15.6%)	54 (15.6%)	32 (9.2%)	18 (5.2%)	20 (5.8%)
PMR-24 (PS)	Male	29 (14.7%)	15 (7.6%)	28 (14.2%)	34 (17.3%)	34 (17.3%)	30 (15.2%)	27 (13.7%)
	Female	25 (7.2%)	31 (8.9%)	50 (14.4%)	66 (19.0%)	47 (13.7%)	43 (12.7%)	80 (23.1%)
PMR-25 (PA)	Male	92 (46.7%)	26 (13.2%)	27 (13.7%)	22 (11.2%)	13 (6.6%)	8 (4.1%)	9 (4.6%)
	Female	195 (56.2%)	49 (14.1%)	40 (11.5%)	27 (7.8%)	12 (3.5%)	6 (1.7%)	13 (3.7%)
PMR-26 (PN)	Male	103 (52.3%)	30 (15.2%)	25 (12.7%)	19 (9.6%)	12 (6.1%)	3 (1.5%)	5 (2.5%)
	Female	203 (58.5%)	39 (11.2%)	34 (9.8%)	29 (8.4%)	19 (5.5%)	8 (2.3%)	11 (3.2%)
PMR-27 (PS)	Male	18 (9.1%)	12 (6.1%)	20 (10.2%)	37 (18.8%)	30 (15.2%)	27 (13.7%)	53 (26.9%)
	Female	14 (4.0%)	22 (6.3%)	40 (11.5%)	49 (14.1%)	48 (13.8%)	42 (12.1%)	128 (36.9%)
PMR-28 (PA)	Male	80 (40.6%)	27 (13.7%)	38 (19.3%)	21 (10.7%)	9 (4.6%)	11 (5.6%)	10 (5.1%)

	Female	143 (41.2%)	53 (15.3%)	44 (12.7%)	46 (13.3%)	33 (9.5%)	11 (3.2%)	13 (3.7%)
PMR-29 (PN)	Male	102 (51.8%)	26 (13.2%)	22 (11.2%)	24 (12.2%)	10 (5.1%)	7 (3.6%)	6 (3.0%)
	Female	190 (54.8%)	58 (16.7%)	26 (7.5%)	29 (8.4%)	15 (4.3%)	12 (3.5%)	12 (3.5%)
PMR-30 (PS)	Male	30 (15.2%)	20 (10.2%)	34 (17.3%)	27 (13.7%)	25 (12.7%)	18 (9.1%)	43 (21.8%)
	Female	48 (13.8%)	32 (9.2%)	52 (15.0%)	46 (13.3%)	43 (12.4%)	26 (7.5%)	96 (27.7%)

Notes. N_{Male} = 197; N_{Female} = 343; N_{Total} = 540; 1 (never); 7 (over 20 times per year); PA = Psychological Abuse; PN = Psychological Neglect; PS = Psychological Support

Appendix C – Supplementary Materials – Chapter 4

Table S4.1. Demographic Characteristics

	N	%
Female	347	63.90%
Male	197	36.00%
Non-binary	3	0.5%
Age		
18-20	114	20.80%
21-30	328	60.00%
31-40	90	16.50%
41-60	14	2.60%
Over 61	1	0.20%
Primary Caregivers		
Mother	346	63.3%
Father	107	19.6%
Stepmother	4	0.70%
Stepfather	1	0.20%
Grandparents	74	13.50%
Nanny	6	1.10%
Others	9	1.60%

Notes. N = 544. Others refer to other relatives such as uncle or aunt.

Appendix D – Supplementary Materials – Chapter 5

Table S5.1. Demographic Characteristics (China)

		N	%
Gender	Female	346	63.4%
	Male	197	36.1%
	Non-binary	3	0.5%
Age	18-20	114	20.9%
	21-30	327	59.9%
	31-40	90	16.5%
	41-60	14	2.6%
	Over 60	1	0.2%
Primary Caregiver	Mother	337	61.6%
	Father	98	17.9%
	Stepmother	3	0.5%
	Stepfather	1	0.2%
	Grandparents	73	13.3%
	Nanny	6	1.1%
	Others	29	5.3%
Education Level	Below high school	7	1.3%
	High school	49	9.0%
	Undergraduate	371	67.8%
	Postgraduate	105	19.2%
	PhD	15	2.7%

Notes. N = 544. Others refer to other relatives such as uncle or aunt.

Table S5.2. Demographic Characteristics (UK)

		N	%
Gender	Female	371	63.0%
	Male	208	35.3%
	Non-binary	10	1.70%
Age	18-20	357	60.6%
	21-30	171	29.0%
	31-40	47	8.0%
	41-60	13	2.2%
	Over 60	1	0.2%
Primary Caregiver	Mother	498	84.2%
	Father	43	7.3%
	Grandparents	26	4.4%
	Nanny	7	1.2%
	Others	17	29.%
Education Level	Below high school	3	0.5%
	High school	111	18.8%
	Undergraduate	396	67.2%
	Postgraduate	65	11.0%
	PhD	14	2.4%

Notes. N = 589. Others refer to others refer to domestic helper, other relative such as great grandparent.

Table S3. Cronbach's Alpha for all measures in both China and the UK sample

	China	UK
PA	0.89	0.90
PN	0.90	0.94
PS	0.84	0.89
ACE	0.74	0.58
Anxiety	0.91	0.94
Depression	0.87	0.89
Self-esteem	0.85	0.82
Physical aggression	0.73	0.82
Verbal aggression	0.58	0.75
Anger	0.76	0.81
Hostility	0.82	0.78

Table S5.4. Correlations between variables (China)

	PA	PN	PNS	Self-esteem	Anxiety	Anger	Physical Aggression	Hostility	Verbal Aggression	depression
PA	1	.76	.24	-.265	.36	.37	.39	.35	.30	.42
PN	<.001	1	.41	-.29	.44	.32	.37	.35	.24	.44
PNS	<.001	<.001	1	-.26	.31	.05	.05	.04	-.27	.13
Self-esteem	<.001	<.001	<.001	1	-.55	-.33	-.27	-.46	-.09	-.57
Anxiety	<.001	<.001	<.001	<.001	1	.50	.47	.47	.10	.70
Anger	<.001	<.001	.250	<.001	<.001	1	.70	.62	.47	.45
Physical Aggression	<.001	<.001	.398	<.001	<.001	<.001	1	.56	.50	.43
Hostility	<.001	<.001	.271	<.001	<.001	<.001	<.001	1	.56	.54
Verbal Aggression	<.001	<.001	<.001	.039	.024	<.001	<.001	<.001	1	.30
Depression	<.001	<.001	.004	<.001	<.001	<.001	<.001	<.001	<.001	1

Notes. PA = Psychological Abuse, PN = Psychological Neglect, PNS = Psychological Non-Support. Pearson correlations above the diagonal; *p*-values below the diagonal.

Table S5.5. Correlations between variables (UK)

	PA	PN	PNS	Self-esteem	Anxiety	Anger	Physical Aggression	Hostility	Verbal Aggression	Depression
PA	1	.79	.46	-.34	.38	.27	.20	.39	.12	.41
PN	<.001	1	.57	-.39	.45	.29	.20	.42	.11	.41
PNS	<.001	<.001	1	-.32	.28	.20	.18	.28	.10	.26
Self-esteem	<.001	<.001	<.001	1	-.58	-.38	-.21	-.57	-.11	-.58
Anxiety	<.001	<.001	<.001	<.001	1	.35	.15	.54	.06	.69
Anger	<.001	<.001	<.001	<.001	<.001	1	.60	.48	.55	.32
Physical Aggression	<.001	<.001	<.001	<.001	<.001	<.001	1	.38	.43	.16
Hostility	<.001	<.001	<.001	<.001	<.001	<.001	<.001	1	.28	.53
Verbal Aggression	.005	.010	.016	.011	.141	<.001	<.001	<.001	1	.15
Depression	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	1

Notes. PA = Psychological Abuse, PN = Psychological Neglect, PNS = Psychological Non-Support. Pearson correlations above the diagonal; *p*-values below the diagonal.

Table S5.6. Fit statistic from the latent profile analysis model (China)

	LMR	p	AIC	BIC	aBIC	Entropy
Class 1	/	/	10667.310	10701.701	10676.306	/
Class 2	378.032	<.001	10086.973	10133.659	10098.743	0.827
Class 3	139.353	0.0402	9953.157	10021.064	9970.277	0.851
Class 4	**81.934**	**0.0002**	**9878.599**	**9967.726**	**9901.068**	**0.860**
Class 5	51.146	0.2112	9835.815	9946.163	9863.634	0.861
Class 6	55.911	0.2532	9788.411	9919.980	9821.581	0.844
Class 7	37.515	0.6135	9760.037	9912.827	9798.557	0.857
Class 8	36.081	0.0689	9733.234	9907.245	9777.104	0.870

Notes. LMR = Lo-Mendell-Rubin likelihood ratio test; AIC = Akaike's Information Criteria; BIC = Bayesian Information Criteria; aBIC = adjusted Bayesian Information Criteria. ACE as a covariate.

Table S5.7. Fit statistic from the latent profile analysis model (UK)

	LMR	p	AIC	BIC	aBIC	Entropy
Class 1	/	/	22108.657	22143.684	22118.287	/
Class 2	835.845	<.001	12753.071	12801.233	12766.312	0.941
Class 3	264.390	0.0909	12490.391	12560.446	12509.651	0.888
Class 4	**187.693**	**0.0000**	**12306.812**	**12398.759**	**12332.091**	**0.911**
Class 5	74.360	0.1277	12240.121	12353.960	12271.418	0.899
Class 6	58.579	0.4172	12189.705	12325.436	12227.022	0.908
Class 7	54.347	0.1215	12143.654	12301.277	12186.989	0.909
Class 8	25.951	0.8156	12126.889	12306.404	12176.243	0.876

Notes. LMR = Lo-Mendell-Rubin likelihood ratio test; AIC = Akaike's Information Criteria; BIC = Bayesian Information Criteria; aBIC = adjusted Bayesian Information Criteria. ACE as a covariate.

Table S5.8. Selected 4-profile Model in the whole sample (China)

Class	Class Size*	Psychological Abuse		Psychological Neglect		Psychological Non-support	
		M	SE	M	SE	M	SE
Psychological Non-support	5.4%	4.79	1.29	4.24	1.10	42.30	1.57
Low-Maltreated	56%	11.96	0.69	7.61	0.50	11.76	0.67
High-Maltreated	32.9%	28.35	1.47	24.75	1.52	23.24	0.62
Severe-Maltreated	5.5%	46.93	4.01	44.90	3.65	30.83	4.18

Notes. *Based on estimated posterior probabilities.

Table S5.9. Selected 4-profile Model in the whole sample (UK)

Class	Class Size*	Psychological Abuse		Psychological Neglect		Psychological Non-support	
		M	SE	M	SE	M	SE
Low-Maltreated	57.9%	8.935	0.474	3.700	0.236	17.104	0.343
Moderate-Maltreated	25.4%	21.909	1.192	14.931	0.831	24.081	0.683
High-Maltreated	11.2%	32.119	1.348	31.774	1.355	27.764	1.034
Severe-Maltreated	5.5%	47.753	1.376	51.483	1.168	30.619	1.566

Notes. *Based on estimated posterior probabilities.

Table S5.10. Relations of the 4-profile model on mental health outcomes (China)

Outcome means (SE) by class

	Psychological Non-Support	Low-Maltreated	High-Maltreated	Severe-Maltreated
Self-esteem	31.38 (.95)	30.70 (.31)	27.74 (.41)	24.78 (1.14)
Anxiety	30.31 (1.90)	24.38 (.82)	40.51 (1.17)	41.05 (4.04)
Depression	2.63 (.69)	5.615 (.29)	9.84 (.41)	11.05 (1.51)
Anger	14.47 (.70)	17.67 (0.33)	20.19 (.37)	23.50 (1.28)
Physical aggression	17.51 (1.03)	21.67 (.34)	25.30 (.41)	27.33 (1.67)
Verbal aggression	8.97 (.79)	15.05 (.18)	15.44 (.22)	16.05 (.96)
Hostility	13.63 (1.19)	22.35 (.36)	24.42 (.40)	28.80 (.98)

Wald test *p* value	C1 vs. C2	C1 vs. C3	C1 vs. C4	C2 vs. C3	C2 vs. C4	C3 vs. C4
Self-esteem	0.496	<.001**	<.001**	<.001**	<.001**	0.016
Anxiety	0.005*	<.001**	0.003*	<.001**	<.001**	0.477
Depression	<.001**	<.001**	<.001**	<.001**	<.001**	0.151
Anger	<.001**	<.001**	<.001**	<.001**	<.001**	0.001*
Physical aggression	<.001**	<.001**	<.001**	<.001**	<.001**	0.049
Verbal aggression	<.001**	<.001**	<.001**	0.529	0.066	0.112

Hostility	<.001**	<.001**	<.001**	0.002*	<.001**	<.001**

Notes. C1 = Psychological Non-support; C2 = Low-Maltreated; C3 = High-Maltreated; C4 = Severe-Maltreated. According to Bonferroni correction, the new p value = .0083. p <.0083*, p <.001**.

Table S5.11. Relations of the 4-profile model on mental health outcomes (UK)

Outcome means (SE) by class						
	Low-Maltreated	Moderate-Maltreated	High-Maltreated	Severe-Maltreated		
Self-esteem	29.95 (.27)	26.46 (.45)	25.23 (.63)	23.82 (.95)		
Anxiety	24.16 (.89)	34.30 (1.44)	44.61 (2.26)	50.07 (3.54)		
Depression	8.10 (.34)	11.40 (.52)	15.29 (.80)	16.90 (1.30)		
Anger	14.75 (.31)	17.61 (.51)	18.69 (.78)	19.88 (1.31)		
Physical aggression	16.77 (.35)	20.42 (.62)	20.27 (.93)	20.38 (1.86)		
Verbal aggression	13.60 (.24)	15.00 (.42)	14.70 (.57)	15.41 (.95)		
Hostility	20.12 (.36)	24.54 (.49)	26.19 (.71)	29.75 (.90)		
Wald test *p* value	C1 vs. C2	C1 vs. C3	C1 vs. C4	C2 vs. C3	C2 vs. C4	C3 vs. C4
Self-esteem	<.001**	<.001**	<.001**	0.122	0.012	0.225
Anxiety	<.001**	<.001**	<.001**	<.001**	<.001**	0.20
Depression	<.001**	<.001**	<.001**	<.001**	<.001**	0.302
Anger	<.001**	<.001**	<.001**	0.263	0.108	0.443
Physical aggression	<.001**	<.001**	<.001**	0.896	0.983	0.960
Verbal aggression	0.005*	0.072	0.065	0.687	0.690	0.529
Hostility	<.001**	<.001**	<.001**	0.062	<.001**	0.002*

Notes. C1 = Low Maltreatment; C2 = Moderate-Maltreated; C3 = High-Maltreated; C4 = Severe-Maltreated. According to Bonferroni correction, the new p value = .0083. p <.0083*, p <.001**.

Sensitivity Analysis

Latent Profile Solution – Chinese Samples

A series of latent profile models with one to eight were specified and estimated. The LMR test had a non-significant value for the 6-class model ($p > .05$), suggesting a 5-class optimal model. However, the p-value of the 5-class model LMR test was close to our *p*-threshold of .05 and we therefore also considered the 4-class model as a further candidate optimal model. Other than the LMR test, we also utilized criteria for AIC, BIC, and aBIC for model selection. These suggested that the five-profile solution should be preferred. However, Foti et al. (2012) highlighted that the meaning of the profile-solution picked needs to be considered when determining the number of profiles. We thus further investigated the characteristics of these solutions. We found that choosing a four-profile solution translated into the addition of a meaningful profile, while the five-profile solution shared similar characteristics with the four-profile solution (see Table S12).

Based on the aforementioned rationales, we thus explored further the four-profile model in the Chinese sample. Table S12 indicated that the entropy of the four-profile solution was 0.904, which is considered satisfactory (Morin et al., 2011). Additionally, the average latent class probabilities for the four-profile model were 0.959, 0.928, 0.937, and 0.919, above the cut-off criterion of 0.80 (Nylund, Asparouhov, & Muthén, 2007). Accordingly, we adopted the four-profile model for the Chinese samples as the best solution based on theoretical and statistical considerations. The first latent profile was the smallest and described the 5.4% of the sample who reported the lowest level of psychological abuse and psychological neglect but the highest level of psychological non-support and was thus labelled the "*Psychological Non-support*" profile. The second latent profile represented 56.5% of the samples was labeled "*Low-Maltreated*," given that the level of psychological abuse and psychological neglect was higher than the "*Psychological Non-support*" group, but with the lowest level of psychological non-

support. The third latent profile, named the "*High-Maltreated*" profile, characterized 33.9% of the sample presenting experiences of a higher level of psychological abuse, psychological neglect, and psychological non-support. The fourth latent profile, labeled "*Severe-Maltreated*", includes 4.3% of the sample and reported the highest level of psychological abuse, psychological neglect, and psychological non-support. Table S13 presents the means and standard errors of each psychological maltreatment type.

Latent Profile Solution – UK Samples

The four-class solution was also considered the best fitting model for the UK sample based on a series of fit indices (see Table S14). The LMR test had a non-significant value for the 5-class model ($p > .05$), suggesting a 4-class optimal model and the BIC, which has been identified as the most reliable of the available fit indices (Nylund et al., 2007), was lower than other models with significant *p*-values. We, therefore, adopted the four-profile model as the best solution for further analyses.

The first latent profile was the largest and described 57.9% of the sample who reported the lowest level of childhood psychological maltreatment and were thus "*Low-Maltreated*". The second latent profile represented by 25.4% of the sample was labeled "*Moderate-Maltreated*," given that samples experienced a moderate level of childhood psychological maltreatment. The third latent profile, named the "*High-Maltreated*" profile, characterized 11.2% of samples, representing a higher level of childhood psychological maltreatment. The fourth latent profile, labeled "Severe-*Maltreated*", included 5.5% of the sample who reported the highest level of childhood psychological maltreatment. Table S15 presents the means and standard error for each form of psychological maltreatment.

Reference

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Morin, A. J., Maiano, C., Nagengast, B., Marsh, H. W., Morizot, J., & Janosz, M. (2011). General growth mixture analysis of adolescents' developmental trajectories of anxiety: The impact of untested invariance assumptions on substantive interpretations. *Structural Equation Modeling: A Multidisciplinary Journal*, *18*(4), 613-648.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural equation modeling: A multidisciplinary Journal*, *14*(4), 535-569.

Table S5.12. Fit statistic from the latent profile analysis model (China)

	LMR	p	AIC	BIC	aBIC	Entropy
Class 1	/	/	12863.678	12889.472	12870.425	/
Class 2	436.920	<.001	12417.417	12460.407	12428.663	0.838
Class 3	150.501	0.0066	12268.942	12329.128	12284.686	0.885
Class 4	**137.151**	**<.001**	**12134.348**	**12211.729**	**12154.590**	**0.904**
Class 5	91.642	0.0240	12047.068	12141.645	12071.809	0.863
Class 6	67.190	0.2939	11985.211	12096.984	12014.450	0.868
Class 7	63.947	0.0032	11926.726	12055.695	11960.463	0.859
Class 8	22.772	0.5246	11911.051	12057.215	11949.286	0.868

Notes. LMR = Lo-Mendell-Rubin likelihood ratio test; AIC = Akaike's Information Criteria; BIC = Bayesian Information Criteria; aBIC = adjusted Bayesian Information Criteria.

Table S5.13. Relations of the 4-profile model on mental health outcomes (China)

Outcome means (SE) by class

	Psychological Non-Support	Low-Maltreated	High-Maltreated	Severe-Maltreated
Self-esteem	31.37 (.94)	30.64 (.30)	27.74 (.41)	24.78 (1.14)
Anxiety	30.65 (1.91)	24.38 (.82)	40.51 (1.17)	41.05 (4.04)
Depression	2.655 (.69)	5.615 (.29)	9.84 (.41)	11.05 (1.51)
Anger	14.47 (.71)	17.67 (0.33)	20.19 (.37)	23.50 (1.28)
Physical aggression	17.69 (1.07)	21.67 (.34)	25.30 (.41)	27.33 (1.67)
Verbal aggression	9.10 (.83)	15.05 (.18)	15.44 (.22)	16.05 (.96)
Hostility	13.72 (1.23)	22.35 (.36)	24.42 (.40)	28.80 (.98)

Wald test *p* value	C1 vs. C2	C1 vs. C3	C1 vs. C4	C2 vs. C3	C2 vs. C4	C3 vs. C4
Self-esteem	0.467	<.001***	<.001***	<.001***	<.001***	0.016*
Anxiety	0.003**	<.001***	0.020*	<.001***	<.001***	0.901
Depression	<.001***	<.001***	<.001***	<.001***	<.001***	0.446
Anger	<.001***	<.001***	<.001***	<.001***	<.001***	0.015*
Physical aggression	<.001***	<.001***	<.001***	<.001***	0.001**	0.246
Verbal aggression	<.001***	<.001***	<.001***	0.193	0.304	0.537

Hostility	<.001***	<.001***	<.001***	<.001***	<.001***	<.001***

Notes. C1 = Psychological Non-support; C2 = Low-Maltreated; C3 = High-Maltreated; C4 = Severe-Maltreated.

Table S5.14. Fit statistic from the latent profile analysis model (UK)

	LMR	p	AIC	BIC	aBIC	Entropy
Class 1	/	/	13605.126	13631.396	13612.348	/
Class 2	741.295	0	12842.776	12886.56	12854.814	0.93
Class 3	259.435	0.0633	12581.173	12642.471	12598.026	0.892
Class 4	**165.918**	**0.0003**	**12416.752**	**12495.564**	**12438.42**	**0.908**
Class 5	74.146	0.3899	12347.7	12444.025	12374.183	0.892
Class 6	57.508	0.5176	12295.937	12409.776	12327.235	0.903
Class 7	52.99	0.168	12248.871	12380.224	12284.984	0.902
Class 8	24.147	0.2828	12231.777	12380.644	12272.705	0.869

Notes. LMR = Lo-Mendell-Rubin likelihood ratio test; AIC = Akaike's Information Criteria; BIC = Bayesian Information Criteria; aBIC = adjusted Bayesian Information Criteria.

Table S5.15. Relations of the 4-profile model on mental health outcomes (UK)

Outcome means (SE) by class						
	Low-Maltreated	Moderate-Maltreated	High-Maltreated	Severe-Maltreated		
Self-esteem	29.90 (.27)	26.48 (.46)	25.16 (.64)	23.91 (.97)		
Anxiety	24.42 (.90)	34.08 (1.46)	44.98 (2.34)	49.46 (3.57)		
Depression	8.12 (.33)	11.54 (.54)	15.27 (.81)	16.74 (1.32)		
Anger	14.70 (.31)	17.82 (.51)	18.66 (.79)	19.97 (1.34)		
Physical aggression	16.69 (.35)	20.74 (.63)	20.05 (.95)	20.80 (1.85)		
Verbal aggression	13.53 (.24)	15.21 (.42)	14.72 (.58)	15.34 (.97)		
Hostility	20.18 (.36)	24.54 (.51)	26.21 (.71)	29.81 (.90)		
Wald test *p* value	C1 vs. C2	C1 vs. C3	C1 vs. C4	C2 vs. C3	C2 vs. C4	C3 vs. C4
Self-esteem	<.001***	<.001***	<.001***	0.104	0.017*	0.288
Anxiety	<.001***	<.001***	<.001***	<.001***	<.001***	0.29
Depression	<.001***	<.001***	<.001***	<.001***	<.001***	0.351
Anger	<.001***	<.001***	<.001***	0.389	0.134	0.404
Physical aggression	<.001***	0.001**	0.029*	0.559	0.974	0.721

Verbal aggression	0.001**	0.054	0.07	0.509	0.898	0.589
Hostility	<.001***	<.001***	<.001***	0.064	<.001***	0.002**

Notes. C1 = Low Maltreatment; C2 = Moderate-Maltreated; C3 = High-Maltreated; C4 = Severe-Maltreated.