Resilience and protective factors among people with a history of child maltreatment: A systematic review

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Abstract

Purpose To provide an overview of resilience and protective factors associated with a better life following child maltreatment exposure, to compare protective factors across specific subtypes of maltreatment, and to explore existing issues in the current state of the literature.

Methods Electronic databases and grey literature up to October 2017 were systematically searched for English language with observational study designs for the research on resilience and childhood maltreatment. Systematic review and qualitative approaches were used to synthesize the results. Study quality and heterogeneity were also examined.

Results Initial screening of titles and abstracts resulted in 247 papers being reviewed. A total of 85 articles met eligibility criteria of this review. Most of these studies had low or middle study quality. There were two subgroups of studies reviewed: 1) 11 studies examined whether resilience protected against the negative consequence of childhood maltreatment, and, 2) 75 studies explored what protective factor was associated with a kind of adaptive functioning. Although the conceptualization of resilience significantly varied from study to study, protective factors associated with resilience at individual, familial, and societal levels reduced the likelihood of negative consequences of childhood maltreatment. Negative consequences following childhood maltreatment can be prevented or moderated if protective factors are provided in time. Future research needs to address the conceptualization issue of resilience.

Conclusions Public and population mental health preventions should focus on early childhood and apply preventive strategies as early as possible. Cost-effective studies should be considered in the evaluation of resilience prevention program.

Keywords Child abuse; Depression; Anxiety disorders; Resilience; Protective factors

Introduction

Child maltreatment is internationally considered as a serious public health, human rights, legal and social issue [1]. Every year it is estimated that millions of children are abused and neglected [2]. International studies revealed that an estimated 20% of women and 5% to 10% of men reported being sexually abused during childhood, and 25% to 50% of all children reported being physically abused [3].

Child abuse, including physical abuse, sexual abuse and emotional abuse, and neglect progressively contribute to compromised adaptation in a number of developmental domains and issues central to a successful progression to adulthood. These developmental failures pose significant risk for psychopathology [4-7]. The sequelae accompanying child maltreatment not only cause adverse consequences during childhood, but also initiate a negative developmental trajectory that lasts through the lifetime [8]. However, despite the increase risk of psychopathology, research indicates that some abused individuals retain normal levels of functioning [9]. This dynamic developmental process encompassing the attainment of positive adaptation within the context of significant adversity is referred as resilience [10].

Even though many studies had been carried on to research the conceptualization of resilience, which has been measured by various approaches, most often using various scales, no consensus on an operational definition has been reached [11]. In light of previous studies, resilience can be defined as adaptive functioning and/or absence of psychopathological symptoms [10,12]. Protective factors are individual and/or social characteristics that can be modified, or altered individual’s response to stressors that

predisposes individual to a maladaptive outcome [13]. Research on resilience and its associated protective factors is needed to guide the development of treatment and prevention programs.

To our knowledge, there are very few traditional/ narrative reviews published on resilience and child maltreatment in general [2,14-16], one literature review in French looked at protective factors following child sexual abuse and summarized that social support and cognitive coping were related to the recovery but the extent of their contribution was unstated [17], and another systematic review looked at resilience in survivors of child sexual abuse and reached a similar conclusion that family and social support played the key role in resilience [10]. Previous traditional reviews summarized protective factors associated with sexual abuse, but did not systematically synthesize the evidence for other subtypes of childhood adversities. The research in this area has substantially increased in recent years. Furthermore, these newer studies have found that common and unique negative psychological and negative consequences are related to specific subtypes of childhood maltreatment. It is important to have an overview of resilience and protective factors associated with better life outcomes following the exposure of childhood maltreatment in general and specific subtypes of maltreatment. In addition, the timing of abuse experience in childhood is critical for development and is closely related to occurrence of psychological problems in the adulthood. However, there is no systematic review that has been conducted to explore different sets of adaptive factors related to the timing of childhood maltreatment.

Given the large number of original studies that have been published in the recent years, a systematic review comprehensively synthesizing protective factors following

child maltreatment is needed. This systematic review had three objectives. Firstly, we provided an overview of protective factors and resilience associated with better life outcomes against child maltreatment. Secondly, we compared the outcomes and protective factors at different developmental stages (children, adolescents, and adults) and taking the issue of age specificity of resilience into account. Thirdly, we rated the quality of selected studies according to a quality assessment checklist and reviewed methodological issues in the discussion section.

This review provides guidance for the implementation of programs and services designed to prevent and reduce childhood adversities and to treat their sequelae, and in turn, to decrease incidence and prevalence of psychopathological problems and promote protective factors related to resilience in our communities. Research into resilience in the aftermath of child maltreatment is valuable, empirical studies suggest that resilience may act as a protective mechanism thwarting the development of mental health problems. Resilience refers to the ability to employ a collection of protective factors to return to or maintain positive mental health following the experience of disadvantage or adversity. This review aids in building an evidence base for effective resilience-focused interventions and in doing so provides an opportunity to better inform the development of interventions to potentially prevent mental health problems in child and adolescent populations.

Methods

The process and reporting of results systematic review were guided by the PRISMA guidelines, 2009 revision [18].

Search strategy for identification of studies

To ensure a thorough and systematic review of the literature, two methods were used to retrieve all relevant studies. Firstly, we conducted computerized searches in the PubMed, PsychINFO, EMBASE, Medline, and Cochrane Library databases for published articles up to October 31, 2017. To get the maximum number of relevant citations, we used the following search strings: 'child' AND (abus* OR maltreat* OR neglect OR abandon* OR illtreat* OR ill-treat* OR mal-treat* OR advers* OR trauma* OR ACE*) AND (resilience OR resiliency OR protective OR adaptive OR Resilient)' as the keywords for study retrieval. Secondly, a snowball technique was applied whereby the reference lists of selected original and review articles on relevant topic, and the gray literatures were screened.

Inclusion criteria

All suitable articles were evaluated with regards to their internal validity and the following six inclusion criteria: 1) had a cohort, or case-control, or cross-sectional study design; 2) used a clear diagnosis criteria/ questionnaire for absence of psychopathology, adaptive functioning, or other positive outcomes; 3) gave clear information on the assessment of childhood maltreatment (e.g. subtypes of maltreatment, age when abused, length of abuse, parental mood, etc.) or adverse childhood experience. The information

on abuse was either from written documents or a standard scale or questionnaire; 4) provided a statistical indicator (i.e. relative risk) or original data to estimate the relationship between child abuse and positive outcomes; 5) controlled potential confounders by using statistical adjustment in the analysis or matching in the study design; and, 6) published in English.

Exclusion criteria

Articles were excluded from this review if they 1) were case reports, or qualitative studies or narrative reviews; 2) did not provide detailed information on childhood abuse or resilient outcome or protective factors.

Selection of studies

Two authors (XM & CD) independently screened the titles. Then, they retrieved abstracts of all studies that met the inclusion criteria. If two review authors deem an article to be irrelevant, it was discarded, and vice versa. Inconsistencies in interpretation were resolved through a group of discussions with other coauthors. Endnote and RefWorks were used as bibliographic software. **Figure 1** presents the process of studies selection.

Data extraction and management

Data on author, publication year, country, sample size, cohort, study design, resilience and protective factors, measures of protective and resilient factors,

measurements of abuse, type of abuse, outcomes, measurements of outcomes, major findings were extracted independently by the two authors. If there were multiple reports of a single study, they were coded into a single record in the data extraction form. The latest published report that we found was extracted first and then additional reports were used to fill the gaps, if any. Study authors were contacted for clarification, if necessary. Any disagreements among review authors were discussed. **Table 1** presents a summary of all eligible articles.

Data synthesis

We assessed the heterogeneity of selected studies for the following study characteristics, including study subjects, measurements on child maltreatment, resilience, protective factors, resilient outcomes, and statistical analyses. The large amount of heterogeneity found for the above characteristics precluded the use of meta-analysis in this review. Differences in study characteristics significantly violate the underlying assumption of random-effects models, which assume that different studies are drawn from a normal distribution [19]. Consequently, as recommended, a qualitative approach was applied to further explore the overview of resilience after child maltreatment in general and in subtypes of maltreatment based on the primary objectives of the selected studies.

A quality assessment checklist for each study was also developed based on key study characteristics (**Appendix 1**). There were ten characteristics explored (total score=10), with the assumption of each characteristic equally contributed to study quality.

Results

The summary of the search

The initial search produced 13,675 titles, from which 5,808 abstracts were reviewed, and 247 articles were fully retrieved for full evaluation. A total of 85 articles met the eligibility criteria. The average score of study quality for selected articles was 5.80 (ranged from 3 to 9). A total of 43 studies (51%) had above-average quality. **Appendix 2** provides the full list of selected articles, which are listed according to the order of individual reference in the **Table 1**. This review covers 194,876 study participants, with the sample size ranged from 51 to 47,869 (median sample size =260). The selected 85 studies used a wide range of conceptualization for resilience, including adaptive functioning, social and emotional adjustment, family functioning, college adjustment, life satisfaction, maltreatment perpetration, academic achievement, re-traumatization, intergenerational abuse, adolescent adjustment, perceived competence, adult relationships, and absence of psychopathology.

In general, two groups of studies were identified among 85 selected studies. Group I consisted of 11 studies that examined whether resilience could protect against the negative consequence of early childhood maltreatment. Resilience was measured by a standard or structured interview or questionnaire. Most studies used the Connor-Davidson Resilience scale (CD-RISC) to assess the level of resilience. These studies universally supported that resilience reduced the risk of lifetime alcohol and illicit drug

use, PTSD, depression, interpersonal and physical distress, and had more adaptive functioning. Because these studies targeted different outcomes (mostly absence of psychopathology), and used different measurements to measure the exposure of child maltreatment, resilience and outcomes, all these inconsistences introduce a high level of heterogeneity across studies. Therefore we chose to present the results in **Table 1**.

Group II (75 studies) summarized the findings on what protective factors were associated with positive outcomes compared to those without these protective factors among people with the history of childhood maltreatment. There were several protective factors being examined for their contributions in multiple outcomes. We summarized research findings in subgroups according to the specific outcomes researched. In addition, **Figure 2** shows the detailed information on the number of studies focused on individual protective factors. Notably, several studies explored multiple outcomes and protective factors. The most frequently studied factors were social support, family cohesion, coping skills and self-control.

Table 1 provides a summary of selected articles and shows details on the attributes of the studies contained in each group and subgroup. The following review summarizes the findings according to outcomes.

*Resilience reduced **the risk of health problems and increases adaptive functioning** (11/85)- Group I*

Generally, most of the studies (9/11) used cohorts with any kind of childhood abuse, except one studied sexual abuse and another psychological abuse. A variety of

observational study designs (11/11) were used. Most had well-accepted measurements for resilience and abuse (9/11), covered children, adolescents, and adults, and examined the role of resilience in health outcomes and/or adaptive functioning. The major heterogeneity was in the measurement of various outcomes explored. However, most of studies (8/11) had an above-average score according to the study quality assessment list.

Consistently, resilient children, adolescents and adults were found to have a lower risk of developing mental health problems (depression, PTSD, alcohol abuse, illicit drug use, interpersonal and psychological distress) and a better functioning (i.e. better parenting skills). Subsequent to childhood maltreatment, resilience was associated with a better life outcome from childhood to adulthood.

*Relationships between protective factors and **absence of psychopathology** (44/85) - subgroup IIa*

Half of studies (44/85, 52%) used absence of psychopathology to indicate resilience against the history of childhood maltreatment. Among these studies, psychopathology was broadly defined, including a wide range of psychiatric disorders, i.e. depression, anxiety, PTSD, illicit drug use, alcohol use, suicide attempts and ideation, psychological distress, psychosis, and internalizing and externalizing problems. Different questionnaires and scales were used to access the presence of psychopathology and its related protective factors. In order to better present these factors, we categorized these factors into three levels, including individual factors, family and peers factors, and community/ society factors (see **Table 2**). Although different mental health problems and protective factors were studied, these studies consistently found negative relationships between protective

factors and psychopathology. These protective factors reduced the risk of individuals with a history of childhood maltreatment having mental health problems across all age groups. The study quality of these studies ranged from low to high, but most had an average study quality.

*Relationships between protective factors and **school functioning** (4/85) - subgroup IIb*

There are four studies originally from USA focused on school functioning among children, adolescents, and young adults. Consistently, these studies found that individual attributes (*intelligence, social skills),* family/peer factors *(family and peer context, relatedness with mother*), and societal factors (*social and emotional resources)* played an important role in promoting better school functioning. Protective factors during the early life before adulthood were associated with better academic performances. The study quality of these studies ranged from low to middle.

*Relationships between protective factors and **adaptive functioning (capacity of handling everyday demands and independence compared to people with the similar background)** (12/85) - subgroup IIc*

This subgroup included all three levels of protective factors: individual factors (*intelligence, personality, personal control, children social information processing, cognitive ability, well-adjusted temperament, social deprivation, positive self-esteem, ego resilience, ego-over control, social adjustment, physical self-efficacy*); family/ peers factors (*parenting, stable living situation, supportive partner or spouse, maternal*

warmth, maternal mental health problems, parental antisocial personality, parental substance use problems, adult domestic violence, sibling warmth, sibling conflict, relatedness to mother); and societal factors (*neighborhood advantage, crime rate, social cohesion, and informal social control in neighborhood).* Likewise, the presence of these factors predicted better functioning (from childhood to late adulthood) among those who had a history of childhood abuse, compared to those without these protective factors. Notably, there were a higher proportion of studies on physical abuse (4/12). All these studies were from USA. The study quality of these studies ranged from low to high, and most of them were of high quality.

*Relationships between protective factors and **interpersonal relationships** (3/85) - subgroup IId*

Three USA studies used children and female adult cohorts to explore how maternal factors (attachment and care) and social support influenced on later-on adulthood interpersonal relationships. They found that these positive maternal factors led to better interpersonal relationships. The study quality of this subgroup was mixed.

*Relationships between protective factors and **traumatization** (7/85) - subgroup IIe*

These studies used cohorts of children, adolescents and young adults and found resilient survivors of childhood maltreatment had a reduced risk of traumatization either to themselves or others. *Safe stable, nurturing relationships, mentorship, emotional support, secure attachment, locus of control, positive coping skills, family cohesion, and*

number of years living with their biological mother were associated with a reduced risk of re-traumatization and intergenerational abuse. The study quality of these studies was low to middle.

*Relationships between protective factors and **life satisfaction, psychological wellbeing, perceived competence, and self-concept** (7/85) - subgroup IIf*

This subgroup used cohorts of adolescents and young adults. These studies found that resilient survivors of childhood maltreatment were more extraverted, agreeable, conscientious, had good family cohesion, having supportive relationships, and were able to find positive meaning in the trauma, compared to their peers. Most of the protective factors examined in this subgroup of studies were individual factors (personality, sense of family coherence, sense of school membership, ego identity, education and income level, and coping skills). One study also examined the role of family characteristics in evaluation of psychological wellbeing. The study quality of these studies was generally lower than average.

*Relationships between protective factors and **aggressive behavior** (4/85) - subgroup IIg*

Four USA studies studied cohorts of children, adolescents and young adults consistently found that sensitive parenting and social support from family and friends as well as living in a protective neighborhood predicted less aggressive behavior. The study quality of these studies was very mixed, ranging from low to high.

A summary of protective factors identified across selected studies

We summarized all the protective factors based on different subtypes of childhood maltreatment. **Table 3** presents the overview of protective factors associated with different subtypes of childhood maltreatment. Clearly, there is a lack of research on emotional abuse and even less on neglect. Although most of studies generally used questionnaires to evaluate the presence and severity of maltreatment without further grouping into subtypes of maltreatment, there have been a lot of studies conducted focusing on populations with the history of physical and sexual abuse. All protective factors were further grouped into individual, familial and societal factors. Generally, the majority of studies focused on individual attributes, for instance, personality factors, and familial factors, with the emphasis on early childhood environmental factors. There were a large number of individual and familial protective factors associated with better health and wellbeing across different subtypes of maltreatment.

Discussion

To the best of our knowledge, this is the first comprehensive review to systematically synthesize relationships between resilience and its associated protective factors among people with a history of childhood maltreatment. In general, we found that 1) resilience was associated with a better life, in terms of reducing the risk of psychopathology, decreasing the likelihood of traumatization, increasing the level of perceived psychological wellbeing, and developing more adaptive skills; 2) protective factors at

individual, familial, and societal levels predicted subsequent resilience against negative consequences of childhood maltreatment; 3) although the conceptualization of resilience following childhood maltreatment, and measurements of study outcomes and protective factors have been varied, it is clear that protective factors at individual, familial and societal levels played a significant role in promoting psychological wellbeing and reduced the risk of negative consequences of childhood maltreatment; and, 4) there has been a lack of research in the field of resilience following emotional abuse, and even more scare for neglect, compared to the ample number studies concerning maltreatment in general and following physical and sexual abuse.

How and why resilience and its factors work?

Studies have proved that child maltreatment constitutes a strong environmental hazard to children's adaptive functioning [20-22]. Negative experiences have been recognized as continuing toxic conditions whereby people with the experience of maltreatment would then be exposed to further chronic and severe stress [23]. Negative experiences significantly increase the risk of development of psychopathology across the lifespan [24], the intergenerational transmission of maltreatment, and re-traumatization [25]. The body has to pay a biological price when faced with repeated major stressors (i.e. child maltreatment) and the resultant physiological sequelae of chronic exposure to heightened and sustained neural and neuroendocrine responsiveness [26]. Therefore, factors that reduce the allostatic load could prevent or intervene against the negative consequences of childhood maltreatment. They are many factors, which can decrease the allostatic load at individual, familial and societal levels.

Individuals who begin on the same developmental trajectory may exhibit very different patterns of adaption and maladaptation. When confronted with childhood maltreatment, some may exhibit adaptive functioning across the rest of lifespan and others not. The pathway to adaptive functioning can be very complicated following different paths. It involves the interplay between biological and psychological organization, current experiences and environments, the timing of adversity and experience, and family and community context. It is important to recognize and triage major determinants associated with resilience in the face of experiencing severe stressors [27].

Which protective factors contribute to adaptive functioning?

Due to the wide variation in measurements of child maltreatment and outcomes and different study participants, it is difficult to apply a simple method comparing primary findings across studies. However, we found that the family and/or peers factors, for example, maternal care, close mother-child relationship and friendship and societal factors (i.e. social support) had shown consistent protection in better life and adaptive functioning. In light of gender specific findings of prevalent subtypes of child abuse, studies have been conducted to especially explore protective factors for individual subtypes of child maltreatment among participants of a particular gender. A list of sex- and gender-specific determinants has been reported [28-39], and most of these studies were primarily interested in resilience associated sexual abuse among women and girls. Both familial and societal factors provide supportive environment and relationships that could facilitate adaptive responses, which reduce the allostatic load on stress response

system [23]. Notably, the protection of protective factors cannot last through the whole life, as it is a dynamic process balancing between resilience and allostatic load. Although none of the selected studies reported the "bounce back" phenomenon among formerly resilient individuals, previous literature did introduce resilience as a dynamic concept [40]. The absence of "bounce back" in the studies reviewed may be explained by the fact that all selected studies are cross-sectional or short-term longitudinal studies. Long-term longitudinal studies are required to observe the trajectory of resilience across various turning points across the lifespan.

It is noteworthy that different protective factors were identified among different age groups following with the exposure of childhood maltreatment. In general, early environmental factors, such as maternal care, relationship with mother at younger ages, etc. played a significant role across the lifespan, especially for early life. As children and youths grow up, more factors contributed to the protection, including both early life factors and time-point specific factors (such as school environmental factors, peer relationships, etc. for adolescents.). The protection of these factors in health and adaptive functioning dynamically change as an individual ages. Some factors become more distal and lose their dominant roles in their protection and other proximal factors become more important. In addition, the importance of protective factors is also influenced by the age of onset of maltreatment, which is critical for child development and the likelihood of psychological problems later on. We found that the earlier exposure of maltreatment the greater protection was needed from early environmental factors. This may be partially explained by the more vulnerable and sensitive period of neurodevelopment in early life. Also, later exposure of maltreatment in adolescents was associated with more familial

and societal factors (relatively proximal protective factors) to buffer the negative influence of maltreatment on health and adaptive functioning.

Strengths & limitations

Although research on resilience of child maltreatment has been conducted for decades, only a few systematic reviews have been reported and even fewer had been conducted on selected types of child maltreatment for specific measures of adaptive functioning, i.e. a systematic review on sexual abuse and psychopathology [10]. This current review is one of few studies using a systematic approach to explore what protective factors are associated with resilience following childhood maltreatment across the life course. Furthermore, it provides synthesized results on the relationships between all kinds of childhood maltreatment and a full list of adaptive functioning. It offers an overview of resilience among people with a history of child maltreatment. There are a few limitations to note. Firstly, the conceptualization of resilience has evolved over the decades, and it has generally been understood as the achievement of adaptive functioning in the context of ongoing significant adversity, that poses a great challenge in synthesizing results from relevant studies, as it can introduce significant heterogeneity in the review. Secondly, the study quality of the selected studies varied a lot when considering study design, sample size, confounders, statistical analyses, and measurements of outcomes and exposures. The results of this review should be interpreted with caution. Thirdly, the identification of child maltreatment (and its subtypes) varied across studies. Among the selected studies, only a small proportion of them verified the status of child maltreatment by applying official records, whereas the

majority of studies used a set of survey questionnaires. It clearly introduces a significant heterogeneity in terms of measurement accuracy, abuse severity, and its impact. We found that findings from studies with official records were generally consistent with studies using questionnaires and scales. However, due to the limited number of studies with official records, the number of protective and resilient factors studied in these studies was limited. Fourthly, this review only studied the literature published in English. It is possible that this review does not capture those articles published in other languages. As most of the reviewed studies are from developed countries, there is an obvious need for studies carried out in developing countries. Lastly, due to the fact of inconsistent measurements of study characteristics (i.e. study outcomes, conceptualization of resilience, study populations, etc.), we did not, as recommended, perform a meta-analysis for selected studies, as biases would be introduced into the pooled results.

Practical implications of this review

Consistent with the literature, this review reinforces that the negative sequelae of childhood maltreatment may be prevented or moderated if protective factors are provided at the right time. Resilience is not "immutable". There are several sensitive periods or so-called "turning points" closely related to a dynamic process of functioning. They help either remaining in an adaptive or positive functioning trajectory despite adversity, or becoming maladaptive staying on a negative functioning trajectory.

From research perspectives, the conceptualization of resilience should include multiple domains, as the research in this area has expanded becoming more multidisciplinary and with composite scores being used more often to indicate the

competent functioning. In addition, not only the accuracy of maltreatment experience should be confirmed, but also some indicators of severity of maltreatment experience should be added into the data collection and analysis. If possible, official records or standardized questionnaires (or the two methods combined) should be employed. Long-term longitudinal studies are needed to investigate the trajectory of resilience across the lifespan in order to identify the sensitive periods or critical turning points. As we noted in this review, the majority of primary studies reviewed here are from USA (60/85), followed by UK (5/85), Canada (5/85), Germany (4/85), and other countries. Findings from developing countries are also important to help understand a complete picture of resilience and child maltreatment.

From population and public health perspectives, early childhood is crucial to prevention and intervention efforts for those confronted with child adversity. Supportive environment (from family, school, to society) should be included in the target lists for vulnerable groups, as they have consistently been confirmed to be protective. Although the potential benefits of health promotion at any age cannot be underestimated, the emphasis should be given to an early age, if possible. Prevention studies (including cost-effective studies) are needed to evaluate the efficacy and effectiveness of these prevention strategies among the high-risk population groups.

Conclusions

Overall, we found that a scientific consensus is emerging that protective factors were associated with a wide range of adaptive functioning that guard against the negative sequelae of child maltreatment. Individual, familial and societal factors were linked with

resilience, and the most consistent findings related to familial factors. Studies with the following characteristics are still warranted: long-term longitudinal study design, large sample size, from developing countries, using a multi-domain definition for resilience and standardized measurements of child maltreatment, taking multiple covariates (for instance, neighborhood disadvantages, childhood economic status, critical life events, age of onset of maltreatment, etc.) into account in the data analysis plan. Health prevention and promotion could significantly benefit from advances in neuroscience and biology of stress system, as they can help to disentangle the complexity of biological mechanisms underlying the resilience-abuse relationship. These disciplinary perspectives should be integrated into resilience research as a part of the agenda.

Conflict of interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

1. Butchart A, Harvey AP, Furniss T (2006) Preventing child maltreatment: a guide to taking action and generating evidence. Geneva (CH): World Health Organization and International Society for Prevention of Child Abuse and Neglect.
2. Afifi TO, Macmillan HL (2011) Resilience following child maltreatment: a review of protective factors. Can J Psychiatry 56 (5):266-272. doi: 10.1177/070674371105600505
3. WHO (2012) Media Centre: Child maltreatment. Geneva: World Health Organzation
4. Howe ML, Cicchetti D, Toth SL (2006) Children's basic memory processes, stress, and maltreatment. Dev Psychopathol 18 (3):759-769.
5. Ayoub CC, O'Connor E, Rappolt-Schlichtmann G, Fischer KW, Rogosch FA, Toth SL, Cicchetti D (2006) Cognitive and emotional differences in young maltreated children: a translational application of dynamic skill theory. Dev Psychopathol 18 (3):679-706.
6. Kim J, Cicchetti D (2006) Longitudinal trajectories of self-system processes and depressive symptoms among maltreated and nonmaltreated children. Child Dev 77 (3):624-639. doi:10.1111/j.1467-8624.2006.00894.x
7. Li M, D'Arcy C, Meng X (2016) Maltreatment in childhood substantially increases the risk of adult depression and anxiety in prospective cohort studies: systematic review, meta-analysis, and proportional attributable fractions. Psychol Med 46 (4):717-730. doi:10.1017/S0033291715002743
8. Masten AS, Cicchetti D (2010) Developmental cascades. Dev Psychopathol 22 (3):491-495. doi:10.1017/S0954579410000222
9. Kendall-Tackett KA, Williams LM, Finkelhor D (1993) Impact of sexual abuse on children: a review and synthesis of recent empirical studies. Psychol Bull 113 (1):164-180.
10. Domhardt M, Munzer A, Fegert JM, Goldbeck L (2015) Resilience in Survivors of Child Sexual Abuse: A Systematic Review of the Literature. Trauma Violence Abuse 16 (4):476-493. doi:10.1177/1524838014557288
11. Cicchetti D (2010) Resilience under conditions of extreme stress: a multilevel perspective. World Psychiatry 9 (3):145-154.
12. Daigneault I, Hebert M, Tourigny M (2007) Personal and interpersonal characteristics related to resilient developmental pathways of sexually abused adolescents. Child Adolesc Psychiatr Clin N Am 16 (2):415-434, x. doi:10.1016/j.chc.2006.11.002
13. Rutter M (1985) Resilience in the face of adversity. Protective factors and resistance to psychiatric disorder. Br J Psychiatry 147:598-611.
14. Heller SS, Larrieu JA, D'Imperio R, Boris NW (1999) Research on resilience to child maltreatment: empirical considerations. Child Abuse Negl 23 (4):321-338.
15. Haskett ME, Nears K, Ward CS, McPherson AV (2006) Diversity in adjustment of maltreated children: factors associated with resilient functioning. Clin Psychol Rev 26 (6):796-812. doi:10.1016/j.cpr.2006.03.005
16. Herrmann D, Scherg H, Verres R, von Hagens C, Strowitzki T, Wischmann T (2011) Resilience in infertile couples acts as a protective factor against infertility-specific distress and impaired quality of life. J Assist Reprod Genet 28 (11):1111-1117. doi:10.1007/s10815-011-9637-2
17. Dufour MH, Nadeau L, Bertrand K (2000) [Resilience factors in the victims of sexual abuse: state of affairs]. Child Abuse Negl 24 (6):781-797.

18. Moher D, Liberati A, Tetzlaff J, Altman DG, Group P (2009) Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ 339:b2535. doi:10.1136/bmj.b2535
19. Higgins JP, Thompson SG, Spiegelhalter DJ (2009) A re-evaluation of random-effects meta-analysis. J R Stat Soc Ser A Stat Soc 172 (1):137-159. doi:10.1111/j.1467-985X.2008.00552.x
20. Cicchetti D, Toth SL (1995) A developmental psychopathology perspective on child abuse and neglect. J Am Acad Child Adolesc Psychiatry 34 (5):541-565. doi:10.1097/00004583-199505000-00008
21. Cicchetti D (2013) Annual Research Review: Resilient functioning in maltreated children--past, present, and future perspectives. J Child Psychol Psychiatry 54 (4):402-422. doi:10.1111/j.1469-7610.2012.02608.x
22. Cicchetti D (2016) Socioemotional, Personality, and Biological Development: Illustrations from a Multilevel Developmental Psychopathology Perspective on Child Maltreatment. Annu Rev Psychol 67:187-211. doi:10.1146/annurev-psych-122414-033259
23. Shonkoff JP, Boyce WT, McEwen BS (2009) Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. JAMA 301 (21):2252-2259. doi:10.1001/jama.2009.754
24. Nanni V, Uher R, Danese A (2012) Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: a meta-analysis. Am J Psychiatry 169 (2):141-151. doi:10.1176/appi.ajp.2011.11020335
25. Trickett PK, Noll JG, Putnam FW (2011) The impact of sexual abuse on female development: lessons from a multigenerational, longitudinal research study. Dev Psychopathol 23 (2):453-476. doi:10.1017/S0954579411000174
26. Ganzel BL, Morris PA, Wethington E (2010) Allostasis and the human brain: Integrating models of stress from the social and life sciences. Psychol Rev 117 (1):134-174. doi:10.1037/a0017773
27. Luthar SS, Cicchetti D, Becker B (2000) The construct of resilience: a critical evaluation and guidelines for future work. Child Dev 71 (3):543-562.
28. Edwards KM, Probst DR, Rodenhizer-Stampfli KA, Gidycz CA, Tansill EC (2014) Multiplicity of child maltreatment and biopsychosocial outcomes in young adulthood: the moderating role of resiliency characteristics among female survivors. Child Maltreat 19 (3-4):188-198. doi:10.1177/1077559514543354
29. Walsh K, Blaustein M, Knight WG, Spinazzola J, van der Kolk BA (2007) Resiliency factors in the relation between childhood sexual abuse and adulthood sexual assault in college-age women. J Child Sex Abus 16 (1):1-17. doi:10.1300/J070v16n01_01
30. Liang B, Williams LM, Siegel JA (2006) Relational outcomes of childhood sexual trauma in female survivors: a longitudinal study. J Interpers Violence 21 (1):42-57. doi:10.1177/0886260505281603
31. Banyard VL, Williams LM, Siegel JA (2002) Re-traumatization among adult women sexually abused in childhood: exploratory analyses in a prospective study. J Child Sex Abus 11 (3):19-48.
32. Lam JN, Grossman FK (1997) Resiliency and adult adaptation in women with and without self-reported histories of childhood sexual abuse. J Trauma Stress 10 (2):175-196.
33. Wahab S, Tan SM, Marimuthu S, Razali R, Muhamad NA (2013) Young female survivors of sexual abuse in Malaysia and depression: what factors are associated with better outcome? Asia Pac Psychiatry 5 Suppl 1:95-102. doi:10.1111/appy.12051

34. Wilson L, Scarpa A (2014) Childhood abuse, perceived social support, and posttraumatic stress symptoms: a moderation model. Psychological trauma: Theory, Research, Practice, and Policy 6:512-518. doi: 10.1037/a0032635
35. Elkins J (2011) Developmental outcomes in a nationally representative sample of sexually abused boys: The moderating influence of family and peer context. Columbia University
36. Bruggen L (2011) Romantic relationships in young women with a history of child maltreatment: examining the role of mentoring relationships as a protective factor. University of Victoria
37. Traina D (2008) Resilience in mothers who had been victims of physical child abuse: an exploration of the mediating effects of personality characteristics, coping skills, social support, and family characteristics. Seton Hall University
38. MCclure F, Chavez D, Agars M, Peacock M, Matosian A (2008) Resilience in sexually abused women: risk and protective factors. J Fam Viol 23:81-88. doi: 10.1007/s10896-007-9129-4
39. Moran PB, Eckenrode J (1992) Protective personality characteristics among adolescent victims of maltreatment. Child Abuse Negl 16 (5):743-754.
40. Rutter M (2012) Resilience as a dynamic concept. Dev Psychopathol 24 (2):335-344. doi:10.1017/S0954579412000028

Appendix 1. A checklist for study quality assessment

Items	Quality Criteria	Quality Score
1	Representativeness of the population	Population-based representative = 1; Not representative, selected group, volunteers, convenient samples, or no description = 0
2	Does the paper have a large sample size for its study design?	If the sample size >100 =1; otherwise =0
3	Application of longitudinal study design	Yes = 1; No = 0
4	Ascertainment of exposure to child maltreatment	Data on child abuse extracted from official records = 1; otherwise = 0
5	Assessment of child maltreatment	Standard or structured interview or questionnaire =1, or selective questions or no description = 0
6	Assessment of outcome	Standard or structured interview or questionnaire = 1; not systematic, not specified, or self-reported = 0
7	Application of a multi-domain conceptualization of resilience	Yes = 1; No = 0
8	Demonstration that outcome of interest was not present at start of study	Yes = 1; No = 0
9	Appropriate statistical analysis	Yes = 1; No = 0
10	Appropriate methods to control confounding	Yes (multivariable adjustments in models) = 1; No (univariate analysis or controls for age/sex only) = 0

Appendix 2. Articles selected in this review

Group I

Beutel, M.E., Tibubos, A.N., Klein, E., Schmutzer, G., Reiner, I., Kocalevent, R-D.& Brahler, E. (2017). Childhood adversities and distress - The role of resilience in a representative sample. *PloS One* doi.org/10.1371/journal.pone.0173826.

Kim, H., Kim, S.A. & Kong, S. (2017). Resilience mediates impact of some

childhood maltreatment on post-traumatic stress symptoms in conscripted marines in the Republic of Korea. *Res Nurs Health* **40**, 51-62.

Tlapek, S.M., Auslander, W. Edmond, T., Gerke, D., Schrag, R.V. & Threlfall, J. (2017). The moderating role of resiliency on the negative effects of childhood abuse for adolescent girls involved in child welfare. *Children and Youth Services Review* **73**, 437-44.

Arslan, G. (2016). Psychological maltreatment, emotional and behavioral

problems in adolescents: The mediating role of resilience and self-esteem. *Child Abuse Negl* **52**, 200-9.

Sexton, M. B., Hamilton, L., McGinnis, E. W., Rosenblum, K. L. & Muzik, M. (2015). The roles of resilience and childhood trauma history: main and moderating effects on postpartum maternal mental health and functioning. *J Affect Disord* **174**, 562-8.

Wingo, A. P., Ressler, K. J. & Bradley, B. (2014). Resilience characteristics mitigate tendency for harmful alcohol and illicit drug use in adults with a history of childhood abuse: a cross-sectional study of 2024 inner-city men and women. *J Psychiatr Res* **51**, 93-9.

Edwards, K. M., Probst, D. R., Rodenhizer-Stampfli, K. A., Gidycz, C. A. & Tansill, E. C. (2014). Multiplicity of child maltreatment and biopsychosocial outcomes in young adulthood: the moderating role of resiliency characteristics among female survivors. *Child Maltreat* **19**, 188-98.

Schulz, A., Becker, M., Van der Auwera, S., Barnow, S., Appel, K., Mahler, J., Schmidt, C. O., John, U., Freyberger, H. J. & Grabe, H. J. (2014). The impact of childhood trauma on depression: does resilience matter? Population-based results from the Study of Health in Pomerania. *J Psychosom Res* **77**, 97-103.

Wingo, A. P., Wrenn, G., Pelletier, T., Gutman, A. R., Bradley, B. & Ressler, K. J. (2010). Moderating effects of resilience on depression in individuals with a history of childhood abuse or trauma exposure. *J Affect Disord* **126**, 411-4.

Graham-Bermann, S. A., Gruber, G., Howell, K. H. & Girz, L. (2009). Factors discriminating among profiles of resilience and psychopathology in children exposed to intimate partner violence (IPV). *Child Abuse Negl* **33**, 648-60.

Kaufman, J., Yang, B. Z., Douglas-Palumberi, H., Houshyar, S., Lipschitz, D., Krystal, J. H. & Gelernter, J. (2004). Social supports and serotonin transporter gene moderate depression in maltreated children. *Proc Natl Acad Sci U S A* **101**, 17316-21.

Group II

Baytunca, M.B., Ata, E., Ozbaran, B., Kaya, A., Kose, S., Aktas, E.O., Aydin, R., Guney, S., Yuncu, Z., Erermis, S., Bildik, T & Aydin, C. (2017). Childhood sexual abuse and supportive factors. *Pediatr Int* **59**, 10-5.

Miller-Graff, L.E., Howell, K.H., Martinez-Torteya, C. & Grein, K. (2017). Direct and indirect effects of maltreatment and social support on children's social competence across reporters. *Child Psychiatry Hum Dev* **48**, 741-53.

Lind, M.J., Brown, R.C., Sheerin, C.M., York, T.P., Myers, J.M., Kendler, K.S. & Amstadter, A.B. (2017). Does parenting influence the enduring impact of severe childhood sexual abuse on psychiatric resilience in adulthood? *Child Psychiatry Hum Dev* doi: 10.1007/s10578-017-0727-y.

Mohr., D. & Rosen, L.A. (2017). The impact of protective factors on posttraumatic growth for college student survivors of childhood maltreatment. *J Aggress Maltreatment Trauma* **26**, 756-71.

Go, M., Chu, C.M., Barlas, J. & Chng, G.S. (2017). The role of strengths in anger and conduct problems in maltreated adolescents. *Child Abuse Negl* **67**, 22-31.

Oshri, A., Topple, T.A. & Carlson, M.W. (2017). Positive youth development and resilience: Growth patterns of social skills among youth investigated for maltreatment. *Child Dev* **88**, 1087-99.

Shafa, Vanessa. (2016). Family relationship factors and their effects on resilience in adolescents maltreated by caregivers. Alliant International University.

Hardner, K., Wolf, M.R. & Rinfrette, E.S. (2017). Examining the relationship between higher educational attainment, trauma symptoms, and internalizing behaviors in child sexual abuse survivors. *Child Abuse Negl* http://dx.doi.org/10.1016/j.chiabu.2017.10.007.

Yoon, S., Tebben, E & Lee, G. (2017). Early childhood aggression among child welfare involved children: The interplay between the type of child maltreatment and ecological protective factors. *Child Youth Serv Rev* **81**, 72-80.

Kaye-Tzadok, A & Davidson-Arad, B. (2017). The contribution of cognitive strategies to the resilience of women survivors of childhood sexual abuse and non-abused women. *Violence Against Women* **23**, 993-1015.

Schury, K., Zimmermann, J., Umlauft, M., Hulbert, A.L. Guendel, H., Ziegenhain, U. & Kolassa, I-T. (2017). Childhood maltreatment, postnatal distress and the protective role of social support. *Child Abuse Negl* **67**, 228-39.

Daigneault, I., Dion, J., Hebert, M. & Bourgeois, C. (2016). Mindfulness as mediator and moderator of post-traumatic symptomatology in adolescence following childhood sexual abuse or assault. *Mindfulness* **7**, 1306-15.

Afifi, T., MacMillan, H.L., Taillieu, T., Turner, S., Cheung, K., Sareen, J. & Boyle, M.H. (2016). Individual- and relationship-level factors related to better mental health outcomes following child abuse: Results from a nationally representative Canadian sample. *Can J Psychiatry* **61**, 776-88.

Arslan, G. (2016). Psychological maltreatment, emotional and behavioral

problems in adolescents: The mediating role of resilience and self-esteem. *Child Abuse Negl* **52**, 200-9.

Hillmann, K., Neukel, C., Hagemann, D., Herpertz, S.C. & Bertsch, K. (2016). Resilience factors in women with severe early-life maltreatment. *Psychopathology* **49**, 261-8.

Taubner, S., Zimmermann, L., Ramberg, A. & Schroder, P. (2017). Mentalization mediates the relationship between early maltreatment and potential for violence in adolescence. *Psychopathology* **49**, 236-46.

Dion, J., Matte-Gagne, C., Daigneault, I., Blackburn, M-E., Hebert, M. McDuff, P., Auclair, J., Veillette, S. & Perron, M. (2016). A proposective study of the impact of child maltreatment and friend support on psychological distress trajectory: From adolescence to emerging adulthood. *J Affect Disord* **189**, 336-43.

Cleary, S.E. (2016). Pathways from childhood abuse to positive adapation: The moderating roles of social support and coping style. University of Denver.

Muzik, M., Umarji, R., Sexton, M.B. & Davis, M.T. (2017). Family social support modifies the relationships between childhood maltreatment severity, economic adversity and postpartum depressive symptoms. *Matern Child Health J* **21**, 1018-25.

Aydin, B., Akbas, S., Turla, A. & Dundar, C. (2016). Depression and post-traumatic stress disorder in child victims of sexual abuse: perceived social support as a protection factor. *Nord J Psychiatry* **70**, 418-23.

Henry, K. L., Thornberry, T. P. & Lee, R. D. (2015). The Protective Effects of Intimate Partner Relationships on Depressive Symptomatology Among Adult Parents Maltreated as Children. *J Adolesc Health* **57**, 150-6.

Gayer-Anderson, C., Fisher, H. L., Fearon, P., Hutchinson, G., Morgan, K., Dazzan, P., Boydell, J., Doody, G. A., Jones, P. B., Murray, R. M., Craig, T. K. & Morgan, C. (2015). Gender differences in the association between childhood physical and sexual abuse, social support and psychosis. *Soc Psychiatry Psychiatr Epidemiol* **50**, 1489-500.

Manning, L. G., Davies, P. T. & Cicchetti, D. (2014). Interparental violence and childhood adjustment: how and why maternal sensitivity is a protective factor. *Child Dev* **85**, 2263-78.

Maples, L., Park, S., Nolen, J. & Rosen, L. (2014). Resilience to childhood abuse and neglect in college students. *Journal of Aggression, Maltreatment & Trauma* **23**, 1001-1019.

Lowell, A., Renk, K. & Adgate, A. H. (2014). The role of attachment in the relationship between child maltreatment and later emotional and behavioral functioning. *Child Abuse Negl* **38**, 1436-49.

Sperry, D & Widom, C.S. (2013). Child abuse and neglect, social support, and psychopathology in adulthood: A prospective investigation. *Child Abuse Negl* 37, 415-25.

Hengartner, M. P., Muller, M., Rodgers, S., Rossler, W. & Ajdacic-Gross, V. (2013). Can protective factors moderate the detrimental effects of child maltreatment on personality functioning? *J Psychiatr Res* **47**, 1180-6.

Wahab, S., Tan, S. M., Marimuthu, S., Razali, R. & Muhamad, N. A. (2013). Young female survivors of sexual abuse in Malaysia and depression: what factors are associated with better outcome? *Asia Pac Psychiatry* **5 Suppl 1**, 95-102.

Wilson, L. & Scarpa, A. (2014). Childhood abuse, perceived social support, and posttraumatic stress symptoms: a moderation model. *Psychological trauma: Theory, Research, Practice, and Policy* **6**, 512-518.

Folger, S. F. & Wright, M. O. (2013). Altering risk following child maltreatment: Family and friend support as protective factors. *J Fam Viol* **28**, 325-337.

Whitelock, C., Lamb, M. & Rentfrow, P. (2013). Overcoming trauma: Psychological and demographic characteristics of child sexual abuse surviors in adulthood. *Clinical psychological science* **1**, 351-362.

Thornberry, T. P., Henry, K. L., Smith, C. A., Ireland, T. O., Greenman, S. J. & Lee, R. D. (2013). Breaking the cycle of maltreatment: the role of safe, stable, and nurturing relationships. *J Adolesc Health* **53**, S25-31.

Kim-Spoon, J., Haskett, M. E., Longo, G. S. & Nice, R. (2012). Longitudinal study of self-regulation, positive parenting, and adjustment problems among physically abused children. *Child Abuse Negl* **36**, 95-107.

Williams, J. & Nelson-Gardell, D. (2012). Predicting resilience in sexually abused adolescents. *Child Abuse Negl* **36**, 53-63.

Ng, R. M., Bhugra, D., McManus, F. & Fennell, M. (2011). Filial piety as a protective factor for depression in survivors of childhood abuse. *Int Rev Psychiatry* **23**, 100-12.

Elkins, J. (2011). Developmental outcomes in a nationally representative sample of sexually abused boys: The moderating influence of family and peer context. Columbia University.

Coohey, C., Renner, L. M., Hua, L., Zhang, Y. J. & Whitney, S. D. (2011). Academic achievement despite child maltreatment: a longitudinal study. *Child Abuse Negl* **35**, 688-99.

Philippe, F., Laventure, S., Beaulieu-Pelletier, G., Lecours, S. & Lekes, N. (2011). Eco-resiliency as a mediator between childhood trauma and psychological symptoms. *Journal of Social and Clinical Psychology* **30**, 583-398.

Kim, J. & Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *J Child Psychol Psychiatry* **51**, 706-16.

Walter, K. H., Horsey, K. J., Palmieri, P. A. & Hobfoll, S. E. (2010). The role of protective self-cognitions in the relationship between childhood trauma and later resource loss. *J Trauma Stress* **23**, 264-73.

Pitzer, L. M. & Fingerman, K. L. (2010). Psychosocial resources and associations between childhood physical abuse and adult well-being. *J Gerontol B Psychol Sci Soc Sci* **65**, 425-33.

Powers, A., Ressler, K. J. & Bradley, R. G. (2009). The protective role of friendship on the effects of childhood abuse and depression. *Depress Anxiety* **26**, 46-53.

Schultz, D., Tharp-Taylor, S., Haviland, A. & Jaycox, L. (2009). The relationship between protective factors and outcomes for children investigated for maltreatment. *Child Abuse Negl* **33**, 684-98.

Bruggen, L. (2009). Romantic Relationships in Young Women with a History of Child Maltreatment: Examining the Role of Mentoring Relationships as a Protective Factor. University of Victoria.

Reyes, C. J. (2008). Exploring the relations among the nature of the abuse, perceived parental support, and child's self-concept and trauma symptoms among sexually abused children. *J Child Sex Abus* **17**, 51-70.

Kim, J. (2008). The protective effects of religiosity on maladjustment among maltreated and nonmaltreated children. *Child Abuse Negl* **32**, 711-20.

Walsh, K., Blaustein, M., Knight, W. G., Spinazzola, J. & van der Kolk, B. A. (2007). Resiliency factors in the relation between childhood sexual abuse and adulthood sexual assault in college-age women. *J Child Sex Abus* **16**, 1-17.

Banyard, V. L., Williams, L. M. & Siegel, J. A. (2002). Re-traumatization among adult women sexually abused in childhood: exploratory analyses in a prospective study. *J Child Sex Abus* **11**, 19-48.

Traina, D. (2008). Resilience in mothers who had been victims of physical child abuse: an exploration of the mediating effects of personality characteristics, coping skills, social support, and family characteristics. Seton Hall University.

MCclure, F., Chavez, D., Agars, M., Peacock, M. & Matosian, A. (2008). Resilience in sexually abused women: risk and protective factors. *J Fam Viol* **23**, 81-88.

Haskett, M. E., Allaire, J. C., Kreig, S. & Hart, K. C. (2008). Protective and vulnerability factors for physically abused children: effects of ethnicity and parenting context. *Child Abuse Negl* **32**, 567-76.

Eisenberg, M. E., Ackard, D. M. & Resnick, M. D. (2007). Protective factors and suicide risk in adolescents with a history of sexual abuse. *J Pediatr* **151**, 482-7.

Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C. & Maughan, B. (2007). Resilience to adult psychopathology following childhood maltreatment: evidence from a community sample. *Child Abuse Negl* **31**, 211-29.

DuMont, K. A., Widom, C. S. & Czaja, S. J. (2007). Predictors of resilience in abused and neglected children grown-up: the role of individual and neighborhood characteristics. *Child Abuse Negl* **31**, 255-74.

Jaffee, S. R., Caspi, A., Moffitt, T. E., Polo-Tomas, M. & Taylor, A. (2007). Individual, family, and neighborhood factors distinguish resilient from non-resilient maltreated children: a cumulative stressors model. *Child Abuse Negl* **31**, 231-53.

Cicchetti, D. & Rogosch, F. A. (2007). Personality, adrenal steroid hormones, and resilience in maltreated children: a multilevel perspective. *Dev Psychopathol* **19**, 787-809.

Liang, B., Williams, L. M. & Siegel, J. A. (2006). Relational outcomes of childhood sexual trauma in female survivors: a longitudinal study. *J Interpers Violence* **21**, 42-57.

Nomura, Y., Chemtob, C. M., Fifer, W. P., Newcorn, J. H. & Brooks-Gunn, J. (2006). Additive interaction of child abuse and perinatal risk as signs of resiliency in adulthood. *Ann N Y Acad Sci* **1094**, 330-4.

Flores, E., Cicchetti, D. & Rogosch, F. A. (2005). Predictors of resilience in maltreated and nonmaltreated Latino children. *Dev Psychol* **41**, 338-51.

Lyle-Lahroud, T. (2005). The influence of childhood maltreatment on adolescent adjustment: The mediating role of cognitive appraisals and coping strategies. University of Texas.

Kaufman, J., Yang, B. Z., Douglas-Palumberi, H., Houshyar, S., Lipschitz, D., Krystal, J. H. & Gelernter, J. (2004). Social supports and serotonin transporter gene moderate depression in maltreated children. *Proc Natl Acad Sci U S A* **101**, 17316-21.

Leifer, M., Kilbane, T. & Kallick, S. (2004). Vulnerability or resilience to intergenerational sexual abuse: the role of maternal factors. *Child Maltreat* **9**, 78-91.

Kim, J. & Cicchetti, D. (2003). Social self-efficacy and behavior problems in maltreated and nonmaltreated children. *J Clin Child Adolesc Psychol* **32**, 106-17.

Lynch, K. (2002). Children Exposed to Domestic Violence: Resiliency and the Mother-Child Relationship. University of Montana.

Bolger, K. E. & Patterson, C. J. (2001). Pathways from child maltreatment to internalizing problems: perceptions of control as mediators and moderators. *Dev Psychopathol* **13**, 913-40.

Morrow, J. (2001). Childhood trauma, family functioning and adult health: Protective factors as mediating variables. University of Rhode Island.

Sagy, S. & Dotan, N. (2001). Coping resources of maltreated children in the family: a salutogenic approach. *Child Abuse Negl* **25**, 1463-80.

Varia, R. & Abidin, R. R. (1999). The minimizing style: perceptions of psychological abuse and quality of past and current relationships. *Child Abuse Negl* **23**, 1041-55.

Feiring, C., Taska, L. & Lewis, M. (1998). Social support and children's and adolescents' adaptation to sexual abuse. *Journal of Interpersonal Violence* **13**, 240-260.

Cicchetti, D. & Rogosch, F. A. (1997). The role of self-organization in the promotion of resilience in maltreated children. *Dev Psychopathol* **9**, 797-815.

Lam, J. N. & Grossman, F. K. (1997). Resiliency and adult adaptation in women with and without self-reported histories of childhood sexual abuse. *J Trauma Stress* **10**, 175-96.

Liem, J. H., James, J. B., O'Toole, J. G. & Boudewyn, A. C. (1997). Assessing resilience in adults with histories of childhood sexual abuse. *Am J Orthopsychiatry* **67**, 594-606.

Toth, S. L. & Cicchetti, D. (1996). The impact of relatedness with mother on school functioning in maltreated children. *Journal of School Psychology* **34**, 247-266.

Moran, P. B. & Eckenrode, J. (1992). Protective personality characteristics among adolescent victims of maltreatment. *Child Abuse Negl* **16**, 743-54.

Scalzo, J. (1991). Beyond survival: Keys to resilience among women who experienced childhood sexual abuse. Simon Fraser University.

Table 1 A summary of the selected articles in this review

Authors	Year	Study setting	Sample size	Study design	Resilient or protective factors	Outcome	Type of childhood maltreatment	Groups by major objectives of the original studies
Group I: Resilience associated with better life outcomes								
Beutel *et al.*	2017	Germany	2508	Cross-sectional	Resilience	Distress	All	I=whether resilience associated with better life outcomes
Kim *et al.*	2017	South Korea	169	Cross-sectional	Resilience	Post-traumatic stress symptoms	All	I=whether resilience associated with better life outcomes
Tlapek *et al.*	2017	USA	237	Cross-sectional	Resilience	Depression, PTSD, substance abuse and revictimization	All	I=whether resilience associated with better life outcomes
Arslan	2016	Turkey	937	Cross-sectional	Resilience	Behaviroal and emotional problems	Psychological abuse	I=whether resilience associated with better life outcomes
Sexton *et al.*	2015	USA	214	Longitudinal cohort	Resilience	Posttraumatic stress, depression, family functioning, postpartum sense of competence	All	I=whether resilience associated with better life outcomes
Wingo *et al.*	2014	USA	2024	Cross-sectional	Resilience	Alcohol use, illicit drug use	All	I=whether resilience associated with better life outcomes
Edwards *et al.*	2014	USA	765	Longitudinal cohort	Resilience	Bio-psycho-social functioning (psychological distress, physical health distress, interpersonal distress)	All	I=whether resilience associated with better life outcomes
Schulz *et al.*	2014	Germany	2046	Cohort	Resilience	Major depressive disorder	All	I=whether resilience associated with better life outcomes

Wingo *et al.*	2010	USA	792	Cross-sectional	Resilience	Depression	All	I=whether resilience associated with better life outcomes
Graham-Bermann	2009	USA	219	Cross-sectional	Resilience	Social and emotional adjustment	Intimate partner violence	I=whether resilience associated with better life outcomes
Kaufman	2005	USA	195	Case-control	Multidimensional resilience	Adaptive functioning	All	I=whether resilience associated with better life outcomes
Group II: Protective factors associated with better life outcomes								
Baytunca *et al.*	2017	Turkey	181	Cross-sectional	Family integrity and school attendance	Absence of psychopathology	Sexual abuse	II=which protective factor worked IIa: Mental health problems
Miller-Graff *et al.*	2017	USA	783	Cross-sectional	Social support	Social competence	All	II =which protective factor worked II d: Interpersonal relationships
Lind *et al.*	2017	USA	1423	Longitudinal cohort	Parental warmth	Psychiatric resilience	Sexual abuse	II=which protective factor worked IIa: Mental health problems
Mohr &Rosen	2017	USA	501	Cross-sectional	Acceptance, emotional support, positive reframing	Posttraumatic growth	All	II =which protective factor worked II c: Adaptive functioning
Go *et al.*	2017	Singapore	130	Cross-sectional	Having talents/interests, family relationships, educational support, the role of recognition and application of these strengths	Conduct problems	All	II=which protective factor worked IIa: Mental health problems
Oshri *et al.*	2017	USA	1179	Longitudinal cohort	Social skills	Positive youth development and resilience	All	II =which protective factor worked

								II c: Adaptive functioning
Shafa	2017	USA	3275	Longitudinal cohort	Positive family experience and sibling relationship	Emotional functioning and problems	Physical and sexual abuse	II=which protective factor worked IIa: Mental health problems
Hardner *et al.*	2017	USA	260	Retrospecti ve cohort study	Higher eduction attainment	Trauma symptoms, dissociation, anxiety, depression, and sleep problems	Sexual abuse	II=which protective factor worked IIa: Mental health problems
Yoon *et al.*	2017	USA	499	Cross-sectional	Ecological factors	Aggression	All	II =which protective factor worked II g: Aggressive behavior
Kaye-Tzadok *et al.*	2017	Israel	184	Case-control	Cognitive strategies of hope and self-forgiveness	Resilience	Sexual abuse	II =which protective factor worked II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Schury *et al.*	2017	Germany	240	Cross-sectional	Social support	Postnatal distress	All	II=which protective factor worked IIa: Mental health problems
Daigneault *et al.*	2016	USA	246	Cross-sectional	Mindfulness	Post-traumatic symptomatology	Sexual abuse	II=which protective factor worked IIa: Mental health problems
Afifi et al	2016	Canada	23395	Cross-sectional	Individual- and relationship-level factors	Mental health	All	II =which protective factor worked II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Arslan	2016	Turkey	937	Cross-sectional	Resilience and self-esteem	Emotional and behavioral problems	Psychological abuse	II=which protective factor worked IIa: Mental health problems

Hillmann *et al.*	2016	Germany	89	Cross-sectional	Secure attachment and social competence	Absence of psychopathology	All	II=which protective factor worked IIa: Mental health problems
Taubner	2016	Austria	161	Cross-sectional	Mentalization	Violence	All	II =which protective factor worked II e: Traumatization
Dion *et al.*	2016	Canada	605	Longitudinal cohort	Support from friends	Psychological distress	All	II=which protective factor worked II a: Mental health problems
Cleary	2016	USA	117	Cross-sectional	Social support and coping style	Positive adaption	All	II =which protective factor worked II c: Adaptive functioning
Muzik *et al.*	2016	USA	183	Longitudinal cohort	Family social support	Postpartum depressive symptoms	All	II=which protective factor worked II a: Mental health problems
Aydin *et al.*	2016	Turkey	182	Cross-sectional	Perceived social support	Depression and PTSD	Sexual abuse	II=which protective factor worked IIa: Mental health problems
Henry *et al.*	2015	USA	485	Longitudinal cohort	Intimate partner relationships	Depressive symptoms	All	II=which protective factor worked II a: Mental health problems
Gayer-Anderson *et al.*	2015	UK	468	Case-control	Social support	Psychosis (first-episode)	Physical and sexual abuse	II=which protective factor worked IIa: Mental health problems
Manning *et al.*	2014	USA	201	Longitudinal cohort	Sensitive parenting	Children Angry reactivity and California Child Q-set	Interparental violence	II =which protective factor worked II g: Aggressive behavior
Maples *et al.*	2014	USA	301	Cross-sectional	Social and emotional resources	College adjustment	All	II =which protective factor worked II b: School functioning

Lowell ***et al.***	2014	USA	424	Cross-sectional	Attachment	Emotional and behavioral outcomes (internalizing and externalizing problems)	All	II =which protective factor worked II a: Mental health problems
Sperry ***et al.***	2013	USA	754	Longitudinal cohort	Social support	Psychopathology	Physical abuse, sexual abuse, neglect	II =which protective factor worked II a: Mental health problems
Hengartner ***et al.***	2013	Switzerland	511	Longitudinal cohort	Coping, education	Personality disorders	All	II =which protective factor worked II a: Mental health problems
Wahab ***et al.***	2013	Malaysia	51	Cross-sectional	Living with parents	Depression	Sexual abuse	II =which protective factor worked II a: Mental health problems
Wilson & Scarpa	2013	USA	265	Cross-sectional	Perceived social support	PTSD	All	II =which protective factor worked II a: Mental health problems
Folger & O'Dougherty	2013	USA	344	Cross-sectional	Social support from family and friends	Depressive/ anxiety symptom and anger/hostility	All	II =which protective factor worked II a: Mental health problems II g: Aggressive behavior
Whitelock ***et al.***	2013	UK	47,869	Cross-sectional	Personality	Life satisfaction	Sexual abuse	II =which protective factor worked II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Thornberry ***et al.***	2013	USA	1000	Longitudinal cohort	Safe stable, nurturing relationships	Maltreatment perpetration	All	II =which protective factor worked II e: traumatization
Kim-Spoon ***et al.***	2012	USA	95	Longitudinal cohort	Self-regulation (Parent report), positive parenting	Internalizing and externalizing symptomatology	Physical abuse	II =which protective factor worked II a: Mental health problems

Williams & Nelson-Gardell	2012	USA	237	Cross-sectional	School engagement, caregiver social support, hope and expectancy, caregiver education, SES	Psychological symptoms	Sexual abuse	II =which protective factor worked II a: Mental health problems
NG *et al.*	2011	UK	160	Case-control	Chinese factor (filial piety)-FP, Inferential style	Depression	All	II =which protective factor worked II a: Mental health problems
Elkins	2011	USA	171	Cross-sectional	Social skills, family and peer context	Internalizing, externalizing, posttraumatic stress and academic achievement	Sexual abuse	II =which protective factor worked II a: Mental health problems II b: School functioning
Coohey *et al.*	2011	USA	702	Longitudinal cohort	Intelligence	Academic achievement	All	II =which protective factor worked II b: School functioning
Philippe *et al.*	2011	Canada	118	Cross-sectional	Eco-resiliency	Psychological outcomes	All	II =which protective factor worked II a: Mental health problems
Kim & Cicchetti	2010	USA	421	Case-control	Emotion regulation	Internalizing and externalizing symptomatology (teachers)	All	II =which protective factor worked II a: Mental health problems
Walter *et al.*	2010	USA	402	Cross-sectional	Protective self-cognition	PTSD	All	II =which protective factor worked II a: Mental health problems
Pitzer & Fingerman	2010	USA	2711	Cross-sectional	Personal control	Physical and psychological functioning	Physical abuse	II =which protective factor worked II c: Adaptive functioning
Powers *et al.*	2009	USA	378	Cross-sectional	Friendship	Depression	Sexual abuse	II =which protective factor worked II a: Mental health problems

Schulz ***et al.***	2009	USA	997	Longitudinal cohort	Social competence, adaptive functioning skills, and peer relationships	Internalizing and externalizing symptomatology, reading competence	All	II =which protective factor worked II a: Mental health problems
Bruggen	2009	Canada	267	Cross-sectional	Mentoringship, emotional support	Psychological and physical maltreatment in romantic relationship	Psychological, physical, sexual abuse	II =which protective factor worked II e: Traumatization
Reyes	2008	USA	61	Cross-sectional	Self concept, perceived parental support	Self reported levels of trauma symptoms	Sexual abuse	II =which protective factor worked II a: Mental health problems
Kim	2008	USA	384	Case-control	Role of child religiosity	Children's internalizing and externalizing behaviors	All	II =which protective factor worked II a: Mental health problems
Walsh ***et al.***	2008	USA	73	Cross-sectional	Self efficacy, coping styles, locus of control	Adult sexual experiences	Sexual abuse	II =which protective factor worked II e: Traumatization
Banyard ***et al.***	2008	USA	80	Longitudinal cohort	Social support satisfaction	Re-traumatization	Sexual abuse	II =which protective factor worked II e: Traumatization
Traina	2008	USA	80	Cross-sectional	Coping skills, family cohesion	Child abuse potential to their kids	Physical abuse	II =which protective factor worked II e: Traumatization
McClure ***et al.***	2008	USA	177	Cross-sectional	Family characteristics	Psychological wellbeing, self-acceptance, positive relations with others, environmental mastery	Sexual abuse	II =which protective factor worked II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Haskett ***et al.***	2008	USA	153	Case-control	Ethnicity and features of parenting context	Aggressive behavior	Physical abuse	II =which protective factor worked II g: Aggressive behavior

Eisenberg *et al.*	2007	USA	83731	Cross-sectional	Family connectedness, teacher caring, other adult caring, and school safety	Suicide ideation and attempts	Sexual abuse	II =which protective factor worked II a: Mental health problems
Collishaw *et al.*	2007	UK	364	Longitudinal cohort	Parental care, adult personality functioning, relationship history	Psychopathology	Sexual and physical abuse	II =which protective factor worked II a: Mental health problems
DuMont *et al.*	2007	USA	676	Perspective cohort	Cognitive ability, stable living situation, neighborhood advantage, supportive partner or spouse	Multiple domains of functioning (education, psychiatric disorder, substance abuse, official reports of arrests, self-reports violent behavior, employment, homelessness and social activity	Physical, sexual abuse, and neglect	II =which protective factor worked II c: Adaptive functioning
Jaffee *et al.*	2007	USA	1116 twin pairs and parents	Longitudinal cohort	Above average IQ, Well-adjusted temperament, maternal warmth, social deprivation, maternal depression, parental antisocial personality, parental substance use problems, adult domestic violence, sibling warmth, sibling conflict, crime rate, social cohesion, and informal social control in neighbhourhood	Adaptive functioning	Physical abuse	II =which protective factor worked II c: Adaptive functioning
Cicchetti & Rogosch	2007	USA	677	Case-control	Personality	Resilient functioning	All	II =which protective factor worked II c: Adaptive functioning
Liang	2006	USA	136	Longitudinal cohort	Maternal attachment	Marital and other relational outcomes	Sexual abuse	II =which protective factor worked

et al.								II d: Interpersonal relationships
Nomura ***et al.***	2006	USA	1748	Longitudinal birth cohort	Optimal birth outcomes (normal birth weight and full term birth)	Psychiatric problems	All	II =which protective factor worked II a: Mental health problems
Flores ***et al.***	2005	USA	133	Case-control	Ego resiliency and intelligence, ego over-control	Resilient functioning	All	II =which protective factor worked II c: Adaptive functioning
Lyle-Lahroud	2005	USA	157	Cross-sectional	Cognitive appraisals and coping strategies	Adolescent adjustment	All	II =which protective factor worked II c: Adaptive functioning
Kaufman ***et al.***	2004	USA	101	Case-control	Social support	Depression	All	II =which protective factor worked II a: Mental health problems
Leifer ***et al.***	2004	USA	196	Cross-sectional	Secure attachment, years living with biological mothers	Intergenerational sexual abuse	Sexual abuse	II =which protective factor worked II e: Traumatization
Kim & Cicchetti	2003	USA	500	Case-control	Social efficacy	Internalizing and externalizing symptomatology	All	II =which protective factor worked II a: Mental health problems
Lynch	2002	USA	50	Cross-sectional	Mother-child relationship, parenting	Psychological functioning, children's internalizing and externalizing problems	Domestic violence	II =which protective factor worked II a: Mental health problems II c: Adaptive functioning
Bolger & Patterson	2001	USA	785	Longitudinal cohort	Perceived internal control	Internalizing problem (depression, anxiety, social withdrawal, and somatic symptoms)	All	II =which protective factor worked II a: Mental health problems
Marrow	2001	USA	451	Cross-sectional	Family functioning, resilience scale,	Health related problems	All	II =which protective factor worked II a: Mental health problems

					community support, spirituality			
Sagy & Dotan	2001	Israel	226	Case-control	Sense of family coherence, psychological sense of school membership, social support	Perceived competence and psychological distress	All	II =which protective factor worked II a: Mental health problems II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Varia & Adidin	1999	USA	90	Cross-sectional	Maternal care	Adult relationships	Psychological abuse	II =which protective factor worked II d: Interpersonal relationships
Feiring	1998	USA	154	Cross-sectional	Social support	Psychological distress	Sexual abuse	II =which protective factor worked II a: Mental health problems
Cicchetti & Rogosch	1997	USA	213	Case-control	Positive self-esteem, ego resilience, ego over-control	Adaptive functioning	All	II =which protective factor worked II c: Adaptive functioning
Lam & Grossman	1997	USA	264	Case-control	16 protective factors (16 self-report variables in individual, familial, and social domains)	Adult psychological and social functioning	Sexual abuse	II =which protective factor worked II c: Adaptive functioning
Liem	1997	UK	145	Cross-sectional	Early family environment, physical coercion	Depression, self-esteem	Sexual, emotional abuse	II =which protective factor worked II a: Mental health problems II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept
Toth & Cicchetti	1996	USA	61	Case-control	Relatedness with mother	School functioning	All	II =which protective factor worked II b: School functioning

Moran & Eckenrode	1992	USA	145	Case-control	Locus of control, self-esteem	Depression	All	II =which protective factor worked II a: Mental health problems
Scalzo	1991	Canada	100	Cross-sectional	Ego identity, coping skills	Psychological distress and self-concept	Sexual abuse	II =which protective factor worked II a: Mental health problems II f: life satisfaction, psychological wellbeing, perceived competence, and self-concept

Note: Type of childhood maltreatment: all includes sexual abuse, physical abuse, psychological/ emotional abuse, neglect

Appendix 2 provides the references for above selected articles, which are listed according to the order of individual reference in the table.

Groups	Objective factors	Self perceived factors
Individual factors	Optimal birth outcomes, coping, education, relationship history, social economic status, social skills, positive coping, and adaptive functioning skills.	Self-regulation, perceived internal control, attachment, locus of control, self esteem, ego identify, eco-resiliency, emotion regulation, adult personality functioning, personality, social efficacy, spirituality, hope expectancy, protective self-cognition, and social competence.
Familial factors	Early family environment, living with parents, positive parenting, parental care, family functioning, family and peer context, role of child religiosity, friendship, intimate partner relationships, sibling relationships, and peer relationships.	Family connectedness, family integrity
Community/society factors	Other adult (other than family members) caring, teacher caring, social support, school safety, community support, inferential style, educational support, living in a neighbourhood with few problems, and social engagement.	

Table 2 A summary of protective factors associated with adaptive functioning and resilience

Table 3 Protective factors associated with better health and well-being outcomes by type of maltreatments

Types of maltreatment	Groups of factors	IIa: Absence of psychopathology	IIb: School functioning	IIc: Adaptive functioning	IId: Interpersonal relationships	IIe: Traumatization	IIf: Life satisfication, psychological well-being, etc.	IIg: Aggressive hevior
All, inclusive	**Individual factors**	Secure attachment, ego resiliency, emotional regulation, protective self-cognition, importance of faith, perceived internal control, self esteem, locus control, ego identity, adaptive coping, fillal piety, social competence, adaptive functioning skills, optimal birth outcomes, stability	Intelligence, emotional resources	Cognitive appriasals, positive coping, ego over-control, ego resiliency, self-esteem a composite score of individual, familial, and societal factors	**No studies**	Attachment to child	Higer education and income, physical activity, good coping skills	**No studies**
	Family/peers factors	Relationship satisfication, sense of family coherence, peer relationships, family experience, sibling relationships	Relatedness with mother	**No studies**	**No studies**	Relationship satisficatio n	Sense of family coherence	**No studies**
	Community/ society factors	Social support, social efficacy,	Social resources	**No studies**	**No studies**	**No studies**	**No studies**	Social support

		living in a neighborhood with fewer problems, and school attendance						
Physical abuse	**Individual factors**	Adult personality, functioning, adaptive self-regulation,	**No studies**	Personal control, temperament, being white, non-Hispanic, stable living situation, stressful life events, IQ,	**No studies**	Coping skills	**No studies**	**No studies**
	Family/peers factors	Relationship history, positive parenting, parental care, positive family experience, sibling relationship	**No studies**	maternal warmth, maternal depression, parental antisocial behavior, supportive partner	**No studies**	Mentorship, emotional support, family cohesion	**No studies**	Parental warmth
	Community/ society factors	Social support	**No studies**	Social deprivation, social control	**No studies**	**No studies**	**No studies**	**No studies**
Sexual abuse	**Individual factors**	Social skills, functioning, coping skills, hope and expectancy, ego identity, self concept, social economic status	Social skills	Being white, non-Hispanic, stable living situation, stressful life events	**No studies**	Secure attachment	Physical coercion, adaptive coping skills, ego identity	**No studies**
	Family/peers factors	Living with parents, caregiver education, parental warmth, friendship, family	Peer rejection	Supportive partner	Maternal attachment	Mentorship, emotional support, years living with	Family characteristics, early family environment	**No studies**

		connectedness, parental care, teacher and others caring, relationship history, early family environment, positive family experience, sibling relationship				biological mothers		
	Community/ society factors	Social support, school engagement, school safety,	**No studies**	**No studies**	**No studies**	Self efficacy, locus control, social support	**No studies**	**No studies**
Emotional abuse	**Individual factors**	Physical coercion	**No studies**	**No studies**	**No studies**	**No studies**	Physical coercion	**No studies**
	Family/peers factors	Mother-child relationship, parenting, early family environment	**No studies**	Parenting	Maternal care	Mentorship, emotional support	early family environment,	Sensitive parenting
	Community/ society factors	**No studies**	**No studies**	Mother-child relationship	**No studies**	**No studies**	**No studies**	**No studies**
Neglect	**Individual factors**	**No studies**	**No studies**	Being white, non-Hispanic, stressful life events, stable living situation	**No studies**	**No studies**	**No studies**	**No studies**
	Family/peers factors	**No studies**	**No studies**	Supportive partner	**No studies**	**No studies**	**No studies**	**No studies**
	Community/ society factors	**No studies**	**No studies**		**No studies**	**No studies**	**No studies**	**No studies**

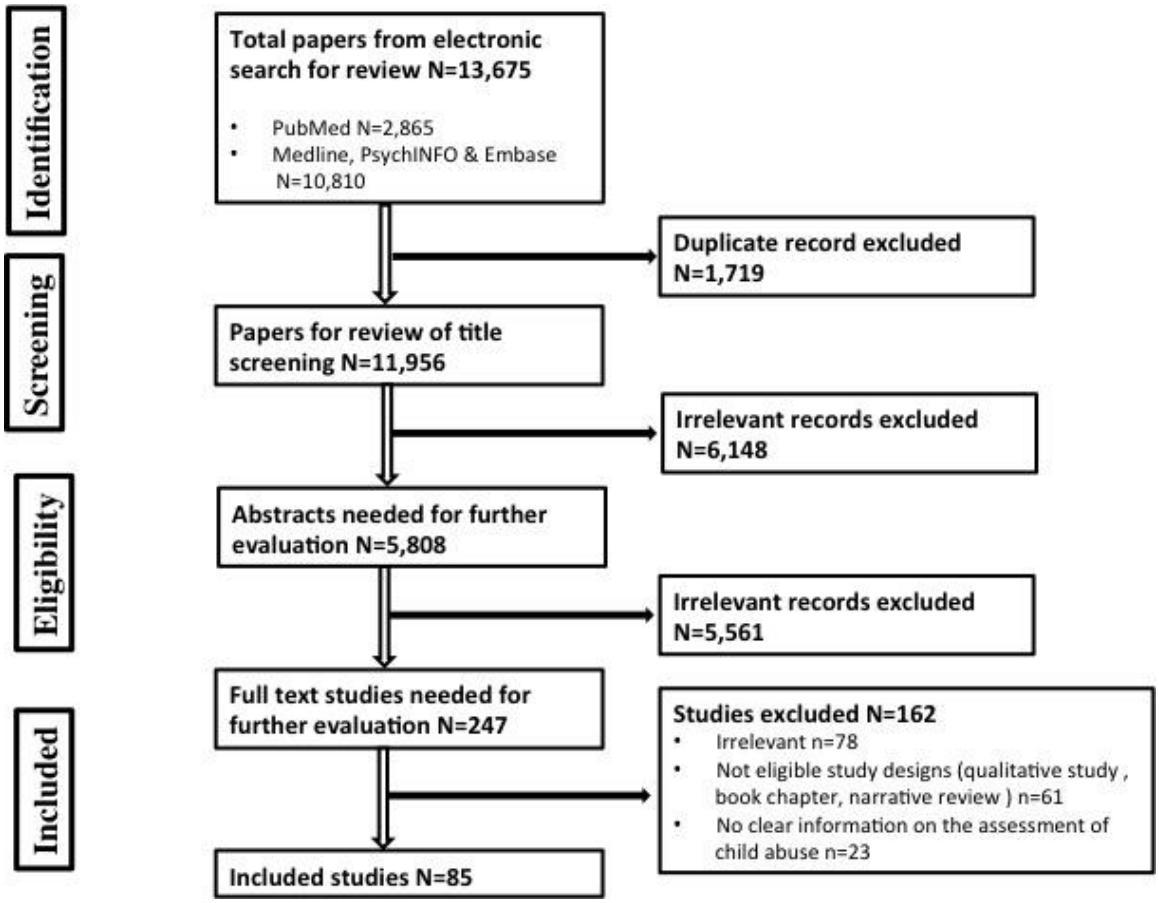

Figure 1. The process of studies selection

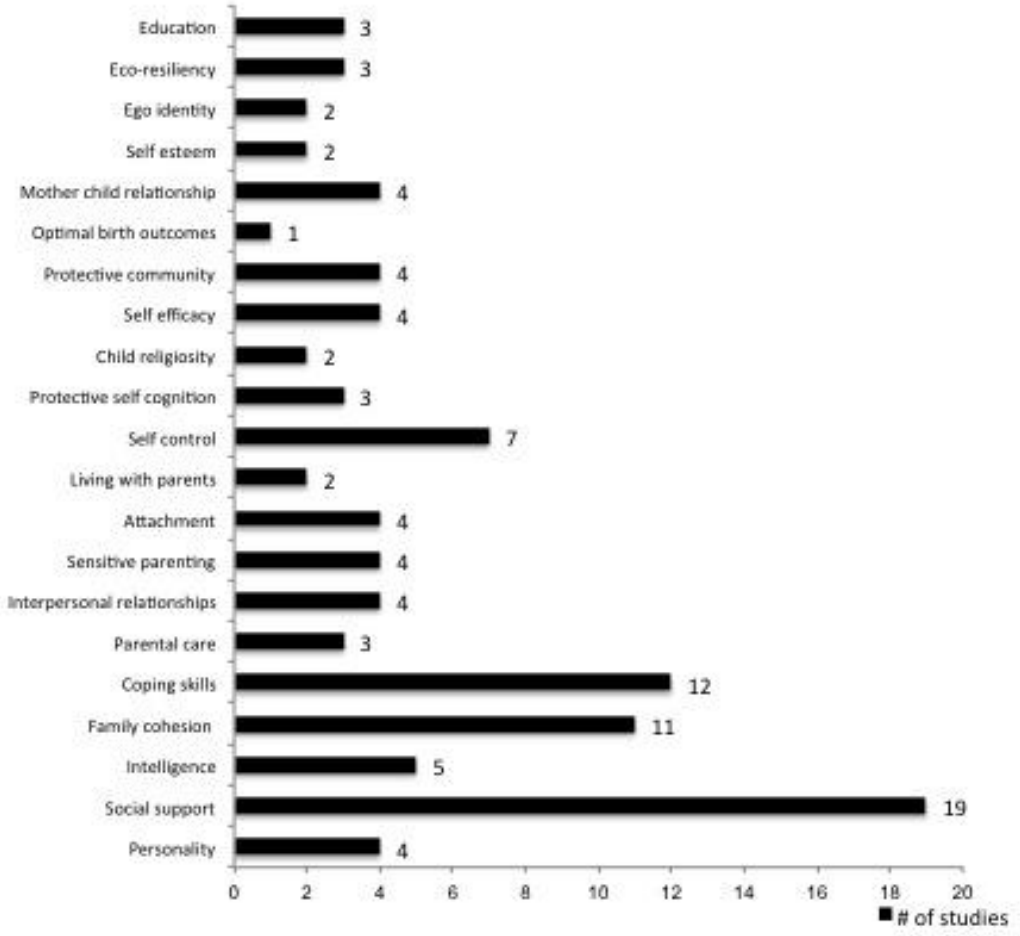

Figure 2. A summary of studies on protective factors associated with better health and well-being following the exposure of childhood maltreatment