PARENTAL RISK AND RESILIENCE: HOW DOES EVIDENCE INFORM CHILD MALTREATMENT PREVENTION AND REDUCTION?

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UCL

PhD Thesis

Declaration

I, Fatima Younas, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

Child Maltreatment is a global concern with a sequela of negative consequences. The Risk and Resilience Ecological Framework is used to enable synthesis of evidence from two systematic reviews, A and B, on evidence of factors that influence parental child maltreatment. Review A comprises non-interventional, empirical studies to determine parental risk and protective factor interplay, lending support to causal and correlational links to child maltreatment. Review B synthesises evidence from intervention evaluations on parental risk factors and intervention provision for child maltreatment. A total of 128 studies, 68 observational studies in Review A and 60 intervention evaluations in Review B, were systematically reviewed. Quality appraisal did not lead to exclusion of studies. Review A findings mirror prior evidence and highlight nuances such as memories of parental childhood maltreatment as risk, emotional support for mothers and companionship support for fathers as protective, and demarcate maltreatment type-specific factors, especially for physical abuse and neglect. A low representation of fathers, under-research of unique factors for sexual and emotional abuse and of macro-level protective factors were identified. Review B provides comprehensive data on potentially effective intervention components including child development education and parental emotional regulation. Behaviour Change Techniques Framework helped identify potentially optimal delivery techniques including Instruction on how to perform a behaviour and Social support (unspecified). Lack of cultural representation, sparsity of interventions targeting fathers, over-reliance on self-reporting measures and under-examination of macro-level intervention components were identified as gaps in knowledge. Both reviews underline a call for consensus in definitions and avoidance of umbrella terms. A final synthesis elucidated the complex interplay of multiple influences on parental child maltreatment. Findings offer valuable insight to move the field forward, inform researchers, policy, and practice to strengthen parental resilience to prevent and reduce child maltreatment.

Impact Statement

The negative outcomes of child maltreatment are extensively established in research. Consequently, understanding the various influences on parents that increase or decrease the risk of child maltreatment along with efforts made by child maltreatment interventions to prevent and reduce its occurrence, is vital in curbing this phenomenon. Two systematic reviews were conducted with one synthesising observational research evidence and the second synthesising evidence from child maltreatment intervention evaluations on parental risk and protective factors. Findings from both reviews offer valuable insight to research and practice of child maltreatment reduction and prevention.

Findings suggest numerous avenues requiring further investigation. Firstly, more research needs to be conducted to establish maltreatment type-specific parental risk and protective factors, especially for sexual and emotional abuse. Secondly, national level efforts which buffer the risk of child maltreatment for parents need further exploration and examination. Moreover, future research needs to be more representative of fathers' role in either increasing or mitigating the risk of child maltreatment. Delineating the role of various types of social support and its varying protective influence on parents is warranted in research. Finally, findings from this thesis bring to light numerous definitional and methodological issues prevalent in child maltreatment research, paving the way for efforts to tackle these challenges.

Using the Behaviour Change Techniques Taxonomy (BCTT v1) to identify Behaviour Change Techniques (BCT) used by child maltreatment interventions presents a novel framework to characterising child maltreatment intervention content, helping bridge the evidence and practice gap in the field and guiding future research. It aids in delineating intervention components (*what* interventions deliver) from BCTs (*how* interventions deliver components), clarifying the important distinction between the two, an aspect often overlooked in research examining child maltreatment interventions. Findings suggest that using BCTs that shape parents' knowledge and social support may be optimal means of delivery in child maltreatment interventions.

The findings also impact practitioners involved in efforts to reduce or prevent child maltreatment. Interventions working with parents can use findings on potentially effective ways of supporting parents facing multiple adversities. For instance, intervention developers and practitioners can be guided by maltreatment type-specific risk and protective factors, especially for physical abuse and neglect. Further, implementation and evaluation of child maltreatment interventions in low- and middle-income countries is relatively neglected, warranting further attention. A more diverse and culturally representative perspective may ensure efforts promote global reduction of child maltreatment.

Findings from this thesis can inform evidence-based policy decisions including investment in implementation of child maltreatment interventions especially for fathers, a focus on policies alleviating economic disadvantage and inequality in service availability for vulnerable families and introducing policies that help remove barriers (e.g., fear of surveillance) for parents to utilise support services.

Dissemination of this research, primarily through publication in peer-reviewed journals, advances knowledge in the field, informing research and practice of child maltreatment reduction and prevention.

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Fatima Younas, the first author, conceptualised the research, conducted the methodology and the formal analysis as well as wrote the original draft. Leslie M. Gutman, the second author, helped with the review of the draft including editing and provided supervisory support.

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Candidate

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09/01/2023

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Acknowledgements

I would like to express my deepest gratitude to my primary supervisor, Professor Leslie M. Gutman, without whom this endeavour would not have been possible. Her generous support, unlimited guidance, and relentless encouragement helped me to stay positive and motivated throughout the PhD experience even in the face of numerous challenges. Thank you, Leslie, for being a fantastic supervisor and a mentor.

I would also like to thank my secondary supervisor, Professor David Gough, who lent his expertise especially for the systematic review method and provided invaluable feedback.

I want to extend my gratitude to all my family and friends who extended the occasional nudge of motivation and persisted in their belief in me.

Lastly, I dedicate this thesis to my mother, who encouraged me to begin this journey and to my daughter, who inspired me to complete it.

Contents

Chapter 1: Introduction

Overview of topic and aims

The World Health Organisation (WHO) defines child maltreatment as occurring to children under the age of 18 and involves “physical and emotional mistreatment, sexual abuse, neglect, and negligent treatment of children…which results in actual or potential harm to the child’s health” (WHO, 2006, p. 7). Based on figures released by the UK government, 52,560 cases of substantiated child maltreatment were recorded in the year 2019 compared to 48,300 in 2014 (ONS, 2020). The extensive costs and negative sequelae associated with child maltreatment have already been comprehensively established in research (Gilbert, Widom & Brown, et al., 2009; Kessler, Davis and Kendler, 1997; MacMillan et al., 2001; Chartier et al., 2007). In terms of its economic impact, a UK study estimated that the economic burden of intervening late in high-risk families amounts to nearly £17 billion a year in England and Wales (Bywaters et al., 2016). With the COVID-19 Pandemic, there have been reported increases in certain types of child maltreatment (e.g., physical abuse; Department for Education, 2021). Varying pressures on parents because of the Pandemic have also resulted in a decline in some parents’ mental health (Skripkauskate et al., 2021), an increase in economic strain (ONS, 2021) increased substance misuse (Aldridge et al., 2021, Public Health England, 2021) and an increase in social isolation (Romanou and Belton, 2020); all factors associated with a higher risk of child maltreatment. Given the magnitude and importance of the problem of child maltreatment, it is imperative that an organised base of research knowledge exists which informs and guides future research and practice of child maltreatment prevention and reduction.

This PhD thesis focuses on *parental* risk (factors enhancing possibility of occurrence of or actual child maltreatment) and protective factors (influencing factors providing a buffer against risk) for child maltreatment to facilitate further understanding of how these can inform efforts to strengthen parental resilience and prevent child maltreatment. Factors which increase either the risk of or play a role in influencing actual child maltreatment are referred to as risk factors. Edmond and colleagues (2006) state that "risk factors refer to characteristics of a group that increase the statistical probabilities of experiencing negative outcomes" (p. 4). Similarly, factors that act as safeguarding mechanisms against actual occurrence of child maltreatment or decrease the risk of child maltreatment are referred to as protective factors. To put simply, these are positive influences which moderate adversity or risk (Austin et al., 2020). While protective factors provide a buffer against risk, *resilience* refers to the ability to withstand risk (Hawkins et al., 1992). Personality traits such as determination, self-efficacy, perseverance, and self-awareness have been positively correlated with resilience (Affi and Macmillan, 2011).

The emphasis in this PhD thesis is on parent outcomes and parent-related factors (risk and protective) for child maltreatment and not on child-related outcomes or influencing factors. For instance, risk factors such as child temperament or child disability which may increase risk of child maltreatment are excluded from this thesis.

Parental child maltreatment also excludes any maltreatment by strangers, friends, or other members of the family, including stepparents and only considers biological parents.

This thesis employs a systematic review methodology to assess and synthesise evidence. The goals of this PhD thesis are three-fold; i) to systematically review and synthesise evidence on parental risk and protective factors in child maltreatment observational research (Review A), ii) to systematically review and synthesise evidence on risk factors and intervention provision from evaluations of parenting interventions to reduce or prevent child maltreatment (Review B), and finally, iii) to synthesise findings of both systematic reviews to evaluate the extent of evidence fitting practice of prevention and reduction of child maltreatment. The final synthesis answers the question, 'How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?'

Theoretical framework

Use of theoretical models that integrate various risk and protective factors allow researchers to learn about mechanisms that facilitate or protect against child maltreatment. This PhD thesis employs the Risk and Resilience Ecological Model (Bronfenbrenner, 1979; Kirby and Fraser, 1997) to capitalise on current knowledge and allow exploration of risk and protective factors. Bronfenbrenner's (1979) ecological framework sets up an individual's development within nested layers of influences ranging from the personal and immediate family to external influences comprising of the community and society. Fraser et al. (1997) advanced the ecological framework and formulated the Risk and Resilience Ecological Framework. This framework looks at the balance of risk and protective factors to assess resilience which is an individual's ability to function adaptively despite stressful circumstances (Kirby and Fraser, 1997; Fraser et al., 1999).

This model is used as a basis for systematic reviews A and B to identify and assess parental risk and protective factors for child maltreatment. This framework is chosen because it provides a balanced view of both risk and protective factors and recognises the complexity of individual influences. From the context of parenting interventions for child maltreatment, this framework can help to unpack interventions to identify risk characteristics within the parenting sample and examine intervention provision within an ecological context. It also provides the basis to present a holistic picture of parental child maltreatment as well as providing a coherent and systematic approach to synthesising the evidence.

Contextualising the research: overview of research and gaps

Research on parental risk and protective factors for child maltreatment has been on the increase for several decades. Alongside this, research on interventions that aim to prevent or reduce the occurrence of child maltreatment has also increased. Granted a great deal of insight has been gained in the past, the problem of child maltreatment persists. Researchers still do not know, for instance, whether factors influencing parents to perpetrate child maltreatment differ based on the type

of maltreatment. This can partly be attributed to the intricacy of the phenomenon itself and that there is no single pathway that causes child maltreatment, rather it can be a combination of multiple factors at various contextual levels. Research in this field is also particularly complex and this is partly based on high levels of heterogeneity in studies conducted. For instance, definitions of child abuse and neglect, samples, quality of studies and methods employed vary immensely, making it difficult to have an overview of research in the field, extract the best available evidence and draw robust conclusions.

Understanding the complexity of child maltreatment is challenging and researchers continue to examine the phenomenon to make efforts to clarify the multiple influences on parents that either reduce or increase the potential for child maltreatment.

A qualitative literature review (Austin et al., 2020) looking at risk and protective factors from an ecological perspective found that most existing research has focused on interpersonal risk and protection and more research on community and societal factors, especially those that are beyond the control of the family, such as paid parental leave and affordable childcare, is needed. While this study did provide a comprehensive overview of risk and protection in the literature on child maltreatment, a lack of a systematic review method makes the integrity of findings questionable.

A number of systematic reviews and meta-analyses on risk and protective factors for child maltreatment have also been conducted. For instance, a systematic review of protective factors for mothers at risk of intergenerational child maltreatment (Atzl et al., 2019) found that mothers' internal capacities (e.g., self-esteem, coping ability), and external resources (e.g., social support) have a buffering effect on risk of child maltreatment. This review, however, looked at only one risk factor which is maternal history of child maltreatment, considered only mothers and focused solely on the perinatal period.

Timshel and colleagues (2017) systematically reviewed evidence from a socio-ecological perspective on risk and protective factors for family related violence among refugee families and found some of the same risk and protective factors as they apply to child maltreatment such as mental illness, parents' experience of childhood abuse, and substance abuse. They also found that positive coping strategies was a protective factor. This review, however, was limited to refugee families, included all family violence and not just child maltreatment, and further limited context of findings to western countries.

Further to this, a lot of research on resilience is focused on child outcomes. Some research has focused on parents but has examined only mothers (Stith et al., 2009) and not both parents which means these factors cannot be applied to fathers in the same way. Research on parental resilience is largely and specifically focused on child risk factors such as child emotional or behavioural problems (Criss et al., 2002; Hodgkinson and Lester, 2002).

There have also been several meta-analyses examining effectiveness of child maltreatment interventions but some of these focused only on families that did not maltreat but were potentially at risk of child maltreatment (Filene et al., 2013; Geerart et al., 2004), focused on only one or two types of maltreatment such as physical abuse and neglect (Geerart et al., 2004), centred on one type of delivery in interventions such as home visiting (Sweet and Applebaum, 2004), and specified an intervention delivery time-frame such as during pregnancy (Pinquart et al., 2010).

Two meta-analyses (Euser et al., 2015; van der Put et al., 2018) looked only at RCTs of child maltreatment interventions to identify effective components. One meta-analysis did not specify intervention population characteristics but listed them as 'maltreating' or 'at-risk of maltreating' (Euser et al., 2015) so it was unclear whether it included only parents or not. The other study (van der Put et al., 2018) limited intervention evaluations to only interventions in western countries (van der Put et al., 2018).

Another meta-analysis of child maltreatment interventions was conducted by Assink and colleagues (2018). They found that curative interventions (aimed at treating maltreating parents) were more effective compared to preventive interventions (aimed at at-risk parents). However, this study looked at only one risk factor - intergenerational transmission of child abuse and neglect.

An umbrella synthesis of meta-analyses on child maltreatment antecedents and interventions from a risk and resilience perspective was conducted more recently in 2020 (Ijzendoorn et al.). Their findings showed that interpersonal violence (IPV) and parental history of child maltreatment were two robust risk factors that predict child maltreatment. In terms of effectiveness of interventions, effect sizes were found to be low compared to effect sizes of antecedents, highlighting that interventions have limited effect in curbing or preventing child maltreatment. However, this umbrella synthesis included only studies published within a four-year period (2014-2018).

While a mountain of research has been conducted in this field, no systematic review to date, and to the author's knowledge, has synthesised evidence from empirical, observational studies on parental risk and protective factors in child maltreatment alongside a systematic review of intervention evaluations to synthesise findings of both reviews and examine translation of research evidence to prevention and reduction of child maltreatment.

There also exists a research and practice gap within this field. In academia, researchers are generally not taught how to influence policy and practice (Dhaliwal and Tulloch, 2012). Doctoral students also "lack training about the policy and practice relevant child maltreatment research" (Adedokun and Daro, 2017). As research does not 'speak for itself' (Tseng, 2021, p1) practitioners must interpret and apply evidence from research. This is particularly challenging due to heterogeneity of study findings which may create an 'information overload' (Tseng, 2012, p1). Hence, systematic reviews which incorporate available evidence on parental risk and protection and evidence from intervention evaluations are particularly helpful as they give a window to the mapping of evidence in practice.

Research questions

The first systematic review (Review A) reviews empirical and observational literature on parental risk and protective factors for child maltreatment (from 1980-2018) and asks, firstly, what are the parental risk factors for child maltreatment? Secondly, what parental protective factors can reduce or prevent child maltreatment? And finally, what is the evidence that parental risk and protective factors differ based on type of child maltreatment?

The second systematic review (Review B) asks similar questions as Review A but from the context of parenting intervention evaluations (from 1980-2022) for child maltreatment. The first question asks what are the risk factors found among parents in child maltreatment interventions? Secondly, what intervention components and BCTs can help to prevent or reduce child maltreatment? The final research question asks if parental risk and intervention components differ based on type of child maltreatment?

A synthesis of findings from both reviews answers the overarching thesis question of 'How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?'

Chapter summary

Table 1 presents all the chapters included in this thesis along with a brief overview of their contents.

Table 1: Chapters included in this thesis and summaries

Chapter 1	An introduction to the thesis, rationale, and research questions for the two systematic reviews are presented in this chapter.
Chapter 2	This chapter defines terms and concepts (e.g., risk, and protective factors, resilience, child maltreatment and sub-types), presents the theoretical framework guiding both the systematic reviews in this thesis and introduces prior research on parental risk and protective factors for child maltreatment.
Chapter 3	This chapter presents an introduction to systematic review methods.
Chapter 4	The systematic review method for Review A is presented in this chapter. Details are provided for each step of the systematic review.
Chapter 5	This chapter presents the results for each of the research questions guiding Review A.
Chapter 6	The findings of Review A are discussed in this chapter.
Chapter 7	An introduction to Review B is presented, highlighting child maltreatment interventions, theoretical frameworks used, aims of the review and the research questions.
Chapter 8	The systematic review method for Review B is presented in this chapter. Details are provided for each step of the systematic review.

Chapter 9	Findings of Review B are presented for each research question guiding the review.
Chapter 10	This chapter discusses the findings of Review B.
Chapter 11	A final synthesis bringing together key findings of both systematic reviews, A and B, is presented.
References	All references included in the thesis are presented in this section. Studies included in Review A are denoted with an asterisk (*) and studies included in Review B are denoted with two asterisks (**).
Appendices	This section presents supplementary information such as forms used for data extraction from included studies in both reviews and quality appraisal criteria.

Chapter 2: Child Maltreatment and Parental Risk and Resilience

Clarifying Assumptions

This section clarifies some underlying assumptions in this thesis most of which are inherent in researching parental child maltreatment and depict societal biases and assumptions associated with this phenomenon. Classifying parents as 'maltreating' or 'high-risk' can be stigmatising. While these types of classifications allow ease of analysis in research, they can contribute to socially enforced negative views and need to be interpreted with caution. Reference to maltreating parents, in the context of this research, only refers to those parents who have had prior substantiated cases of abuse and this does not mean that they will remain maltreating or will maltreat in the future. Similarly, high-risk parents signify those parenting groups with multiple, co-occurring adversities and indicates potential and not certainty for future maltreatment. Neither absence of risk factors nor presence of multiple protective factors and vice versa, guarantees that parental maltreatment will or will not occur.

Reference to certain risk factors such as young age of parents, single parents, parents with more than two children, parents who smoke, and those parents who are economically disadvantaged, are indicative of parents' struggles and difficulties rather than a direct reference to maltreatment potential. Similarly, intergenerational transmission of child maltreatment is a hypothesis and not a claim that all parents who were maltreated as children will maltreat in the future. It only underlines that for *some* parents, this can enhance the likelihood of future maltreatment. These risk factors need to be considered with caution and in light of the evidence as well as in the context of individual parental circumstances.

Finally, there is an underlying assumption that parental child maltreatment is a result of circumstances or influences which may lie outside the control of parents and that parents, because of these multiple adversities, end up maltreating their children. While not examined in this research, there are subgroups of parents who malevolently maltreat, and the risk and protective factor interplay emphasised in this research does not translate to this subgroup. Caution, especially for researchers and practitioners, in interpreting the evidence identified in this research particularly pertaining to the above assumptions, is warranted.

Defining Concepts

The following section briefly explores definitional issues in child maltreatment and its subtypes and the complexities which arise in research due to a lack of consensus in definitions.

Definitional dilemma

Despite a vast array of research within the area of child maltreatment, there are many problems that still plague this field of study. One of these is related to definitions. Behaviours that constitute the term ‘maltreatment’ or ‘abuse’ are difficult to define in an objective way because these vary depending on the audience. From children services to researchers to public health officials, all tend to use differing definitions which limit efforts in identification, assessment, treatment, and prevention of child maltreatment (Petersen et al., 2014). Making any cross-cultural comparisons becomes even more difficult as cultures, traditions and laws vary considerably across countries.

The lack of an operational definition of child abuse and neglect has hampered clarity and advancement of knowledge in the field of child maltreatment (Besharov, 1981; Zigler, 1980; National Research Council, 1993). Groenveld and Giovannoni (1977) articulately express this concern by asking “if one cannot specify what is meant in operational terms by abuse and neglect, how does one specify what it is that is being studied? How are populations to be selected and how are crucial variables to be measured?” (p.26). Without an operational definition of child maltreatment and types, not only are prevalence estimates and incidence rates hampered but measurement of child maltreatment as an outcome in research also becomes challenging (Miller-Perrin and Perrin, 2012).

The terms used most often are child maltreatment or child abuse and neglect and these are not based on a single entity or single behaviour rather these terms encapsulate different types of maltreatment with each category encompassing a wide variety of behaviours. Similarly, the reasons why parents maltreat or abuse their children are also varied. Due to multiple variations, there is a danger that findings of empirical studies cannot be applied to all maltreating parents (Douglas & Besharov, 1981). This is another reason why a systematic review of such studies is important. Systematic reviews can shed light on the extent of the problems faced in researching child maltreatment.

While all forms of child maltreatment lack a consistent definition; this issue is particularly pertinent to emotional or psychological abuse. According to Feerick and Snow (2006), one of the reasons why maltreatment type is difficult to define is due to the presence of weak societal consensus in the difference between unsatisfactory parenting and emotional abuse. This difference seems to be clearer for other instances of abuse such as physical abuse, which is generally perceived to be more dangerous requiring more attention (Feerrick and Snow, 2006).

Furthermore, as much of the research relies on recorded cases of child maltreatment from state-governed child welfare agencies, bias may exist in using definitions which are put forth by the state. While these definitions are developed for legal and administrative purposes, they may be challenging to use in research as these definitions are often too broad and do not provide necessary information pertinent for examination (Trickett, Mennen, Kim and Sang, 2009).

The following section provides definitions for child maltreatment chosen from a wide variety of available definitions and which are deemed, by the author, to be

adequate for use for this thesis. The section further explores some of the issues with varying definitions.

Child maltreatment: definition and types

According to the World Health Organisation (2010), child maltreatment, also referred to as child abuse, "...includes all forms of physical and emotional ill-treatment, sexual abuse, neglect…that results in actual or potential harm to the child's health, development, or dignity" (WHO, 2010, p. 6).

Researchers have also added another form of child maltreatment referred to as 'domestic bullying' which indicates a child's exposure to domestic violence or domestic abuse of another (Naylor, Petch and Ari, 2011). This term encapsulates a child being physically hurt while protecting a parent from the perpetrator, emotional harm from witnessing domestic violence and from the threat or fear of being victimised by the perpetrator (Humphreys & Mullender, 2002). While important, witnessing domestic violence is not focused upon in this thesis as a maltreatment type rather it is examined as a significant parental risk factor.

For the purposes of this PhD thesis, only four maltreatment types are focused upon and these include physical, emotional, sexual abuse and neglect. The thesis focuses on parents as either perpetrators of child maltreatment or at risk of such, hence definitions are narrowed to include only parents. Child maltreatment is hence defined, for this thesis, as any act of commission or omission *by a parent* which results in actual harm, potential harm, or threat of harm to a child. Acts of commission include those actions which are deliberate but may not necessarily intend to cause harm to the child. These acts of commission include physical, sexual, and psychological abuse. Acts of omission involve the failure of provision of certain needs of the child including physical, emotional, and psychological and safety needs. These would also include lack of medical, emotional, physical, and educational care as well as a failure to adequately supervise a child. In this definition, a child is defined as any individual from birth up until eighteen years of age who has experienced maltreatment during this period (Leeb et al., 2008).

Harm refers to disruption or disturbance to a child's physical or emotional well-being and health. Threat of harm can include any implicit or explicit expression of an intention of harming the child. Explicit threats may include raising a hand as if to hit the child and implicit threats can include smashing objects in front of the child (Holder et al., 2001).

Physical abuse

Physical abuse of a child is an action which results in physical harm or physical injury to the child. This can include hitting, shaking, suffocating, slapping, pushing, kicking, burning, scalding, or using an object to cause injury or pain are some of the examples of physical abuse. This may also include, dependent on the circumstances, a person engaging in behaviour recklessly or carelessly which results in injury or harm to the child. Children can also die from physical abuse. In the USA,

for example, 1,840 children died in 2019 due to child maltreatment of which 1,466 died at the hands of one or both parents and of these, 651 were due to physical abuse (Child welfare, 2021).

Emotional abuse

In academic literature, terms such as psychological abuse, mental cruelty, emotional maltreatment, and emotional harm are used interchangeably. For this thesis, the term emotional abuse encapsulates all other terms and definitions within this type of maltreatment.

Hart et al., (1983) define emotional abuse as consisting of, “acts of omission and commission which are judged based on a combination of community standards and professional expertise to be psychologically damaging…Such acts damage immediately or ultimately the behavioural, cognitive, affective, or physical functioning of the child. Examples include acts of rejecting, terrorizing, isolating, exploiting, and mis-socialising” (p. 6).

Glasser (2002) proposes categories of parenting behaviour which fall within the overall definition of emotional abuse and these categories will be relied upon in this thesis to refer to emotional abuse. These five categories include parental insensitivity (including unavailability to respond to child’s emotional needs), negative attributions to the child (including misattributions, hostility and rejection of child), interactions with the child that are not age-appropriate (e.g., limitation of exploration, exposure to traumatic events or information, expectations from child which are not developmentally aligned), not recognising the child’s boundaries (e.g., inability to separate from child, using the child to fill parents’ own needs), and finally, not facilitating a child’s social adaptation.

Sexual abuse

The World Health Organisation (WHO) defines child sexual abuse as “the involvement of a child in sexual activity that he or she does not fully comprehend, is unable to give informed consent to, or for which the child is not developmentally prepared, or else that violate the laws or social taboos of society” (WHO, 2006, p.10). The UK government’s statutory guidance also provides a definition which encapsulates non-contact sexual abuse or “…non-contact activities such as involving children in looking at, or in the production of sexual images, watching sexual activities, encouraging children to behave in sexually inappropriate ways or grooming a child in preparation for abuse” (Department for Education, 2018, p.107).

Unlike child physical abuse or neglect, there are limited clear signs that a child is or has been sexually abused and detection requires the victim child or a witness to disclose abuse or through medical examination (Goodyear-Brown, 2012; Allnock, 2010). Research also states that approximately one in three children do not report sexual abuse (Radford et al., 2010).

Neglect

The official statutory definition of neglect in the UK comprises of actions that "…may occur during pregnancy because of maternal substance abuse…may involve a parent failing to provide adequate food, clothing, and shelter (including exclusion from home or abandonment); protect a child from physical and emotional harm or danger; ensure adequate supervision (including the use of inadequate caregivers); ensure access to appropriate medical care or treatment. It may also include neglect of, or unresponsiveness to, a child's basic emotional needs" (HM Government, 2018, p. 38). Neglect is the most common form of child maltreatment (Centre on the Developing Child at Harvard University, 2015) and often occurs in conjunction with other types of abuse (Nikulina, Widom & Czaja, 2011). According to one study (Jonson-Redi et al., 2003) which looked at child protection records to ascertain prevalence; findings highlighted that reports and allegation of child neglect co-occurred mostly with emotional and/or physical abuse.

Theoretical framework

Theories are useful in identifying radically different areas which may have been overlooked and can help develop new treatments or preventative strategies (Petersen, Joseph and Feit, 2014). Within the context of parental maltreatment of children, it is vital to understand the conceptual underpinnings (context and dynamics) of risk and protective factors and how these can ultimately contribute to parental resilience to prevent and reduce child maltreatment. Many studies (e.g., Afifi and MacMillan, 2011; Flores et al., 2005; Edmond et al., 2006) to date have focused on resilience among children and young people who have had adverse childhood experiences including maltreatment, however, these are also relevant to parents as some parents may have a history of childhood maltreatment which effects their parenting as represented in the phenomenon of intergenerational cycles of maltreatment, an established risk factor for child maltreatment (Schelbe and Geiger, 2017).

The complexity within the phenomenon of child maltreatment and the multiple influences on parents which may either increase or buffer risk of child maltreatment requires an ecological theory that is able to delineate these influences from various sources in parents' environment.

Various ecological models exist which are rooted in empirical evidence on risk and protective factors for child maltreatment. For instance, Belsky's (1984) Parenting Process Model postulates that parenting is determined by influences from three main tenets: parent characteristics, child characteristics and parents' sources of support or stress in the environment. This framework has been extensively used in studies of parent perpetrated child maltreatment (e.g., Lakhdir et al., 2017), however, as this thesis does not focus on child characteristics, a main tenet of Belsky's (1984) model, this framework was not considered apt for this thesis. Instead, the Risk and Resilience Ecological Framework (Bronfenbrenner, 1979; Fraser et al., 1999) is employed.

Risk and Resilience Ecological Framework

Uri Bronfenbrenner (1979), in the context of child development, was the first to present the ecological framework in which there are multiple layers within the environment, including the individual, the family, the community and finally the wider social environment, which all impact child development. While the basis of Bronfenbrenner's theory was human development, it has been applied to many other fields including psychology and public health (e.g., Grzywacz and Fuqua, 2000; Richard et al., 2011; Uehara et al., 2016).

Bronfenbrenner's (1979) ecological theory can also be extended to better understand the personal, familial, communal, and societal factors that determine whether a parent does or has the potential to, maltreat their child. As parents are also inseparable from their immediate and wider environmental context, the ecological framework can facilitate understanding of the complex interaction of factors (risk and protective) within ecological systems, and their impact on child maltreatment (Ungar et al., 2013).

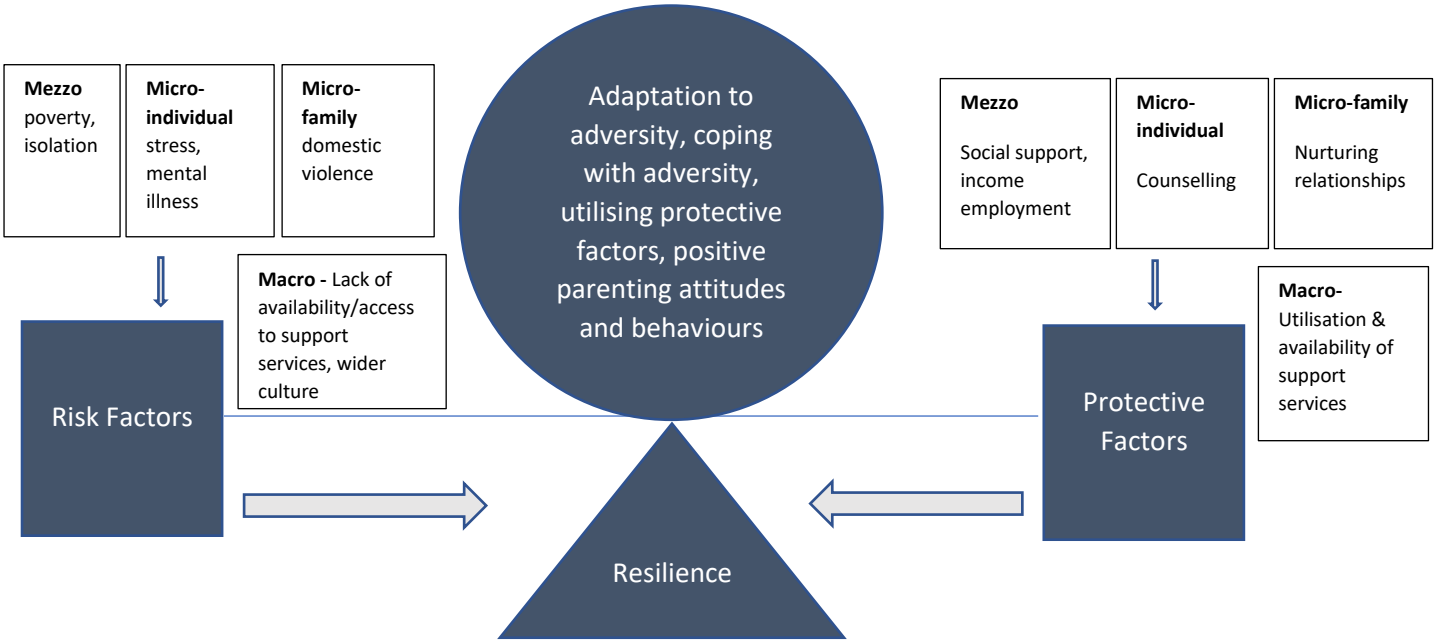
To further this understanding, introducing the concept of resilience also provides valuable insight. Resilience focuses on those processes which enhance an individual's ability to do well despite adverse circumstances (Ungar, 2008). Rutter (2006) posits that no single process or factor can predict resilience and patterns of coping and adaptability in adverse circumstances are impacted by multiple, ecological-level variables. Resilience is dependent upon the qualities of the individual, the environment (immediate and wider) and the interaction between these (Ungar et al., 2013). This interpretation of resilience is similar to the systems thinking introduced by Bronfenbrenner (1979; Ungar et al., 2013).

Furthermore, various conceptual frameworks have been proposed to combine the ecological and resilience models to fully encapsulate risk, protection, and adaptability of individuals. Lerner (2006) posits that resilience is not a single attribute within an individual or within systems surrounding the individual rather it is a dynamic characteristic of the relationship between the individual and each element of the environment. Studies of populations exposed to extreme stress (e.g., child soldiers or maltreated children) show a pattern of findings which suggest that environmental factors are more influential on resilience and positive outcomes compared to other individual qualities (Klasen et al., 2010; DuMont et al., 2012). This further reinstates a need for the study of resilience within a socio-ecological framework and its importance in gaining insight on factors influencing parental resilience for child maltreatment.

Figure 1 presents how the Risk and Resilience Ecological Framework can be applied to child maltreatment. The risk and resilience framework considers the balance of risk (factors which contribute to adverse circumstances) and protective factors (resources which guard against adversity) and their interaction to understand the extent of an individual's ability to continue to function despite adversity (Fraser, 1997). Fraser and colleagues (1999) expanded the risk and resilience framework and organised the risk and protective factors to fit in an ecological (micro, mezzo, and macro-level factors) context and this is referred to as the 'Risk and Resilience

Ecological Framework' (Fraser et al., 1999). The three main systems within the ecological framework are micro (individual and family), mezzo (parent's interaction with the wider community including schools and neighbourhood), macro (parents' interaction with wider cultural and national systems). All these systems influence the risk of child maltreatment directly or indirectly.

Figure 1: Example of a Risk and Resilience Ecological Model for child maltreatment



This framework can help identify both risk and protective factors as evidenced in research. Firstly, it aims to create a balanced view of both weaknesses (risks) and strengths (protective factors) and "recognises the complexity of individuals and the systems in which they are nested" (Corcoran and Nicholas-Casebolt, 2004, p. 213). Furthermore, the ecological framework extends the focus from the individual and familial circumstances to other systemic factors in the wider community and society that can act as risk and/or protective influences.

Child Maltreatment and Risk/Resilience

Resilience

Resilience is defined as 'a phenomenon or process reflecting relatively positive adaptation despite experiences of adversity or trauma' (Luthar, 2005: 6). This concept provides a framework for understanding the ways in which parents, despite their experience, and past or present adversity do not maltreat their children (Luthar, Cicchetti and Becker, 2000). Resilience does not only represent an individual's capacity to 'bounce back' from difficulty but it is influenced by interactions with the family and the wider environment (Schoon, 2006). Some parents can be resilient despite their difficulties while others may struggle. There is an emphasis on factors, processes and mechanisms which interact to build resilience, particularly the interaction of risk and protective factors at different levels of the environment.

Risk Factors

Risk factors consist of certain vulnerabilities which make it likely for abuse to occur. “In narrow definitions the emphasis is placed on individual events, for example, a physical abuse incident…in these situations risk is equated to harm and the negative outcomes of the event…” (Waugh, 2008, p. 113). The term ‘risk’ implies that something may occur in the future, and this allows for predictions to be made based on the probabilities associated with a particular risk. Parton (2007) states that the Children Act 1989 (DoH, 1989) paved the way for a future focus in legislative terms and child abuse occurred when “the child concerned is suffering or is *likely* to suffer significant harm” (s.31 (92)(a)). In the same way, Children (Scotland) Act 1995 uses the term “is *likely*…to be impaired in his health or development” (52(2)(c) (Norrie, 2004).

Glasser (2002) states that intervention should not be delayed until harm has occurred to a child but in fact, preventing the *likelihood or risk* of harm is a reasonable response. However, the difficulty in assessing risk of harm to the child remains. Having one or more risk factor does not mean that a child has been or will be maltreated and nor is the absence of risk factors a guarantee that child maltreatment will not occur. However, research consistently shows that risk factors are often interlinked and enhance possibility of a child being maltreated (Cleaver et al., 2011).

While the origins of child maltreatment are not completely understood, research has demonstrated that a variety of risk factors contribute to an increased potential for perpetration of child maltreatment. Literature suggests that risk factor exposure is cumulative in nature and the higher the presence of risk factors, the more likely it is that a child will be maltreated (Begle et al., 2010; MacKenzie et al., 2011). Based on a cumulative risk hypothesis, it is posited that child maltreatment is based on “constellations of risk” rather than an individual or isolated risk factor (Evans, Li, and Whipple, 2013). For instance, a parent with substance abuse, may also experience stress in relation to finances because of substance abuse which may then increase social isolation and parenting stress; ultimately increasing the likelihood of child maltreatment (Vial et al., 2020).

Protective Factors

Protective factors are those conditions or safeguards which mitigate risk and promote healthy and normal child development and well-being (Child Welfare Information Gateway, 2014). These can include helping ‘high-risk’ parents to find resources and support to allow them to develop coping strategies against adverse circumstances to parent effectively and reduce actual maltreatment or risk of potential maltreatment.

There is also variation in the way protective factors are defined and measured. For instance, some researchers consider protective factors as variables that predict a low probability of a negative outcome or the ‘mirror image’ of a risk factor (e.g., White, et al., 1989). Other researchers have defined it as a variable that

interacts with a risk factor to invalidate its effect (e.g., Rutter, 1985). Hence, a protective factor can either be interactive (interacts with a risk factor) or a risk-based protective factor (predicts low-probability of a negative outcome among an at-risk group).

Protective factors like nurturing relationships (micro-family level; Affi and Macmillan, 2011), support from community (mezzo level; Sameroff and Rosenblum, 2006), positive appraisals (Affi and Macmillan, 2011) and availability of resources (macro-level; Davies et al., 2011) are not just associated with mitigation of risk but can also enhance or strengthen resilience (Dias and Cadime, 2017).

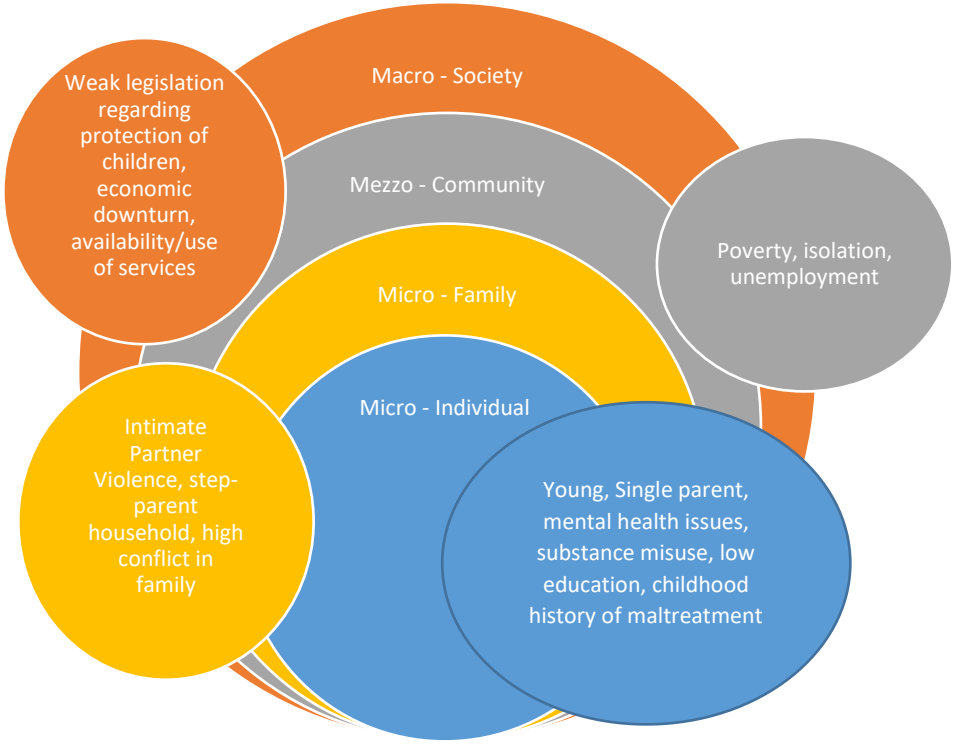
A three-generation cohort study examined association between parents' childhood history of maltreatment and future child maltreatment risk and found that positive, warm, and supportive relationship with a romantic partner decreased the likelihood of child maltreatment (Schofield, Conger & Conger, 2017). Most studies look at an at-risk sample (e.g., parents with a history of childhood maltreatment) and studies in this domain are usually correlational (e.g., Martin et al., 2012; Price-Wolf, 2014) or cohort and longitudinal studies (e.g., Schofield et al., 2017; Thornberry et al., 2013).

Risk Factors in an ecological system

It should be noted that much of the research presented in this section is correlational in nature and does not always control for confounding factors, hence the findings should be treated on the basis that some bias may exist.

Figure 2 presents the risk factors for child maltreatment within an ecological framework comprising the micro, mezzo and macro level factors of risk that increase the likelihood for child maltreatment to occur.

Figure 2: Risk Factors for child maltreatment – example of an ecological framework (based on Kirby and Fraser, 2017)



Micro Level

The micro level is the first level and is concerned with parents' immediate surroundings. It includes both individual (e.g., personality traits, mental health, young age) and familial factors (e.g., relationships with family members, domestic violence). Within individual level risk factors, research has shown, for instance, that a mother with a history of childhood abuse and depression is more likely to neglect her child and have inconsistent patterns of care giving (Nikulina, Widom & Czaja, 2011). Young parenthood is deemed as another risk factor and De Paul and Domenech (2000) found that teenage mothers were at the highest risk of perpetuating child maltreatment. Research within the familial context has shown that family structure has an impact on child maltreatment risk. For instance, research has found that single-parent families are at heightened risk, however, this can be due to multiple confounding factors such as financial stresses and low resources, young age, and low level of education (Hunter and Price-Robertson, 2013). Further to this, presence of Intimate Partner Violence (IPV) within the family not only increases risk but has high incidence of co-occurring with child maltreatment (Hamby et al., 2010).

Mezzo level

The mezzo level focuses on the community and neighbourhood level factors that may impact parenting and risk of child maltreatment. These include factors such as neighbourhood disadvantage, social isolation, and housing conditions. Berlin et al.'s (2011) study with 499 mothers and infants (from records of child maltreatment

registers) found that social isolation acted as a mediator for maltreating mothers. Studies have found that neighbourhood factors such as deprivation and impoverishment in the community, lack of resources and support available and poor conditions of housing can all increase the risk of child abuse and neglect even after controlling for individual and family risk factors (Coulton, Korbin and Su, 1999).

Macro Level

The macro level contains risk factors related wider cultural beliefs, availability and utilisation of support services, national policy (e.g., affordable childcare) and economic climate (e.g., lack of jobs) that may impact families. Some of these risk factors indirectly contribute to the likelihood of child abuse and neglect. Studies have shown that low availability or low utilisation of resources such as social support and services can increase risk of maltreatment (Cicchetti & Lynch, 1993, 1995). Culture can also have a huge influence on the risk of child abuse. For instance, Nordic culture does not accept the use of physical force in child rearing (Larzelere & Johnson, 1999) and Norway, Sweden, Denmark, and Finland's laws reflect this cultural value. The cultural perspective of maltreatment can sometimes present an issue, especially in relation to definitions. As discussed earlier in the introduction, definitional dilemmas are further exasperated in a cross-cultural context, for instance, based on a survey with 72 countries, it was found that there was immense variation among the countries in categorising severe physical discipline as child physical abuse (Daro, 2006). While child maltreatment is a global phenomenon, much of the published research is from western countries, hence tremendous variation in what is deemed abusive exists cross-culturally (Raman, 2012).

Protective factors in an ecological system

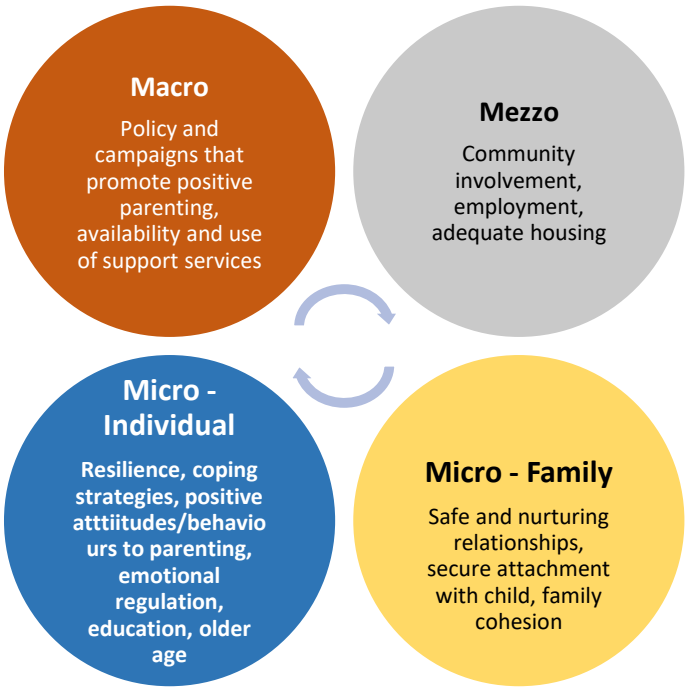
Several studies have identified protective factors which can help build resilience in parents with a history of childhood abuse for them not to repeat the same patterns with their own children. For instance, studies have found that safe, stable, and nurturing relationships (SSNRs) can interrupt the cycle (e.g., Conger et al., 2013; Herrenkohl et al., 2013; Thornberry et al., 2013). Other factors have included psychotherapy (Egeland, et al., 1988), some experiences of childhood nurturing (Bartlett and Easterbrooks, 2012), more financial resources and more psycho-social and community support (Dixon, et al., 2009) all of which have been shown to aid in breaking the cycle of abuse.

A cohort study by Dixon et al (2009) found that financial and social support acted as protective factors for mothers who had a history of childhood sexual abuse and who did not repeat the cycle of abuse. Similarly, Bartlett and Easterbrooks (2012) in their study of 92 adolescent mothers referred to child protection professionals for neglect and who had a history of childhood physical abuse found that a history of positive care in childhood acted as a protective factor in breaking the intergenerational cycles.

An ability to delay pregnancy and the age of becoming a parent can be a protective factor (Bartlett and Easterbrooks, 2015) as well as obtaining care pre-natally and utilising social resources (Hunter and Kilstrom, 1979) can reduce the risk

of child maltreatment. Higher educational attainment and financial security have also been associated with contributing to reducing stress among parents, and enabling a safe home environment (Dixon et al., 2009). Thornberry and colleagues (2013) found that three factors in interpersonal relationships are associated with protection against perpetuation of child maltreatment, and these include relationship satisfaction (with spouse or partner), parental satisfaction and attachment to child. Schofield et al (2013) found that SSNRs can disrupt potential for child maltreatment. Resilience can also be found in parents who were maltreated as children and research shows that some of them are able to acquire a high level of emotional intelligence along with high levels of empathy, motivation, and insight (Klika and Herrenkohl, 2013). Community support, especially interventions, can buffer the potential for child maltreatment. Figure 3 shows examples of some of the protective factors within an ecological system.

Figure 3: Protective factors within an ecological system - an example



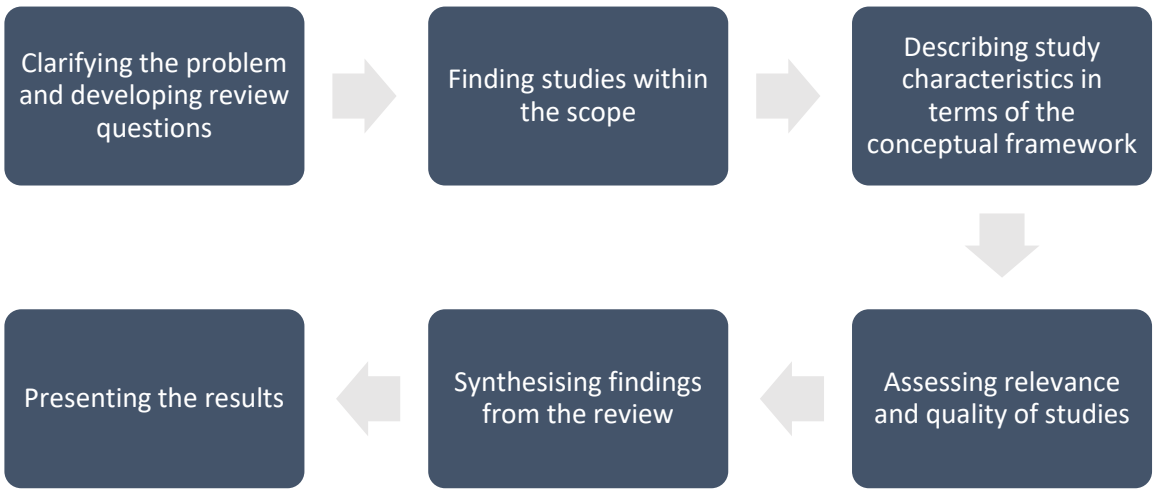
This section has highlighted research within the areas of child maltreatment and definitions of different types of maltreatment as well as parental risk and protective factors. While a lot of research has been conducted within the field of child maltreatment, there is a lack of a grand synthesis of two major elements in child maltreatment prevention. One element focusing on synthesising the evidence on association between various parental risk and protective factors and child maltreatment and the second element which synthesises evidence on parental risk and intervention provision from child maltreatment interventions to ultimately map the two syntheses together and examine how evidence influences child maltreatment prevention and reduction. This PhD thesis aims to fill this large gap within this highly complex but vital area of research.

Chapter 3: Introduction to Systematic Reviews

What is a systematic review?

A systematic review is defined as a way of synthesising research in a structured, and methodical way (Aromataris and Pearson, 2014). The systematic review process focuses on researcher accountability and transparency of processes. The method also allows flexibility to researchers to refine and revisit steps in the process to gain further clarity (Gough et al., 2017). Gough and colleagues (2017) describe the systematic review method as a six-step process depicted in Figure 4.

Figure 4: The Systematic Review Process (Gough et al., 2017)



Why use systematic review methods?

The evidence movement, with the contribution of organisations such as the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), have allowed systematic reviews to become popular in many disciplines including social sciences. This is because systematic reviews offer more valid conclusions compared to conventional literature reviews (Littell, Corcoran and Pillai, 2008). “Literature reviews, even those written by experts, can be made to tell any story one wants them to, and failure by literature reviews to apply scientific principles to the process of reviewing the evidence, just as one would to primary research, can lead to biased conclusions and to harm and wasted resources” (Petticrew and Roberts, 2005, p. 5).

Systematic review method is becoming increasingly popular among masters and doctoral students and researchers have found that students using this method in conducting their research have “gained a greater depth and insight into the subject they were researching” (Armitage and Keeble-Allen, 2008, p. 103). Sambunjak and

Puljak (2010) further state that systematic reviews allow students to develop critical reasoning, methodological expertise and skills of problem solving as well as skills related to technology.

Employing systematic review methods for this PhD is valuable because it allows synthesis of findings from vast number of studies to present and further knowledge of child maltreatment.

The research methods for this thesis comprise of two separate systematic reviews, Reviews A and B. The overarching research question guiding both systematic reviews is ‘How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?’ The two systematic reviews are designed to provide an integrated account of adversity and positive influences for parental child maltreatment and any distinctions in these based on maltreatment types.

Systematic review methods are suitable for this PhD thesis because; i) there is a vast amount of data and information regarding parental risk and protective factors and intervention evaluations for child maltreatment, ii) it is deemed the best method to analyse the literature in response to the overarching as well as the specific research questions of both reviews, iii) it can help to show whether findings from studies showing associations between parental risk and protective factors and child maltreatment and evidence from evaluations of parenting interventions of child maltreatment are consistent. It can also guide applicability of findings. The two systematic reviews aid in limiting bias, help improve reliability of findings and provide a way of synthesising a large amount of evidence from studies in a manageable, replicable, and systematic way. It is hoped that findings from this thesis can aid policy makers and practitioners to make informed decisions, guide development of child maltreatment interventions and provide effective and relevant support to vulnerable families. For researchers, these findings can help provide insights, identify gaps, and guide future research to move the field of child maltreatment forward.

Chapter 4: Methods for Systematic Review A

Review A synthesised findings from published, empirical and observational research on parental risk and protective factors to prevent or reduce child maltreatment. The review focused on primary studies from 1980 to November 2018.

Stage 1: Review Initiation

Review initiation requires involvement of stakeholders in the review process to gather expert opinions in the field of inquiry. This is done to enable a deeper understanding of the practical context of the research and to aid the review with the inclusion of specialist knowledge in the field from, for example, practitioners and policy makers (Rees and Oliver, 2012). For this research, stakeholders could be anyone who has a 'stake' in the evidence generated by this thesis, and these could include, for example, policy makers, intervention developers and even service-users or vulnerable parents. For a PhD, the goal is to make an original contribution to knowledge and as a sole researcher, opinions of stakeholders have not been utilised. The extent of stakeholder involvement is the utilisation of expertise from the two PhD supervisors, Professor LM Gutman and Professor D Gough, who helped clarify review questions and guided refinement of systematic review processes. It was not felt that additional input from other stakeholders is required to answer the review questions given the extensive research evidence in this area. On balance it was concluded that due to challenges associated with engaging stakeholders including constraints of time and resources and in keeping the primary goal of PhD research in mind, stakeholder involvement for this research is not essential.

Stage 2: Formulating review question and method

The second stage in the systematic review process is formulating a research question and then selecting the review methods and approach that is best able to answer the review questions. These can include aggregative (best addressed with a prori deductive methods) or configurative (using inductive methods) analysis or a combination of both (Gough et al., 2012). The overarching question for this research is, 'How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?'

Based on this, Review A answers the following questions:

1. What are the parental risk factors for child maltreatment?
2. What parental protective factors can reduce or prevent child maltreatment?
3. What is the evidence that parental risk and protective factors differ based on type of child maltreatment?

Next, the review method was identified. Based on Gough et al. (2012) categorisation which states that if key concepts are clearly defined then it is possible to aggregate according to the concepts and this method is likely to be predominantly a priori in approach. On the other hand, when key concepts are not well defined then a configurative approach is best which may include much iteration. During the review of studies, immense variation in the definition of what constitutes various forms of

child maltreatment including child neglect, child emotional and psychological abuse, and child physical and sexual abuse are identified across studies. Based on a lack of a universal definition for certain terms as well as the predicted heterogeneity in study findings, both a configurative and aggregative approach was adopted as most appropriate for examining the evidence on risk and resilience for parents who may maltreat their children. Additionally, interest is based on examining both empirical associations between risk and protection as well as examining the variation in risk and protection and the complex dynamic between the two. So, for the first and second review questions on parental risk and protective factors, an aggregative technique was employed whilst for the third question on difference in risk and protective factors based on type of child maltreatment, a configurative approach is used. Thus, the review was not confined in either category but both an aggregative and a configurative approach is used to understanding the review findings. Furthermore, search strategies for configurative reviews allow for an iterative search process and concepts can be refined and solidified throughout the process (Gough et al., 2012).

Stage 3: Developing and refining a search strategy

This stage focuses on identifying and selecting relevant evidence most suited for answering the review questions. The search strategy is derived from the review questions and provides guidance for the search (Brunton et al., 2012).

Inclusion Criteria

The inclusion criteria were refined twice during the systematic review process. The initial inclusion criteria included a wide array of publications and was not limited by study method. This is because the type of method or methods that would best answer Review A's questions was unclear at the time of conducting the search. Further, type of publications to be included were also not restrictive at the beginning of the search to assess all available evidence on risk and protection in child maltreatment. Opinion pieces were excluded as they do not constitute empirical evidence which was required to answer the review questions. Intervention evaluations were also excluded as they are included in the second systematic review, Review B. The original inclusion criteria for Review A are presented in Table 2.

Table 2: Initial inclusion criteria for Review A

Domain	**Inclusion Criteria**
Publication	Journals, books, government documents (hard copy and online), statistical data; some unpublished work e.g., student dissertations, conferences, overviews of theories, literature
Study Year	1980-2018
Participants	Parents with children aged 0-17
Focus of study	Quantitative literature that focuses on parental risk and protective factors of child maltreatment
Study methods	Not yet defined
Excluded Studies	Opinion pieces, intervention evaluations

Once an initial search was conducted, relevant studies employed a large variety of methods, some of which answered review questions and some methods, which did not. Hence, refinement to the inclusion criteria was necessary.

The final refinement to the inclusion criteria was conducted during the full text screening process and the resulting criteria is depicted in Table 3.

Table 3: Refined inclusion criteria for Review A

Domain	**Inclusion Criteria**
Publication	Journals, book (or chapter in book reporting findings of empirical study)
Study Year	1980-2018
Participants of studies	Parents with children aged 0-17
Focus of study	Quantitative, primary studies that include parental risk and protective factors for child maltreatment
Study Methods	Case control and case reviews, longitudinal/cohort, systematic reviews, and meta-analysis (only for primary studies), cross-study comparisons, cross-sectional
Excluded Studies	Opinion pieces, editorials, descriptive/qualitative studies, books which do not report findings of an empirical study, theoretical/conceptual papers, intervention evaluations or intervention studies

Included studies were limited to quantitative primary studies as these can provide hard numerical data, which are more reliable in answering the review questions, compared to descriptive and qualitative studies. They also provide findings which may be applicable to a wider population as samples used in quantitative studies are larger than those in qualitative studies. However, it is to be noted that research studies, including the ones mentioned above, do not include certain parenting populations who may be deemed ‘high risk’ and most in need of

support but who are resistant to services (e.g., those involved in illegal activities or lifestyles), live in areas which are difficult to access by researchers (e.g., prisons), and certain minority groups. While the samples are relatively larger than those in qualitative studies, the 'wider population' only refers to applicability of findings to groups which are usually represented in research.

The study methods which best answer Review A questions included cross-sectional studies, cross-study comparisons, case control analysis, longitudinal and cohort studies and these study designs were then focused upon in the final inclusion of studies during full text screening. Systematic reviews and meta-analysis were only included to acquire primary studies from them. Books and opinions pieces were not included as they are descriptive in nature and tend to provide historical research summaries, background, and review theoretical concepts except if a book reported empirical study findings. Finally, some intervention studies and evaluations were found in the searches, and these were excluded as Review B will solely review child maltreatment intervention evaluations.

Search strategy: Identifying sources of search

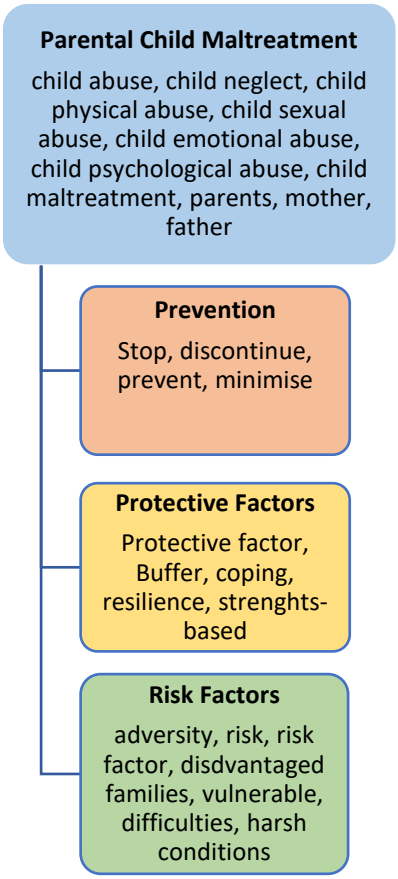
Sources used to conduct the searches were primarily electronic and were accessed through UCL Library's electronic databases and e-journals facility. Four databases were most appropriate for this search and these included Cochrane Library, PsycInfo, Scopus, and Web of Science. One database was included which focused on systematic reviews and for this Cochrane Library was chosen as it is primarily a systematic review and meta-analysis database covering a wide range of subjects. The aim was to exclude systematic reviews and meta-analyses once relevant primary studies were extracted from them. Scopus and Web of Science were included because they also hold many titles and are not restrictive by subject area. Finally, PsycInfo was included as it contains all titles relevant to the field of Psychology and this ensured that a more focused search was also included.

No search can uncover *all* relevant studies related to an area of inquiry and hence, as a checking mechanism searches on the Child Abuse & Neglect journal were conducted manually. This was done to see if any relevant studies were missed or did not appear in the database search. If so, it would mean a refinement of search terms and restarting the search. This proved to be a good mechanism for keeping a check as two initial searches had to be revisited and search terms refined, and the process started again to ensure that most relevant studies were included.

Identifying search terms

Figure 5 shows the process of identifying the key search terms to use when conducting searches for relevant studies. The main terms such as parental child maltreatment, prevention, risk, and protective factors were broken down into similar terms that would help identify prior literature on the topic.

Figure 5: Identifying key search terms



Developing search terms

The search strategy was developed using the identified key search terms and one example of a search conducted in the database PsycInfo is presented in Table 4.

Table 4: Search strategy of one database (PsychInfo)

#	Searches	Results
1	Child abuse.mp.	31037
2	Child maltreatment.mp.	5380
3	Child physical abuse.mp.	617
4	Child sexual abuse.mp.	6048
5	Child neglect.mp.	4220
6	Child emotional abuse.mp.	43
7	**1 or 2 or 3 or 4 or 5 or 6**	**33884**
8	Risk factor*.mp.	114306
9	Adversity*.mp.	7613
10	Troubled* families*.mp.	140
11	Harsh conditions*.mp.	58
12	Disadvantaged* families*.mp.	404
13	Vulnerable families*.mp.	249
14	Famil* difficulties*.mp.	223
15	**8 or 9 or 10 or 11 or 12 or 13 or 14**	**121719**
16	Protective* factor*.mp.	13667
17	Resilience.mp.	24010
18	Strength*-based.mp.	2529
19	Buffer*.mp.	11959
20	Coping*.mp.	83238
21	**16 or 17 or 18 or 19 or 20**	**125529**
22	Prevention*.mp.	127784
23	stop*.mp.	24495
24	Discontinue*.mp.	6880
25	Minimi?e*.mp.	19521
26	**22 or 23 or 24 or 25**	**175446**
27	Parent*.mp.	275395
28	Mother*.mp.	125956
29	Father.mp.	26771
30	**27 or 28 or 29**	**357671**
39	**7 and 15 and 21 and 26 and 30 (multi-field search – 21 and 30 (Abstract) and 7, 15, 26 (All fields)**	**605**
7 =	Child abuse OR child maltreatment OR child physical abuse OR child sexual abuse OR child neglect OR child emotional abuse.mp.	
15 =	Risk factor* OR Adversity* OR Troubled* families* OR Harsh conditions* OR Disadvantaged* families* OR Vulnerable families* OR Family* difficulties*.mp.	
21 =	Protective* factor* OR Resilience OR Strength*-based OR Buffer* OR Coping*.mp.	
26 =	Prevention* OR stop* OR discontinue* OR minimi?e*.mp.	
38 =	parent* OR mother* OR father*.mp.	

Conducting the searches

The search for relevant studies for Systematic Review A was conducted at University College London Library through the electronic database and e-journal

searching facilities. Table 5 below shows the details of the searches including search terms used and the date the search was conducted.

Table 5: Searches conducted for each database for Review A

Database or E-Journal	Search Strings	Filters	Date of search
Cochrane	Child abuse OR child maltreatment OR child physical abuse OR child sexual abuse OR child neglect OR child emotional abuse in Title Abstract Keyword AND Risk factor* OR Adversity* OR Troubled* families* OR Harsh conditions* OR Disadvantaged* families* OR Vulnerable families* OR Family* difficulties* in Title Abstract Keyword AND Protective* factor* OR Resilience OR "Strength* based" OR Buffer* OR Coping* in Title Abstract Keyword AND Prevention* OR stop* OR discontinue* OR minimi?e* in Title Abstract Keyword AND parent* OR mother* OR father*	Advanced search: Title, Abstract and Keyword search fields.	16/11/2018
PsycInfo	((Child abuse or child maltreatment or child physical abuse or child sexual abuse or child neglect or child emotional abuse) and (Risk factor* or Adversity* or Troubled* families* or Harsh conditions* or Disadvantaged* families* or Vulnerable families* or Family* difficulties*) and (Protective* factor* or Resilience or Strength*-based or Buffer* or Coping*) and (Prevention* or stop* or discontinue* or minimi?e*) and (cumulative* or co-occurrence* or multiple*) and (interplay* or interaction* or dynamic*) and (parent* or mother* or father*)).af.	Filter on date: 1980-2018. Multi-field search – All fields.	15/11/2018
Scopus	(ALL (child AND abuse OR child AND maltreatment OR child AND physical AND abuse OR child AND sexual AND abuse OR child AND neglect OR child AND emotional AND abuse) AND ALL (risk AND factor* OR adversity* OR troubled* AND families* OR harsh AND conditions* OR disadvantaged* AND families* OR vulnerable AND families* OR family* AND difficulties*) AND ALL (protective* AND factor* OR resilience OR “strength*based” OR buffer* OR coping*) AND ALL (parent* OR mother* OR father*))	All fields searched – basic search (not advanced)	12/11/2018

Web of Science	Child abuse OR child maltreatment OR child physical abuse OR child sexual abuse OR child neglect OR child emotional abuse AND Risk factor* OR Adversity* OR Troubled* families* OR Harsh conditions* OR Disadvantaged* families* OR Vulnerable families* OR Family* difficulties* AND Protective* factor* OR Resilience OR "Strength* based" OR Buffer* OR Coping* AND Prevention* OR stop* OR discontinue* OR minimi?e* AND parent* OR mother* OR father*	No filters	13/11/2018
Child Abuse & Neglect	Risk factors, protective factors, child abuse, parents, prevention, resilience	All fields searched	18/11/2018

The search results for the number of studies found in each database and through manual searching of Child Abuse & Neglect is shown in Table 6. The total number of studies included was 1,480. Search results were transferred to EPPI-reviewer and 38 duplicates were identified by EPPI-reviewer and were subsequently removed. 68 further duplicates were manually identified, and these were excluded under the 'Exclude on duplicate' code. Total studies excluded because of duplicates was 106. The number of studies remaining to screen for Title and Abstract stood at **1374.**

Table 6: Search results

Databases and E-Journals	**Results**
Cochrane Library	25
PsycInfo	650
Scopus	298
Web of Science	351
Child Abuse & Neglect	156
Total results	**1480**

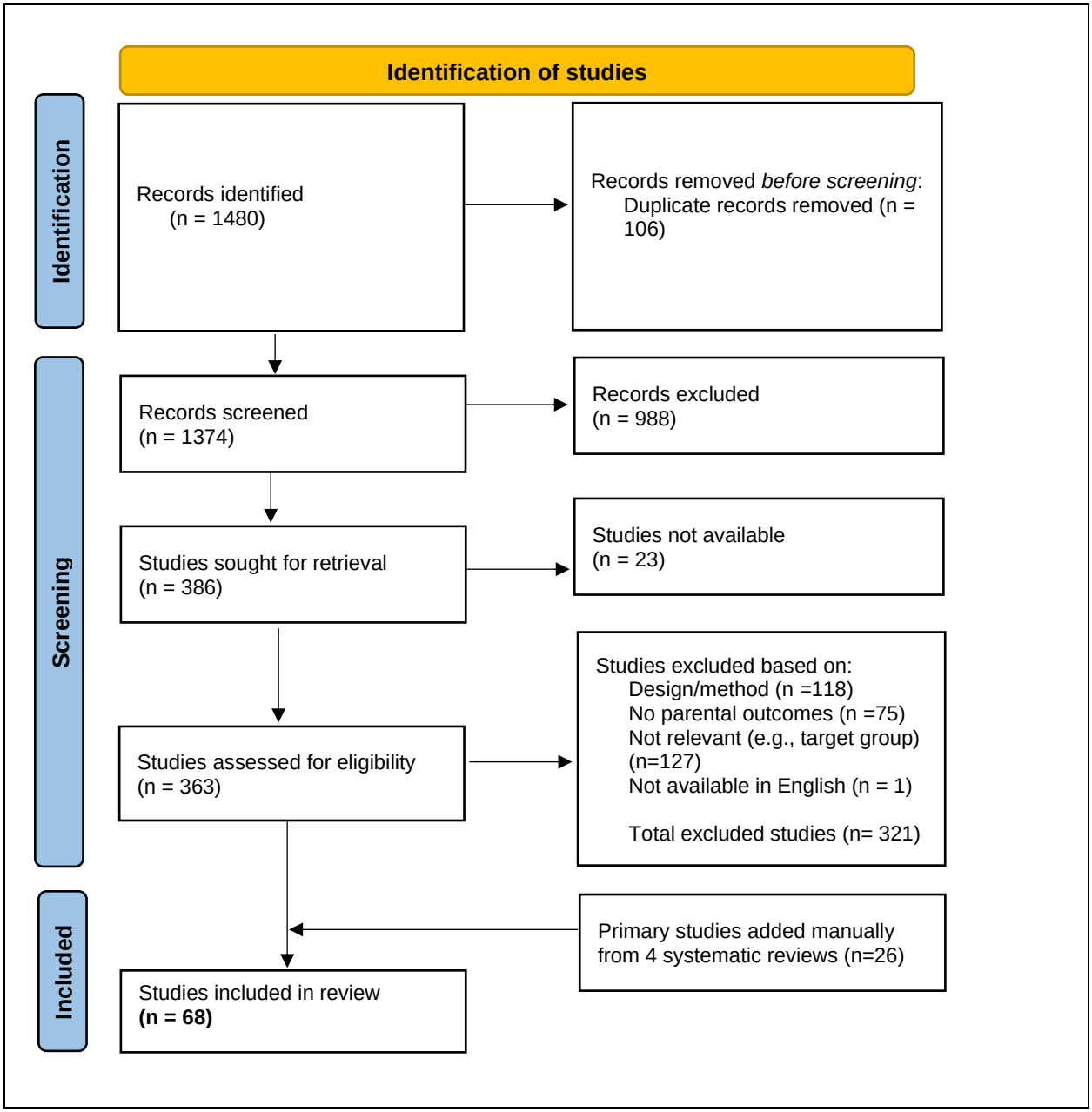
Screening on Title and Abstract

A total of 988 studies were excluded as clearly not meeting the inclusion criteria leaving 386 studies that were included for full text screening as shown in Figure 6. The excluded studies were mostly excluded as the subject matter was not considered relevant, for example, one study looked at adolescent dating abuse. The target group was the second main reason for exclusion of studies. Systematic Review A focuses on *parental* child maltreatment and *parental* outcomes based on risk and protective factors. All studies excluded in this category of target group focused on child outcomes, for instance, children's coping skills or resilience, or children's behavioural adjustments.

Screening on Full Text

From the 386 studies, 23 studies were not available and the remaining 363 studies were retrieved, mostly from UCL library's electronic database search, and these were then screened for eligibility. There were a few journal articles, which were not available, and authors of these articles were contacted through Research Gate (online website) and copies of these articles were obtained directly from the authors. Full texts of all 363 studies were stored on EPPI-reviewer 4, a systematic review software. The Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA; Page et al., 2021) flow chart in Figure 6 displays a summary of the screening process.

Figure 6: PRISMA flow chart



During review of the studies, the inclusion criteria was refined as a clearer picture of what study designs are most appropriate to answer Review A's research questions began to emerge.

Primary studies from the four systematic reviews were then reviewed to see which ones were already included and which study fit the criteria for inclusion for Review A. Seventy-nine primary studies comprised all four systematic reviews. A total of 26 primary studies met the inclusion criteria, and the four systematic reviews were then excluded. This brought the total included studies to 68. Study designs of included studies are listed in Table 7.

Table 7: Study design of included studies (n=68)

Study design	**No. of studies**
Correlational	41
Longitudinal/cohort studies	22
Case control	3
Cross-study comparison	2

Stage 4: Describing study characteristics

A data extraction tool was devised based on the EPPI-Centre's guidelines for reporting of empirical research studies in education (The REPOSE guidelines; Newman and Elbourne, 2005). The tool was refined during the data extraction process and a few questions were streamlined or removed as they were not found to be necessary in extracting data relevant to the review questions. (See Appendix A). Data extraction was undertaken using EPPI-Reviewer 4 software.

Stage 5: Assessing quality of studies

Quality assessment criteria based on included studies' designs was used. The quality assessment criteria were derived from The National Institute for Health and Care Excellence guidelines (NICE, 2012) and summarised in one quality appraisal tool (see Appendix B). Judging the quality of each study based on the type of design used in the study was particularly important due to differing factors determining quality. For instance, important things to consider when appraising cohort studies including looking at indication of selection bias or confounding factors. This is similar to assessing quality of case control and correlational studies as well and confounding is a significant factor. Similarly, in longitudinal studies indication of follow-up length, attrition and whether the study addressed missing or incomplete data are useful in assessing quality.

Furthermore, research evidence of high quality is not the only criteria to appraise studies in systematic reviews. More importantly, whether the included studies are fit for purpose and answer the review questions is a significant factor in their appraisal. For this reason, the Weight of Evidence (Gough, 2007) was used to assess whether the studies are relevant to this review (see Section D of the Quality

Appraisal Tool in Appendix B). This was useful especially for Systematic Review A due to the heterogeneity in study designs and added an additional measure of scrutiny to identify relevance of studies.

The quality assessment tool comprised of four sections. The first one considered risk of bias and looked at the study population and whether it was representative. It also considered whether confounding variables have been identified and how the study minimised their effect. The second section focused on outcome and reliability of measures and procedures as well as follow-up in longitudinal studies. The third section considered reliability of data analysis and the fourth and final section considered the weight of evidence and relevance of study to answer review questions.

The GRADE (Grading of Recommendations, Assessment, Development and Evaluations; Guyatt et al., 2011) approach was used to rank each study. While this approach is primarily used in intervention evaluation studies, it is also useful for Systematic Review A as it addresses risk of bias and confounding, which are a primary concern in studies included in Review A.

Within the GRADE approach, there are four rankings including high, moderate, low, or extremely low. Based on this approach, observational studies are given a criterion of 'low' and marked up or down. All the included studies in the review were given an initial ranking of low and were then moved up to a ranking of Moderate or High if there was no or minimal risk of bias, outcome measures and processes, including follow-up, were reliable and data analysis were appropriate and valid (Kirmayr, et al., 2021). Studies were marked down if one of the following occurred:

a. Risk of bias (e.g., selection bias, reporting bias)
b. Confounding not addressed completely or at all
c. No strategies for incomplete follow up (longitudinal studies only)
d. Analysis not valid
e. Association not calculable or given (correlational studies)

Finally, the weight of evidence was marked separately to the quality of studies and was given a ranking of extremely low, low, moderate, or high based on the three questions concerning each study's relevance to the review. Initial ranking of all studies was low and if the evidence could be trusted and the study design and method of the study deemed appropriate to answer review questions, even partly, then the study was moved to moderate or high ranking. The weight of evidence was given priority over the quality of the research evidence. So, if a study ranked low in quality of evidence, but the weight of evidence was high or moderate, then the study was included.

Stage 6: Synthesising the findings

Due to the predicted heterogeneity in findings from included studies, a narrative synthesis approach was chosen to synthesise the results. The synthesis presents findings in several ways. Firstly, in tabular form including study characteristics such as study design, variables being investigated and the outcome.

This configurative approach was utilised as it helps with developing a preliminary synthesis and assists in locating any patterns within and between studies.

Synthesis of the findings from Review A included a controversial method of vote counting to identify significant risk and protective factors within the included studies. Vote counting has predominantly been used in meta-analytic studies (Bushman and Wang, 2009) due to its simplicity of comparing significant versus non-significant findings in evaluation studies; however, it is considered, by many researchers (Friedman, 2001; Eshkol and Steinberg, 2002; Warner, 2001) to be a flawed and limiting approach as it does not consider quality of the studies, size of the sample or of the effect and focuses primarily on frequency of significance. This may be limiting when looking at, for instance, intervention evaluations and using vote counting to differentiate between studies showing benefit (positive studies) or studies showing harm (negative studies). However, as Review A does not include evaluation studies, vote counting to only identify significant and prevalent risk and protective factors was considered adequate as it helped to produce a coherent synthesis and identification of patterns within included studies (Cwikel, Behar and Rabson-Hare, 2000). Graphical representations were also used to present risk and protective factors based on ecological levels; micro (individual/family), mezzo (neighbourhood/community) and macro (national/society). Only significant findings were presented for both risk and protective factors. Venn diagrams were used to show distinct and overlapping risk and protective factors for maltreatment sub-types.

Chapter 5: Findings of Systematic Review A

Quality Assessment

Following full text screening, 68 studies were included in Review A. Quality assessment of the 68 studies did not lead to exclusion of any studies based on quality and weight of evidence (Appendix C).

Table 8: Study rankings using GRADE

No. of Studies	GRADE High	GRADE Moderate	Reason
51	✓	-	-
2		✓	Outcome measures
7		✓	Selection bias
1		✓	Non-adjustment of confounding factors
1		✓	Low survey response rate
6		✓	Issues with data analysis

As shown in Table 8, all 68 studies were ranked as high or moderate. For the quality of evidence (see Appendix C for details), 17 studies were ranked as moderate quality. Two of these studies were marked down on outcome because neither had clearly stated validity and reliability of outcome measures. Nine studies were ranked lower mostly due to selection bias such as oversampling, population not representative (e.g., community sample rather than an at-risk sample). Other reasons included non-adjustment of confounding factors in one study and a low survey response rate in another. Six studies were ranked lower because of issues with analysis as majority of these studies did not provide a rationale for their data analysis or did not address replicability or reliability of the analysis. The remaining 51 studies were ranked as high quality.

For the weight of evidence, 61 studies were ranked as high and only 7 ranked as moderate. This was because the focus of the study was not entirely on parental risk and protective factors although it did form part of the study.

Overview of study characteristics

Table 9 includes a summary of the study characteristics. Study population ranged from 48 to 189,055. Fourteen studies included a sample of both parents and children, 11 studies had participants of mother-child dyads, 20 studies only had mothers (including pregnant women), and the remaining studies included both parents. Majority of the studies included only risk factors (53), while some included both risk and protective factors (15). No study exclusively examined protective factors.

In terms of maltreatment type studied and as shown in Table 9, 23 studies focused on all child abuse and neglect which includes child emotional or psychological abuse, child physical abuse, sexual abuse, and child neglect, one study looked at all child abuse and neglect but also included another abuse category 'threatened harm'. Child neglect alone was studied by five studies, while 19 studies only looked at child physical abuse, one on emotional abuse and one study focused on child sexual abuse. The remaining studies included more than one type of child maltreatment with nine focusing on neglect and physical abuse, and three studied emotional and physical abuse. Six studies looked at three types of maltreatment; three looked at child neglect, physical and sexual abuse and three examined child neglect, physical and emotional abuse.

From the 68 included studies, child maltreatment outcome measures included child protective services (CPS) referrals or records of alleged maltreatment (n = 7), substantiated CPS records (n = 12), both substantiated and unsubstantiated records from CPS (n = 5) Conflict Tactic Scale (Straus et al., 1979) by six studies and the Conflict Tactic Scale Parent-Child (CTSPC; Straus et al., 1997) by seven studies. The Child Abuse Potential Inventory (CAPI; Milner, 1986) was used by 10 studies. The remaining studies used hospital records (n = 2), national database (n = 6), researcher devised questionnaires (n = 6), and the Diagnostic Interview Schedule (DIS; Robins et al., 1981) was used by one study. One study also used the Juvenile Victimisation Questionnaire (JVQ; Hamby and Finklehor, 2004). Five studies used more than one measure which included CTSPC and CPS reports in one study, researcher devised questionnaires and observational measures in two studies, CTSPC and Multidimensional Neglectful Behaviour Scale (Straus and Kinard, 1995) were used by one study.

There were two case control studies, three cohort studies, 23 cross-sectional studies, two cross-study comparisons, 18 longitudinal studies and six studies analysing secondary data which were mostly descriptive (e.g., identifying characteristics of abusing parents). Data from the studies were only used as it applied to child maltreatment and parenting outcomes and the main data from all 68 studies were used. However, there were seven studies which also had child outcomes and these outcomes were excluded and only parenting outcomes considered.

Table 9: Included study characteristics

Study	Design	Child Maltreatment Type and measure	Aims of study	Child age	Country	Study sample and size	Complete study/part
AjdukoviÄ (2018)	Cross-sectional	Child physical abuse Child Abuse Potential Inventory (CAPI; Milner, 1986)	Moderating role of social support in the relationship between cumulative risk (socioeconomic status and family economic hardship and higher exposure to stressors) and child abuse potential. As well as relationship between individual risk (e.g., economic hardship) and child abuse potential	13-16 years	Croatia	746 mothers recruited from a larger study with mothers and children	Complete
Anderson (2018)	Cross-sectional	All child abuse and neglect Shortened version of CAPI (Milner, 1986)	Exploration of relationships Association of child abuse potential with IPV exposure and psychiatric illness	Not stated	USA	211 mothers from domestic violence shelters	Complete
Appleyard (2011)	Cross-sectional	All child abuse and neglect CPS records of substantiated and alleged child maltreatment	Relationship between mothers' childhood history of maltreatment, mental health and substance abuse and association with child abuse and neglect ("offspring victimisation")	0-2 years	USA	499 Pregnant women – both first time mothers and those with children	Complete
Banyard (2003)	Cross-sectional	All child abuse and neglect Conflict Tactics Scale – and Parent Child (CTS and CTSPC; Straus et al., 1979; 1997) Check with CPS if parents reported for child abuse	Contributions of unique and common childhood and adult trauma on parenting outcomes in respect to physical child abuse and neglect. Mediating role of maternal depression between trauma exposure and parenting outcomes. Potential protective factors of social support and strong relationships in adulthood.	M 2.69 (SD 1.62)	USA	152 mothers	Complete

Bartlett (2014)	Longitudinal	Child neglect Conflict Tactics Scale (CTS; Straus et al., 1979)	Using an ecological model of child neglect, influence of characteristics at the level of the child, mother, family, and broader childrearing contexts on adolescent first-time mothers with infants.	Not stated	USA	383 adolescent mothers with firstborn infant	Complete
Bartlett (2015)	Longitudinal	Child neglect CPS substantiated cases of abuse and neglect	Examination of whether certain factors (positive childhood care, older maternal age, and social support) protect against intergenerational child neglect among high-risk young mothers of infants	0-1 year	USA	447 mothers (aged <21 years at birth of first born)	Complete
Bartlett (2017)	Longitudinal	All child abuse and neglect Cumulative records from Department for Child and Families (DCF)	Type-to-type examination of intergenerational child abuse and neglect among adolescent mothers; distinguish transmission to continuity in identifying cases where mother both victim and perpetrator; investigate impact of maternal history of multiple types of maltreatment as child and risk for different types of child maltreatment	0-8 years	USA	252 mothers, community sample	Complete
Berkout (2016)	Cross-sectional	Child neglect and Child physical abuse (characterised as child-directed aggressive caregiving) Conflict Tactics Scale (CTS; Straus et al., 1979)	Examination of background and clinical variables among help-seeking parents who were at risk for or had been identified as having engaged in child abuse. Identify characteristics of abusive from non-abusive and explore similarities. Propose model of dysfunction describing relationship between parenting stress, negative affect, positive parenting, and child abuse to assess associations	9-12 years (M 11.49, SD 3.14)	USA	195 Parents	Complete

Bert, (2009)	Cross-sectional	All child abuse and neglect CAPI (Milner, 1986)	Examined the intergenerational transmission of abuse among 3 types of mothers (all first time); teen mothers, adult low resource, and adult high resource	0-1 year	USA	681 mothers divided into 3 groups, 1) teen mothers <19 years of age and 2) adult>21 years, low-resource mothers, 3) adult, high-resource mothers	Complete
Caliso, (1992)	Cross-sectional	Child physical abuse and verbal/emotional abuse CAPI (Milner, 1986) and CTS (Straus, 1979)	Determine effect of childhood abuse on adult child abuse potential in mothers	Not stated	USA	90 mothers divided into 3 groups: i) 30 physical child abusers with childhood physical abuse history, ii) 30 non-abusive comparison mothers with childhood physical abuse history, iii) 30 non-abusive mothers with no childhood history of physical abuse.	Complete
Chaffin, (1996)	Longitudinal	Child neglect Child physical abuse Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981)	Using data from both Waves I and II of the National Institute for Mental Health's Epidemiologic Catchment Area survey, 7,103 parents from a probabilistic community sample who did not self-report physical abuse or neglect of their children at Wave I were followed to determine the risk factors associated with the onset of self-reported physical abuse or neglect identified at Wave II.	Not stated	USA	7,103 parents	Complete
Chan, (1994)	Cross-sectional	Child physical abuse CPS records - substantiated	Examines the role of parenting stress and maternal social support in physical child abuse in Hong Kong.	Not stated	Hong Kong	74 mothers; 37 abusive and 37 non-abusive comparison mothers	Complete
Chang (2008)	Cross-sectional	All child abuse and neglect CPS records - substantiated	Examine types of maltreatment and child and parent sociodemographic and behavioural characteristics among Cambodian refugee families.	0-18 years	USA	71 parents with 243 children (average of 3.4 children per family)	Complete

Cheng (2015)	Longitudinal	All child abuse and neglect CPS records – substantiated	Explore impacts of parental receipt of social services and caseworkers' and parents' collaborative engagement on substantiated child maltreatment re-report	0-17 years	USA	5676 parents with prior CPS reports of substantiated child abuse (parents with substantiated re-report 2368)	Complete
Christensen (1994)	Longitudinal	Child neglect Child physical abuse Tennessee department of Human Service records – alleged reports	Association of parental low self-esteem with child maltreatment	0-4 years	USA	471 pregnant women	Complete
Connell (2009)	Longitudinal	Child neglect Child physical abuse Child sexual abuse CPS substantiated records	Compare rates of maltreatment among children following parental reunification between children in foster care due to maltreatment and those in foster care for other reasons. Assess effects of child, family, and case characteristics on rate of re-maltreatment.	0-16 years	USA	3226 Parents and children	Complete
Connelly (1992)	Cross-sectional	Child physical abuse CTS (Straus, 1979)	Examine association of maternal age and risk of child physical abuse using a nationally representative sample	Mean age 8.8 years	USA	1997 mothers; 251 abuse group, 1746 comparison group	Complete
Corse, (1990)	Cross-sectional	Child physical abuse CPS – substantiated	Compare the social networks of mothers in families identified as abusive and mothers in control families' relationships between social networks, parenting beliefs and practices and child abuse.	Abuse group mean 7.25, comparison group M 7.13	USA	52 mothers	Complete

de (2000)	Longitudinal	Child physical abuse CAPI (Milner, 1986)	Determine whether adolescent mothers of new-borns are at higher risk for child abuse than adult mothers of new-borns and to examine whether adolescent mothers with memories of child maltreatment have a higher risk for child abuse.	Initial assessment when mothers' 5-6 months pregnant, follow up when child 1, 6, 12 and 18 months of age	Spain	48 mothers (24 adolescents and 24 adult mothers) divided into 3 groups; 23 mothers who had severe physical abuse as child (SPP group), 12 mothers who had severe physical childhood abuse with physical damage (PD group) and 13 mothers who had childhood emotional abuse (EW group)	Complete
Dixon (2009)	Longitudinal	All child abuse and neglect CPS records – suspected and substantiated	Investigate factors (parenting styles, individual risk factors) associated with continuation and discontinuation of intergenerational transmission of child abuse within 1st year of child's life.	0-1 years	England	4351 families	Complete
Doidge (2017)	Cohort	All child abuse and neglect Self-report questionnaire	Explore child, parent, and family risk factors for child maltreatment to identify high-risk groups and independent predictors of each type of child maltreatment.	0-27 years	Australia	2443 infants	Part
Doris (2006)	Longitudinal	All child abuse and neglect New York State Central Register of Child Abuse and Neglect (SCR) - substantiated reports of maltreatment	Child welfare data were examined to explore relationship between mothers' cocaine use (prenatal) and subsequent child welfare outcomes	0-3 years	USA	152 mothers and 152 infants	Complete
Drake, (1996)	Cross-sectional	Child neglect, child physical and sexual abuse Missouri's Child Abuse and Neglect database for substantiated and	Explore relationship between neighbourhood poverty and three different types of child maltreatment: neglect, physical abuse, and sexual abuse	Under 18 years	USA	481722 families within select zip codes based on income (low or moderate)	Complete

		alleged reports of child maltreatment					
Dubowitz (2011)	Longitudinal	Child neglect and physical abuse CPS records - referrals	Explore association of multiple levels of risk factors (child, parent, family, community) to examine antecedents and outcomes of maltreatment.	Start of study average age of infant 14 months; followed till child 12 years	USA	224 Parents (mother or father) and 224 children	Part (child outcomes/child variables excluded)
Duffy (2015)	Case-control	All child abuse and neglect CPS reports	Explore relationship between parental risk factors and substantiating status and number of CPS reports in families	Median age at first CPS report 5 months (range 0-42 months)	USA	131 high-risk families receiving services for child abuse prevention	Complete
DuMont (2012 – book chapter)	Secondary data analysis	All child abuse and neglect NYS State-wide Automated Child Welfare Information System – substantiated records	Explore the influence of promotive factors in achieving resilience to child abuse and neglect among at-risk mothers	Not stated	USA	524 Mothers taken from control group data from a longitudinal RCT of Healthy Families New York	Part - only maternal characteristics - not child characteristics
Freisthler (2017)	Cross-sectional	Child neglect and Child physical abuse Physical abuse – CTSPC (Straus et al., 1997) Neglect – Multidimensional Neglectful Behaviour Scale (Straus and Kinard, 1995)	Assesses the relationship between indicators of drug demand and drug supply on physical abuse, physical neglect, and supervisory neglect in a general population sample.	M 6.71 years SD 3.62	USA	2597 parents	Complete
Fuller (2003)	Longitudinal	All child abuse and neglect Illinois Child Abuse and Neglect Tracking Systems Database – all cases opened for investigation	Examination of factors that are predictive of short-term maltreatment recurrence among CPS cases among cases of parents with alcohol and drug use	Not stated	USA	95 Parents with prior CPS reports of child maltreatment	Complete

Grumi (2017)	Cross-study comparison	All child abuse and neglect Families referred to CPS for maltreatment	Exploration of relationships risk and protective factors assessment by CPS to place children in foster care	n=328; M 8.41 years (SD 4.89) range 0-17 years	Italy	328 families with 313 fathers and 323 mothers (Italian versus immigrant families)	Part - Not considered child variables
Guterman (2009)	Cross-sectional	Child physical abuse self-report and observational measures	Retrospective study aimed to examine the presence/absence of a set of risk and protective factors among Italian and immigrant families for whom Child Protection Services intervened with the child's placement in out of home care	Not stated	USA	1480 parents with maternal CPS maltreatment record	Complete
Haapasalo, (1999)	Cross-sectional	All child abuse and neglect CPS substantiated records	Abusive and/or neglecting mothers whose child had been under the supervision of the child protection services compared with mothers who had never had any contact with such an agency. The specific aims were to examine the differences between the two groups of mothers in their reports of childhood maltreatment experiences and to test whether the mothers' self-reported childhood experiences could explain maltreatment directed at their own children.	CPS group (n=25) M 12.68 years; comparison group (n=25) M 11.88 years	Finland	50 mothers and 50 children divided equally into CPS report groups and non-CPS report group	Complete
Herrenkohl (2013)	Longitudinal	Child physical abuse described as 'abusive disciplining'. Parents' self-report	Association of parents' history of physical punishment in childhood and physical abuse of offspring	Children pre-school age at start of study and last follow-up when children aged 30 years	USA	268 children followed over 30-year period	Complete
Hunter (2000)	Cross-sectional	Child physical and psychological abuse CTSPC (Straus et al., 1997)	Description of risk characteristics of abusive parents from an Indian village.	0-16 years	India	395 mothers	Complete

Kajese (2011)	Secondary data analysis	Child neglect (leading to or contributing to death) and Child physical abuse (leading to/contributing to death) Kansas CPS and county records	Describe epidemiology of child abuse homicides to identify risk factors among abusive parents.	0-16 years	USA	parents of 170 children who had died (from CPS records of maltreatment)	Complete
Kelly (2017)	Case-control	Child physical abuse (abusive head trauma) Hospital records	Examine data routinely available to perinatal healthcare providers, to identify factors associated with the occurrence of abusive head trauma, and to contribute to evidence that could inform targeted prevention programs.	0-2 years	New Zealand	Mothers (142 cases and 550 controls)	Complete
Kim (2015)	Secondary data analysis	Child neglect, Child physical abuse, Child emotional/psychological abuse CTSPC (Straus et al., 1997)	Association of certain risk factors (parenting attitudes, relationships, demographic data, mental and physical health, etc.) and child maltreatment behaviour.	9 years	USA	2991 mothers from a longitudinal study (only wave 5)	Complete
Lee (2012)	Cohort	Child neglect CTSPC (Straus et al., 1997)	To examine the association of paternal depression with risk for parental neglect of young children.	Risk factor assessment when child 3 years old, child neglect assessment when child 5 years (neglect in the past year)	USA	1089 families	Complete
Lesnik-Oberstein, (1995)	Cross-sectional	Child emotional/psychological abuse CTS (Straus et al., 1979)	Identify risk factors for psychological abuse of children	Abused group Mean age 1.5 years (SD 2.6); comparison group M 3.1 years (SD 3.9)	Netherlands	n= 344 participants (mothers and children) comparison group consisted of 128 children and their mothers. The psychologically abused group consisted of 44 children and their mothers.	Complete

Li (2011)	Longitudinal	All child abuse and neglect CPS reports	Explore both risk and protective factors of child maltreatment among at risk elementary school children.	From age 4-5 years to age 8-9 years	USA	405 Mothers and children	Complete
Lowell (2017)	Cross-sectional	Child neglect Child physical abuse Child emotional/psychological abuse CAPI (Milner 1986)	Investigation impact of child risk factors (behavioural and emotional difficulties) for child maltreatment potential among mothers with young children.	1.5- 5 years	USA	158 mother and child dyads	Complete
Maguire-Jack (2016)	Cross-sectional	Child neglect Child physical abuse CTSPC (Straus et al., 1997)	Examines the relationship between aspects of social service availability and child maltreatment. Specifically, estimate whether service availability, accessibility, and receipt are associated with physical child abuse and neglect.	Not stated	USA	1053 parents	Complete
Mash, (1983)	Cross-sectional	Child physical abuse Observations	Compare interactions of abusive and non-abusive mothers with their children to identify behavioural and interactional risk factors	Abused sample mean age 55.4 months; non-abused sample mean age 59.3 months	Canada	72 participants - 2 groups of 18 mother-child dyads (abused and non-abused group)	Complete
McGuigan (2001)	Cohort	Child neglect Child physical abuse Child emotional/psychological abuse Oregon CPS agency – 6% confirmed cases, others reported	Relationship between domestic violence and each type of child maltreatment (neglect, physical and emotional abuse) occurrence from birth till child 5 years old	Birth till child 5 years old	USA	2544 families	Complete

Metzner (2017)	Cross-sectional	All child abuse and neglect Self-reporting questionnaire	Examined the characteristics of fathers in psychosocially stressed families and associations between paternal risk factors (PRFs: mental health disorder, physical health disorder, young paternity, unemployment, absence of father) and family risk factors (FRFs: problematic financial situation, problematic housing situation, social isolation) for child maltreatment.	Not stated	Germany	506 at-risk families	Complete
Milner, (1990)	Cross-sectional	Child neglect Child physical abuse Child sexual abuse CAPI (Milner, 1986)	Investigate psychological and social characteristics of parents who have abused their children physically or neglect their children	Not stated	USA	150 parents - 75 child abusers, 75 non-abuser comparison group	Complete
Negash (2016)	Cross-sectional	Child neglect Child physical abuse CTSPC (Straus et al., 1997)	Availability of social services (within the context of social support) and its' association with reduction in child abuse and neglect	Not stated	USA	1050 parents	Complete
Pajer (2014)	Cross-sectional	Child physical abuse CAPI (Milner, 1986)	Determine whether psychopathology, exposure to maltreatment, preparedness for childbearing, substance use disorders (SUDs), IQ, race, and socioeconomic status were associated with the potential for child abuse in nonpregnant adolescent girls.	Not stated	Not stated	195 Adolescent girls of childbearing age	Complete
Paveza, (1988)	Case-control	Child sexual abuse (father to daughter) Questionnaire on specific sexual beliefs and attitudes (based on Finklehor's instrument, 1979)	Characteristics of fathers who sexually abuse their daughters to identify risk factors to predict such abuse.	5–18-year-old girls	USA	34 mother-daughter dyads in abused group and 68 dyads in control group	Complete

Price-Wolf (2014)	Cross-sectional	Child physical abuse CTSPC (Straus et al., 1997)	Examined relationship between social support, collective efficacy, and child physical abuse and compared the impact on mothers versus fathers	Mean 6.7 years (SD 3.6)	USA	3023 parents	Complete
Ricci (2003)	Secondary data analysis	Child physical abuse (Abusive head trauma) Maine Hospital records	Characteristics of parents of children who have died due to abusive head trauma	2 weeks to 17 months	USA	Parents of 19 children with abusive head trauma	Part - child risk factors not considered
Rodriguez (2010)	Cross-sectional	Child physical abuse CAPI (Milner, 1986)	Investigated whether parenting-relevant cognitions (e.g., hostility, stress, and coping skills) would predict child abuse potential	< 12 years, mean age 5.86 years	USA	363 parents; 53 fathers and 310mothers	Complete
Rodriguez (2015)	Cross-sectional	Child physical abuse CAPI (Milner, 1986)	Explored role of cognitive processes (negative child attributions and dispositional empathic ability) in predicting maternal child physical abuse risk	6–9-year-old children (mean age 7.46)	USA	95 mother-child dyads	Complete
Romero-Martinez, (2013)	Cross-sectional	Child physical abuse CAPI (Milner, 1986) – Portuguese version (Gomes, 2010)	Explored role of parent's gender, timing of childhood abuse and socio-demographic variables on the relationship between parents' history of childhood physical abuse and current risk for children.	Not stated	Portugal	920 parents (414 fathers, 506 mothers)	Complete
Ross, (1996)	Cross-sectional	Child physical abuse CTS (Straus et al., 1979)	Estimated the gender-specific probability of a violent spouse also physically abusing his or her child within a representative sample.	0-18years	USA	3363 parents (or single parent) of child under 18 living at home	Complete
Schick (2015)	Cross-sectional	All child abuse and neglect Juvenile Victimization Questionnaire (Hamby and Finklehor, 2004)	Examined prevalence and risk factors of various types of child maltreatment in a population-based representative sample of native and immigrant adolescents in Switzerland	Adolescent 13-20 years, mean age 15.04	Switzerland	6787 adolescents	Complete

Sedlak, (1997)	Secondary data analysis	All child abuse and neglect National Incidence Study of Child Abuse and Neglect (NIS-2) – all reports	A large database of child abuse and neglect was analysed to identify demographic risk factor for child abuse and neglect	0-17 years	USA	6033 children: nationally representative sample of 2,235 children who met the Harm Standard were combined with a comparison database of 3,798 nationally representative non-maltreated children obtained in the U.S. Bureau of Census Current Population	Complete
Cantos (1997)	Cross-sectional	Child physical abuse Substantiated maltreatment, Problem Solving Inventory (Heppner & Petersen, 1982)	Mothers who had physically abused their children were assessed to determine whether these mothers had a general coping skills deficit. Abusing mothers were compared to non-abusing mothers of conduct problem children.	Not stated	USA	Total mothers = 33; Abusing mothers n=17 versus non-abusing mothers n =16	Complete
Slack (2011)	Cross-study comparison	Child neglect CPS maltreatment report	Cross-study comparison to identify risk and protective factors for child neglect	Not stated	USA	2622 parents (Across 3 longitudinal studies)	Complete
Slack (2017)	Cross-sectional	All child abuse and neglect CPS maltreatment report	Exploratory study examines combinations of income-tested welfare benefits and earnings, as they relate to the likelihood of child maltreatment investigations among low-income families with young children participating in a nutritional assistance program.	0-2 years	USA	1065 parents	Complete
Thornberry (2013)	Longitudinal	All child abuse and neglect CPS records - substantiated	Investigate whether safe, stable, and nurturing relationships can interrupt cycle of child abuse	14-30 years	USA	711 adolescents	Complete

Thornberry (2014)	Longitudinal	All child abuse and neglect Substantiated cases from CPS records	Investigate adolescent risk factors, measured at both early and late adolescence, for involvement in child maltreatment during adulthood.	13 years - 31 years	USA	n=816 - G1 Parents, G2 Adolescents	Complete
Tracy (2018)	Longitudinal	Child physical abuse Child emotional/psychological abuse Self-report questionnaires devised by researchers	Examined whether maternal social support in early childhood, and [also paternal involvement in middle childhood] could prevent the intergenerational transmission of abuse	prenatal till child 8 years old	England	From 14,541 pregnant women, 13,988 live births	Part - not concerned with offspring violence - 2 separate analysis in study
Valentino (2012)	Secondary data analysis	All child abuse and neglect Self-reports questionnaire	Community violence and authoritarian parenting attitudes were evaluated as predictors of the intergenerational continuity of abuse, and the moderating effect of African American race was examined.	0-18 years	USA	70 first-time adolescent mother and child dyads	Complete
Whipple, (1991)	Cross-sectional	Child physical abuse CPS records	Role of several psychosocial stressors, individual components of stress and support in physically abusive and non-abusive families with conduct-problem children.		USA	123 families (divided into two groups of abusive/non-abusive parents)	Complete
Wolfner (1993)	Cross-sectional	Child physical abuse CTS (Straus et al., 1979)	Survey of national sample of parents to identify characteristics of physically abusive parents	0-18 years	USA	National sample of 5941 parents	Complete
Wu (2004)	Cohort	All child abuse and neglect and threatened harm CPS substantiated records	Identified perinatal and sociodemographic risk factors associated with maltreatment of infants up to I year of age	Prenatal to 1 year old infant	USA	189055 Mother and infant dyads	Complete

Zhao (2018)	Longitudinal	Child neglect CTSPC (Straus et al., 1997)	Identified the change of prevalence and influencing factors for child neglect in a rural area of Anhui province through the 2-year follow-up study.	7-16 years	China	816 children	Part - not considered child variables such as child's coping style and social anxiety
Zuravin, (1987)	Cross-sectional	Child neglect and physical abuse CPS substantiated cases	Explored relationship between contraception use, unplanned pregnancies and child abuse and neglect	0-12 years	USA	518 single mothers receiving public assistance	Complete

Overview of Risk and Protective Factors

Majority of the (51 out of 68) studies were conducted in USA. Two studies were conducted in England and one study did not clearly state the country, and the remaining 14 studies were conducted in China, Portugal, Switzerland, Australia, New Zealand, Italy, Hong Kong, Germany, Finland, Spain, Canada, Netherlands, Croatia, and India. From the 68 studies, 36 only focused on risk factors while the remaining 32 included both risk and protective factors. No study measured protective factors alone. Only two studies looked at one risk factor each (parental history of childhood maltreatment) while the rest included multiple risk factors (see Appendix D for variables measured). The following section presents the findings for each review question.

1. What are the parental risk factors for child maltreatment?

Parental Risk Factors

Using the Ecological Risk and Resilience Framework (Fraser, 1997), risk factors were divided from the included studies into micro (individual and family), mezzo (neighbourhood and community factors) and macro (national factors). The following sections present findings of parental risk factors from the 68 studies. For each ecological level, prevalent and significant findings across studies are presented in detail.

Micro-individual level risk factors: Parental Mental Health

Figure 9 illustrates the individual level parental risk factors studied and identifies the number of studies finding significant association between risk factors on this ecological level and child maltreatment. Parental mental health was measured by 34 studies and 21 of these studies found a significant link between parental mental health and child maltreatment. Anderson (2018) measured psychiatric diagnosis of Post-Traumatic Stress Disorder (PTSD) and Borderline Personality Disorder (BPD) among mothers with childhood abuse histories and found significant association ($p<.001$) with child abuse potential. Bartlett (2014) found that adolescent mothers who were victims of domestic violence and in receipt of mental health services had a higher likelihood ($p<.001$) of child neglect. Chang (2008) found that type of child maltreatment was associated with parents' gender and mothers who maltreated children were more likely to have mental health problems.

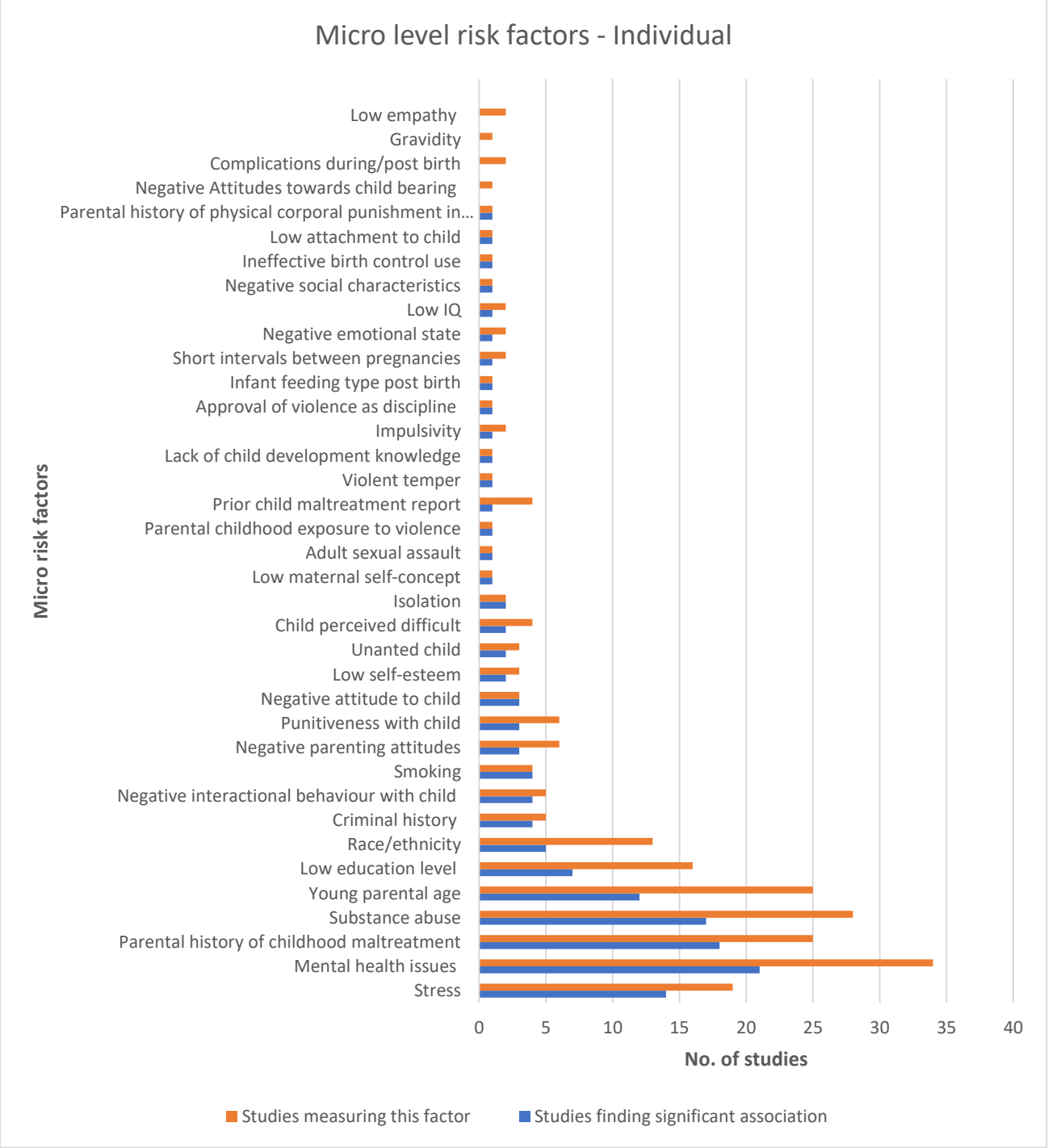
Depression was the most frequently cited mental health issue (e.g., Slack, 2011, Mash, 1983) but most of the studies used a generic term of 'mental health issues/concerns' (e.g., Negash, 2013, Maguire-Jack, 2016) or 'parental psychopathology' (Grumi, 2017). There was also variation among studies in respect to what this risk factor represented. Some studies, like Anderson (2018), looked at diagnosed mental health disorders of a parent, Dixon (2009) considered past treatment of parents for depression or other mental illness as a mental health issue

and Slack (2017) and Li (2011), for instance, considered parents' self-reports of depressive symptoms to be a mental health concern.

Parental childhood history of maltreatment

A childhood history of maltreatment among parents was a highly common risk factor among studies and was measured by 25 studies with 21 finding a significant association. From these 21 studies, maternal childhood maltreatment was the focus of 14 of the studies while the remaining 6 were parental childhood history of maltreatment. A longitudinal study (Bartlett et al., 2015) found that mothers with a history of abuse compared to those without were 2.5 times more likely to neglect their infants ($p= .038$). De et al., (2000) also conducted a longitudinal study with adolescent mothers and their first-borns and found that mothers with memories of childhood physical abuse had higher abuse potential compared to mothers with childhood physical abuse but no memories of that abuse ($p= .02$). Thornberry et al., (2013) found that parents with a history of maltreatment were 2.6 times more likely to maltreat their children when the parents were between the ages of 21 and 30 years (OR = 2.57, CI (1.47-4.50)] compared to parents without such a history. Romero-Martinez et al., (2013) also found a significant association between parental history of physical childhood abuse and child abuse potential ($p<.05$) compared to the control group.

Figure 7: Parental Micro-individual level risk factors



Substance Abuse

Substance abuse was measured by 28 studies and 18 found a significant association between this risk factor and child maltreatment. Among these 18, three focused on only fathers' substance abuse, three on maternal substance abuse and the remaining 12 were on parental substance abuse. Six studies used an umbrella term of substance abuse to refer to drugs and alcohol abuse, one study specified an addition of 'abuse of prescription drugs', two were on parental alcohol abuse, one

solely on drug use, one specified marijuana and alcohol use within substance abuse while one study looked at a diagnosed substance abuse disorder.

Significant findings included a cross-study comparison by Slack et al. (2011) who found parental drug use to be a marginally significant predictor of infant neglect ($p<.10$), while Ricci et al. (2003) identified characteristics of parents of children with abusive head trauma and 53% (n=19) of the parents abused drugs and alcohol. Fuller (2003) found that drug and alcohol abuse was related to maltreatment recurrence ($p=.03$) and similarly, Cheng (2015) also found that maltreatment recurrence was positively associated with alcohol abuse ($p<.05$). Chaffin's (1996) longitudinal study compared parents who had physically abused their child to a control group and found that parents who had a substance abuse disorder at Wave 1 had an onset of child physical abuse (OR 2.9, $p<.01$, CI 1.52-5.53) and child neglect (OR 3.24, $p<.001$, CI 1.63-6.44) at Wave 2.

Stress

Nineteen of the 68 included studies focused on stress among parents with 14 finding a significant association between stress and child maltreatment. Within these 14 studies, majority of the studies (n = 8) referred to parenting stress, four studies considered cumulative stress or multiple life stresses, while one study specified stress as 'distress of daily hassles' and the remaining one just used stress as an umbrella term for parenting as well as life stresses.

Slack et al., (2011) cross-study comparison found parenting stress to a be significant predictor of child neglect ($p<.001$). Rodriguez et al., (2013) found significant correlation between child physical abuse and parents' self-reported high stress scores ($p<.001$). One of the findings in Price-Wolf's (2014) study was that having greater levels of parenting stress was associated with higher frequency of child physical abuse ($p<.001$).

Age of parents

Twenty-five studies looked at young age of parents and 11 of these found a significant association of age and child maltreatment. From these 11 studies, three studies looked at mothers' age at time of birth of first child as less than 21 years old, two studies looked at both parents' age as less than 22 years and another three studies considered less than 21 years old as young parents. Two studies looked at adolescent mothers and only one of these also considered father's age.

Bartlett et al. (2015) conducted logistic regression and found that odds of maternal infant neglect were higher among mothers with childhood abuse histories when age was entered into the equation ($p<.05$). Connelly (1992) examined association between maternal age and risk of physical child abuse among a nationally representative sample of first-time mothers aged 19-23 and compared physically abusive (n=251) to non-abusing mothers (n=1746) and found that the younger the mother's age at time of birth of child, the higher the likelihood of physical abuse ($p=0.047$). Dixon et al. (2009) conducted a longitudinal study with 4351 families to investigate factors associated with continuation and discontinuation of intergenerational child abuse within the child's first year. Researchers found that the

abusive groups compared to the control group had higher rates of parents under 21 years of age (p<.008).

Other significant risk-factors

Table 10 lists the risk factors found to be significant in only one study. A low level of parental education was measured by 16 studies with seven finding an association (e.g., Adjukovia et al., 2018; Guterman et al., 2009) and ethnicity or race was measured by 13 studies with five finding an association (e.g., Maguire-Jack et al., 2016; Price-Wolf, 2014) between this risk factor and child abuse and neglect potential. Each of the following risk factors had significant associations with child maltreatment in 12 studies: four studies for parental smoking (e.g., Wu et al., 2004; Bartlett et al., 2014), four for parental criminal history (including arrests and criminal convictions, e.g., Fuller et al., 2003; DuMont et al., 2012) four for negative interactional behaviour with child (e.g., criticism, ignoring).

Four studies also found an association between child maltreatment and negative parenting attitudes. There was some variation in what studies described as negative parenting attitudes with one study (Berkout, 2016) describing it as incorporating inconsistent discipline, poor supervision and monitoring and corporal punishment, whilst another (Corse, 1990) considered a lack of enjoyment of child, not encouraging autonomy in child and authoritarian control as negative parenting attitudes. DuMont (2012) categorised this as rigid and unrealistic expectations of child. Milner (1990) referred to it as a negative concept of child.

Punitiveness with child was found to be significant in three studies and these considered punitiveness as corporal punishment (Berkout et al., 2016; Haapasalo et al., 1999) with one labelling it as ‘harsh punishment of child’ (DuMont et al., 2012). Three studies focused on ‘negative attitude to child’ (Dixon et al, 2009; Mash et al., 1983; Milner et al., 1990) which included hostile feelings towards child.

Eight studies found the following risk factors to be associated with child maltreatment: two studies found an unwanted child (Kajese et al., 2011; Grumi et al., 2017), two found child perceived as difficult (DuMont et al., 2012; Milner et al., 1990), another two found parental low self-esteem (DuMont et al., 2012; Lesnik-Oberstein et al., 1995) to have an association while two studies found parental isolation as a significant risk factor (DuMont et al., 2012; Grumi et al., 2017).

Table 10: Significant parental risk factors identified in only one study

Risk Factor	**Study**
Adult sexual assault (maternal)	Banyard et al., 2003
Parental childhood exposure to violence	Banyard et al., 2003
Maternal self-concept (e.g., Self-esteem, moral self-worth)	Christensen et al., 1994
Prior child maltreatment report to protective services	Cheng et al., 2015
Violent temper	DuMont et al., 2012
Lack of knowledge of child development	Grumi et al., 2017
Impulsivity	Price-Wolf, 2014
Approval of violence as educational practice	Grumi et al., 2017
Infant feeding type after birth	Kelly et al., 2017
Short intervals between pregnancies	Kelly et al., 2017
Negative emotional state (Maternal; emotional dysregulation, mood quality)	Lowell et al., 2017
Negative social characteristics (Distress, unhappiness, rigidity, loneliness)	Milner et al., 1990
Low IQ	Pajer et al., 2014
Ineffective birth control use	Zuravin et al., 1987
History of corporal punishment in childhood	Ross et al., 1996
Low attachment to child	Thornberry, 2014

Risk factors showing no significance

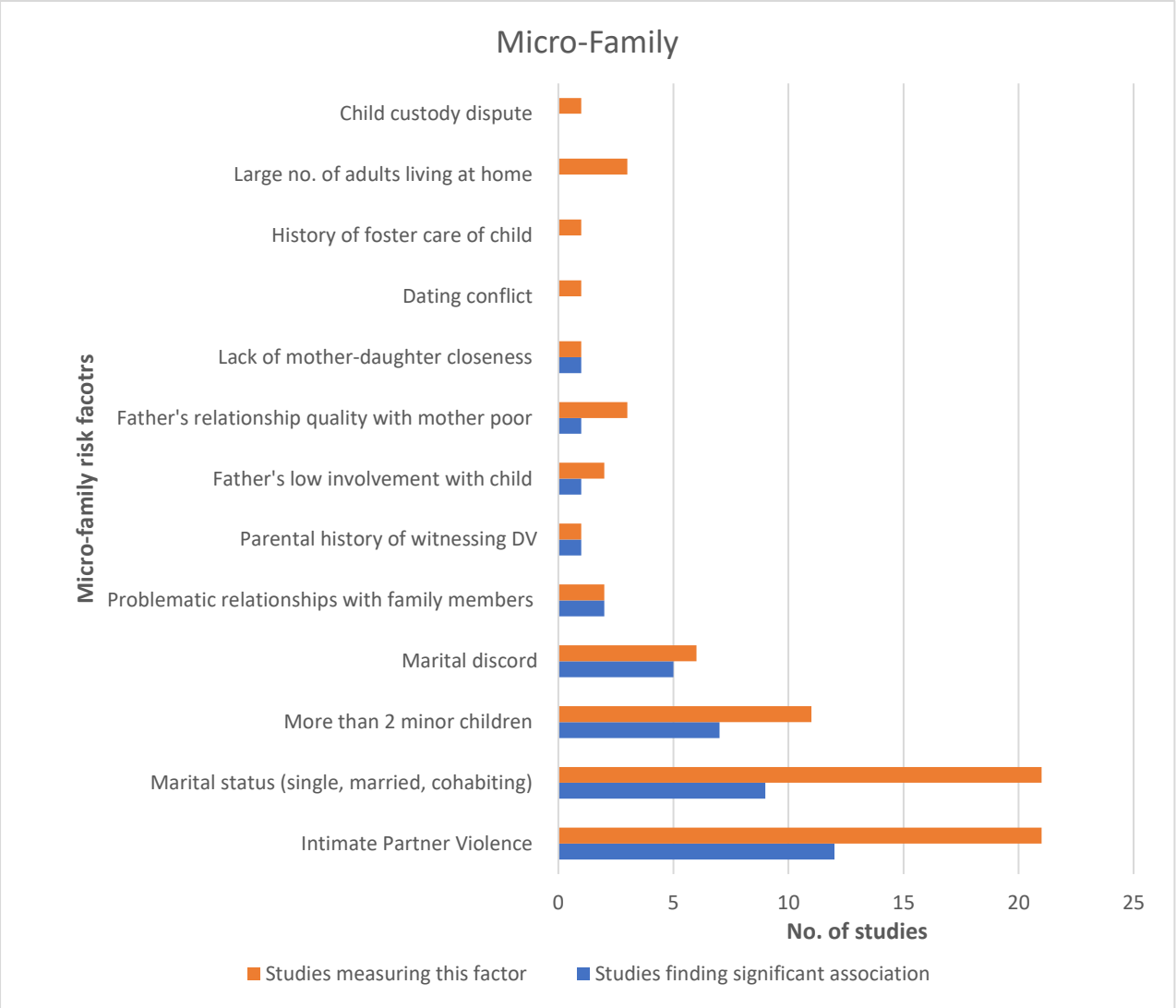
There were four risk factors which were studied but did not show any significant associations with child maltreatment. Two of these were related to birth complications during or after delivery of child (including low birth weight, infant separation from mother after birth; Kelly et al., 2017; Lesnik-Oberstein et al., 1995) and gravidity (no. of pregnancies). The remaining two were a negative attitude to childbearing (Pajer et al., 2014) and low empathy (general and towards child; Bartlett et al., 2014; Rodriguez et al., 2015).

Micro-family level risk factors: Intimate Partner Violence

Figure 8 presents a breakdown of the micro-family level risk factors, the studies that measured this factor and those that found a significant association. From 21 studies measuring Intimate Partner Violence (IPV), 12 found a significant association. Bartlett et al., (2014) compared neglecting mothers (n=63) to control mothers and found both victims of IPV and perpetrators of IPV to have higher odds of infant neglect (both $p<.05$). Dixon's (2009) longitudinal study investigating risk factors for continuation of intergenerational child maltreatment also found that for those who continued the cycle of abuse (n=9), there was a higher prevalence of

them living with a violent partner (p<.008). Duffy (2015) found that among parents with prior reports of child maltreatment to protective services (n=131) both paternal (p<.001) and maternal domestic violence history (p<.001) increased the risk of substantiated child maltreatment report. There were also differences found among all studies regarding terms used to describe IPV and what these terms constituted.

Figure 8: Micro-family level risk factors



Marital Status (single parent)

From 21 studies, nine found an association between parents' marital status and child maltreatment. Five of these studies referred to single parent household/families, one study categorised this as single mothers while four studies used the term marital status as single. Dubowitz et al., (2011) longitudinal study explored association of multiple level risk factors to examine antecedents and outcomes of maltreatment. 224 parents were followed for 12 years by which time 43% (97) families had at least one child protection report. The study found that

mothers with CPS reports of child maltreatment were less likely to be married (p=.07). Similarly, Fuller's (2003) longitudinal study examined factors predictive of recurrent maltreatment among parents with substance use disorders (n=95) and found that single parent families were more likely to have maltreatment recurrence (p=.02).

Marital distress/discord

This family level risk factor including marital problems such as separation and divorce along with marital conflict or discord in the relationship. Five studies found an association between this risk factor and child maltreatment. Zhao's (2018) longitudinal study with a Chinese population of neglected children (n=553) found a correlation between parental marital disruption (divorce) and child neglect (p=0.027). Similarly, Whipple's (1991) study found that physically abusive mothers (n=92) had higher marital distress (less satisfaction with marital relationship; p=.044).

No. of children at home (more than 2)

Seven studies found an association between the number of children in residence and child maltreatment. Banyard et al. (2003) found a correlation between number of children (range 1-10, M 2.69, SD 1.62) and child neglect among 152 mothers (z=.19, p<.05). Wu and colleagues' (2004) cohort study of verified maltreatment cases found more than two children at home (RR 2.7) was significantly related to infant maltreatment. Wolfner's (1996) study surveying 3,232 households found a correlation between number of children (more than four at home) and physical abuse (p<.01). Similarly, Schick's (2015) study also found a correlation between adolescent and physical abuse risk to be higher among those who had more than three children at home (p<.05).

Other Family level risk factors

Family level risk factors with two or less studies showing an association with child maltreatment included parental history of witnessing domestic violence as a child (Doidge, 2018), problematic relationship with family (Grumi, 2017; Milner, 1990), father's low level of involvement with child's activities (Guterman, 2009), father's poor relationship quality with child's mother (e.g., coercive, unsupportive; Guterman, 2009) and lack of a close mother-daughter relationship (Paveza, 1988). The study samples and type of maltreatment varied between these studies. For instance, Paveza (1988) only looked at father-daughter sexual abuse among mother-daughter dyads with daughters who had been sexually abused and compared them to a control group to identify characteristics of sexually abusive fathers. On the other hand, Guterman's (2009) retrospective study looked at a population of 1480 parents with substantiated maternal child protective records for physical child abuse to examine risk and protective factors.

Risk factors showing no significance

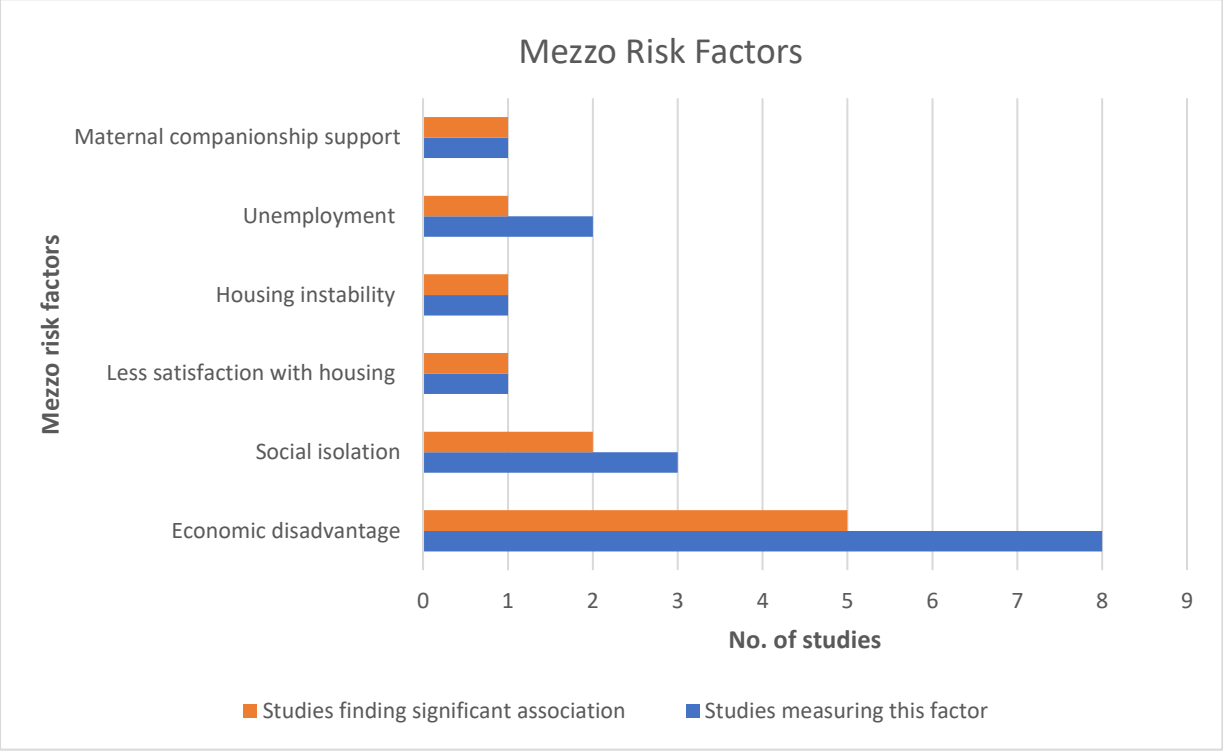
There were four risk factors at the micro-family level which were studied but no associations with child maltreatment were found. These included child custody dispute (Ross et al., 1996), number of adults living at home (more than two; Slack et

al., 2011, Dubowitz et al., 2011; Guterman et al., 2009), history of foster care of a child (Connell et al., 2009) and dating conflict (Grumi et al., 2017).

Mezzo level risk factors: Economic disadvantage

This risk factor included low household income, low resources, poverty as well as parental welfare receipt. As shown in Figure 9, six studies found an association between this risk factor and child maltreatment. Ajdukovic (2018) study of Croatian, adolescent mothers (n=746) from a national sample found that welfare receipt was associated with child abuse potential (R=.107). Cheng's (2015) study also found a lower family income (<$20,000 annually) to be correlated to child abuse potential (p<.01).

Figure 9: Mezzo level risk factors



Social Isolation

Two studies found a significant association between parental social isolation which included both perceived feelings of social isolation and actual isolation (including less availability of childcare, lower peer relationships or lack of support groups). Corse's (1990) study found that child maltreating group of mothers (n=26) had less satisfaction with available support (p<.01), less child-rearing help (p<.05), and fewer peer support (p<.01). Dixon's 2009 study found that compared to parents who break the cycle of intergenerational child abuse (n=126), cycle maintainers (n=9) had significantly higher prevalence of feelings of isolation (p<.008).

Other Mezzo risk factors

Mezzo risk factors only significant in one study each included parents' unemployment (Slack, 2017), housing instability (Slack, 2017), less satisfaction with housing conditions (Ajdukovia, 2018) and maternal companionship support (Price-Wolf, 2014).

Macro-level Risk Factors

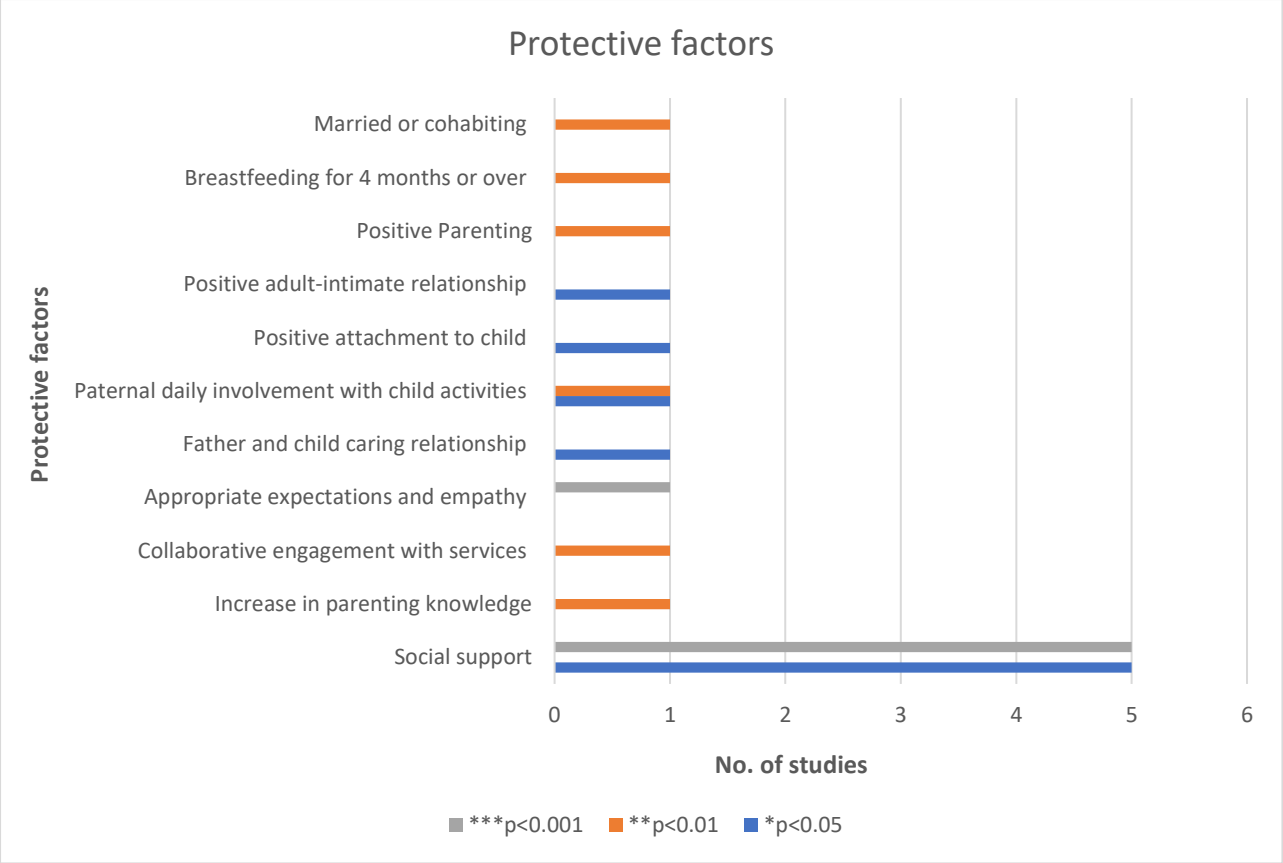
Among macro-level risk factors, there was only one factor identified across studies which was found to be significantly associated with child maltreatment. This risk factor was use of mental health services during pregnancy. Bartlett and colleagues' (2014) study of neglectful mothers' characteristics found that adolescent mothers who were victims of IPV and accessing mental health services during pregnancy were at greater odds of neglecting their infants ($p<.001$).

2. What protective factors can help reduce or prevent child maltreatment?

From the 68 included studies, 18 studies reported a total of 11 significant protective factors. 15 out of the 18 studies found protective factors to be significant in high-risk samples. High-risk refers to a sample which has one or more of the following: i) the presence of two or more individual-level risk factors (e.g., depression, stress, substance abuse), ii) previous involvement with CPS, iii) substantiated record of child maltreatment, iv) parental history of childhood maltreatment. The remaining four studies found significant protective factors in a medium and/or low-risk sample. There were only three studies that measured protective factors against cumulative risk while the remaining 15 measured protective factors as interacting with individual risk factors. Three studies measured protective factors in comparison groups; high risk vs. low risk (Bartlett et al., 2015), abuse group vs. non-abuse group (Chan et al., 1994) and high risk vs. medium risk vs. low risk (Tracy et al., 2018).

Figure 10 shows the breakdown of the protective factors and the number of studies measuring them as well as their respective values of significance (p-values).

Figure 10: Studies reporting significant protective factors



Social support was the most common protective factor found in 10 studies reporting a significant p-value. Adjukovia et al., (2018) measured the interaction between cumulative effect of risk (low maternal education, low satisfaction with housing conditions, and economic hardship) and social support and found that when social support was *perceived* to be high, the effect of cumulative risk on child abuse potential was lower. This meant that higher perception of social support was protective against cumulative risk.

One study (Bartlett et al., 2015) found that among mothers with a history of childhood maltreatment, a higher frequency of social support lowered odds of infant neglect. Similarly, Nagesh and colleagues' (2016) study also found social support to be a protective factor against child neglect and perceived availability of social services lowered the risk of child physical abuse. Chan's (1994) study compared characteristics of physically abusive mothers to non-abusive mothers and found that abusive mothers had lower social support. Li and colleagues' (2011) study found that mothers with a high level of social support were 0.29 times less likely to be reported to CPS for child abuse and neglect. One study (DuMont et al., 2012) found a positive correlation between a specific type of social support, non-directive counselling, and maternal resilience in the presence of multiple risk factors for child maltreatment. Macguire-Jack and colleagues' (2016) study found that service availability was negatively correlated with child physical abuse. Greater satisfaction from friendships was associated with a reduction risk of physical child abuse (Banyard et al., 2003). Price-Wolf (2014) found a significant association between higher emotional support

and lower child physical abuse frequency among mothers and fathers, but it was stronger for mothers. It also found an association between companionship support for fathers and lowered frequency of child physical abuse, and this was the opposite (risk factor) for mothers. Being married or cohabiting, for both mothers and fathers, was protective against likelihood of physical abuse (Price-Wolf, 2014).

Father's involvement in child's daily activities was found to be a significant protective factor in two studies. Lee's (2012) study found that daily paternal involvement with child's activities lowered risk of neglect. Slack's (2011) cross-study comparison backed Lee's (2012) findings.

Some of the other protective factors included an increase in parenting knowledge which lowered child abuse and neglect potential and actual abuse among teen mothers with a history of childhood maltreatment (Bert et al., 2009). Similarly, having appropriate expectations from the child based on their age and showing empathy towards the child also lowered risk of child abuse and neglect by contributing to an increase in maternal resilience in the presence of multiple risk factors (DuMont, 2012).

DuMont's (2012) study found that mothers who breastfed for four or more months had a positive correlation with enhancing resilience in the presence of multiple risk factors including maternal depression, maternal low self-esteem, and maternal childhood maltreatment history, among others.

Collaborative engagement with services (e.g., mental health services, social services) reduced the likelihood of maltreatment recurrence (Cheng et al., 2015). Positive adult-intimate relationships and attachment to child lowered odds of maltreatment (Thornberry, 2013). This was particularly true for those parents with a history of childhood maltreatment and a positive and caring paternal relationship was associated with lowered odds of maltreatment (Herrenkohl, 2013). Positive parenting also had a moderating effect on parenting stress and was negatively correlated with child neglect (Berkout, 2016).

Protective factors showing no significance

There were two protective factors which were studied but no associations with child maltreatment were found. These included mothers' older age at birth of first child and mothers' spirituality and both were measured in only one study (Banyard et al., 2003).

3. What is the evidence that risk and protective factors differ based on type of maltreatment?

A specific type(s) of maltreatment was mentioned in 44 of the 68 studies whilst the remaining 24 did not specify a type but used terms like child abuse and neglect or child maltreatment to refer to all types of maltreatment. One study used the umbrella term of child abuse and neglect and added a further type of maltreatment

apart from neglect, physical abuse, sexual abuse and emotional or psychological abuse; 'threatened harm' (Wu et al., 2004). This review is only concerned with the four types of maltreatment hence, 'threatened harm' was not taken into consideration as a separate maltreatment type when presenting findings.

From the 44 studies which mentioned a type or types of maltreatment, 32 were on risk factors and 12 reported both risk and protective factors. Twenty-one studies only focused on physical abuse, six were on neglect, one study on emotional abuse and one study focused on sexual abuse. The remaining 15 studies focused on multiple types of maltreatment; two studies were on physical and emotional abuse, eight studies on physical abuse and neglect, three on physical abuse, emotional abuse, and neglect and two on physical and sexual abuse and neglect.

Micro Risk Factors – Individual

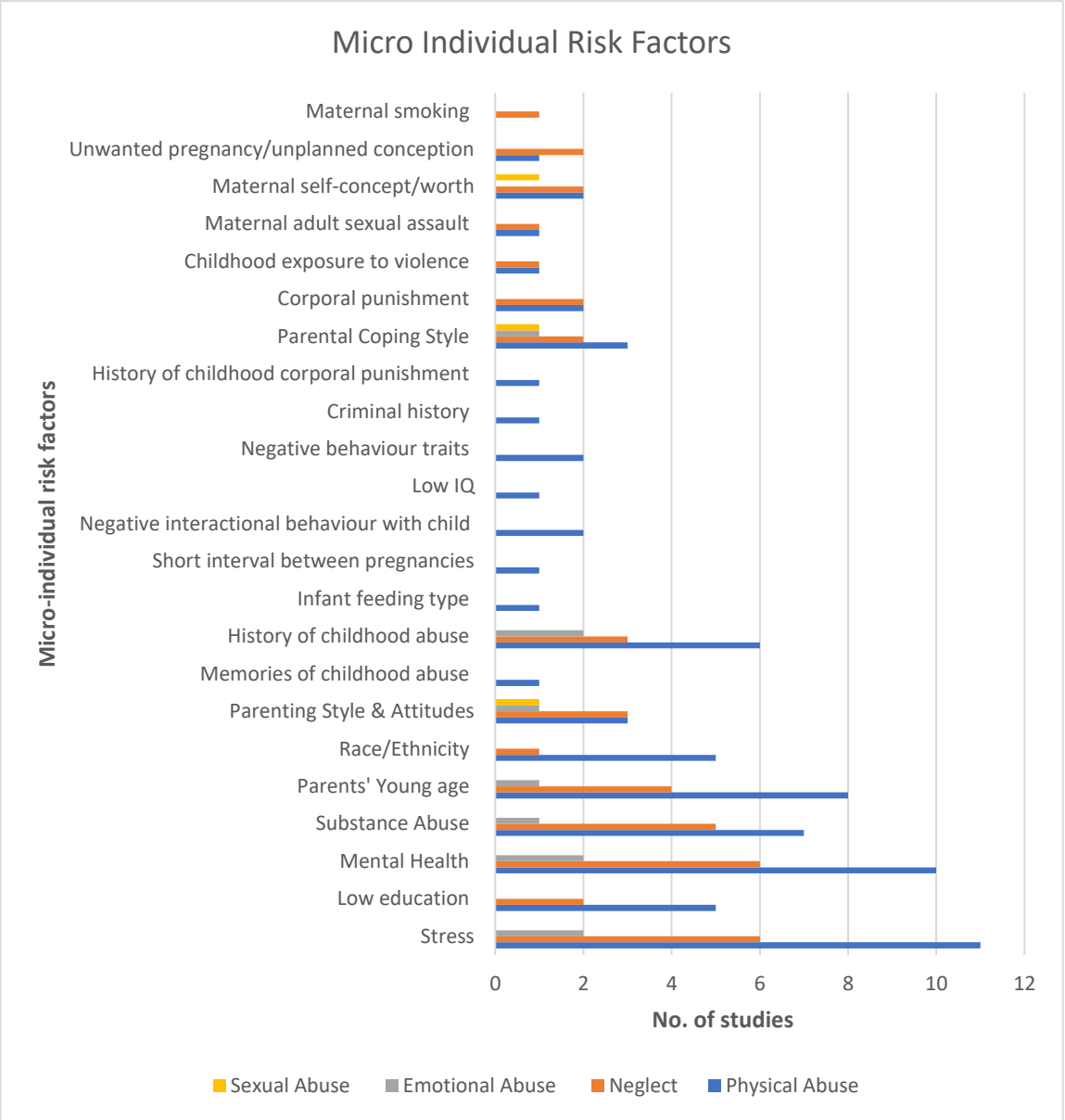
In respect to micro-Individual level risk factors and as can be seen in Figure 11, there were two that were common among all four types of maltreatment: 'parenting style and attitudes to child' and 'parenting coping style and mood quality'. Parenting style and attitudes to child encompassed an authoritarian style of parenting, lack of enjoyment of child and not encouraging autonomy in child (Corse et al., 1990). Parents' coping style and mood quality included rigidity, a lack of flexibility towards the child, and emotion-focused style of coping as well as dysregulation in emotion for physical, emotional, and sexual abuse and neglect (Milner, 1990; Lowell et al., 2017).

A few risk factors were common among three types of maltreatment: physical abuse, neglect and emotional abuse and these included stress, parents' mental health, substance abuse, parents' young age, and parental history of childhood maltreatment. Stress specifically related to parenting (Mash et al., 1990; Price-Wolf, 2014; Berkout et al., 2016; Macguire-Jack et al., 2016; Kim et al., 2015; Lowell et al., 2017; Lee et al., 2012) was common among all three types of maltreatment. However, life stress or stress caused by daily activities or life events was only applicable to physical abuse. For mental health issues, depression was the most common among all three types of maltreatment while Obsessive Compulsive Disorder (OCD) was a distinguishing mental health issue for Physical abuse (Chaffin et al., 1996) and social anxiety for emotional abuse (Lesnik-Oberstein et al., 1995).

Maternal self-concept and self-worth were risk factors for physical abuse, neglect, and sexual abuse. This included a negative view of oneself, low moral self-worth, negative perception of identity and being self-critical (Christensen et al., 1994; Milner et al., 1990).

Risk factors common among two types of maltreatment (physical abuse and neglect) included race or ethnicity of parents (Conelly et al., 1992; Price-Wolf, 2014; Ross et al., 1996; Wolfner et al., 1993 and Maguire-Jack et al., 2016), corporal punishment of child (Whipple et al., 1991; Berkout et al., 2016; Slack et al., 2011), parents' exposure to violence as children (Banyard et al., 2003), maternal adult sexual assault (Banyard et al., 2003) and unwanted or unplanned pregnancy (Zuravin et al., 1987; Kajese et al., 2011).

Figure 11: Micro-individual risk factor and maltreatment types



Risk factors at the individual level for a single maltreatment type were mostly for physical abuse and included memories of childhood abuse (de et al., 2000), infant feeding type (breast feeding or bottle feeding) at time of discharge from hospital (Kelly et al., 2017), maternal low IQ (Pajer et al., 2014), negative behaviour traits (e.g. impulsivity, hostility; Price-Wolf, 2014; Rodriguez et al., 2010) criminal history (Ricci et al., 2013) and parents' corporal punishment as children (Ross et al., 1996). Maternal smoking was found to be associated with child neglect in one study (Bartlett et al., 2014).

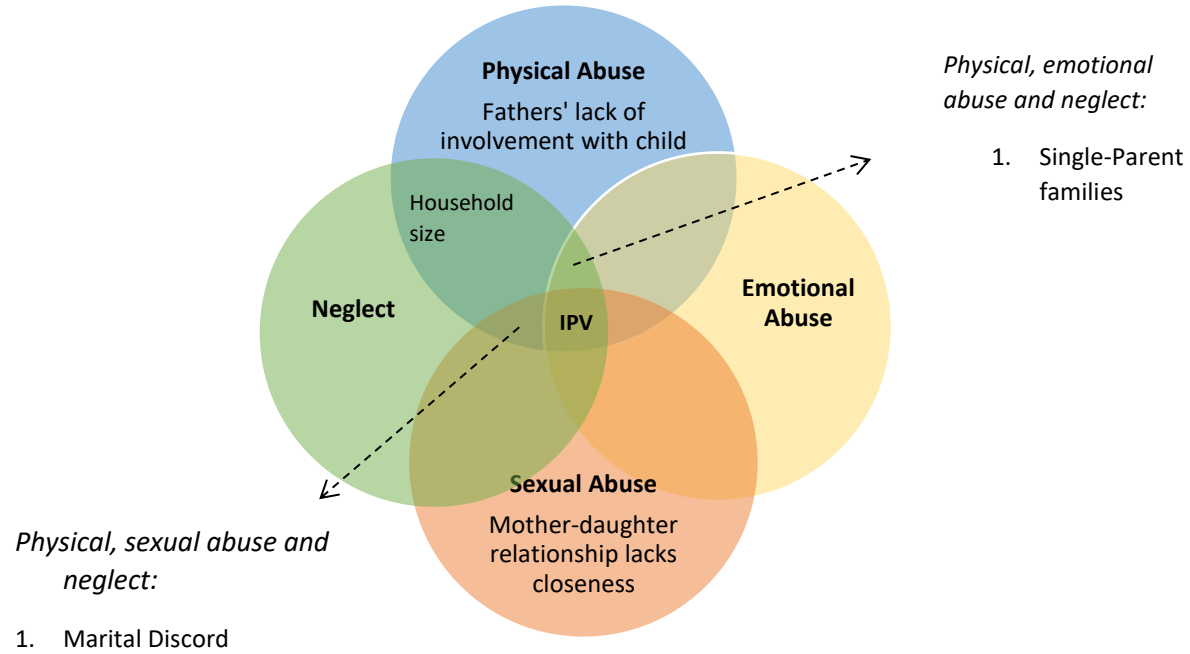
Micro-family Risk Factors

As represented in Figure 12 and among family-level, micro risk factors, the only commonality between the four maltreatment types was Intimate Partner Violence (IPV; Banyard, 2003; Bartlett, 2014; Hunter, 2000; McGuigan, 2001;

Paveza, 1988; Ricci, 2003; Ross, 1996; Tracy, 2018). Household size which included number of children and number of adults living within a home was common between neglect (Dubowitz, 2011) and physical abuse (Chaffin, 1996; Connelly, 1992; Wolfner, 1993). Single parent families as a risk factor was common among neglect, physical abuse, and emotional abuse (Dubowitz, 2011; Kelly, 2017; Kim, 2015) while marital discord was a common risk factor for sexual abuse (Paveza, 1988), neglect (Zhao, 2018) and physical abuse (Whipple, 1991). Two of the studies defined marital discord as lower marital satisfaction (Whipple, 1991; Paveza, 1988) and Zhao (2018) referred to it as 'severe family dysfunction' which was assessed using a scale which measured affection, growth, resolve and adaptation within the family (AGPAR scale, Smilkstein, 1978).

A distinct risk factor for physical abuse was the level of father's involvement with child's activities and daily life (Guterman, 2009). For sexual abuse, the only family-level risk factor which was not found for other maltreatment types was mother-daughter relationship quality or closeness (Paveza, 1988). There were no distinct risk factors identified for emotional abuse.

Figure 12: Micro-family risk factors and maltreatment types

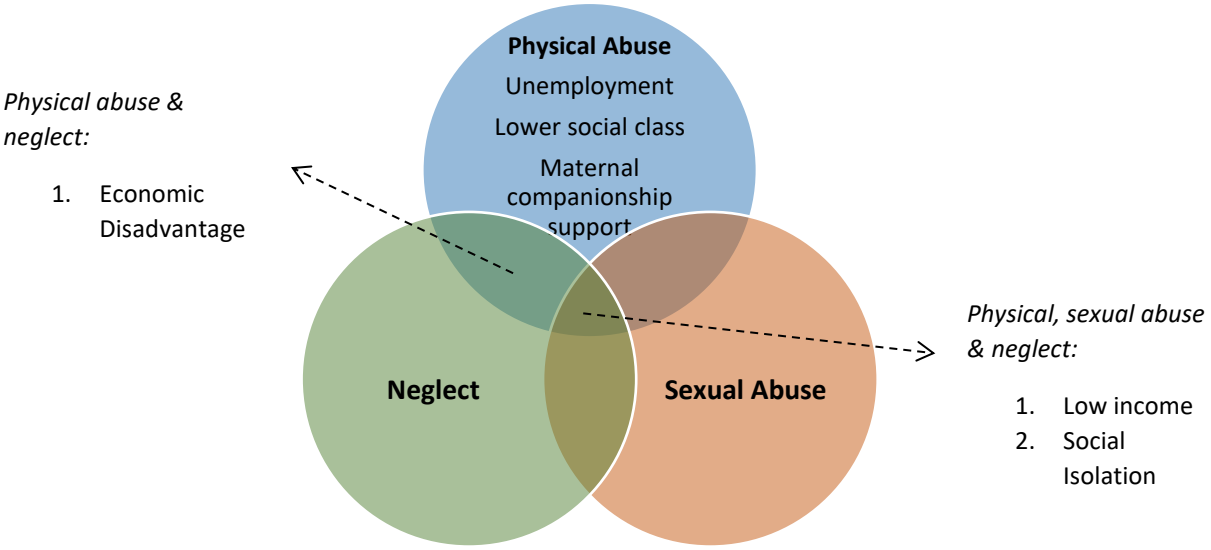


Mezzo Risk Factors

No risk factors were found for emotional abuse within the mezzo level as can be seen in Figure 13. Sexual abuse, physical abuse and neglect shared two

risk factors; low income and social isolation (Bartlett, 2014; Corse, 1990). Social isolation was classified as *perceived* isolation by parents and another study classified it as a lack of social support (Rodriguez, 2015; Corse, 1990).

Figure 13: Mezzo level risk factors and maltreatment types



A shared risk factor between physical abuse and neglect was economic disadvantage (AjdukoviÄ, 2018; Maguire-Jack, 2016). Economic disadvantage was identified in two studies, and both used a different way of categorising this risk factor. Ajdukovia (2018) used two subjective measures of satisfaction with housing conditions and perceived impact of economic pressure (e.g., 'Money is the source of conflict in my family') to assess economic disadvantage. On the other hand, Maguire-Jack et al. (2016) used the term 'economic hardship' to assess several financial hardships experienced by parents within the past year including utilities disconnected, receiving financial help from family and inability to see a doctor due to costs, among others. Both perception and impact of economic pressure on parents was categorised under economic disadvantage which differed from the category of 'low income' as this risk factor was concerned with only the monetary value and whether the household income fell below the level of threshold of poverty.

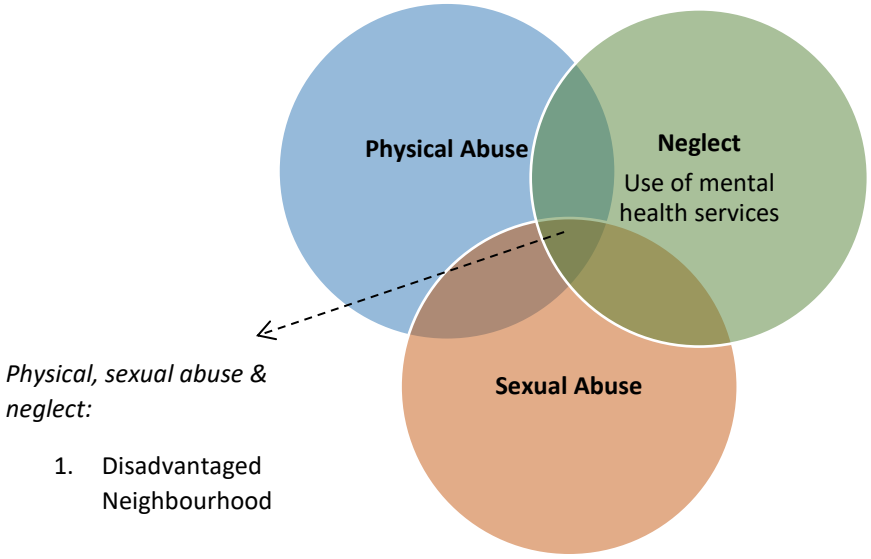
No sole risk factors were found for sexual abuse or neglect within the mezzo level. However, physical abuse did have three risk factors independent of other maltreatment types. These included parental unemployment (Guterman, 2009; Ricci, 2003), lower social class (Pajer et al., 2014) and maternal companionship support (Price-Wolf, 2014). Pajer and colleagues' (2014) study was a prospective study looking at adolescent girls and their potential for child maltreatment. Social class was determined by the adolescent girls' parents' contribution to the support of the girl (equal contribution from both led to a higher social status) as well as their occupation, education, and marital status. Price-Wolf's (2014) study looked at differences between mothers and fathers in

respect to frequency of child physical abuse and found that for mothers, companionship support was associated with higher frequency of abuse.

Macro risk factors

The macro-level risk factors are presented in Figure 14. Within this ecological level which comprise wider community and societal factors, there were no distinct or shared findings related to emotional abuse. Physical, sexual abuse and neglect shared disadvantaged neighbourhood as a common risk factor (Drake, 1996; Price-Wolf, 2014; Friesthler, 2017). There was some difference in considerations for what constituted a disadvantaged neighbourhood among the studies. For instance, Friesthler's (2014) study looked at drug demand and supply within a community while Price-Wolf (2014) and Drake et al., (1996) studies considered socioeconomic factors such as income and education.

Figure 14: Macro level risk factors and maltreatment types



Neglect was the only maltreatment type with a macro-level risk factor independent of other types of maltreatment and this was use of mental health services. Bartlett et al., (2014) study found that one of the risk factors of infant neglect among adolescent mothers was their utilisation of mental health services during the pre-natal period.

Protective Factors and maltreatment types

There were thirteen studies which presented significant associations of protective factors and identified maltreatment types as well. From these, 10 studies presented social support as a protective factor whilst three had positive parenting and parental involvement in child's activities as protective. Among the studies which found an association for social support as a protective factor, physical abuse and/or neglect were the maltreatment types identified in all these studies except one which also included emotional abuse. There were no protective factors examined for sexual abuse within the included studies. Studies mostly defined social support as support

(e.g., task sharing, community involvement, childcare, etc.) from family and partner or friends (e.g., companionship support and emotional support; Price-Wolf, 2014), or community support and one categorised support as availability and receipt of social services (Maguire-Jack, 2016).

Two studies (Friesthler et al., 2017 and Price-Wolf, 2014) found maternal emotional support to be associated with lower frequency of child physical abuse (Price-Wolf, 2014) and potential for child physical abuse and neglect (Friesthler et al., 2017). Price-Wolf's (2014) also found paternal companionship support to be inversely associated with child physical abuse. Banyard (2003) specifically found an association for support from friendships as a buffer against physical abuse and neglect.

Adjukovia (2018) looked at *perception* of support among mothers and if mothers perceived a high level of social support than they had lower potential of physically abusing their child. Similarly, Negash (2016) also looked at perception of social support, but this was protective for both physical abuse and neglect. Maternal social support starting in the perinatal period was found to be protective against physical and emotional abuse (Tracy, 2018).

Daily involvement with child's activities (Lee, 2012; Slack, 2011) and positive parenting (positive affect and attitude towards child; Berkout, 2016) were found to be protective against child neglect. One study (Price-Wolf, 2014) found that for mothers, having high emotional support was protective against likelihood of physical abuse. The same study also found that for both parents, being married or cohabiting was also protective against child physical abuse.

Chapter 6: Discussion of Review A findings

Summary of findings

This systematic review synthesised research on risk and protective factors for child maltreatment. The aim of this review was to gather empirical evidence on parental factors of risk and protection and to present these as guided by the ecological risk and resilience framework.

Findings suggest that the majority of risk factors fall within the micro level which include the individual and family. Prevalent micro-level parenting risk factors include stress (parenting and life stresses), substance abuse, mental health issues, Intimate Partner Violence (IPV), childhood history of maltreatment, single-parent families, and marital discord or distress. Among mezzo level risk factors, economic disadvantage and social isolation were the most common among included studies and other factors included maternal companionship support, housing instability, unemployment, and less satisfaction with housing conditions. Within the macro level, only two significant associations with child maltreatment emerged which were disadvantaged neighbourhoods and utilisation of mental health services during pregnancy among adolescent mothers.

From the 18 studies that did report significant association between protective factors and a decrease in child maltreatment risk, a mezzo level factor of social support was the most common and was found in 10 studies. There were distinct definitions and ways of measuring social support among studies and two studies looked at *perception* of social support and the remaining four dealt with *actual* provision or availability of social support. Social support was divided into several categories between studies ranging from social service availability, emotional support, companionship support, perceived availability of services and counselling.

Protective factors also included those on a micro-Family ecological level, and these were paternal daily involvement with child which was associated with a reduction in risk of maternal neglect. Positive interactions with child including showing empathy and having appropriate expectations from child as well as breastfeeding for more than four months was associated with strengthening maternal resilience. An increase in parenting knowledge, positive parenting and attachment to child were also associated with lower child maltreatment potential.

Findings also synthesised evidence on risk and protective factors based on type of maltreatment. Not all studies included in the review specified a type of maltreatment and among the 44 studies that did, 32 were on risk factors and 12 on both risk and protective factors. Physical abuse and neglect were the two types most focused upon by studies. IPV, parenting style and attitudes and parenting coping method and mood quality were common risk factors for neglect, physical, emotional, and sexual abuse. The remaining risk factors were mostly shared among one or more type of maltreatment but there were distinct risk factors found for physical abuse, neglect, and sexual abuse. Fathers' lack of involvement with child, memories of parental history of childhood abuse, maternal low IQ, corporal punishment of

parents in childhood, infant feeding type at discharge from hospital, unemployment, and lower social class were exclusive risk factors for physical abuse. Maternal smoking was the only exclusive risk factor for neglect while lack of mother-daughter closeness was found to be a distinct risk factor for sexual abuse. No unique risk factors were found for emotional abuse.

Among protective factors, findings show that social support is the most prevalent buffer against physical abuse, emotional abuse, and neglect. Daily involvement with child's activities and positive parenting were also protective against neglect. No protective factors were identified for sexual abuse.

Interpretation of findings

Interpretation of findings of Review A are presented in this section. A maximum of three most prevalent factors (risk and protective) among the studies for each ecological level (micro – indiviudal, micro – family, mezzo and macro) are presented in detail.

Parental risk factors for child maltreatment

Micro-individual level risk factors: Mental Health

A number of studies (21) within this review found an association between parents' mental health and child abuse potential. Post-Traumatic Stress Disorder (PTSD), Depression and Borderline Personality Disorder (BPD) were among the identified disorders from findings (Mash, 1983; Slack, 2011; Anderson, 2018). Parental depression has previously been associated with child abuse and neglect (Berger and Brooks-Gunn, 2005; Stith et al., 2009) and maternal depression, in particular, increases the risk of child physical abuse (Hentges et al., 2021; Marcal, 2021). Similarly, prior studies indicate that paternal PTSD symptoms are linked to child maltreatment potential (Cross et al., 2018, Kalebic et al., 2011). Previous research also shows that a diagnosis of BPD is associated with child maltreatment more than any other personality disorder (Battle, Shea, et al., 2004; Yen, Shea, Battle, et al., 2002).

It is proposed that the development of BPD is based on a lack of responsiveness from caregivers in childhood which results in an impaired ability to regulate emotions (Hughes et al., 2012). A prior cohort study (Widom et al., 2009) found that significantly more maltreated children (compared to non-maltreated, demographically controlled children) matched criteria for a BPD diagnosis in adulthood. Consequently, parents with a childhood history of maltreatment may be more likely to develop BPD, increasing the risk of intergenerational transmission of child maltreatment.

Parental history of childhood maltreatment

Among the 21 studies in this review which found a significant association between parental childhood history of maltreatment and child maltreatment potential,

majority of the studies (14) were focused on maternal history of maltreatment while only six were on parents' history of maltreatment. This gender difference is also found in the entire child maltreatment literature and there is more focus on mothers and less so on fathers. For instance, a meta-analysis confirms that mothers are more likely to physically abuse their children (Behl et al., 2003). Similarly, adults with a history of child maltreatment report higher rates of mothers as perpetrators (Muller, 1995). On the flip side, there are far more lone mothers than fathers who are primary caregivers of children and the lower rate of fathers maltreating may be attributed to their absence from the home rather than their abuse potential based on gender. This is supported by Nobes and Smith (2000) who, after controlling for fathers' absence, found that children living with both parents were more likely to receive physical abuse from their fathers.

Interestingly one study in Review A found that *memories* of childhood abuse among parents rather than just its occurence play a role in perpetuation of that abuse. De and colleagues' (2000) longitudinal study found that adolescent mothers with memories of childhood physical abuse were more likely to maltreat their infants compared to mothers with childhood history of physical abuse but no memory of it. While not a huge amount of research has been done to firmly establish links between memories of abuse and future abuse potential, one old study conducted by Caliso and Milner (1992) had findings which support De and colleagues' (2000) study.

A lesser known association between childhood history of abuse and timing of that abuse and its' links to future maltreatment potential was found by Thornberry and colleagues' (2013) study. This study, using prospective longitudinal data, found that parents with a history of maltreatment were 2.6 times more likely to maltreat their children when the parents were aged between 21 and 30 years (Thornberry et al., 2013). However, this study looked only at substantiated CPS records and this may not capture the breadth of maltreatment perpetration and there is a risk of underestimation.

Substance Abuse

Substance abuse, among mothers and fathers, is a well-established risk factor for child maltreatment in the literature. Review A found 18 studies in which there was a significant association been a parent's substance abuse and child maltreatment risk. These associations were mostly for physical abuse (e.g. Chaffin et al., 1996) and neglect (e.g. Slack et al., 2011) suggesting that this risk factor is particularly pertinent for these two maltreatment types. Prior studies have suggested a link between alcohol abuse and child physical abuse (e.g. Miller et al., 1997) and this has been attributed to several factors, including alcohol's pharmacological effects on the brain. Parents with diagnosed Substance Use Disorders (SUDs) are consistently found in the literature to be at an increased risk of child maltreatment, especially child physical abuse (Dubowitz et al., 2011; Laslett et al., 2012). While there are direct associations found between parents' substance misuse and child maltreatment, parents who abuse alcohol or drugs tend to also have presence of other risk factors. It then becomes difficult to discern the role of substance misuse

and child maltreatment potential. There is some prior research that suggests that parents who misuse substances and maltreat their children tend to have psychological problems (particularly personality disorders; Stith et al., 2009), and are more likely abusing cocaine and/or alcohol (Moore et al., 2008). However, a more recent study (Goldberg and Blaauw, 2019) refuted these findings and found no significant differences in psychological comorbidiies among substance abusing parents who abuse compared to those who do not. They also found no significant difference in the use of alcohol between the two groups but did find that substance abusing parents who maltreated their children had significantly higher use of cannabis and cocaine. This study, however, had a small sample size which may reduce the strenght of the results.

Micro-family level risk factors: Intimate Partner Violence (IPV)

The most prevalent micro family-level risk factor in systematic review A was Intimate Partner Violence (IPV) which was significantly associated with child maltreatment in 12 studies. Previous systematic reviews on recurrence of maltreatment (e.g. Hindley et al., 2009) have found IPV to be a significant risk factor in child maltreatment. Further to this, more recognition is now given to children's exposure to IPV or witnesssing domestic violence which is considered as a type of maltreatment (Jones, 2008).

However, there were some discrepancies noted regarding definition and use of terms to describe IPV. For instance, studies used 'domestic violence' (e.g., Duffy et al., 2015; McGuigan et al., 2001), 'living with a violent partner' (e.g., Dixon et al., 2009), 'adult partner violence' (Banyard et al., 2003) and 'spousal abuse' (e.g., Ricci et al., 2003), among others. 11 out of the 12 studies either clearly described the term used for IPV as physical abuse or implied that it referred to physical abuse (e.g., through questions asked from scales used, Banyard et al., 2003). Only one study (Tracy, 2018) referred to IPV as "physical and emotional cruelty" (p. 48) from partner. Researchers tend to limit the use of IPV (or an associated term) to signify only physical harm and this may be partly due to challenges associated with measuring 'emotional harm' (Jewkes, 2010).

Furthermore, the review found some nuances in respect to associations between child maltreatment and IPV. For instance, it found that IPV is most associated with child physical abuse and child neglect (e.g., McGuigan et al., 2001; Bartlett et al., 2014; Ricci et al., 2003). It also found that IPV tends to co-occur with other individual level risk factors such as maternal depression and paternal substance abuse (Hunter et al., 2000) as well as paternal criminal history (Duffy et al., 2015).

Marital Status (single parent)

From 21 studies that looked at marital status, nine found a significant association between single parenthood and child maltreatment. This risk factor is considered somewhat controversial in child maltreatment literature and it is suggested that it is the co-occurring risk factors, mostly a by-product of being a single parent, including low-income, low social-support and associated stresses that

heighten risk of child maltreatment rather than only single-parenthood (Stith et al., 2009; Gelles, 1989; Berger, 2004). In Review A, single parenthood is not studied on its own and co-occurs with other risk factors such as substance abuse (Fuller et al., 2003; Dubowitz et al., 2011) maternal depression (Dubowtiz et al., 2011) and adolescent mothers (Kelly, 2017), among others.

Marital Distress

Closely linked to IPV, marital distress was identified as significantly associated with child maltreatment in five studies in Review A. This term encapsulated transitioning to separation or divorce and/or marital conflict between parents or one biological parent and partner. Three of the five studies were conducted in the 80s and 90s (Paveza, 1988; Whipple et al., 1991; Milner et al., 1990). More recent studies included Zhao and colleagues' (2018) study which found an association between marital disruption and child neglect. Kajese and colleagues' (2011) study found marital discord, co-occuring with other family level risk factors such as IPV and several individual-level risk factors (e.g., mental health issues and substance abuse) to be significantly associated with homicidal child neglect.

One issue with this risk factor is that researchers do not use a consistent definition of marital distress, marital discord, or marital conflict – all terms used in the studies from Review A that found an association. While marital disruption also falls under this umbrella term, it was more clearly defined as either parental separation or divorce. In respect to marital distress or conflict, prior studies have suggested that marital conflict lies on a continuum with higher levels of hostility between parents and often co-occurs with IPV (Campo, 2015; Krishnakumar and Beuhler, 2000).

Mezzo level risk factors

Economic disadvantage along with receipt of welfare and social isolation were two most prevalent mezzo level risk factors in Review A's findings. In respect to economic disadvantage, this was mostly corrrelated with physical abuse (e.g. Adjukovia et al., 2018; Guterman, 2009) and neglect (Bartlett et al., 2014). It also co-occurred with family level risk factors such as having more than two minor children at home (Maguire-Jack et al., 2016), individual level risk factors such as maternal smoking (Bartlett et al., 2014) and low education of parents and parenting stress (Adjukovia et al., 2018).

Social isolation was defined in one study (Corse et al., 1990) as less peer support, less satisfaction with support, fewer perceived resources and lack of or dissatisfaction with child rearing help. Rodriguez and colleagues' (2015) study used a loneliness scale to measure mothers' social isolation from a community sample of mothers. This is backed by a body of research which supports the assertion that maternal social isolation contributes to increasing child maltreatment risk (Kotch et al., 1997; Stith et al., 2009; Black et al., 2001). Hence, provision of social support can help moderate the association between isolation and child maltreatment.

Macro level risk factors

Only one significant association was found at the macro level with child maltreatment and this represented use of mental health services during pregnancy among adolescent mothers who neglected their infants (Bartlett et al., 2014). These mothers were also, either currently or in the past, victims of IPV. Findings of Review A in the micro ecological level show adolescent mothers and association with infant neglect (Dixon et al., 2009; Bartlett et al., 2015) as well as IPV and neglect (e.g. Ricci et al., 2003). However, use of mental health services implies a mental health issue which is already established as a micro level risk factor for child maltreatment and supported by Review A's findings (e.g. Stith et al., 2009; Slack et al., 2011). Young mothers struggling with mental health concerns may have presence of a high number of risk factors which heighten the risk of future child maltreatment.

Research, not part of this review, suggests that adolescent mothers have a higher chance of developing postpartum depression (Reid and Meadows-Oliver, 2007). Development of mental health issues can also be indicative of childhood history of maltreatment and associated psychological distress and trauma, all risk factors linked to child maltreatment potential (Zelenko et al., 2015).

Risk Factors without significant association

Risk factors which were studied but did not have a significant association with child maltreatment were only found at the micro (individual and family) ecological level but not at the mezzo or macro levels. On the micro-Indiviudal ecological level, for instance, complications during or afer birth of child were not significantly associated with child maltreatment in two studies (Kelly et al., 2017; Lesnik-Oberstein et al., 1995). These complications included low birth weight of child and separation of infant from mother after birth. Regarding low birth weight, the findings of this systematic review contradict the findings of prior studies (not included in this review) as premature birth and low birth weight are associated with child maltreatment (Kawaguchi et al., 2020; Fujiwara et al., 2008). Interestingly, Gavin and colleagues' (2011) study found an association between mothers' history of childhood maltreatment leading to low-birth weight in infants. Researchers in this study found that mothers' history of sexual, physical, emotional abuse and/or neglect by the age of 10 was a strong predictor of substance abuse in high school which was further linked to alcohol use and smoking during pregnancy ultimately leading to premature births and low birth weight among such mothers (Gavin et al., 2011). This systematic review has highlighted association between parents' history of childhood maltreatment's association with future child maltreatment with several studies (e.g., Bartlett et al., 2015 and Thornberry et al., 2013). However, the pathway for this association and links to low birth weight is further encapsulated in Gavin and colleagues' research (2011).

Within the family ecological level, there were some risk factors which were studied but no significant associations were found. Among these was child custody dispute (Ross et al., 1996) and dating conflict (Grumi et al., 2017). Regarding child custody dispute, prior research has drawn links with the emotional harm on the child due to parental conflict often rife in such disputes (e.g. Burke, Macintosh and Gridley, 2007). There has also been evidence linking the moderating role of such

disputes on parenting as parents' attention during such custody battles can divert from the child's needs and can also increase stress among parents (McIntosh and Long, 2006). Further examination of custody disputes and link to child maltreatment is needed especially to uncover distinct pathways (e.g., elevation in parental stress) to child maltreatment. In respect to dating conflict, no prior studies, to the author's knowledge, have established a link between parental dating issues and child maltreatment.

Protective factors for child maltreatment

Compared to risk factors found in Systematic Review A, there were relatively fewer studies included in the review which focused on protecive factors for child maltreatment. From the 68 included studies, 18 studies reported a total of 11 protective factors that had a significant association. Social support, a mezzo level protective factor, was the most common factor found in 10 studies. Findings of Review A mirror prior review findings (e.g., Meng et al., 2018) where social support is found to be the most examined and consistently established protective factor for child maltreatment.

Social support was measured in different ways in many studies including frequency of support (Bartlett et al., 2015), higher perception of support (Adjukovia et al., 2018), perceived availability of social services (Nagesh et al., 2016) and specific types of support such as counselling (Dumont et al., 2012). Price-Wolf's (2014) study was the only one that measured various types of social support (emotional, companionship support, tangible support) and their moderating effect on child physical abuse and compared it between mothers and fathers. This study found that for mothers, higher emotional support was associated with lower frequency of child physical abuse compared to fathers even though it was also protective for fathers. Price-Wolf's study found companionship support to be protective for fathers but companionship support for mothers was associated with an increase in frequency of child physical abuse (Price-Wolf, 2014). While there is scant literature specifically on companionship support, there is one study (not included in Review A) which supports Price-Wolf's (2014) findings. A study looking at the *dark side* of social support particularly in relation to companionship support and its association with physical child abuse found that companionship support can act as a mechanism for alcohol consumption which may heighten the risk of child physical abuse (Freisthler, et al., 2015). It is also possible that mothers may find socialising to be stressful when combined with looking after children and household duties while fathers may find this to be stress relieving. While this is merely speculation and the results of these two studies are correlational and not conclusive, but they do merit further investigation.

This study (Price-Wolf, 2014) also found no association between higher tangible support (e.g., childcare help) and lower frequency of child physical abuse. Another study in the review which looked at characteristics of maltreating mothers (Corse et al., 1990) found an association between less child-rearing help and child maltreatment but these mothers also had less peer support and perceived social support to be low. A further study included in the review (Li et al., 2011) found

‘instrumental support’ to be protective against risk of child maltreatment among a sample of parents with history of childhood maltreatment. Instrumental support in this study was defined as help with household tasks as well as looking after child. Price-Wolf’s (2014) finding also conflicts with prior studies whereby tangible support is associated with a lower risk of child maltreatment (Ortega, 2002; Coohey, 2000).

Review A found several other micro level protective factors which focused on interactions between parent and child. These included having appropriate expectations of and empathy towards child (DuMont et al., 2012), paternal involvement in child’s daily activities (Lee et al., 2021 and Slack et al., 2011), positive parenting behaviours (Berkout et al., 2016), increase in parenting knowledge (Bert et al., 2009) and mothers who breastfed for more than four months (DuMont, 2012). All of these are established protective factors which help strengthen attachment between parent and child and lower risk of child maltreatment (Strathearn et al., 2009; Stern et al., 2015; Walsh, 1996; Almeida et al., 2001).

The protective factors found in Review A only existed on the micro (individual and family) and mezzo ecological levels. No protective factors were studied on the macro ecological level. However, a recent literature review (Austin et al., 2020) found that there are studies which show evidence of macro level protective factors for child maltreatment. For instance, paid family leave policy was associated with a decrease in infant abusive head trauma (Klevens et al., 2016) and an increase in minimum wage was associated with a decrease in child protective investigations for child neglect (Raissian et al., 2017). Both these studies, however, were restricted to the parenting population in California and findings are reflective of one state in USA and have limited application to all parents at risk of child maltreatment.

Table 11 shows protective factors and the corresponding risk factors in the included studies within the micro (individual and family) and mezzo ecological levels.

Table 11: Risk versus protective factors

Study	Risk Micro-Individual	Protective Micro-Individual	Risk Micro-Family	Protective Micro-Family	Risk – Mezzo	Protective – Mezzo	Sample
Adjukovia et al., 2018	Adolescent parent, stress, low education	Perceived Social support			Economic hardship	Perceived social support	High risk
Bartlett et al., 2015	Childhood history of maltreatment			Social support from partner		Social support-neighbours, friends, community	High risk
Chan et al., 1994	Stress (parenting and daily life)			Social support - task sharing, satisfaction with spousal relationship		Social support - community involvement	High risk
Li et al., 2011	Low education, history of childhood maltreatment			Social support - Family (Affective, confidant, instrumental support)			High risk
DuMont et al., 2012	Mental health issues, criminal record, substance abuse, history of child maltreatment suspected past abuse of child, child unwanted	Breastfeeding for at least four months		Parent-child interaction/attitude: Appropriate expectations of child, empathy		Social support-respite care & non-directive counselling	High risk
Price-Wolf, 2014	Parenting stress, race, impulsivity			Cohabiting/married parents, high emotional support-partner/family (more protective for mothers than fathers)	Disadvantaged community		High risk
Lee et al., 2012	Maternal stress, maternal depression			Positive paternal daily involvement with child			High risk
Slack et al., 2011	Substance abuse (drugs) and parenting stress			Positive involvement with child's activities			High risk
Bert et al., 2009	Maternal history of child maltreatment (physical and emotional), adolscent mothers	Increase in parenting and child development knowledge					High risk

Banyard et al., 2003	Maternal history of child maltreatment (physical, sexual), maternal history of witnessing violence in childhood, maternal adult sexual assault (cumulative trauma)					Social support - Greater satisfaction from friendships	High risk
Cheng et al., 2015	Substance abuse and depression		Prior substantiat-ed child maltreatme-nt report			Collaborative engagement with social services	High risk
Thornberry et al., 2013	History of child maltreatment			Positive relationship with partner, positive attachment to child			High risk
Herrekohl et al., 2013	History of child maltreatment			Warm, caring relationships			High risk
Friesthler et al., 2017			Prior CPS report		Drug demand in neighbourhood		High risk
Negash et al., 2016	Mental health issues				Economic hardship	Social Support - High perceived social service availability	High risk
Tracy et al., 2018	History of childhood maltreatment		Prior substantiated CPS report	Social support - emotional and instrumental		High perceived social support - community, neighbourhood& friends	High risk
Berkout et al., 2016	Parenting stress			Positive parenting			Low risk
Maguire-Jack et al., 2016	Parenting Stress					Social Support - Social service availability	Low risk

Protective factors showing no significance

There were two protective factors, mothers' older age at birth of first child and mothers' spirituality, identified in one study (Banyard et al., 2003) which did not show any significant association with child maltreatment. The findings of this systematic review have shown that young age of parents is associated with risk of child maltreatment (e.g. Bartlett et al., 2015; Dixon et al., 2009) which would automatically translate to older age of mothers as a protective factor. However, Banyard and colleagues' (2003) study looked at a sample of parents who had experienced trauma. Similarly, mothers' spirituality was also found in the context of trauma survivors' experience and again this was not found to be protective in this study (Banyard et al., 2003). There are conflicting findings in child maltreatment research regarding parents' spirituality. Some studies have found a link between parents' religious beliefs and risk of child maltreatment (e.g., Sidebotham, 2015; Bottoms et al., 2008) while other studies show a protective effect of spirituality in reducing risk of child maltreatment through pathways of increasing mothers' education levels, self-esteem, confidence and lowering depression (e.g., Carothers et al., 2005; Bae, 2019). Further examination in research of parents' spirituality and its association with child maltreatment can delinate types of spirituality that may act as protective factors.

Risk factors by maltreatment type

There were only 32 studies that reported both the risk factors and type(s) of maltreatment and 12 that reported protective factors and type(s) of maltreatment. The remaining 24 studies used umbrella terms of child maltreatment or child abuse and neglect. Figure 16 show the risk factors by maltreatment type identified in the studies reporting a specific type(s) of maltreatment in Review A. While there was some overlap between types, there were a few risk factors which were common for all maltreatment and some which were unique to physical, sexual abuse and neglect and these are displayed in Figure 15.

Among the factors common to all types of maltreatment was parenting style and attitudes (micro-family level) which comprised a negative attitude and style of parenting. This included, for instance, authoritarian control (Corse et al., 1990), inconsistent discipline (Berkout et al., 2016), and unrealistic expectations of child (DuMont et al., 2012). A prior systematic review of child maltreatment risk factors also found that 'poor parenting skills' and 'caregiver limitations' increased the risk of maltreatment recurrence (White et al., 2015).

Maternal negative emotional state (micro-individual level) included dysregulation of emotion and a difficult temperament (Lowell and Renk, 2017) and this factor was also found to be common among all maltreatment types. However, there was only one study which looked at this factor and it included a homogenous and low-risk population. This does merit further investigation with a high-risk sample. Finally, IPV (micro-family level) was common to all maltreatment types. A previous meta-analysis of risk factors found 'spousal violence' to have a large effect size but

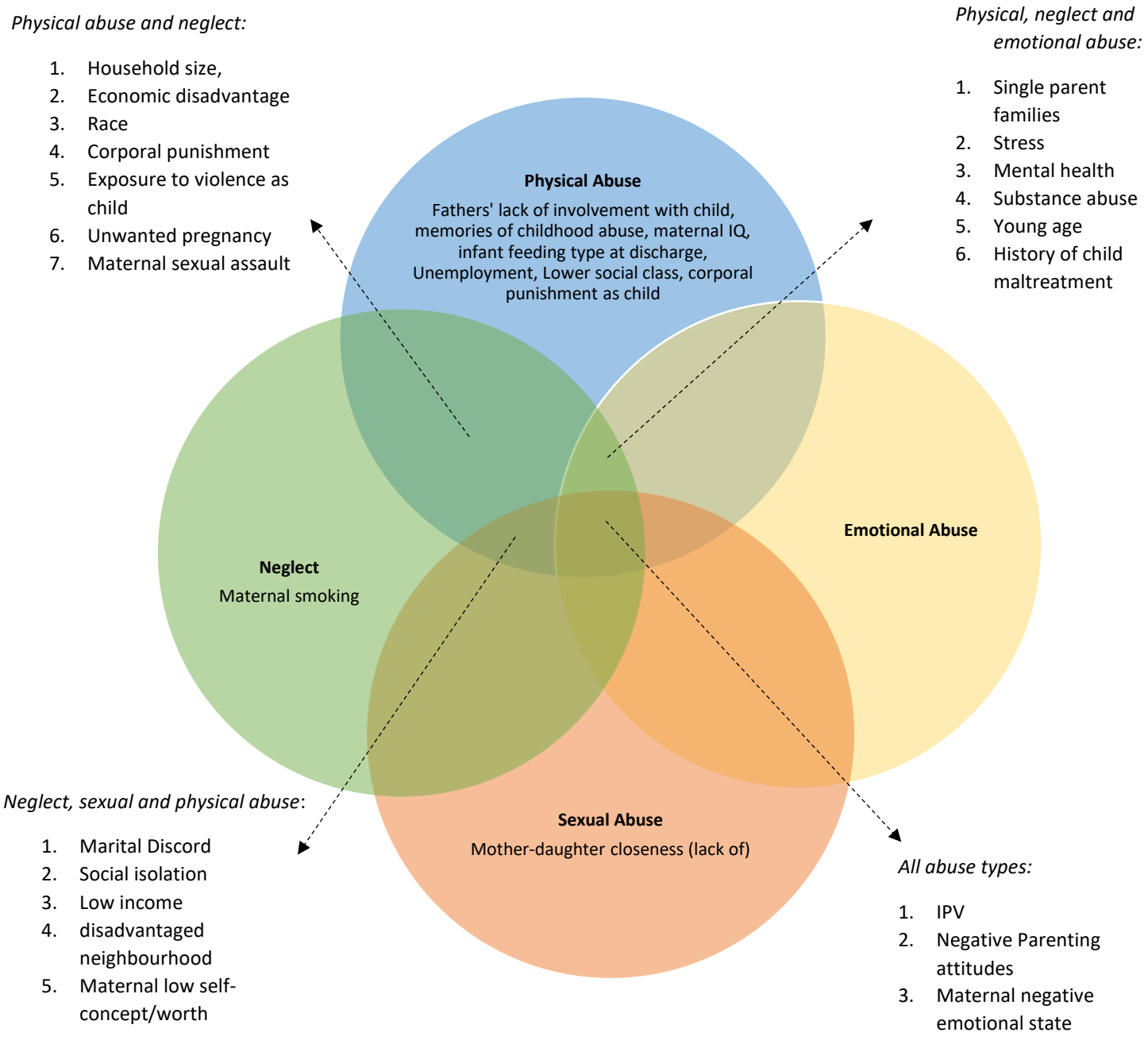
this was only for child physical abuse and neglect (Stith et al., 2009). A prior systematic review (White et al., 2015) supported Review A's finding that domestic violence was associated with all types of maltreatment, however, this review (White et al., 2015) only looked at child maltreatment recurrence.

There were also risk factors found which were unique to a type of maltreatment. For instance, maternal smoking was associated with child neglect. However, the studies measuring this looked at a number of co-occurring risk factors. For instance, in Bartlett and colleagues' (2014) study, mothers who smoked during pregnancy and neglected their infants also had lower incomes compared to non-maltreating mothers. Similarly, one retrospective study (Wu et al., 2004) looked at CPS records and found that mothers who neglected their infants, along with smoking during pregnancy, also had the presence of other risk factors including welfare reciept, single parenthood, and had more than two minor children at home. Prior research has also found that child physical abuse is associated with smoking in later life (Yoon et al., 2020) which may mean that these mothers had a childhood history of maltreatment. Maternal smoking may thus be a marker of other risk factors rather than a risk factor in and of itself.

There was one unique risk factor found for child sexual abuse and this was the lack of closeness between mother and daughter (Paveza et al., 1988). This study, however, is a sole study finding this association and no other study in Review A found a similar association. A prior study (Schechter et al., 2002) did find that relational disturbances including hostility between mothers and daughters may heighten the risk of the daughter being a victim of sexual abuse. However, this was not associated with paternal abuse and included all male-perpetrated abuse. Further research needs to be conducted to test the association between mother-daughter relationship quality and risk of paternal sexual abuse.

There were no unique risk factors found for emotional abuse although emotional abuse did share risk factors with all other types of maltreatment. A previous systematic review (Black et al., 2002) which focused on risk factors for emotional abuse only found six studies of relevance and this illustrates that this maltreatment type is far less studied than, for example, physical abuse and child neglect.

Figure 15: Risk factors by maltreatment type



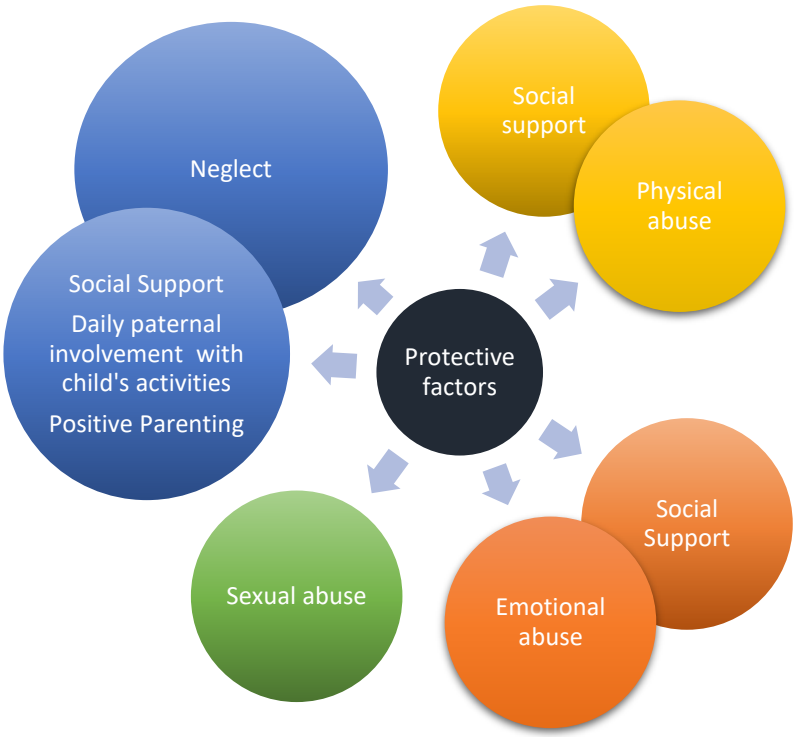
Protective factors by maltreatment type

Figure 17 illustrates the protective factors found in Review A from the 12 studies that did report maltreatment type(s). While social support was common to most, there were no protective factors studied for sexual abuse. Neglect had three protective factors including social support, daily paternal involvement with child's activities and positive parenting behaviours.

The definition of social support varied tremendously between studies and social support looked different for physical abuse and for emotional abuse or neglect. For instance, a high *perception* of social support by mothers was protective against physical abuse and neglect (Negash et al., 2016) while a high level of *actual* emotional support starting in the pre-natal period was protective against physical abuse and emotional abuse (Tracy et al., 2018). Support from friendships was also found to be protective against physical abuse and child neglect (Banyard et al., 2003). A meta-analysis on risk and protective factors for child maltreatment (Austin et al., 2020) found that a higher availability of services (social services, services for specific needs like mental health or substance use), community involvement and support from friends, family, and romantic partner can all provide protection against child maltreatment.

Review A also found daily paternal involvement with child and positive parenting to be protective against neglect. There is a body of research which suggests that fathers' sharing of domestic responsibility, providing emotional support to mothers as well as being actively involved with children tends to lower maternal stress and the risk of child maltreatment (Cummings et al., 1997; Dubowitz et al., 2000).

Figure 16: Protective factors and maltreatment types



Limitations

This review aimed to elucidate evidence on parental risk and protection for child maltreatment. The review was limited to empirical, quantitative, and published studies which omits including findings from 'grey literature' and qualitative studies. While rigid inclusion criteria limited study selection, this decision was made to ensure that the highest quality of evidence is included in the review. Inclusion of only quantitative studies was guided by the notion that the use of numerical data would elicit a larger sample which would be helpful when generalising results and identifying patterns across studies.

Although many risk and protective factors presented in this review are consistently associated with child abuse and neglect in prior literature, there are some inconsistencies and conflicting findings highlighting that evidence in this field is still not conclusive. For instance, Review A's findings have highlighted micro-level risk factors for child maltreatment such as single parent families or young age of parents, however, the question of whether young or single parents are more likely to abuse their children compared to their counterparts is too simplistic. It may be more relevant to focus on the specific circumstances such as poorer economic conditions leading to stress or poor mental health. Adolescent parenting may not be significant unless coupled with low parenting knowledge, low education, lack of social support, and mental health issues, among others.

Many of the conditions for risk factors lie in the wider societal, community and neighbourhood sphere which emphasises the need for more studies on mezzo and macro level risks which are currently under-researched as evidenced by the findings of Review A. Majority of included studies also focused on mothers and fathers were underrepresented, hence, the results from these studies are not readily applicable to fathers. Inclusion of fathers in research on child maltreatment can ensure applicability of findings for both parents and highlight the role fathers play in either heightening or buffering risk for child maltreatment.

Further, type of study designs within the included studies makes it challenging to determine causality as majority of studies were correlational. It is possible that some identified risk factors are indicators of risk such as low-socioeconomic status rather than direct contributors to child maltreatment. For example, one study in this review found maternal smoking as risk for child neglect (Bartlett et al., 2014) but this could be attributed to multiple stress-inducing factors such as low-socioeconomic status or poor mental health and identifying the possible underlying stressors for which use of tobacco is a marker is more beneficial in understanding how to combat risk (Wu et al., 2004).

Additionally, Review A's findings reflected an imbalance whereby more studies were found on risk factors compared to protective factors. While this may reflect bias regarding researchers focus on risk, it is important to know more about protective factors to buffer risk and strengthen parental resilience and to guide and develop effective interventions for child maltreatment.

The search for Review A did not elicit many studies on risk and protective factors for parent-perpetrated child sexual and emotional abuse and majority of the included literature focused on child physical abuse and neglect. While this may hamper synthesis of findings for emotional and sexual maltreatment, the review findings are also a reflection of trends in child maltreatment research. Emotional abuse and child sexual abuse are relatively less focused upon in research. For emotional abuse, the lack of clarity in definition as well as difficulty in substantiating emotional abuse cases may be some of the reasons why this is a less researched area. Similarly, it may also be difficult for researchers to identify cases of parental child sexual abuse due to underreporting. Further to this, consequences of neglect and physical abuse are more visible compared to those of emotional abuse and sexual abuse. However, this partially neglected area of research does need to be focused upon as there may be parental risk and protective factors unique to these two types and specifying them can enhance knowledge in the field and help prevention efforts.

The sample of included studies in Review A may not be representative of all the studies on parental risk and protective factors for child maltreatment. While the search was exhaustive and all measures taken to ensure relevant studies are not excluded, the narrow inclusion criteria resulting in inclusion of only published and empirical studies resulted in the exclusion of unpublished work which could have added value to the findings. Additionally, work is continuously growing in this field and there were several relevant studies which were conducted after the search had been completed and while synthesising the review's findings, in 2019 and onwards.

A limitation in Review A's methodology was the lack of inter-rater reliability. The absence of a second reviewer to establish validity in some review processes (e.g., study selection and screening) may impact quality of findings. However, there have been prior theses of systematic reviews whereby a second reviewer was not involved (e.g., Lee, 2015; Priola, 2016). Wang and colleagues (2020) state that the gold standard of having two independent reviewers can lead to issues and is not entirely free from bias and errors (e.g., lack of assessment of dual exclusion/inclusion errors) and is not 100% reliable. However, efforts were made to ensure relevant studies were not missed in the searches and revision of key words and multiple searches helped optimise search and inclusion of relevant literature.

Another limitation of Review A was the lack of options to synthesise findings. A meta-analysis was ruled out because of heterogeneity in the included studies in respect to methods, design, sample, and variables. Vote counting was thus used to examine the evidence on risk and protective factors. While this is a less powerful way than, for instance, combining P values or reporting magnitude of effect, it was the only appropriate choice considering variation in data across studies.

There were also definitional issues which were prevalent among several of the included studies. This was particularly pertinent to child physical abuse. For example, one study referred to child physical abuse as 'harsh discipline', but the definition of this included acts categorised under physical abuse. There were also differences in definitions of risk and protective factors between studies. For instance,

social support was defined in some studies as emotional support from family while others defined it as social service availability. Similarly, risk factors of parental stress and punitiveness with child were defined differently between studies. A critical step in preventing or treating an issue is to define it appropriately but the lack of clarity and consensus in definitions is rife in child maltreatment research and ranges from no universal definitions of what constitutes certain types of maltreatment to an absence of concrete definitions of risk and protective factors and how they are used in studies. Without this clarity and shared consensus, there will always be limitations when conducting research in the field of child maltreatment. This was particularly apparent when synthesising the findings of Review A which hampered some comparisons of research findings and restricted robust conclusions. Measures were taken to ensure that data extracted from included studies also comprised differences in definitions even though this was not the primary focus of Review A. Extracting definitional data enabled a better comparison between study findings and elicited more in-depth detail regarding variations.

Implications of findings

Results of Review A on parental risk and protective factors for child maltreatment indicate that vulnerability for perpetration of child maltreatment by parents is influenced by a variety of factors related to the individual parent(s), their family, the community, and wider society. Findings suggest that social support as a protective factor can be broken down into various types and is protective in mitigating the effect of several risk factors across maltreatment types, barring emotional abuse. These findings have implications for future research and interventions. Further research to elucidate findings on maltreatment specific risk and protective factors, especially for child sexual abuse and emotional abuse by parents can help enhance knowledge in the child maltreatment field. Certain findings of this review merit further investigation including differences among mothers and fathers in respect to child maltreatment perpetration as well as differences in effect of risk and protective factors on mothers and fathers. Research also needs to focus on the role of fathers, specifically in relation to fathers' involvement in mitigating risk of maternal maltreatment.

Associations between different types of social support and their mitigating effect on risk gives interventions tools for developing effective strategies based on maltreatment type and risk. For instance, intervening during the prenatal period, facilitating breastfeeding to strengthen attachment between mother and child and increasing parenting knowledge can help mitigate risk from trauma caused by parents' own childhood history of maltreatment as well as risk from young age of mothers who may also have mental health issues. Further to this, encouraging fathers to have positive involvement in a child's life may be helpful in mitigating risk from maternal stress and maternal depression. Findings provide insight useful for interventions to target families with co-occurring risk at multiple ecological levels and to tailor services to prevent and reduce child maltreatment. For example, different types of social support (e.g., emotional support, social service availability, perception of support, community involvement) provision can help to buffer risk at various

ecological levels. These can include efforts to reduce parents' stress, improve issues with mental health and help with IPV. Interventions may also help parents with acquiring employment to reduce their economic hardship, strengthen relationships within families and with the wider community and ultimately prevent and reduce child maltreatment.

Recommendations for future research

There is need for extensive research on parental protective factors of child maltreatment and their association with lowering child maltreatment and strengthening parental resilience. More research investigating maltreatment types and corresponding risk and protective factors, especially for emotional abuse and sexual abuse, is needed. Based on Review A findings, much of the existing literature addresses micro level factors (individual and family) while mezzo and, especially, macro level factors appear neglected. A shift in research focus to include these ecological levels is needed to gain a holistic picture of risk and protective factors in child maltreatment. Definitional concerns in the field hamper research and prevention efforts and require clarity and uniformity.

Exploration in research of differences in risk and protective factors between mothers and fathers and whether these also differ based on maltreatment type can provide much needed insight. The child maltreatment field would also benefit in having a balanced perspective in which there is greater research focus on fathers, an exploration of conditions in which fathers may enhance risk of child maltreatment, and the pathways through which fathers act as protective mechanisms.

Conclusion

Much of the findings of Review A mirror those of past reviews and reflect established parental risk and protective factors in the field of child maltreatment. Risk factors on the micro-individual level include parental substance misuse, history of childhood maltreatment, mental health issues and stress, among others. The micro-family level risk factors include IPV, marital distress and single parent households. mezzo and macro level risk factors were fewer compared to micro level and included economic disadvantage, social isolation, and use of mental health services during pregnancy. Protective factors were not equally represented compared to risk factors, but the review did find social support to be the most prevalent factor associated with buffering child maltreatment. Others included increase in parenting knowledge, appropriate expectations of child, positive parenting, and paternal daily involvement in child's activities.

Review A also found that there was a lot of overlap among types of maltreatment and risk and protective factors. For instance, social support was common among neglect, physical abuse, and emotional abuse. Similarly, IPV was a common risk factor for all types of maltreatment. In respect to unique risk and

protective factors, the review identified that father's lack of involvement with child, memories of childhood abuse and corporal punishment were some of the unique risk factors for child physical abuse. A lack of closeness between mother and daughter was only associated with a risk of paternal sexual abuse. Similarly, maternal neglect was associated with maternal smoking. For protective factors, even though social support was common among maltreatment types, the way it was defined varied between studies. For instance, high emotional support for mothers was inversely related to child physical abuse. Similarly, having supportive relationships with family and friends was associated with protecting against child physical abuse while daily paternal involvement with child reduced the potential for maternal neglect.

However, Review A's findings shed light on certain nuances within the literature that are under-researched and while they may not be conclusive, they do merit further investigation. One of these, for example, include *memories* of childhood abuse among parents as an important predictor of future maltreatment (De Paul et al., 2000). Thornberry and colleagues' (2013) finding that an association exists between perpetration of intergenerational child abuse by parents and *age* of parents. More examples include how high emotional support provides a buffer but only to mothers and not fathers in respect to child physical abuse (Price-Wolf, 2014) and how companionship support acts as protective for fathers but is a risk factor for mothers for child physical abuse. The review also bought to light findings which conflict with prior literature and some even conflict with other studies included in the review. For instance, the role of tangible social support such as help with childcare was not associated with lowering risk of child physical abuse in one study (Price-Wolf et al., 2014) while another study in the review found an association between tangible support and decreased risk of child maltreatment but used the term 'instrumental support'.

A secondary finding of the review was the variation in definitions between studies for types of maltreatment and how the same risk or protective factors have different meanings between studies. The lack of clarity in specifying terms and their definitions hampers research as well as prevention efforts. Findings of this review reinforce and enhance knowledge in the field of child maltreatment and not only bring to focus certain risk and protective factors and their associations with specific types of maltreatment but also shed light on areas that require further research which can further knowledge in the field. These findings can also be used to identify vulnerable and at-risk families who are most in need of services, identify and implement protective factors and do these not just based on overall risk present in the family but also based on the type of child maltreatment.

Chapter 7: Introduction to Systematic Review B

Child maltreatment is a global concern resulting in a myriad of negative and serious socio-economic and health consequences (Levey et al., 2017). Since parents are the most common perpetrators of child maltreatment, parental interventions designed to reduce or prevent child maltreatment are considered as effective and appropriate means of supporting vulnerable parents to ensure prevention and reduction of child maltreatment (Yoon et al., 2022). While extensive research has been conducted to understand efficacy of such interventions, evidence is fragmented and far from conclusive on what works for parents to successfully prevent and reduce child maltreatment (Finch et al., 2021).

Child Maltreatment Interventions

Dunst et al. (1990) propose that there exist three different types of interventions: treatment or curative, preventive, and promotion. Curative interventions aim to eliminate or minimise the negative influence of a problem and focus on the remediation of the consequences. Most interventions begin at the treatment stage and even when met with success, there is always the issue that the problems may recur (Dunst et al., 1990). Service providers then turn their attention to preventative strategies to ensure that the occurrence of the issue is minimised. These strategies aim to forestall the occurrence of the problem in question and employ a risk-based approach. However, even prevention does not guarantee that strengthening of capabilities may be long term or achieved, therefore, service providers then move towards intervention modes which consist of promotion strategies. These modes of intervention aim to enhance positive functioning and focus on developing as well as strengthening capabilities to reduce the occurrence of the problem and can include strategies that promote knowledge, awareness, reduce stigma, or encourage help-seeking behaviours (Dunst et al., 1990). Review B focuses on both treatment and preventative child maltreatment interventions.

Child maltreatment interventions are often classified as ‘complex interventions.’ While what constitutes a complex intervention is often debated in literature, there is some consensus that interventions with multiple components addressing several risks with different samples fall under this category (Bates, 2021). The Medical Research Council’s (MRC) guidance on evaluating complex interventions suggests that complexity is based on number of intervention components, difficulty in changing behaviours for those receiving the intervention, variability of outcomes, and variability of groups the intervention is aimed for, among others (Craig et al., 2008). Child maltreatment interventions generally do not have a clear pathway from intervention exposure to outcome, often use multiple components to address a variety of risks across different population subgroups and questions regarding what works, for whom and under what circumstances remain largely unanswered. Petticrew (2011) suggests that complexity can be addressed through ‘unpacking’ interventions into smaller components and parts of the intervention to gain a clearer understanding of their workings.

Theoretical frameworks for review B

The 'Risk and Resilience Ecological Framework' (Brofenbrenner, 1979; Fraser et al., 1999) is chosen as a theoretical framework for Review B. A risk-focused approach is founded on the idea that modification of risk factors can decrease the likelihood of future child maltreatment. In the same way, strengthening protective factors will buffer against the likelihood of child maltreatment (Farrington and Welsh, 2007). This framework is useful in providing guidance about intervention content that can help ameliorate risk across ecological levels.

While not all interventions will implement strategies at all ecological levels, the Risk and Resilience Ecological Framework (Brofenbrenner, 1979; Fraser et al., 1999) can inform researchers and practitioners about the range of influencing factors for child maltreatment, help target and tailor provision of support and guide intervention development. Conceptually, this framework can offer insight into what an 'ideal' parenting intervention for child maltreatment looks like through contextualising parental risk factors and intervention provision ecologically.

Prior studies have used different and interchangeable terms to encapsulate 'intervention components', with some using 'practice elements' (Chorpita and Deleiden, 2009) or 'core components' (Blasé and Fixen, 2013). For Review B, intervention components refer to two main elements of intervention provision: contextual and structural. Contextual refers to provision targeting a specific parental goal or a specific strategy such as parental motivation, managing substance abuse or child development education. The structural element refers to the broad organisation of the intervention and includes setting(s) in which the intervention is delivered (e.g., home visiting, online), and the overall flexibility of the program and whether it is tailored to parents unique needs.

There is also variation in how interventions implement components through the techniques used to deliver them. For instance, an intervention may enhance positive parenting through behavioural practice of optimal interactions while another could use educational means (e.g., lectures, workshops) to achieve the same. Without a shared and systematic understanding of the various intervention components implemented and the specific delivery techniques used there can be missed opportunities to understanding, comparing, and replicating potentially effective intervention content.

To capture techniques used to implement intervention components, the Behaviour Change Technique (BCT) and the Behaviour Change Techniques Taxonomy (BCTTv1) are used (Michie et al., 2013). Grounded in empirical evidence, the BCCTv1 is a 93-item taxonomy of BCTs (see Appendix G) which are the 'active ingredients' of interventions that help facilitate change in behaviour. BCTs[1] are "…designed to alter or redirect causal processes that regulate behaviour" (Michie et al., 2013, p. 23). For instance, an intervention component aimed at equipping

[1] See Appendix H for definitions of each BCT identified in Review B

parents with the necessary skills to address child misbehaviour may be implemented through the BCT of Feedback on behaviour (e.g., giving feedback to parents on their approach to discipline) while another could use the BCT of Instruction on how to perform the behaviour (e.g., teaching parents appropriate ways of managing misbehaviour).

The BCT framework has mostly been used in healthcare interventions such as diabetes care (Pressau et al., 2015), pharmacist interventions to improve out-patients' health outcomes (Scott et al., 2020), and interventions to improve elderly care (Ahmed et al., 2021). Further, it has also been used in systematic reviews of interventions to capture specific techniques used for behaviour change. For instance, Watson and colleagues' (2021) study systematically reviewed evidence on interventions for hand hygiene for older children. Miller and colleagues' (2020) study utilised BCTs to better understand the promotion of self-regulation in health behaviours among children and youth along with providing social ecological influences on development of self-regulation. Only one qualitative, empirical study (Younas and Gutman, 2021) to date, has used BCTs to characterise child maltreatment interventions but this study focused only on intergenerational child maltreatment. The BCT framework is a relatively new development in behavioural psychology and has yet been untested in the context of systematically reviewing child maltreatment intervention evaluations.

While the BCT framework (Michie et al., 2013) was conceptualised and developed alongside the Behaviour Change Wheel (BCW) framework (Michie et al., 2011) primarily for behaviour change in healthcare interventions, this framework can potentially add value to and inform parenting interventions for child maltreatment. Child maltreatment is essentially a parenting behaviour or comprises multiple parenting behaviours (as depicted in the selected definitions of child maltreatment and subtypes in Chapter 2) and while not all risk factors (e.g., single parents) are amenable to change, intervention provision aims to target influences on parenting behaviours that can be shifted either directly or indirectly. For this reason, the BCT framework is chosen to encapsulate delivery of intervention components. It is to be noted that findings from the use of this framework are exploratory in nature to see how the framework fits in this context and how it can be used to characterise intervention provision for child maltreatment.

Unpacking child maltreatment intervention content with the help of the BCT framework guides reporting and synthesis of techniques used to deliver intervention components across included evaluation studies in Review B. It aids in the specification of 'active ingredients' and provides a systematic way of moving focus from reviewing only broad strategies of interventions to capturing nuances in delivery techniques.

Research background

Intervention evidence, especially in relation to effectiveness trials for maltreating parents or those at risk of maltreatment, is limited. The evaluation trials that have been conducted measure parenting behaviour changes either through observations or through psychometric measures (Hurlburt et al., 2013; Zhou et al., 2017).

Recidivism rates for maltreating parents, post-intervention, are also high (Gershater-Molko et al., 2020; MacMillan et al., 2005; Chaffin et al., 2012). Researchers (Whitcombe-Dobbs and Tarren-Sweeney, 2019) argue that the stakes for at-risk and maltreated children are dangerously high if parents' behaviour is unchanged post-participation in an intervention. This in itself is a harmful rather than a neutral outcome. Participation in interventions does not guarantee a change in behaviour of at-risk and maltreating parents, especially since these are a heterogenous group with differing needs, child maltreatment interventions can then be considered experimental. This approach in any other context (e.g., health) would be unacceptable and yet, continues for child maltreatment. It becomes vital then to gain further insight by examining parental risk factors within intervention populations and unpack interventions to scrutinise their content.

Several meta-analysis present conflicting findings on effectiveness of parenting interventions for child maltreatment ranging from little to no effect (Euser et al., 2015) to some effect for certain subgroups of parents (van der Put et al., 2018) and others presenting greater effectiveness for specific components such as multisystemic therapy (Swenson et al., 2010). An umbrella synthesis of meta-analyses reveals that parent training and teaching parenting skills is more effective than wider social support for parents (Ijzendoorn et al., 2019). While Ijzendoorn et al. (2019) umbrella synthesis also considered antecedents of child maltreatment (risk factors), they only included preventive child maltreatment interventions and did not provide detail on type of maltreatment, or the delivery techniques used. An umbrella review of 26 systematic reviews of parenting interventions found several intervention components to be effective for child maltreatment outcomes including home visiting, parent education and multi-component interventions which include childcare, family support and parenting skills (Mikton and Butchart, 2009). Their review, however, did not delineate techniques of delivery nor focused on specific maltreatment types. Mikton and Butchart (2009) also assert that their conclusions are tentative due to low methodological quality of the included systematic reviews.

Prior synthesis of evidence (systematic reviews and meta-analysis) of child maltreatment interventions have not yet comprehensively synthesised prevalent risk characteristics of parents, the various intervention components provided, the specific techniques used to deliver them and their potential contribution to reducing or preventing child maltreatment (Moran et al., 2004; van der Put et al., 2018; Euser et al., 2015). Review B fills this research gap.

Review B unpacks child maltreatment interventions by systematically reviewing intervention evaluations and by looking at the risk factors prevalent in parents and the intervention provision. Intervention provision comprise intervention components which include contextual factors (specific strategies used by interventions, e.g., child development education) and structural factors which encapsulate the setting (e.g., online, community) and flexibility of interventions. Further, Review B also captures the various techniques (e.g., behavioural practice, instruction) used to deliver intervention components. Finally, differences in risk factors and intervention components based on maltreatment type are explored.

In sum, Review B provides a comprehensive, systematic, and ecologically based insight into risk presented by parent populations of child maltreatment interventions, the provision of support provided by such interventions (components and techniques) and any maltreatment-specific variation in both parental risk factors and intervention components.

Research questions for Review B

The research questions for Review B mirror the ones in Review A. In Review A, the questions asked about parental risk and protective factors and their difference by maltreatment type. Review B asks the same questions but from the context of intervention evaluations.

1. What are the risk factors found in the parenting samples of child maltreatment interventions?
2. What intervention components and Behaviour Change Techniques (BCTs) can help prevent or reduce child maltreatment?
3. Do parental risk factors and intervention components differ based on type of child maltreatment?

The first question for Review B allows encapsulation of risk factors present in the parent sample of interventions. It was predicted that there will be overlap in the findings of risk factors in Review A and B and review B summarises evidence that overlaps with that of Review A's findings. The reason for including evidence for a second synthesis of parental risk factors in Review B was because review A only looked at evidence from observational studies. The second systematic review is based on intervention evaluations and hence, gives a window to the real-world context of service provision and service users. It primarily attempts to understand what type of parents are accessing child maltreatment interventions and what are the prevalent risk factors among these parents. This evidence can then lend itself to answering the overarching research question guiding the thesis and presented in the final synthesis in which similarities and differences between risk factors from both reviews are synthesised.

The second question focuses on intervention components of child maltreatment interventions which are extracted from evaluation studies included in the review. This question also includes the various techniques used to implement intervention components and this is captured using the BCT framework (Michie et al., 2013). The final research question emphasises differences in parental risk factors and intervention components based on type of maltreatment. The Risk and Resilience Ecological Framework (Brofenbrenner, 1979; Fraser et al., 1999) is used to synthesise evidence from all three research questions and findings of parental risk factors and intervention provision are presented on the micro, mezzo, and macro ecological levels.

Chapter 8: Methods for Systematic Review B

This systematic review assessed findings from evaluations of parenting interventions with child maltreatment as one of the outcomes. The review focused on evaluation studies from 1980 to January 2022 for parenting interventions.

Stage 1: Review Initiation

Much like Review A, Review B also did not involve any stakeholders in its initiation as the research questions asked of this review were answered sufficiently by the evaluation studies found by the author.

Stage 2: Formulating review questions and method

The overarching question for this research is 'How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?' Review A has already answered questions about risk and protective factors in child maltreatment research and following Review A, Review B's research questions are:

4. What are the risk factors found in the parenting samples of child maltreatment interventions?
5. What intervention components and BCTs can help prevent or reduce child maltreatment?
6. Do parental risk factors and intervention components differ based on type of child maltreatment?

Review B employs both a configurative and aggregative approach[2] as most appropriate for examining the evaluation studies of parenting interventions. The first question can be answered in a configurative manner, but an aggregate approach is considered most suitable for answering the second and third questions.

Stage 3: Developing and refining a search strategy

Inclusion Criteria

As shown in Table 12, the inclusion criteria for Review B includes all intervention evaluation studies published in a journal from 1980 to 2022 which have prevention or reduction of child maltreatment as an outcome and include parents, families or parents-to-be in the intervention population. Publications are only from peer-reviewed journals, and this is done to ensure a high quality of research is used to review the best available evidence. The year range is based on Review A and begins from 1980 to ensure a wide range of evidence is covered and continues till 2022 as the search for Review B began in 2022 and this is done to ensure up-to-date evidence is included.

Evaluations of interventions for child maltreatment where parents are the participating population (but can also include other populations such as children, family members) are the primary target for inclusion in Review B. The evaluation

[2] See Chapter 4, Methods for Systematic Review A, for definitions of both approaches

must include prevention or reduction of all or a subtype of child maltreatment by parents.

Table 12: Inclusion criteria for Review B

Domain	**Inclusion Criteria**
Publication	Journal articles
Study Year	1980-2022
Intervention populations	Must include parents or parents-to-be or vulnerable families (can **also** include children and/or other family members) either maltreating or at risk of maltreating children
Focus of study	Evaluation studies of interventions with a parental child maltreatment outcome; must include details on contextual and/or structural aspects of interventions
Study methods	Impact and outcome evaluations (incl. RCTs); (systematic reviews and meta-analysis of parenting interventions to extract relevant primary studies only and then excluded)
Excluded Studies	Process evaluations, studies not evaluating parenting interventions, studies only looking at fidelity or cost-effectiveness of interventions; evaluations where outcome is not prevention or reduction of child maltreatment, books, opinion pieces/editorials, information on trials to be conducted, studies not in English, studies that are not readily available (and systematic reviews and meta-analysis after extracting primary studies)

While RCTs remain the gold standard for evaluations; they usually provide limiting information pertaining to structural and contextual elements of an intervention. For this reason, along with RCTs, other outcome evaluations are also included to gain a wider perspective on intervention content There is also a requirement of studies, including RCTs, to include sufficient information about the intervention to ensure research questions for Review B are answered. Process intervention evaluations were excluded as they are formative in nature and do not reveal details on intervention components. Systematic reviews and meta-analyses of evaluations were only included for cross-checking purposes and to acquire primary studies if considered to be relevant and if these were not located by the database searches.

Search strategy: Identifying sources of search

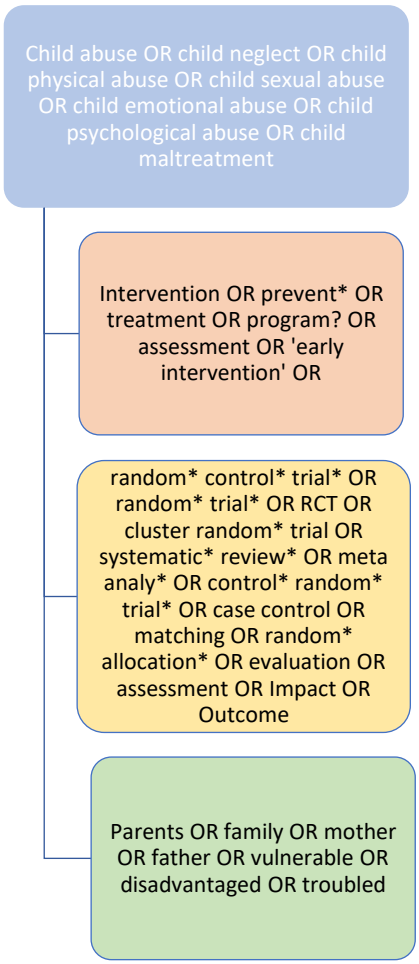
Sources used to conduct the searches were primarily electronic and were accessed through the UCL Library's electronic databases and e-journals facility. Five databases were found to be most appropriate for this search, and these included PsycInfo, PsycExtra, Scopus, Web of Science, and Cochrane Library. Studies that have compared databases have found that PsycInfo holds articles on psychological and psychiatric topics which are not available on other databases (Stevinson and Lawlor, 2004; Brettle, 2001). PsycExtra was chosen as it provides records on conference proceedings, and this was useful as a checking mechanism. Any conference associated with child maltreatment interventions was searched to check if any evaluations were published in a journal and against records found from other databases. This was done so a wide range of intervention evaluations were included in Review B, particularly as grey literature is excluded, and to minimise the chance of leaving relevant interventions out of the review. Scopus was found to be useful,

especially in identifying evaluation studies that other databases may have missed since it brings up citations of relevant studies. Web of Science was included as it is a global citation database and the network covered by this database can also ensure all relevant studies are included in the review. The interface allows long and detailed search strings as well as combining multiple searches together. Searching Web of Science database helped to validate findings from other databases. Finally, Cochrane Library was included as it is up-to-date and holds records of published systematic reviews and meta-analyses. Akin to review A, review B also looked at primary studies from systematic reviews and meta-analyses, as a checking mechanism to ensure relevant intervention evaluations are included. Once relevant primary studies were extracted from the systematic reviews and meta-analyses, these were then excluded. Snowballing to checking reference lists of studies and identify relevant studies was also done.

Identifying search terms

Figure 18 shows the process of identifying the key search terms used when conducting electronic database searches for relevant studies.

Figure 17: Identifying search terms for Review B



The search strategy was developed using the key terms identified.

Conducting the searches

The search for relevant studies was conducted at the UCL Library through the electronic database and e-journal searching facilities. Table 13 shows the details of the searches including search terms used.

Table 13: Database searches - January 2022

Database or E-Journal	Search Strings	Filters	Date of search
Scopus	Parents OR family OR mother OR father AND Intervention OR prevention OR treatment OR program? AND random* control* trial* OR random* trial* OR RCT OR cluster random* trial OR systematic* review* OR meta analy* OR control* random* trial* OR case control OR matching OR random* allocation* OR evaluation OR assessment OR Outcome OR Impact AND Child abuse OR child neglect OR child physical abuse OR child sexual abuse OR child emotional abuse OR child psychological abuse OR child maltreatment	Year: 1980 to 2022 Language: English Access: Full text	04/01/2022
PsycInfo	((Child abuse or child maltreatment or child physical abuse or child sexual abuse or child neglect or child emotional abuse) and (Adversity* or Troubled* families* or Disadvantaged* families* or Vulnerable families* or Family* difficulties*) and (random* control* trial* OR random* trial* OR RCT OR cluster random* trial OR systematic* review* OR meta analy* OR control* random* trial* OR case control OR matching OR random* allocation* OR evaluation OR assessment OR Outcome OR Impact)).af.	Filter on date: 1980-2022. Multi-field search – All fields.	11/01/2022
PsycExtra	Child abuse OR child maltreatment OR child physical abuse OR child sexual abuse OR child neglect OR child emotional abuse AND Intervention OR prevention OR treatment OR program? AND random* control* trial* OR random* trial* OR RCT OR cluster random* trial OR systematic* review* OR meta analy* OR control* random* trial* OR case control OR matching OR random* allocation* OR	No filters	17/01/2022

	evaluation OR assessment OR Outcome OR Impact AND parent* OR mother* OR father*		
Cochrane Library	(Child abuse OR child maltreatment OR child physical abuse OR child sexual abuse OR child neglect OR child emotional abuse AND Intervention OR prevention OR treatment OR program? AND random* control* trial* OR random* trial* OR RCT OR cluster random* trial OR systematic* review* OR meta analy* OR control* random* trial* OR case control OR matching OR random* allocation* OR evaluation OR assessment OR Outcome OR Impact AND parent* OR mother* OR father*)	All fields searched – basic search (not advanced)	18/01/2022
Web of Science	Parents OR family OR mother OR father AND Intervention OR prevention OR treatment OR program? AND random* control* trial* OR random* trial* OR RCT OR cluster random* trial OR systematic* review* OR meta analy* OR control* random* trial* OR case control OR matching OR random* allocation* OR evaluation OR assessment OR Outcome OR Impact AND Child abuse OR child neglect OR child physical abuse OR child sexual abuse OR child emotional abuse OR child psychological abuse OR child maltreatment	No filters	25/01/2022

A total of 2,667 results were obtained from all five databases. Results from the databases searched are presented in Table 14.

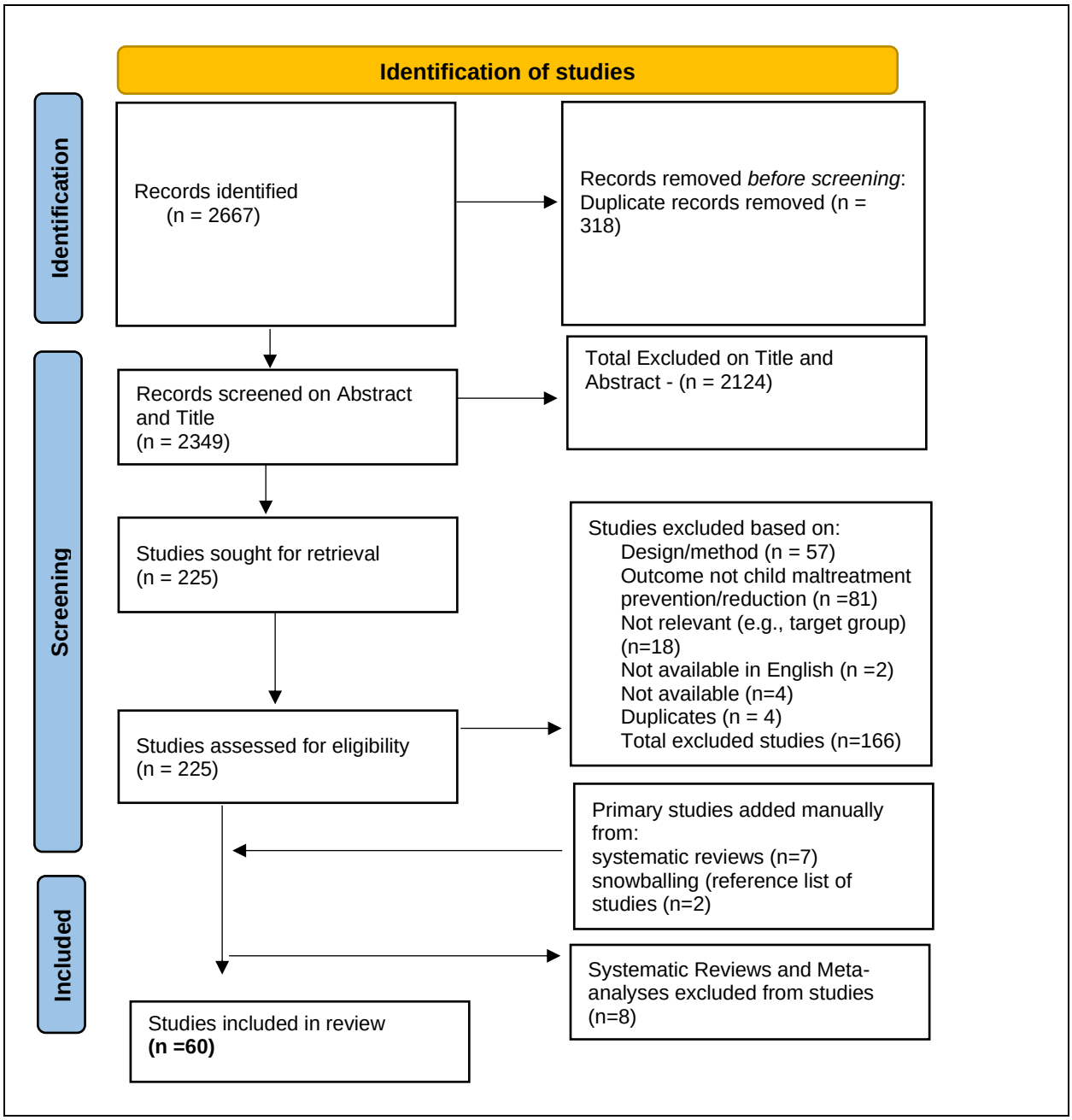
Table 14: Database search results

Database	**Results**
PsycInfo	324
Scopus	407
Web of Science	634
Cochrane Library	1197
PsycExtra	105
Total	**2667**

Screening on Title and Abstract

All records identified from the database searches were exported to EPPI Reviewer 4. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA; Page et al., 2021) flow chart is illustrated in Figure 19. From the 2667 studies, EPPI detected 381 duplicates which were manually checked and then discarded leaving a total of 2349 studies for Title and Abstract screening. A total of 2124 studies were excluded during this stage with the majority being excluded for not meeting specific inclusion criteria including i) not an intervention evaluation, ii) not relevant to the topic, and/or iii) did not include parenting outcomes. A total of 225 studies were considered eligible to be screened for full text screening.

Figure 18: PRISMA flow chart for Review B



Screening on Full Text

The full text of 225 studies were sought from UCL library's database and Google Scholar. Only four studies were not available or could not be found on the Internet nor through contacting the authors of the study. The remaining 221 studies were retrieved and uploaded to EPPI reviewer and assessed for eligibility. Figure 18 illustrates the screening process using a PRISMA flow chart.

The systematic reviews and meta-analyses found from the searches were manually searched for primary studies fitting the inclusion criteria. A total of 291

studies from these were screened and only seven fit the criteria for inclusion. Majority of the studies from these reviews had already been identified through the database searches.

Studies' references were also checked (snowballing) to see if any other relevant intervention evaluations could be identified and only two relevant studies were identified from these references and included. The final intervention evaluations included in Review B totalled 60. From these, there were 46 Randomised Controlled Trials (RCTs) and 14 Quasi-experimental studies.

Stage 4: Describing study characteristics

A data extraction form was devised to capture all relevant information from the intervention evaluations (see Appendix E). This form was guided by the Template for Intervention Description and Replication (TIDier; Hoffman et al., 2014) checklist which facilitates a detailed description of interventions. The only aspect not included in the data extraction form from the checklist related to intervention fidelity and adherence which is outside the scope of the aims of systematic review B.

The data extraction form comprised four sections. The first section included administrative data such as name of evaluation, year of publication, study reference and whether whole or part of the evaluation is included. The second section focused on intervention background and recorded details about goals of the intervention, the target population, length of the intervention, structural factors of interventions capturing setting of the intervention (e.g., home, clinic, etc.), and the type of maltreatment it aimed to prevent or treat. This section also extracted information about contextual factors which included the intervention components. Finally, the way in which intervention components were delivered to parents (e.g., education) were also extracted from the studies.

The third section only looked at risk characteristics found in the intervention population sample and described these in detail. Risk characteristics were extracted from the parent population of the intervention (e.g., substance-abusing teenage mothers), and were located from the population demographics (e.g., inadequate housing, mental illness) as well as baseline measures (e.g., parents' attitude to physical punishment).

The final section of the data extraction form recorded details relevant to quality of the intervention and outcome data. This included information on data analysis, follow up periods, loss to follow up, outcome data (e.g., program effect on child maltreatment outcomes) as well as limitations identified by researchers and the conclusions presented.

Stage 5: Assessing quality of studies

Quality assessment criteria was based on design of included studies. The GRADE approach (Ryan and Hill, 2016) was used to determine quality of Randomised Controlled Trials (RCTs, see Appendix F). Determination of quality was based primarily on risk of bias, indirectness of results and imprecision. Publication bias was not addressed as the included studies were all published and there was no

comparison with unpublished material. Inconsistency was also not included as a criterion because it is used to consider heterogeneity across studies in systematic reviews and not usually used to assess quality of individual RCTs.

The risk of bias assesses the presence of allocation concealment (lack of knowledge about which participant is randomised to treatment or control group) which prevents selection bias. Blinding of participants, investigators, or both about what treatment is received by participants can help prevent observation bias. A follow-up loss greater than 20% was considered a threat to internal validity. Intention-to-treat analysis was an adequate measure to account for any losses. Studies were downgraded by one level (e.g., High to Moderate) if one risk of bias was present and downgraded two levels if more than one risk of bias was identified.

Indirectness was another criterion used to rank quality of RCTs which was based on reporting of all outcomes and representativeness of the sample. Finally, imprecision questioned the preciseness of the effect (if one was given) or if enough information was present in the study to detect an estimate of the effect.

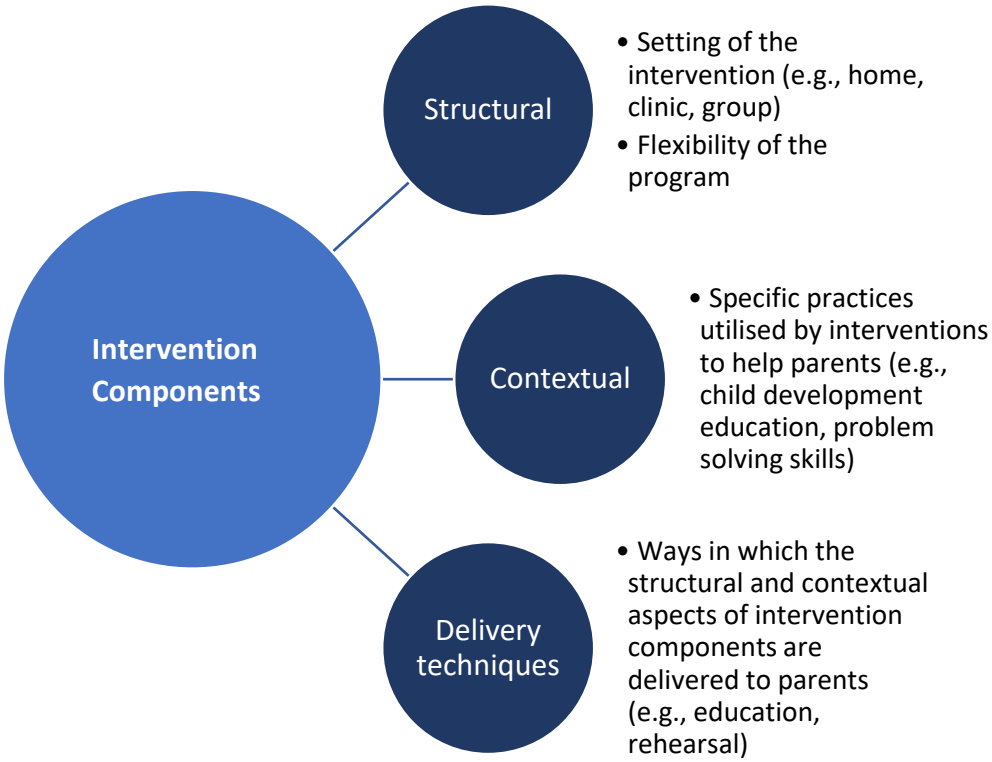
For Quasi-Experimental studies, The Joanna Briggs Institute Critical Appraisal Checklist for Quasi-Experimental Studies (Tufanaru, et al., 2017) was employed (see Appendix F). Assessment criteria for studies included clarity in cause and effect, similarity between treatment and comparison or control groups, measurement of outcomes, complete follow up and methods of accounting for loss to follow up as well as considerations regarding appropriateness of analyses.

Studies were ranked as Very Low, Low, Moderate or High based on the GRADE approach. Within the GRADE approach, RCTs are given a criterion of ‘high’ and were marked up or down based on bias, imprecision, and indirectness. Quasi-experimental studies were given an initial ranking of ‘moderate’ and marked up or down based on presence of bias, validity of outcome measures, loss to follow-up and data analysis.

Stage 6: Extracting and classifying intervention components

Data extraction from the included studies was based on TIDier (Hoffman et al., 2014; Appendix E) as described earlier in Stage 4. In respect to intervention components, three types of data were extracted, and these are presented in Figure 19. These included the structural elements of the intervention which comprised of two key aspects; i) the setting of the intervention (e.g., home, online, community) and ii) whether the program was tailored and flexible. Contextual factors comprised of specific practices or elements to achieve a specific outcome such as enhancing parents’ child development knowledge or developing parental empathy or enhancing problem solving skills. Finally, the techniques used to deliver structural and contextual aspects of the intervention were extracted. These included, for instance, using instructional or educational techniques to teach parents a certain skill or using behavioural practice or rehearsal to improve parent-child interaction.

Figure 19: Intervention components: classification and description



Structural elements of the interventions referred to the broad way in which the intervention was organised, and these were extracted and classified as described by authors of studies resulting in five classifications. This included flexibility of the program, home visits, parenting group sessions, community setting (e.g., visits to clinics), and Internet or online classes.

Classification of contextual factors entailed creating broad categories based on intervention content descriptions and patterns noted across intervention studies. For instance, classification of 'pre-natal health' included all practices used by interventions to promote maternal health during pregnancy and was identified across 12 interventions. This resulted in the creation of 35 classifications for contextual elements of interventions. The structural and contextual elements of interventions were combined (n = 40) and henceforth, referred to as intervention components.

These were then mapped onto the ecological framework based on the level at which the component was implemented. Table 15 presents mapping intervention components to ecological levels with examples. For instance, the intervention component of parental motivation worked with parents' motivation and was categorised under the micro-individual level and this level included all components which target the individual parent but did not have a relationship or familial aspect. For micro-family level, all components which worked to strengthen relationships and/or included the child were classified under this level. This included components of child-parent attachment, reducing parental conflict, and strengthening relationships, among others. Mezzo level components worked at the community or neighbourhood level and included provision of social and/or economic help to

parents such as help with housing, financial training, and referral to other services. All five structural components were mapped onto the mezzo ecological level as these signified overall support from the intervention as nested in the wider community. There were no intervention components identified at the macro level.

Table 15: Mapping intervention components ecologically

Ecological Level	Mapping Intervention components	Examples
Micro-individual	Components to strengthen parental protective factors and those tackling individual parental risk factors	Managing substance misuse, Trauma-informed therapy, Parental self-efficacy, Cognitive appraisal
Micro-family	Components to strengthen relationships within the family mostly involving the child	Child-parent attachment, General caretaking skills, Managing child misbehaviour, Child development education
Mezzo	Components targeting risk factors or strengthening protective factors at the community or neighbourhood level	Social support, Help with housing, Financial training, Home visiting, Referral to services, Help with education and employment
Macro	No components identified	N/A

Finally, coding of delivery techniques was done using the BCTT (v1) Taxonomy (Michie et al., 2013).

Stage 7: Coding of BCTs to capture delivery techniques of intervention components

Behaviour Change Techniques (BCTs) were coded using the BCTT (v1) Taxonomy (Michie et al., 2013; see Appendix G and H for definitions and classifications). A deductive process was utilised to label delivery techniques through the descriptions of intervention components provided by authors of included evaluation studies. Only one BCT was assigned to each structural component as these encapsulated various modes of delivery, overlapping with delivery techniques. The contextual factors, however, used multiple and varying delivery techniques across interventions hence requiring more intensive coding using the BCTT (v1; Michie et al., 2013).

Coding requires complex interpretative judgments and knowledge of BCT framework (Wood et al., 2014). One aspect of coding is not to rely on coders own subjective judgements but to ensure the BCCT (v1) taxonomy (Michie et al., 2013) is adhered to. For this reason, inter-rater reliability was required to ensure there is agreement on the presence or absence of BCTs. A PhD student (RP) with an MSc in Behaviour Change from the Centre of Behaviour Change (UCL) acted as the second coder and inter-rater reliability was initially established at 78%. Discrepancies were

identified, discussed and changes made accordingly until 100% agreement was reached on all BCTs identified.

Stage 6: Synthesis of findings

This section presents the synthesis approach used to answer the research questions for Review B.

The first question asks what are the risk factors found in the parenting samples of child maltreatment interventions? Findings for this question are synthesised across the four ecological levels (micro-individual, micro-family, mezzo and macro) using the Risk and Resilience Ecological Framework (Brofenbrenner, 1979; Fraser et al., 1999). Risk characteristics of parents who received the child maltreatment intervention are extracted from the evaluation studies and presented ecologically using narrative and graphical representation to detail prevalence of parental risk factors across studies.

Secondly, what intervention components and BCTs can help prevent or reduce child maltreatment? In the first instance, summary of intervention characteristics is presented. Secondly, intervention components are extracted from evaluations, and these are presented on each ecological level using graphs to represent frequency and prevalence of components across interventions. These components are then coded using the BCT framework (Michie et al., 2013) and a systems mapping approach visually presents the various BCTs used to deliver intervention components on each ecological level. Systems mapping is a structured and systematic way of presenting the various intervention components, techniques of delivery and how they interact (Cavill et al., 2020). This approach helps to present and synthesise complex and copious information in a manageable way, showing the relationships between intervention components and techniques of delivery (BCTs) across ecological levels. These maps were created using Kumu software (Kumu, 2011)

The final research question asks if parental risk factors and intervention components differ based on type of child maltreatment. Maltreatment specific data is derived from evaluation studies and is synthesised using Venn diagrams for each ecological level to show risk factors and intervention components for the different maltreatment types and any shared factors between maltreatment types. These findings are only presented for intervention evaluations where a specific maltreatment type is identified.

Chapter 9: Findings of Systematic Review B

Quality Assessment and summary characteristics

From the 60 included studies, 46 were RCTs and 14 were of a quasi-experimental design. Ranking of high quality was given to 12 studies of RCT design as shown in Table 16. Thirty-three studies were ranked as moderate of which eight were quasi-experimental and 25 were RCTs. Nine RCTs and six quasi-experimental studies were ranked as low quality. No study had a ranking of very low and none of the 60 studies were excluded due to quality.

Summary of Findings (SoF)

Quality assessment conclusions and summary characteristics for all studies is presented in Table 16 and are divided by study type. Among the 46 RCTs, studies marked down to moderate or low quality were mostly due to non-reporting of allocation concealment or blinding (n = 19), loss at follow up > 20%, high attrition, relatively small and/or non-representative sample. The remainder were assessed as high quality. Follow up period ranged from 3 months to 5 years and three studies assessed short-term outcomes immediately post-intervention. Total samples ranged from 22 to 1,173 participants. Sixteen of the 46 RCT studies showed no effect of the intervention on child maltreatment outcomes. Dumont et al., (2008) study showed some impact (reduction in frequency) one-year post-intervention on parents' self-reported serious physical abuse, psychological abuse, and neglect on the Parent-Child Conflict Tactics Scale (Straus et al., 1997) but no effect was found for CPS substantiated records for physical abuse, psychological abuse, and neglect in years one and two. For studies with effect size (given or calculable) only small or medium effects were noted. Only one study (Jourilles et al., 2010) reported a large effect size (ES = 0.86) for harsh parenting based on parents' self-report on the Revised Conflict Tactics Scale (CTS-R; Straus et al., 1996) but no effect reported for re-referrals to CPS. Luthar and colleagues (2007) RCT showed marginal effects immediately post-intervention on child maltreatment potential, but any benefits noted disappeared at the six-month follow up and reversed for two participants.

From the 14 quasi-experimental studies, six were marked low in quality due to small sample size, self-reporting measures and no observational measures, selection bias in recruitment of participants and lack of long-term follow up. The eight that were ranked as moderate quality had a few limitations such as applicability of western measures to a different cultural context, reliance on substantiated reports of maltreatment only, and lack of sustained effects (not for child maltreatment outcomes) for risk factors such as substance abuse. Follow up periods ranged from three months to 13 years (e.g., longitudinal follow up; Reynolds et al., 2013). Small effects were observed for 10 studies, three studies had medium effects and one study showed no impact.

No studies were marked as very low quality as none had uninterpretable findings nor serious methodological concerns such as errors in findings or very high risk of bias and all 60 evaluation studies were included in Review B after quality appraisal.

Measures

Measurement of the child maltreatment outcome varied between studies, as shown in Table 16, and comprised of self-report measures, observations of the home environment and parent-child interactions, and child welfare referrals and substantiated maltreatment records. Thirty-three studies used only self-report measures and the Child Abuse Potential Inventory (CAPI; Milner, 1986), the Brief Child Abuse Potential Inventory (B-CAPI; Ondersma et al., 2005), and Conflict Tactics Scale (CTS; Straus, 1979) along with the Parent-Child version (PC-CTS; 1998) were the most used. Other self-reporting measures consisted of the Adult-Adolescent Parenting Inventory (AAPI; Bavolek, 1984), a self-reporting measure which captures parenting abusive attitudes (e.g., belief in corporal punishment, lack of empathy towards child's needs and inappropriate expectations) among adolescent and adult parents. One study (Letarte et al., 2010) used the Parenting Practices Interview (PPI; Webster-Stratton, 1998) which is like the AAPI (Bavolek, 1984) as it captures parenting attitudes and practices including harsh physical discipline and appropriate expectations from child and can indicate potential for physical and psychological abuse. Gulirmak and colleagues' (2020) study with Turkish parents employed the Recognition of Emotional Maltreatment Scale (REMS; Uslu et al, 2010) that evaluates parents' knowledge of emotionally abusive behaviours and has convergent validity with the CAPI (Milner et al., 1986). Other self-reporting measures included the Mother–Child Neglect Scale (MCNS; Taylor et al., 2004) and the Child Discipline scale from the UNICEF Multiple Indicator Cluster Survey (UNICEF, 2005).

Child welfare referrals and substantiated records of child maltreatment were acquired from CPS or its equivalent (e.g., Department of Children and Family Services (DCFS); Social Services, etc.) and were employed by 27 of the 60 studies. These were mostly used with additional observation or self-reporting measures. One study (Reynolds et al., 2003) included court records along with substantiated records from CPS. Observational measures included The Home Observation and Measurement of the Environment (HOME; Caldwell & Bradley, 1978) which is a validated observational measure used to assess children's home environment and parenting capacity and can be indicative of child neglect, psychological and /or physical abuse. This inventory was used in one study (Huebner et al., 2002). One study (Galanter et al., 2012) used the Child Interaction Coding System (DPICS; Eyberg et al., 2005) which is used to code observations of parent-child interactions.

Sample and Follow-up

As shown in Table 16, follow up periods began at the commencement of the intervention (baseline) for all 60 studies and ranged from immediately post intervention (e.g., Barth et al., 1988) to 13 years for a retrospective longitudinal evaluation (Reynolds, et al., 2003) with a mean follow up of 17.7 months. Total sample across all included studies was 56,939 with the vast majority comprised of families or parents (91.2% e.g., LeCroy et al., 2020), followed by mothers (5.2% e.g., Ismayilova et al., 2020), pregnant females (1.5% e.g., Fulton, 1991), mother-infant dyads (1.3% e.g., Baggett et al., 2017), parent-child dyads (0.5% e.g., Francis et al., 2021) and only fathers (0.3% e.g., Scott et al., 2021). From the 60 evaluations, 33

were an at-risk sample while 27 parenting samples were maltreating. Parents with CPS referrals which were unsubstantiated were also labelled at-risk and only those with substantiated records were considered a maltreating sample.

Effect on child maltreatment

Forty-one of the 60 included evaluations reported an impact of the intervention on child maltreatment outcomes as displayed in Table 16. From these, majority (n= 31) reported an effect size with some providing a Cohen's d effect (e.g., Thomas et al., 2011), one quasi-experimental evaluation used Cramer's V to report an effect (Scott et al., 2011), and effect size for analysis of ANOVA (n2) was used by one RCT (Knox et al., 2013). Burnson and colleagues' (2021) quasi-experimental evaluation used 'Hedges g' to report an effect size while Lachman and colleagues' (2020) evaluation used IRR (Incidence Rate Ratio) and Odds Ratio (OR) was used one by evaluation to report an effect (Ismayilova et al., 2020). The remaining 10 intervention evaluations used a variety of ways to report impact on child maltreatment. For instance, reporting t-values for the CAPI measure (Fulton et al., 1991), reporting percentage differences between baseline and follow up and between control and intervention groups (e.g., Britner et al., 1997), reporting of Relative Risk (RR; Mejdoubi et al., 2015). Nineteen studies did not report a significant impact on child maltreatment outcome (e.g., Barth et al., 1991; Duggan et al., 2004; Gessner et al., 2008). From the 41 effective interventions, 19 had maltreating parenting samples while 24 were at-risk.

Table 156: Summary of Findings (SoF) Table for included studies (n=60)

Study	Country	Follow up period	Effect size or impact	Measures	Total sample/Maltreating or at-risk	Grade	Comment
Randomised Controlled Trials (RCTs)							
Armstrong (2000)	Australia	18 months	Effect size d = 0.4 (medium effect)	CAPI	181 mothers/at-risk	Moderate	High attrition >20%
Arruabarrena (2022)	Spain	12 months	d = 0.3 (small)	B-CAPI	111 families/at-risk	High	N/A
Baggett (2017)	USA	6 months	No effect	CAPI	159 mother-infant dyads/at-risk	High	N/A
Barlow (2007)	UK	12 months	No effect	CPS records substantiated	131 pregnant women/maltreating	Moderate	Potential adverse event
Barlow (2019)	UK	6 months	d = 0.2 (small effect)	B-CAPI	127 parents/at-risk	High	N/A
Barnes (2017)	UK	12 months	No effect	Adult-Adolescent Parenting Index (AAPI-2)	166 pregnant women/at-risk	High	N/A
Barth (1988)	USA	Post intervention	No effect	CAPI, welfare (substantiated) and medical records	50 mothers/maltreating	Low	Small sample, follow up period not long
Barth (1991)	USA	36 months	No effect	CPS referrals and substantiated (out of home placements), CAPI	191 pregnant women/maltreating	Moderate	CPS referrals higher in intervention group
Black (1994)	USA	18 months	No effect	CAPI	60 pregnant women/at-risk	Moderate	Non-recruitment of pregnant women not in receipt of prenatal services
Bugental (2010)	USA	Post intervention	Phi = 0.2 (small effect)	CTS	96 families/at-risk	Low	Population not representative; loss to follow-up >20%

Chaffin (2011)	USA	30 months	HR = 0.11 (small)	CAPI and child welfare records	192 parents/maltreating	Moderate	Comparative outcome trial with no control group
Dakof (2010)	USA	18 months	d = 0.51 medium effect	CTS, B-CAPI, substantiated child welfare records	62 mothers/maltreating	High	N/A
Dawe (2007)	Australia	6 months	d = 0.3 (small effect)	CAPI	64 parents/at-risk	High	N/A
Dishion (2015)	USA	24 months	No effect	Observations	731 families/at-risk	Moderate	No blinding
Donohue (2014)	USA	10 months	CAPI Abuse = Hedge's g = .41 [-.10, .92]; Child in DFS custody = Hedge's G = -.04 [-.55, .47] (medium effect)	CAPI; records from DFS regarding child placement	72 mothers/maltreating	High	N/A
Duggan (2004)	USA	36 months	No effect	P-CTS, observations, and substantiated CPS records	270 mothers/maltreating	High	N/A
DuMont (2008)	USA	24 months	No Effect - Impact on self -reports of abuse in year 1, no impact on CPS records year 1 and 2	PC-CTS; CPS records (substantiated)	1173 families/maltreating	Moderate	High levels of attrition (50%)
Eddy (2020)	USA	24 months	Abuse potential d = 0.2 (small effect)	CAPI	180 families/at-risk	Moderate	No allocation concealment
Feldman (1992)	Canada	6 months	Reduction in child removal by CPS (82% baseline; 19% at follow up)	Observations and CPS records (child removal)	22 mothers/maltreating	Moderate	Skills not measured in absence of trainer or different environments
Fergusson (2005)	New Zealand	36 months	CTS-PC d = 0.26 (small effect); CPS contact d = 0.91 (Large effect)	PC-CTS; contact with CPS	443 parents/at-risk	Moderate	No blinding reported
Fowler (2017)	USA	30 months	d = 0.3 moderate effect	PC-CTS	150 families/at-risk	Low	Not clear if blinding or allocation

							concealment, loss to follow up >20%
Francis (2021)	Jamaica	3 months	ES (regression coefficient) for parents' use of violence = -0.29, p = 0.04; dose x response ES = -0.42 SD for four sessions and -0.64 for 7 sessions (use of violence)	PC-CTS	223 parent-child dyads/maltreating	High	N/A
Goodman (2021)	USA	60 months	d= 0.18 child maltreatment referrals (small effect)	CPS referrals	549 families/at-risk	Moderate	Blinding not reported
Guastaferro (2018)	USA	12 months	No effect	B-CAPI and PC-CTS	159 families/at-risk	Low	Attrition >20%; allocation concealment not reported
Gulirmak (2021)	Turkey	1.3 months	d = 0.4	Recognition of emotional maltreatment scale	60 parents/at-risk	Low	No blinding and allocation concealment; sample not representative; follow up short
Guterman (2013)	USA	6 months	Psychological aggression d = 0.12 physical assault d = 0.18	Mother–Child Neglect Scale (MCNS); PC-CTS; CPS reports	138 families/maltreating	High	N/A
Ismayilova (2020)	Burkina Faso (West Africa)	24 months	Physical abuse (OR = 0.35, p = .050), 95% CI [0.12, 1.00], and emotional abuse (OR = 0.52, p = .033), 95% CI [0.28, 0.95]	Child Discipline scale from the UNICEF Multiple Indicator Cluster Survey; Child Abuse screening tool	360 mothers/maltreating	Moderate	Allocation concealment not reported

Jouriles (2010)	USA	16 months	ES = 0.86, 95% CI [0.15, 1.53] - (large effect for harsh parenting; no effect for CPS re-referrals)	CTS-R; CPS records for re-referrals	35 families/at-risk	Moderate	More physically abusive families vs. neglecting families; mothers with substance abuse or serious mental health conditions excluded
Khosravan (2018)	Iran	14 months	Lower frequency of slapping (P=0.001), pinching (P=0.03) compared to control group; significant decrease in humiliating child p = 0.001, verbal insults p <0.001 and comparing with others p<0.001	AAPI and child abuse questionnaire developed by researchers	64 families/maltreating	Low	Convenience sampling, self-report measure (validity)
Knox (2013)	USA	3 months	CTS (psychological aggression and physical assault) η2 = 0.06; medium effect	PC-CTS	84 families/maltreating	Moderate	No Blinding, allocation concealment
Lachman (2017)	South Africa	3 months	Positive parenting d = 0.63; self-report child maltreatment - no effect; observed negative parenting d = 0.3	PC-CTS; Sinovuyo Observational Coding System (SOCS; Mlotshwa, 2013)	68 parents/at-risk	Moderate	Small scale trial, short follow up immediately after intervention

Lachman (2020)	Tanzania	4 months	Reductions in child maltreatment - 3 groups (combined: IRR=0.40, 95% CI 0.24 to 0.65)	parent- report and child-report of child maltreatment -ISPCAN Child Abuse Screening Tool	248 families/maltreating	Low	Short follow up term, small sample size of villages; adverse events - 32 cases of severe abuse reported at post- treatment equal in all arms; increase of physical abuse in one intervention arm
LeCroy (2020)	USA	12 months	Total violence d= 0.31; threatened child d = 0.21, spanked child d = 0.23 (small effect)	Total violence score based on self-reported frequency of violence (incl. throwing object at child, slapping, threatening, spanking, etc.)	245 families/maltreating	Moderate	32% loss at follow up; intent to treat approach used
Luthar (2007)	USA	6 months	Marginal effects post treatment but reversed/lost at 6 months FU for child maltreatment potential	Parental Acceptance-Rejection Questionnaire PARQ; Rohner, 2005)	127 mothers/maltreating	Moderate	Allocation concealment and blinding not reported; loss at follow up > 20%
MacMillan (2005)	Canada	36 months	No effect	CAPI, AAPI, CPS records	163 families/at-risk	Moderate	No reporting of allocation concealment or blinding
Mejdoubi (2015)	Netherlands	36 months	CPS reports - RR 0.91, 95% CI 0.28-0.96, p = 0.04	Dutch CPS agency records for referrals	460 mothers/at-risk	High	N/A
Olds (1986)	USA	24 months	Nurse visited teen mums had fewer confirmed reports of abuse and neglect (p = .07); less likely to punish (p = .007)	Substantiated CPS records	400 mothers/maltreating	Moderate	Blinding and concealment not reported, high attrition

			and restrict (p = .04) child compared to controls				
Oveisi (2010)	Iran	2 months	d = 0.5 (medium effect) on PC-CTS total scores	PC-CTS modified version, Parenting scale for dysfunctional parenting	224 mothers/at-risk	Moderate	No observational measures, no blinding or allocation concealment reported
Schaeffer (2021)	USA	18 months	d = 0.37 on child neglect (PC-CTS scale)	PC-CTS (parent and child reports), CPS records for substantiated maltreatment	98 families/maltreating	Moderate	No blinding, small sample, not representative of typical CPS sample (ethnicity)
Scudder (2014)	USA	post intervention	No effect	AAPI and CAPI	82 mothers/at-risk	Moderate	Short term outcomes
Siegel (1980)	USA	12 months	No effect	Observations of mother-infant interactions, CPS records for referrals	321 pregnant women/at-risk	Moderate	Blinding and allocation concealment not reported
Silovsky, (2011)	USA	6 months	No effect	child welfare referrals and out of home placements, CAPI	105 parents/maltreating	High	N/A
Skar (2021)	Colombia	6 months	No effect	PC-CTS scale	176 parents/at-risk	Moderate	No blinding of study participants
Stevens-Simon (2001)	USA	12 months	No effect	PC-CTS scale	171 mother-infant dyads/at-risk	Moderate	Allocation concealment not reported

Taylor (1998)	USA	36 months	No effect	CPS referral records	213 mother-infant dyads/at-risk	Low	No blinding or allocation concealment
Thomas (2011)	Australia	3 months	Child abuse potential d = 0.4 medium effect	CAPI and CPS referrals	150 mothers/at-risk	Low	Short follow up, high attrition, no blinding/allocation concealment
Quasi Experimental studies							
Britner (1997)	USA	36 months	Founded reports - 6.69% (n=314) hospital control group; 7.29% (n=96) home visit control group, 1.60% (n = 125) treatment group	AAPI; substantiated reports from CPS	535 mothers/maltreating	Low	Small sample size and possible selection bias
Burnson (2021)	USA	12 months	Substantiated physical abuse Hedge's g = 0.12; p = 0.01 (small effect)	CPS referrals	4276 parents/maltreating	Moderate	Some confounding not accounted for
Fennell (1998)	USA	Pre-post	Parents' CAPI scores decreased from 290 to 223 (z = 2.89, p =.003)	CAPI	18 parents/at-risk	Low	Small sample, self-reporting
Frye (2008)	Australia	3 months	P = .02 F = 4.68 Pre-treatment CAPI - 197.81 (113.65) Post treatment CAPI - 142.00 (87.29) FU - 136.09 (91.36)	CAPI	12 mothers/at-risk	Low	Small sample, self-reporting measures
Fulton (1991)	USA	pre-post	CAPI - significant difference t = 1.95, p < .03	CAPI	76 pregnant adolescents/at-risk	Moderate	Short-term effectiveness, self-reporting
Galanter (2012)	USA	pre-post	Effect size of 0.541 for AAPI; DPICS effect size 0.87	AAPI DPICS	83 parent-child dyads/at-risk	Low	Single-group design, small sample size

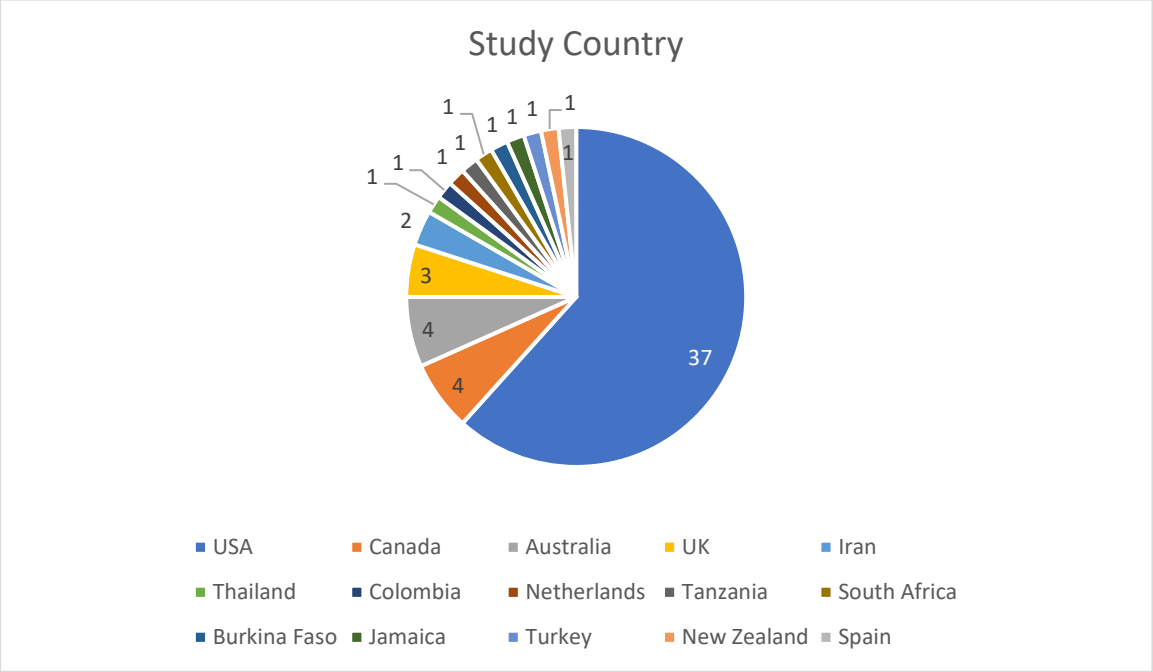
Gessner (2008)	USA	72 months	No effect	CPS referrals	40,099 families/at-risk	Moderate	CPS reports not a reflection of actual maltreatment
Harder (2005)	USA	12 months	Small effect on recidivism rates	Substantiated reports to CPS	246 parents/maltreating	Moderate	Data collected was from those who voluntarily agreed to services
Huebner (2002)	USA	Pre-post	Effect of 0.26 on HOME scale improvement in treatment group	HOME	199 parents/at-risk	Moderate	Parents continued to have issues with substance abuse relapse and parenting during and post treatment
John (1984)	USA	21 months	Percentage of recurrence = Intervention group - 10%; Control 21% $p < .05$)	Direct observations during home visits, reports of abuse/neglect to CPS	97 families/maltreating	Low	Need more long-term data, lack of sufficient control demographics
Letarte (2010)	Canada	4 months	Less harsh discipline [$F (1, 26) = 11.77$; $p< .05$; Êta = 0.26 (moderate)]; appropriate discipline [$F (1, 26) = 14.41$; $p< .001$; Êta = 0.31 (moderate)	Parenting Practice Interview (PPI)	35 parents/at-risk	Low	Small sample, only self-report measures and no observational measures, no long-term outcomes assessed.
Reynolds (2003)	USA	156 months	d = .40 Medium effect	Substantiated reports of child maltreatment	1408 families/maltreating	Moderate	Reliance on substantiated reports, potential for incomplete data
Sawasdipanich (2010)	Thailand	3.6 months	Physical abuse potential d = 0.2 (small effect)	CAPI and AAPI	116 parents/at-risk	Moderate	Measures translated for Thai respondents

Scott (2021)	Canada	24 months	Substantiated re-referral - Cramer's V = 0.17 – small effect	Substantiated re-referral of father-perpetrated maltreatment from welfare records	185 fathers/maltreating	Moderate	Reliance on official reports - underestimate of actual maltreatment

Study Country

Table 16 also lists the countries where each intervention evaluation was conducted, and this spread of the included studies across countries is illustrated in Figure 20. Fifteen countries are represented in the included studies with 61% of studies originating from USA, 7% each from Canada and Australia, 5% from the UK and 3% from Iran. The remaining 24% included Tanzania, Colombia, Turkey, Jamaica, Burkina Faso (West Africa), Thailand, South Africa, Spain, Netherlands, and New Zealand.

Figure 20: Countries represented across included studies



1. What risk factors are found in parenting samples of child maltreatment interventions?

Risk characteristics in the 60 studies are represented based on the Risk and Resilience Ecological Framework (Bronfenbrenner, 1979; Kirby and Fraser, 1997) with micro-individual, micro-family, mezzo and macro risk factors presented separately. Six studies only had two risk characteristics in the intervention sample (e.g., Dawe et al., 2007 – substance abuse and single parents) and four only had one risk characteristic (e.g., Lachman et al., 2020 – poverty). The remaining 50 studies had three or more risk factors present in the intervention population sample. Across the 60 intervention evaluations, micro-individual level risk factors were represented in the sample of 43 interventions, micro-family level risk characteristics were present in 45 intervention samples, mezzo factors were in 39 samples while macro risk factors were present in six intervention samples.

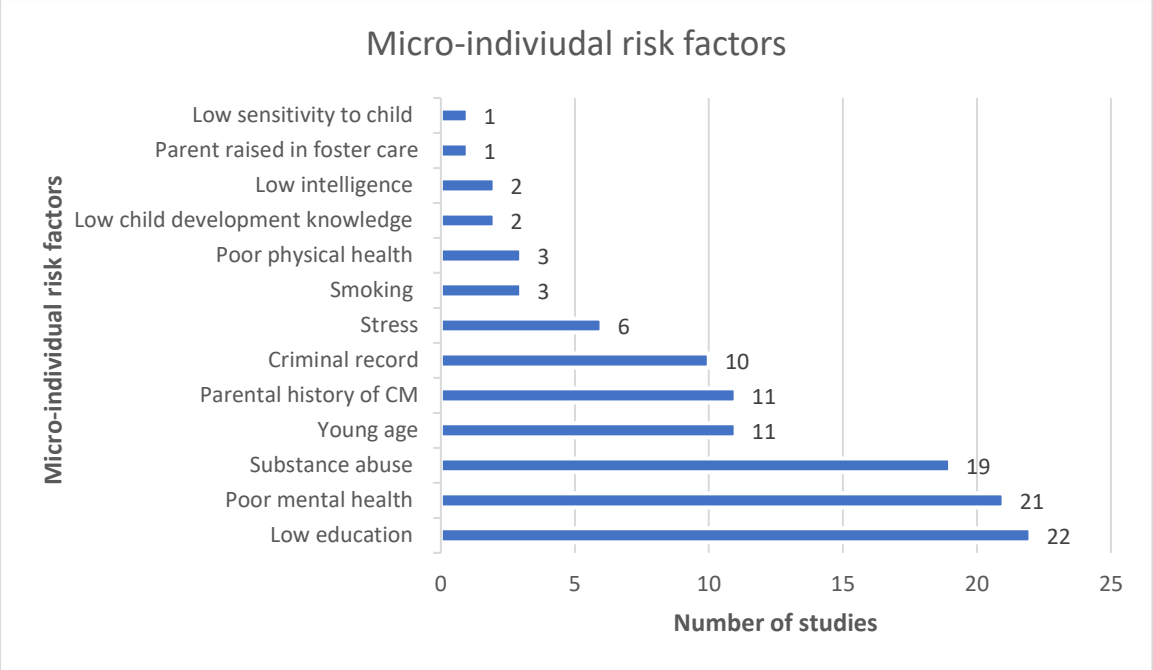
Micro-Individual Risk Characteristics

As seen in Figure 21, from the 60 included studies, 22 evaluations had low education as a risk characteristic in their sample. Low education was defined as up to or below high school level in most studies. Two studies (Fergusson et al., 2005; Barlow et al., 2007) considered a lack of educational qualifications as low education. Other studies (e.g., Gessner et al., 2008; Dakof et al., 2010; Armstrong et al., 2010; Bugental et al., 2010; Scudder et al., 2014) categorised low education as less than 12 years or less than high school. Three studies were conducted in rural settings in Tanzania (Lachman et al., 2020), South Africa (Lachman et al., 2017) and Burkina Faso in West Africa (Ismayilova et al., 2020) and included a population that had low literacy levels.

Poor mental health was the second most common micro-individual level risk factor and was found in 21 evaluation samples. Nine studies did not specify a type of mental health issue (e.g., Armstrong et al., 2000; Barlow et al., 2007; Duggan et al., 2004; Silovsky et al., 2011) and only referred to it as poor mental health. Eleven evaluations specified depression (e.g., Taylor et al., 1998, Guterman et al., 2013; Dishion et al., 2015). Dakof and colleagues (2010) evaluation included 62 substance-abusing mothers with 68% of the sample experiencing serious depression, 55% had suffered anxiety, 19% had suicidal ideation and 13% suffered from hallucinations. It was unclear from the study if any of the mental health issues were a consequence of substance abuse.

Substance abuse was represented in all 19 studies as drug and/or alcohol misuse (e.g., Daokf et al., 2010; Donohue et al., 2014; Eddy et al., 2020; Frye et al., 2008). Black and colleagues (1994) evaluation comprised of a sample of 60 mothers who had used cocaine and/or heroine during the pre-natal period, Gessner and colleagues (2008) RCT had pre-natal alcohol use as a risk characteristic while another evaluation (Huebner et al., 2002) had pre- and post-natal drug use in the sample.

Figure 21: Micro-individual risk factors and frequency in studies



Young parental age and parental history of childhood maltreatment were each found in the samples of 11 intervention evaluations. Young age was defined across all studies as equal to or less than 24 years (e.g., Barnes et al., 2017; DuMont et al., 2008; Siegel et al., 1980). Adolescent mothers were the target sample for four intervention evaluations (Britner et al., 1997; Olds et al., 1986; Stevens-Simon et al., 2001;). Parental childhood history of maltreatment was another risk characteristic found in the intervention sample. Seven of the 11 evaluations had both parents' history of childhood maltreatment as a risk characteristic (LeCroy et al., 2020; Lachman et al., 2017; Huebner et al., 2002; Harder et al., 2005; Fergusson et al., 2005; DuMont et al., 2008; Bugental et al., 2010;) and four evaluations had only maternal history of childhood maltreatment (e.g., Taylor et al., 1998; Duggan et al., 2004; Dakof et al., 2010; Armstrong et al., 2000) in the sample.

Parents' criminal record was a risk characteristic in 10 intervention samples (e.g., Barlow et al., 2019; Barth et al., 1998; Barth et al., 1991; Scott et al., 2021). Eddy and colleagues' (2020) evaluation had both a history of criminality of parents and prior incarceration as a risk characteristic.

High stress was a risk factor present in the sample of six interventions. From these, high parenting stress was present in three intervention samples (Guterman et al., 2013; Huebner et al., 2002; Thomas et al., 2011), high life stress in one (Barlow et al., 2019) while Barnes and colleagues (2017) evaluation did not specify a type of stress. Baggett and colleagues' (2017) evaluation had an intervention sample with both high life stress and high parenting stress.

Smoking and poor physical health were each found in three intervention samples. All three studies (Mejdoubi et al., 2015; Gessner et al., 2008; Barnes et al., 2017) had maternal *prenatal* smoking as a risk characteristic. Poor physical health was not clearly specified in Barth and colleagues (1988) evaluation comprising 50

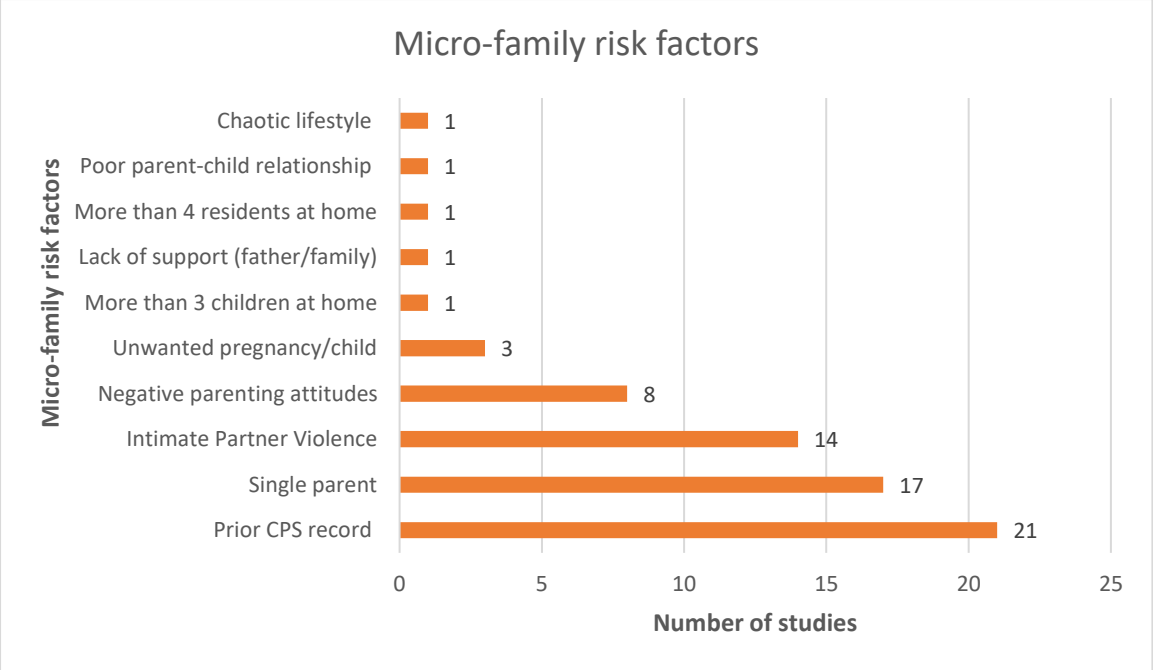
pregnant women. In the other two evaluations (Black et al., 1994; Lachman et al., 2017) poor physical health was denoted by participants having the human immunodeficiency virus (HIV) or acquired immune deficiency syndrome (AIDS).

Low intelligence was a risk factor in two studies (Barth et al., 1991; Feldman et al., 1998). Barth and colleagues' study did not specify any criteria for accessing intelligence in the sample, however, Feldman and colleagues' study (1998) had a sample which were referred by professionals to child welfare services due to concerns about the mothers not being able to care for their infants because of their low IQ. This was based on the Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1981) scores which classifies scores between 90 and 109 as average. The 22 mothers in the sample scored below 75. Another risk characteristic present in the sample of two interventions was maternal low self-esteem (Barth et al., 1988 and Barth et al., 1991) with both interventions comprising a total sample of 241 mothers. Inadequate or low levels of child development knowledge were also found in two intervention populations (Britner et al., 1997; Baggett et al., 2017). Low sensitivity to child (Thomas et al., 2011) and a parent raised in foster care (Black et al., 1994) were found in one intervention sample each.

Micro-Family Risk Characteristics

The distribution of micro-family level risk characteristics in the intervention samples of included studies is illustrated in Figure 22. The most common risk factor at the micro-family level in the samples was a prior record of child maltreatment with child protective or child welfare services found in 21 interventions. Seven of these were substantiated reports (e.g., DuMont et al., 2008; Schaeffer et al., 2021), twelve included non-substantiated referrals (e.g., Bugental et al., 2010; Barlow et al., 2019) to CPS and two had both substantiated and non-substantiated records (Harder et al.,2005; Burnson et al., 2021) as well as records on child removal from home due to maltreatment.

Figure 22: Micro-family risk factors and frequency in studies



Schaeffer and colleagues' (2021) evaluation of an intervention comprising a sample of 98 families all of whom had prior substantiated abuse records for physical abuse or neglect. Similarly, another evaluation (MacMillan et al., 2005) also considered physical abuse or neglect records of 163 families but these were unsubstantiated referrals. Harder and colleagues' (2010) intervention evaluation with 246 parents had majority referred to CPS for neglect or physical abuse and a few also had children removed from the home. Feldman and colleagues' (1991) evaluation with 22 mothers with substantiated physical abuse or neglect reports had nine of these mothers under supervision orders from CPS during the evaluation period.

The second most common risk characteristic at the micro-family level was single parent status and this was present in the sample of 17 interventions. Five of these only had single mothers in the sample (e.g., Fulton et al., 1991) and the remaining 12 had parents' single status as a risk characteristic (e.g., Eddy et al., 2020). Fifteen of the 17 interventions with single parent as risk in the sample also had low income, welfare receipt or unemployment as a co-occurring mezzo-level risk (e.g., Fergusson et al., 2005).

Intimate partner violence (IPV) was found in 14 intervention samples. Scott and colleagues' (2021) evaluation of an intervention with 185 fathers had both substantiated records of child maltreatment and physical violence to the mother as risk characteristics. IPV was mostly described as 'domestic violence' in the evaluations (e.g., Frye et al., 2008; Duggan et al., 2004; Barlow et al., 2019) with one describing it as 'history of partner violence' (Bugental et al., 2010) while another characterised it as 'abusive partner' (Barnes et al., 2017). There were no evaluations that had mother perpetrated IPV as a risk characteristic.

Eight interventions had samples with ‘negative parenting attitudes’ as a risk characteristic. These negative attitudes included several parenting beliefs or negative interactions with the child. For instance, two studies described this as belief in harsh physical punishment (Bugental et al., 2010; Galanter et al., 2010) while Duggan and colleagues’ (2004) RCT with 270 mothers characterised it as having unrealistic expectations from child. An intervention evaluation conducted with 60 Turkish parents (Gulirmak et al., 2020) included democratic parenting attitudes and strict discipline as a risk characteristic. Galanter and colleagues’ (2010) study used the AAPI (Bavolek, 1984) measure to assess negative parental attitudes (pre-intervention) which included lack of empathy to child while negative interactions with child including use of ‘negative talk’ were assessed using observations.

An unwanted child or unplanned pregnancy was a risk factor found in samples of seven interventions (e.g., Fulton et al., 1991; Armstrong et al., 2000). Fergusson and colleagues’ (2005) evaluation of an intervention with 443 parents had 80% with an unplanned pregnancy while another evaluation (Barlow et al., 2007) with 131 pregnant women of which 55% reported that the pregnancy was unwanted. Three of these intervention samples were pregnant women including one with pregnant adolescents in their first or second trimester (Fulton et al., 1991). From the remaining four, one intervention included a sample of mothers with new-born infants (e.g., Duggan et al., 2004) and three interventions included both parents (e.g., Fergusson et al., 2005).

Three intervention samples also had the risk characteristic of parents perceiving the child as difficult (Bugental et al., 2010) or having problems with managing care of the child (Barth et al., 1991) or the child’s behaviour (Arruabarrena, et al., 2022). Having more than three children resident at home was another risk characteristic found in the sample of Reynolds and colleagues’ (2003) evaluation of an intervention with 1408 families residing in a high poverty area and nearly 60% had four or more children at home. This was akin to another evaluation (Skar et al., 2021) with a total sample of 176 parents who had residents in the home ranging from 2-17 with a mean of 4.8 residents, however, this was not limited to children in the home but included adults as well.

A lack of support specifically from family or from the father was a risk factor present in the sample of 191 mothers (Barth et al., 1991). It was unclear from the evaluation the specific type of support which was lacking and whether it was financial or help with childcare or other types of support. The same intervention evaluation (Barth et al., 1991) also had ‘chaotic lifestyle’ as a risk characteristic but failed to clarify what constituted a chaotic lifestyle. However, a screening instrument which was based on prenatal assessment of risk for child abuse and neglect (Gray et al., 1979; Murphy et al., 1985) was utilised and the intervention sample had multiple individual and family-level risk factors.

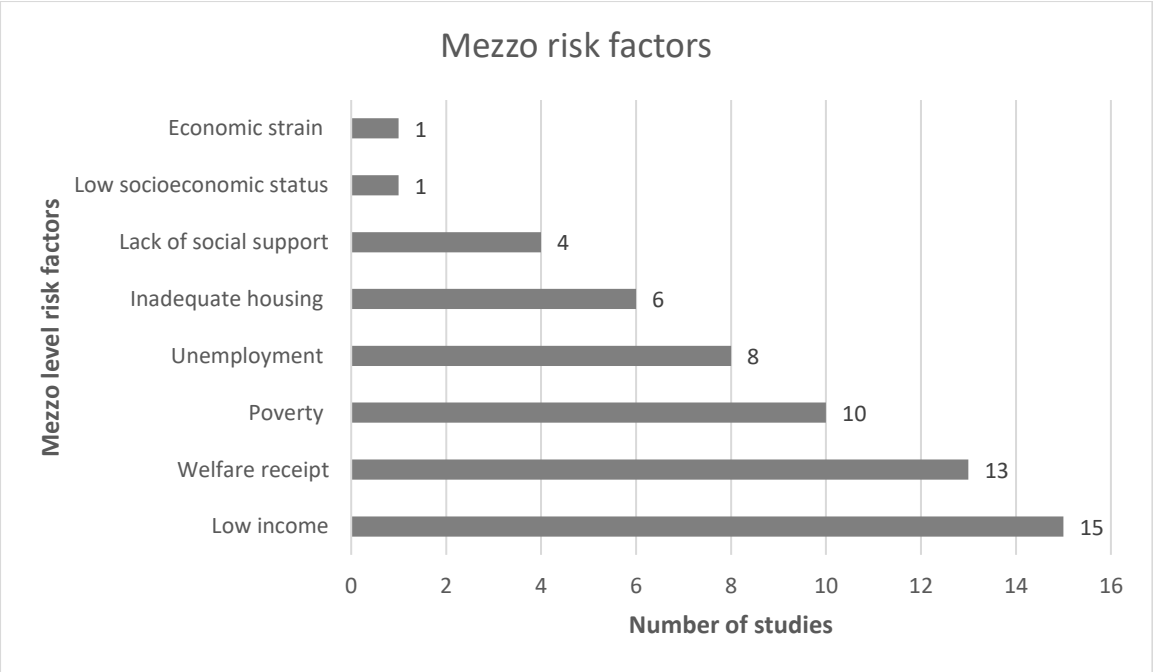
Finally, one intervention sample had ‘dysfunctional parent-child relationship’ as a risk factor (Huebner et al., 2002). The sample consisted of 199 low-income parents of which 95% were mothers. Baseline measures using the Parenting Stress Index (PSI; Abidin, 1997) revealed that parents in the sample viewed their children’s

behaviour as a key source of stress and scored above the cut-off for dysfunctional parent-child relationship.

Mezzo level risk factors

Mezzo level risk factors were present in 39 of the intervention samples in the included studies and are illustrated in Figure 23. Some of the risk characteristics seemed to overlap, for instance, low income, poverty, and low socio-economic status. However, these were categorised separately because the studies also identified, defined, and measured them in different ways, and they frequently co-occurred in the study samples. The most common risk characteristic was low household income present in 15 samples as illustrated in Figure 22. However, income thresholds and what was considered low income differed immensely between studies. For instance, Eddy and colleagues' (2020) intervention evaluation with a sample of 180 families had an income below $20,000 per annum and 80% supported a family of three or more people and 20% supported a family of five or more on this income. Taylor and colleagues' (1998) RCT with 213 adolescent mothers and their infants of which 45% had a monthly income of less than $500 a month. In a sample of 35 single-parent families, the income for 63% stood at less than $15,000 per year (Letarte et al., 2010). Huebner and colleagues' (2002) study evaluated an intervention with 199 parents all of whom were characterised as low-income, but no specific income threshold was clarified. Similarly, an intervention sample of 159 families comprised of 144 families which were from low-income households, but no specific income amount was stated (Guastaferro et al., 2018).

Figure 23: Mezzo level risk factors and frequency in studies



The second most common mezzo-level risk factor was receipt of welfare and was found in 13 samples. Nine of these intervention studies only listed receipt of welfare as a risk characteristic (e.g., MacMillan et al., 2005; Letarte et al., 2010; Huebner et al., 2002). Steven-Simons and colleagues' (2001) RCT had a sample of

171 adolescent mother-infant dyads of which 94% were receiving Medicaid (help with healthcare costs). Another RCT (Skar et al., 2021) had a sample of 105 parents who were all in receipt of nutritional and health support. An intervention sample of 82 mothers had 56% receiving disability or unemployment benefits from the government (Scudder et al., 2014) while another sample of 1408 families had 72% eligible for Medicaid or subsidised meals for children in school.

Poverty was the third most common mezzo-level risk factor found in 10 intervention samples. Like low-income, there were varying thresholds that constituted poverty. For example, Barlow and colleagues' (2017) evaluation of an intervention with a sample of 131 pregnant women of which 62% earned less than $200 a week and were classified as poor. In Chaffin and colleagues' (2011) study of evaluating an intervention with 192 parents, 75% fell below the federal poverty threshold and had a median income of $900 a month. Two other evaluations (Fowler et al., 2017 and Silovsky et al., 2011) also included an intervention population below the poverty threshold based on government guidelines. Ismayilova and colleagues' (2020) conducted an RCT of an intervention in West Africa in impoverished villages and poverty was based on crop yield, ownership of livestock and land, number of dependent children and experiences of hunger.

Parental unemployment was found in the population sample of 8 interventions and inadequate housing was found in six. MacMillan and colleagues' (2005) study had 75% of 163 parents unemployed, one study with 181 pregnant teenagers had 80% not in paid work (Fulton et al., 1991). Another study had 71% of 62 substance abusing mothers unemployed (Dakof et al., 2010).

Description of inadequate housing varied in the six evaluations. For instance, Fowler and colleagues' (2015) intervention evaluation included 150 families who faced the risk of out of home placement for their children due to inadequate housing. This included homelessness or living in homes with poor and potentially harmful conditions not suitable for habitation. In one evaluation (Harder, 2005), 45% of 246 families had inadequate housing but this was not clearly described in the evaluation. Ismayilova and colleagues' (2020) RCT with 360 families from impoverished villages in Burkina Faso (West Africa), inadequate housing constituted crowding with 10 or more people living in small huts. Similarly, Lachman and colleagues' (2017) evaluation with 68 parents from a highly deprived area in South Africa, used the term informal housing which constituted living in tin shacks with five or more people.

Lack of social support was identified in the population samples of four interventions, and this included inadequate childcare (Harder et al., 2005), low social and emotional support from peers, relatives, and community (Taylor et al., 1998), lack of supportive relationships (Barth et al., 1988), and limited social support networks (Britner et al., 1997).

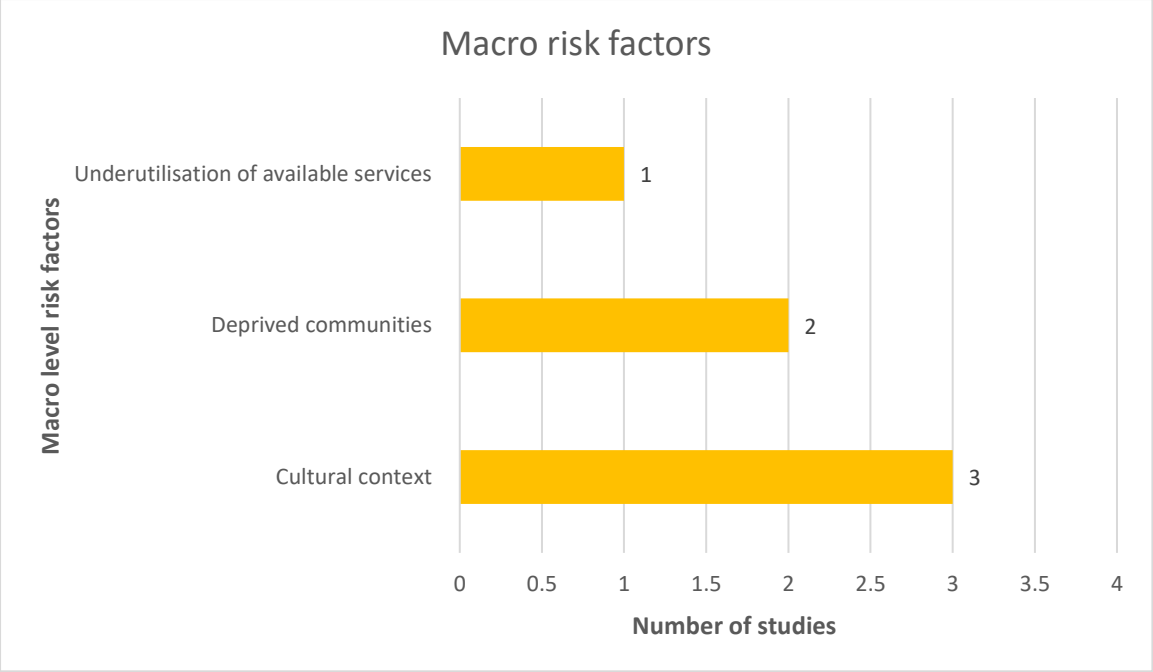
Low socio-economic status was a risk characteristic present in one parenting intervention sample. Olds and colleagues' (1986) intervention evaluation included a sample of 400 mothers and 61% of these belonged to low socioeconomic status based on Hollingshead Index of Social Status which includes classifications based on education and occupation (Hollingshead, 1976). The study classified the sample

as employed or unemployed and if employed, as unskilled or semi-skilled labourers. Economic strain was identified in one intervention sample (Baggett et al., 2017) as a risk characteristic and this was assessed using a Likert scale which asked questions about finances and ability to pay bills, amount of savings, and availability of money for various activities.

Macro level risk characteristics

There were six intervention population samples that included macro-level risk characteristics as can be seen in Figure 24. One of these was underutilisation of available services (Barth et al., 1991). This intervention included a sample of 191 vulnerable mothers with infants who were underutilising available services which included healthcare, social services, and other wider community services.

Figure 24: Macro risk factors and frequency



Two interventions had samples from communities which were either high in poverty and eligible for federal funding (Reynolds et al., 2013) and one sample which belonged to an area with high poverty, high levels of teen pregnancy, high infant mortality, and low prenatal care (DuMont et al., 2008). Finally, three intervention samples belonged to countries (Iran, Jamaica, and Thailand) where certain abusive parenting practices had a high prevalence among parents possibly due to cultural acceptance of those practices. For instance, Sawasdipanich and colleagues' (2010) evaluation of an intervention with a sample of Thai parents aimed to alter parental attitudes and practices which may be indicative of child maltreatment and include harsh physical punishment and unrealistic expectations from child (e.g., submission and complete obedience to parent). Similarly, Oveisi and colleagues' (2010) evaluation of an intervention conducted with 224 mothers in Iran aimed to reduce negative parenting practices to prevent child physical and emotional abuse by teaching mothers alternative disciplining strategies. Both these evaluations included interventions which did not identify any other risk characteristic in the population

samples on the micro or mezzo levels. Finally, Francis and colleagues' (2021) evaluation of an intervention in Jamaica with 223 parent-child dyads which aimed to prevent physical abuse was included as physical abuse has a high prevalence in Jamaica (Lansford and Deater-Deckerd, 2012). However, this evaluation also had a population sample with inadequate housing (mezzo-level) as a risk characteristic.

2. What intervention components and BCTs can help prevent or reduce child maltreatment?

Intervention Summary Characteristics

Summary characteristics of interventions in the 60 included studies are presented in Table 17. There were nine intervention evaluations where the intervention name was not stated. Two studies evaluated the Incredible Years Program (Arruabarenna et al., 2022; Letarte et al., 2010), two studies evaluated Child Parent Enrichment Project (CPEP; Barth et al., 1988 and Barth, 1991), and two evaluated Parent-Child Interaction Therapy (PCIT; Galanter et al., 2012 and Thomas et al., 2011). There were also two studies that evaluated the Parent Aide Program (Harder et al., 2005; Guterman et al., 2013). Finally, three studies evaluated the Parents Under Pressure program (PUP). There were differences in the implementation and populations of the interventions that were evaluated more than once. For instance, Barlow and colleagues' (2019) evaluation of PUP comprised a population sample of high-risk pregnant women, Dawe, and colleagues' (2007) evaluation was with substance abusing families on methadone treatment whilst Frye and colleagues' (2008) evaluation of PUP was with a sample of mothers recruited from prisons (see section on Micro level risk factors). Healthy Families America model of intervention was implemented in three states namely Alaska (Gessner et al., 2008), New York (DuMont et al., 2008) and Arizona (LeCroy et al., 2020).

All interventions aimed to improve parenting outcomes and reduce risk of child maltreatment or its recurrence. Three intervention evaluations did not clarify the length or intensity of the interventions (e.g., John et al., 1984; Oveisi et al., 2010). For the remaining 58, length of interventions varied from brief 3-sessions offered annually (Dishion et al., 2015) to six years (Reynolds et al., 2013). Length of a session (e.g., lecture, workshop, group classes, counselling) was, on average, one hour. For some interventions, visits tapered off or diminished in frequency as parents made progress in the program (e.g., Duggan et al., 2004). Interventions were delivered by a variety of trained staff, family support workers, social workers, and trained paraprofessionals as well as clinicians including therapists, nurses, paediatricians, and health visitors.

Table 167: Summary characteristics of interventions

Study	Intervention name	Length and intensity	Intervention delivered by
Armstrong et al., (2000)	Not stated	6 weekly visits (post-natal) - diminishing frequency. 20 to 60 minutes visits – total 18	Social workers and child health nurses
Arruabarrena et al., (2022)	Incredible Years Parenting and Child Treatment Programs	Over 23 years, 19 weekly - 2-hour sessions + home visitation component 4 x 1-1.5-hour home	Accredited Incredible Years trainers with backgrounds in psychology
Baggett et al., (2017)	e-PALS Baby-Net	11 sessions over 6 months	Baby Net Coaches - professional degrees in psychology, social work
Barlow et al., (2007)	Early home visiting based on the Family Partnership Model	Weekly home visiting from 6 months antenatally to 12 months postnatally	Trained health visitors
Barlow et al., (2019)	Parents Under Pressure (PUP)	12 sessions over 4 months	Family support workers
Barnes et al., (2017)	Group Family Nurse Partnership (gFNP)	44 group meetings over 18 months – 2-hour sessions	Experienced FNP family nurses
Barth et al., (1988)	Child Parent Enrichment Project (CPEP).	6 months home visiting - twice a month	Trained paraprofessionals
Barth et al., (1991)	Child Parent Enrichment Project (CPEP)	Over 6 months - average number of home visits 11	Trained paraprofessionals
Black et al., (1994)	SPICE - special parent/infant care and enrichment + home visitation	2 visits ante-natal, biweekly visits for 18 months post birth (1-hour sessions)	Community health nurses
Britner et al., (1997)	Not stated	Classes on 12-week cycle, 3 times a year	Programme staff
Bugental et al., (2010)	Home visitation based on Healthy Start Program	20 visits - length not stated	Trained professionals
Burnson et al., (2021)	Parents Anonymous	Variation in length. Median treatment in sample - 152 days (~ 5 months)	Elected parent group leader and professional group facilitator
Chaffin et al., (2011)	PCIT + with a self-motivational (SM) orientation	6-14 sessions	Master's-level agency therapists
Dakof et al., (2010)	Engaging Moms Program (EMP)	40 hours of contact with counsellor	Therapists

Dawe et al., (2007)	Parents Under Pressure (PUP) program	Weekly over 10-12 weeks, 1–2-hour sessions	Trained professionals
Dishion et al., (2015)	The Family Check-Up	3 session-based intervention per year	Trained consultant
Donohue et al., (2014)	Family Behaviour Therapy (FBT)	75-minutes session over 6 months, total 20 sessions	Cognitive behaviour therapists
Duggan et al., (2004)	Hawaii Healthy Start Program	3-5 years with weekly visits to new-born home - diminishing frequency.	Trained Home visitors
DuMont et al., (2008)	Healthy Families New York (HFNY)	Biweekly during pregnancy and weekly after mother gives birth. 5 years	Family support workers
Eddy et al., (2020)	Relief Nursery Program	2 years	Trained teachers and support voluntary workers
Feldman et al., (1992)	Not stated	60-90 minutes session over 8 weeks	Trainers with undergraduate degrees in psychology or early childhood education
Fennell et al., (1998)	Systematic Training for Effective Parenting (STEP)	9 weekly study groups - 1.5 hours each.	Psychiatric mental health nurse
Fergusson et al., (2005)	Early Start	From birth till pre-school age - intensity not clear	Trained family support workers
Fowler et al., (2017)	Family Unification Program (FUP)	Housing vouchers -valid till income increases	Housing professionals and housing advocates
Francis et al., (2021)	The Irie Homes Toolbox	90-minute sessions, weekly for 8 weeks	Trained teachers
Frye et al., (2008)	Parents under Pressure (PUP)	Weekly, for 3-4 months	Therapists
Fulton et al., (1991)	Adolescent Parenting Program	4-6 months, 2 x home visits per month Adolescents visit centre every 2 weeks	Trained professionals
Galanter et al., (2012)	Parent-Child Interaction Therapy	10 months - weekly to biweekly sessions	Therapists
Gessner et al., (2008)	Healthy Families Alaska	2 years - one visit a month	Trained paraprofessionals
Goodman et al., (2021)	Family Connects (FC) program	1 to 3 home visits (post-natal), phone contact 4 weeks after	Nurses

Guastaferro et al., (2018)	Parents as Teachers + SafeCare at Home (PATSCH)	Weekly or biweekly (12-24 weeks)	Trained teachers
Gulirmak et al., (2021)	Not stated	6 weeks	Teachers
Guterman et al., (2013)	Parent Aide Program	2 visits per week over 6 months	Parent Aides - trained paraprofessionals
Harder et al., (2005)	Parent Aide Program	Weekly home visits, average 12 visits	Parent Aides - trained paraprofessionals
Huebner et al., (2002)	Systematic Training for Effective Parenting (STEP) program - modified version	16 hours with an interdisciplinary paediatric team	Clinicians team
Ismayilova et al., (2020)	Not stated	Economic intervention over 2 years; Coaching - monthly meetings - 5 months	Trained program agents
John et al., (1984)	Project 12-ways	Not stated	Therapists
Jouriles et al., (2010)	Project Support	Weekly 1-1.5 hr for 8 months	Therapists
Khosravan et al., (2018)	Not stated	Five, 90-min sessions	Health workers
Knox et al., (2013)	ACT Raising Safe Kids (RSK) program	8-session program - weekly 2-hour group sessions	Health workers
Lachman et al., (2017)	Sinovuyo Caring Families Program for Young Children	12 weekly sessions over 3 months, 2–3-hour sessions	Trained workers from local non-governmental organization (NGO)
Lachman et al., (2020)	Skilful parenting agribusiness programme	12- sessions	Trained professional staff
LeCroy et al., (2020)	Healthy Families Arizona	Weekly visits first 6 months and then taper off as the family makes progress.	Trained paraprofessionals
Letarte et al., (2010)	Incredible Years	16 weeks with 2-h weekly meetings	6 facilitators: 3 x psychoeducational background 3 x social workers
Luthar et al., (2007)	Relational Psychotherapy Mothers Group (RPMG)	Weekly group meetings (1 hour) over 6 months	Drug counsellors and therapists
MacMillan et al., (2005)	Not stated	Weekly for 6 months, then diminishing frequency – 12 months	Nurses

Mejdoubi et al., (2015)	Dutch Nurse-Family Partnership	10 home visits during pregnancy, 20 during the first, and 20 in 2nd year of child's life	Nurses
Olds et al., (1986)	Not stated	Antenatal visits x2; weekly for 6 weeks (post-natal); diminishing schedule	Nurses
Oveisi et al., (2010)	SOS - help for parents programme	Not stated	Clinicians
Reynolds et al., (2003)	Child-Parent Centres	6 years	School-community representatives
Sawasdipanich et al., (2010)	Cognitive Adjustment Program	3-months - 3-hour education group sessions and 1 hour home visits	Trained paraprofessionals
Schaeffer et al., (2021)	Multisystemic Therapy-Building Stronger Families (MST-BSF)	6-9 months - therapist contact - 3x per week	1 supervisor, 3 therapists, and a family resource specialist
Scott et al., (2021)	Caring Dads	17-week program - one group session a week - 2 hours per session	Child protection workers
Scudder et al., (2014)	Modelled on Parent-Child Interaction Therapy (PCIT)	7 group classes - 90 minutes each	Instructor with a master's degree in psychology and undergraduate student assistant
Siegel et al., (1980)	Not stated	9 home visits in the first three months post-natal	Infant care workers and clinicians
Silovsky et al., (2011)	SafeCare augmented (SafeCare+) addition of Motivational Interviewing	6 months	Trained home-based providers
Skar et al., (2021)	International Child Development Programme (ICDP)	12 group meetings	Project coordinators and trained paraprofessionals
Stevens-Simon et al., (2001)	Colorado Adolescent Maternity Program (CAMP)	2 years postpartum home visits: weekly for 16 weeks, then diminishing frequency plus clinic visits	Team of obstetrics, paediatrics, social workers, dietician.
Taylor et al., (1998)	Group Well Child Care (GWCC)	11 months - 30-to-60-minute group sessions - 7 group sessions in total	Nurses
Thomas et al., (2011)	Parent child interaction therapy (PCIT)	Varied in length depending on each family's level of progress - average 17 sessions and 24 weeks of contact	PCIT psychologists

Description of intervention components and techniques in studies

Identification and extraction of intervention components and the specific intervening strategies employed by interventions, depended on the study authors' descriptions of these within the included evaluations. There were variations noted in the level of detail provided. For nearly all evaluation studies (n=57), researchers described in detail components of the interventions. For example, one study (Galanter et al., 2012) stated, "…parents were taught skills for giving good commands and the time-out sequence… using these alternative back-up consequences reduced the risk of parents engaging physically with their child" (p. 185). One evaluation described intervention components in a list-like manner e.g., "…in-home services are provided in several areas such as parent stress reduction, self-control, social support…" (John et al., 1984; p. 520) without describing in detail the specific strategies used. Minimal information about intervention components was provided by three intervention evaluations (John et al., 1984; Harder et al., 2005; Khosravan et al., 2018).

Mapping intervention components on the Ecological Framework

A total of 40 intervention components were identified and extracted from the 60 included studies. Table 18 shows the number of intervention components mapped onto each ecological level.

Table 178: Number of intervention components on each ecological level

Ecological Level	**No. of intervention components**	**No. of BCTs**
Micro-Individual	11	25
Micro-Family	15	17
Mezzo	14	20
Macro	0	0

Micro-individual level intervention components and corresponding BCTs

There were eleven intervention components identified on the micro-Individual ecological level and Table 19 lists these with a description for each component, examples, and the frequency of occurrence across interventions. To better understand how the intervention components were implemented in the interventions and what specific strategies were used to execute them, the components were mapped onto Behaviour Change Techniques (BCTs) using the BCT taxonomy (BCCTv1, Michie et al., 2013) and these are also shown in Table 19. At least one example capturing a corresponding BCT is given for each intervention component. The three most frequent intervention components and corresponding BCTs are described in detail in this section.

Table 189: Micro-individual level intervention components and BCTs

Intervention Components	Frequency	Description	Examples	BCTs
Cognitive appraisal	1	A cognitive approach to altering parents' thinking or behaviour in respect to their children	Cognitive appraisal to help counter parents' mis-attributional processes (e.g., children are behaving with negative intent) (Bugental et al., 2010)	Framing/Reframing
Problem solving skills	12	Either an individual or collaborative approach to enable parents to solve problems	Problem-solving support such as thinking through how to address extended family conflicts or how to access local public services (Guterman et al., 2013)	Problem solving, social support (unspecified)
			Teaching parents how to build the skills needed for problem solving (Huebner et al., 2002)	Instruction on how to perform a behaviour
			Participants were encouraged to support each other in problem solving…They were encouraged to use the principles discussed to identify their own solutions (Fennell et al., 1998)	Problem-solving
			Therapists encourage the women to explore the strengths and limitations of their own strategies, and guide them toward developing optimal approaches (Luthar et al., 2007)	Social support (unspecified)
Setting and achieving goals	17	Encouraging and helping parents to set and achieve goals to; i) enhance parents' confidence, ii) monitor progress, iii) change parents' unwanted behaviours	Specialists, and parents work together to establish individual goals (Eddy et al., 2020)	Goal setting (outcome)
			Supporting parental goal setting and achievement (Gessner et al; 2008)	Social support (unspecified)
			Because depression can make the parent unavailable to the child, goals might include having the parent seek professional help regarding mental illness (Duggan et al., 2004)	Goal setting (behaviour)
			Goals are pursued through specific role play exercises (Luthar et al., 2007)	Demonstration of behaviour

			Tasks were recorded on sheets for clients and paraprofessionals to use as prompts and for accountability of task achievement (Barth 1991)	Prompts/cues
			Nurses used goal-attainment scaling with parents to assess progress (MacMillan et al., 2005)	Review behaviour goal
Pre-natal health care	6	Promotion of healthy behaviours for pregnant women	Educating mothers with a specific focus on maternal health topics such as postpartum depression and self-care (Taylor et al., 1998)	Information about health consequences
			Provide routine antenatal care during the meeting...encourage women to monitor their own health (e.g., by testing their own urine, listening to the fetal heartbeat) (Barnes et al., 2017)	Social support (practical), Self-monitoring of behaviour
			The mother is encouraged to breastfeed (Mejdoubi et al., 2015)	Social support (unspecified)
Parental self-efficacy	10	Enhancing parents' confidence in parenting, self-efficacy, self-awareness, and reflection through positive reinforcement and focusing on strengths	Enhancing parental life course development and self-sufficiency by developing Individual Family Support Plans that establish goals and reinforce strengths (DuMont et al., 2008)	Goal setting (outcome)
			Focus on developing self-efficacy and encouraging women to be more self-aware (Barnes et al., 2017)	Social support (unspecified)
			Strengthen the parents' view that they are competent in the parenting role, as the parent makes changes over the program, each success is added to a list of achievements in the parent workbook (Dawe et al., 2007)	Verbal persuasion about capability, Focus on past success
			At the graduation session the therapist reviewed parents' accomplishments, provided a celebratory snack, and presented the parents with completion certificates (Galanter et al., 2012)	Reward (outcome)
			Parents were given assertiveness training (John et al., 1984)	Instruction on how to perform a behaviour
			Women were helped to develop realistic expectations about motherhood and parenting (Mejdoubi et al., 2015)	Framing/Reframing
			Parents were encouraged to use self-evaluation and focus on strengths (Sawasdipanich et al., 2010)	Self-monitoring of behaviour
Parental empathy	2	Promoting and helping build parental empathy towards child	Build parental empathy and responsiveness (LeCroy et al., 2020)	Social support (unspecified)
			Feedback on positive interactions, and supporting the development of parental empathy (Gessner et al., 2008)	Feedback on behaviour
Parental emotional regulation	15	Teaching parents ways of managing their emotions through various techniques such as teaching modules or therapy to	Parents are also taught how to gain greater control over their own emotional reactivity so that discipline and behaviour management occurs in a calm frame of mind (Frye et al., 2008)	Monitoring of emotional consequences, behaviour substitution
			Increasing Mindful Awareness provides opportunities for parents to reflect on their ability to manage mood and impulsive behaviours through the incorporation of mindfulness-based strategies (Barlow et al., 2017)	Self-monitoring of behaviour, Reduce negative emotions

		manage negative emotions	Teaching basic self-control techniques such as deep breathing (when angry with child) (Chaffin et al., 2011)	Instruction on how to perform a behaviour
			When parents became angry about a concept or argumentative, the leader used reflective listening to clarify the parent's feelings, encouraged their attempts to try new parenting behaviours, provided I-messages, and avoided debates or control struggles. The leader modelled respect and patience while setting firm limits on any abusive behaviours in the group (Fennel et al., 1998)	Feedback on behaviour, Demonstration of a behaviour, Information about emotional consequences, Behaviour substitution
			Creating stress reduction for the pregnant woman by providing support with housing and financial problems and aspects that cause stress (Mejdoubi et al., 2015)	Social support (practical)
			CBT for anger management (Schaeffer et al., 2021)	Framing/Reframing
Trauma-informed therapy	3	Therapy to address parents' adverse childhood experiences and associated trauma	Counselling for issues related to their own abusive childhood (Armstrong et al., 2000)	Social support (unspecified)
			'…therapists foster the mothers' own negotiation of fundamental developmental tasks (e.g., developing trust vs. mistrust in relationships) and serve as role models' (Luthar et al., 2007)	Demonstration of the behaviour
Parental motivation	5	Enhancing parental motivation to change abusive behaviours	to encourage motivation in parent to change weaknesses associated with parenting (Dishion et al., 2015)	Social Support (unspecified)
			Counsellors enhance motivation by highlighting the pain, guilt, and shame that the mother and her family have experienced, and the high stakes involved (such as losing a child to the child welfare system), while at the same time creating positive expectations and hope (Dakof et al., 2010)	Information about emotional consequences, Future punishment
Management of substance abuse	9	Teaching of specific skills to manage relapse, avoiding cravings and focusing on addiction recovery along with avoiding other addicts	Help with managing substance use problems focuses on both remaining abstinent and managing lapses (Barlow et al., 2019)	Habit reversal, Social support (unspecified)
			A self-control method to manage drug cravings in which participants are taught to sequentially practice a series of therapeutic thoughts and actions during imaginal practice trials (i.e., imagining early recognition of antecedents to respective problem behaviours, thought stopping to terminate urges or desires to engage in substance use (Donohue et al., 2014)	Remove aversive stimulus, Behaviour substitution, Distraction
			One module teaches ways to minimise the possibility of future relapse into drug or alcohol use (Frye et al., 2008)	Instruction on how to perform a behaviour
			Sessions focused on the processes of addiction and recovery and reinforcing the skills of relapse prevention, e.g., identifying triggers, avoiding dangerous situations, adopting a drug-free lifestyle, and coping with cravings (Luthar et al., 2007)	Information about antecedents
			Therapists work with the client to develop new ways to meet functions previously met through substance use and to attain reinforcement from substance-free activities and lifestyle; If the misuse involves physical dependency (i.e., opiates,	Social support (unspecified),

			alcohol), treatment begins with a short-term inpatient detoxification and linkage to medically assisted treatment changes.	Pharmacological support
Management of parental risky health behaviours	2	Discouraging parents from participating in behaviours which may have adverse outcome on health and information for managing behaviours and identifying health outcomes	Discourage risky behaviours and inform women about the dangers of tobacco and alcohol use while pregnant (DuMont et al., 2008)	Information about health consequences
			Teach mothers to recognize and effectively manage antecedents to sexually transmitted diseases (e.g., unprotected sex, promiscuity, prostitution), self-control and communication skills training to encourage assertion in requesting safe sexual activity (Donohue et al., 2014)	Information about antecedents, instruction on how to perform a behaviour

The most frequently occurring component at the micro-individual level was Setting and achieving goals which was found in 17 interventions of which 10 influenced child maltreatment outcomes. Individual or collaborative goal setting was used by interventions to enhance parenting confidence with goal attainment (Barth, 1988; Gessner et al., 2008), to improve general parenting and change abusive behaviours (e.g., Scott et al., 2021; Chaffin et al., 2011) and to assess parents' progress in the program (MacMillan et al., 2005). Strategies used to implement this component differed across interventions and this component was mapped onto six BCTs. For instance, Duggan and colleagues' (2004) evaluated an intervention which helped mothers set specific goals for their mental health (depression) such as seeking medical help, and this was mapped to the BCT of Goal setting (behaviour). The BCT of Demonstration of behaviour was exhibited in one intervention which utilised role play exercises for goal setting and goal attainment (Luthar et al., 2007). Goals were also used to assess parents' progress in interventions both in respect to the outcome (e.g., Scott et al., 2021) linked to BCT of Review outcome goal and in respect to the behaviour (e.g., MacMillan et al., 2005) which was mapped to the BCT of Review behaviour goal.

The second most frequently occurring micro-individual level intervention component was parental emotional regulation which was identified in 15 interventions from which 14 were effective for child maltreatment. This component enabled parents to manage their negative emotions such as anger or stress. A total of 10 BCTs were used by interventions to implement this component. For instance, interventions used the BCT of Demonstration of a behaviour through practitioners modelling ways to manage emotions (e.g., Fennell et al., 1998), the BCT of Reduce negative emotions through enabling parents to use mindfulness techniques when angry (Dawe et al., 2007), through the BCT of Feedback on behaviour by listening to parents and clarifying their feelings (Fennel et al., 1998) and through BCTs of Social support (practical) and Social support (unspecified). One intervention used the former to reduce stress among pregnant women by helping with housing (Mejdoubi et al., 2015) whilst another used the latter BCT by providing Cognitive Behavioural Therapy (CBT) to parents for anger management (Schaeffer et al., 2021). CBT was also mapped onto the BCT of Framing/Reframing as this type of therapy helps individuals to develop alternate ways of thinking and behaving to reduce distress (Hollon and Beck, 1994). BCT of Instruction on how to perform a behaviour was used for interventions which taught parents ways to manage their emotions, for instance, one intervention taught parents techniques to tolerate negative emotions (Dawe et al., 2007).

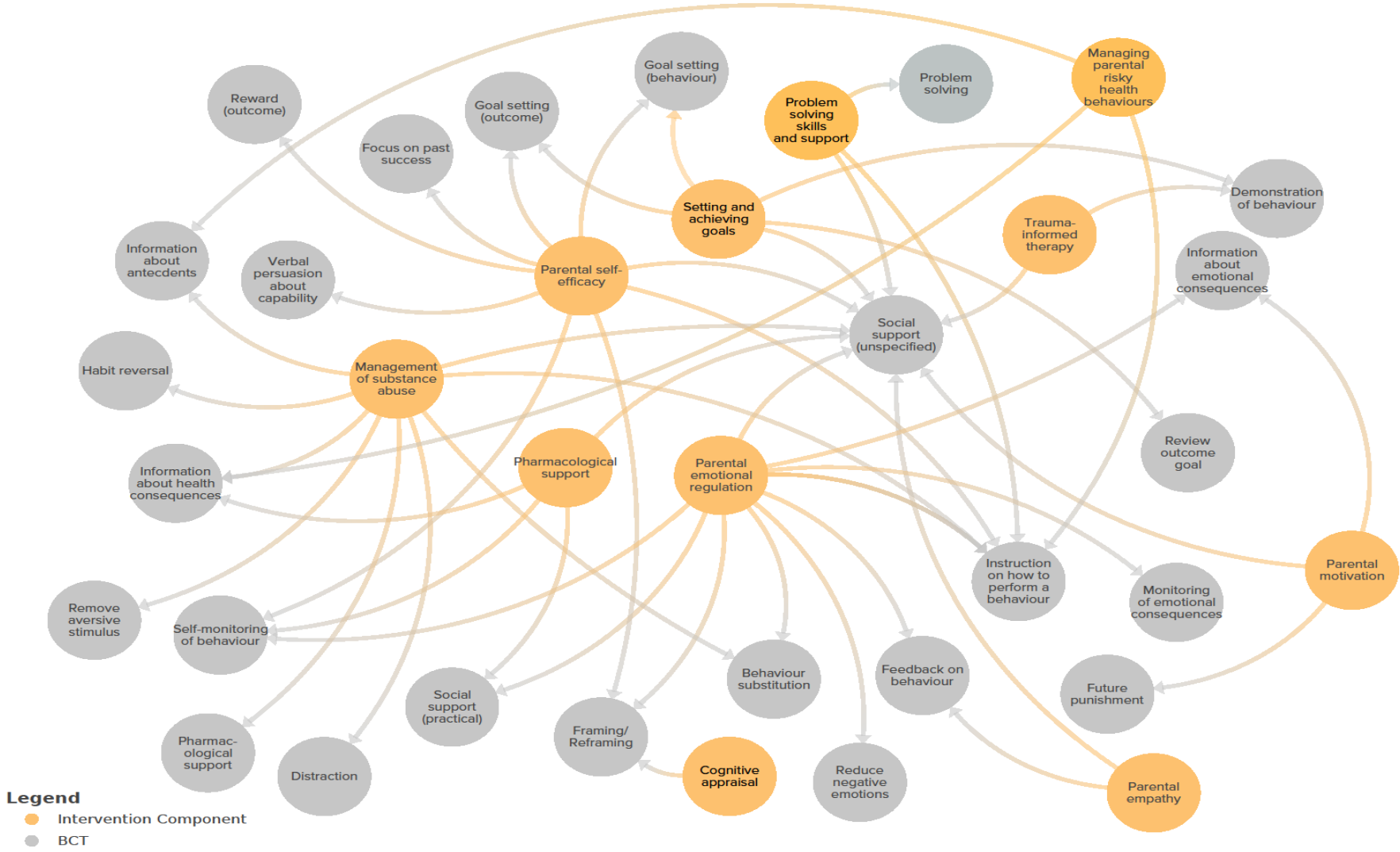
The third most frequent intervention component was supporting parents and equipping them with the skills required to problem solve and this was identified in 12 total interventions of which nine influenced child maltreatment outcomes. This component was only linked to three BCTs; Social support (unspecified) through the provision of therapy (e.g., Luthar et al., 2007), Problem-solving by coaching parents to develop skills to solve daily parenting issues (Ismayilova et al., 2020) and

Instruction on how to perform a behaviour by teaching parents the skills required to solve problems (Huebner et al., 2002).

The remaining eight intervention components at the micro-individual level, presented in Table 19, were identified ten times or less and variations were noted in the way each was implemented across interventions. For instance, management of substance abuse was found in nine interventions and linked to nine BCTs. While the target was to help parents with addiction recovery and prevent relapse, interventions used BCTs of Pharmacological support through an inpatient detoxification process (Schaeffer et al., 2021), the BCT of Instruction on how to perform a behaviour through taught sessions on avoiding relapse (Frye et al., 2008) and the BCT of Remove aversive stimulus whereby interventions enabled parents to avoid triggers such as situations and people that may lead them back to drugs or alcohol (Donahue et al., 2014), among others.

A systems mapping approach is displayed in Figure 25 showing the intervention components at the micro-Individual level, the corresponding BCTs and the links between various components through BCTs. BCTs helped capture heterogeneity of techniques used to implement the same intervention component across different interventions. They also helped to highlight the overlap of BCTs between intervention components. A total of 25 BCTs were linked to the 11 intervention components and a few BCTs were most frequently employed. For example, the BCT of Social support (unspecified) was linked to nine intervention components including trauma-informed therapy, parental self-efficacy, and management of substance abuse. Similarly, the BCT of Instruction on how to perform a behaviour was linked to five intervention components including managing parental risky health behaviours and problem-solving skills and support. The third most prevalent BCT was Self-monitoring of behaviour linked to three intervention components including pre-natal health care and parental emotional regulation.

Figure 25: Micro-individual intervention components and BCTs



Micro-family level intervention components and corresponding BCTs

Fifteen intervention components were identified at the micro-family ecological level, and these are displayed in Table 20 along with their descriptions, examples, and frequency of occurrence across interventions. Each unique BCT linked to an intervention component is depicted by an example. This section provides detail on the three most commonly occurring intervention components and the corresponding BCTs at the micro-family level.

Table 20: Micro-family intervention components and BCTs

No	Intervention component	No. of studies	Description	Examples	BCTs
1	Infant health care	7	Provision of infant health care (e.g., immunizations)	Nurses were involved in regular infant health checks (Barnes et al., 2017)	Social support (practical)
				Encouraging regular health screenings (Guastaferro et al., 2018)	Social support (unspecified)
				Educating parents about routine healthcare and immunizations (Olds et al., 1986)	Information about health consequences
2	General caretaking skills	16	Parents learn how to take care of child/infant and how to provide a safe home environment	Homecare skills, and preparing one clean room for the baby to come home to (Barth et al., 1988)	Social support (practical)
				Support parents in creating a healthy and nurturing home environment (Eddy et al., 2020)	Social support (unspecified)
				Training included identifying how to maintain adequate food in the household with very limited financial resources (Jouriles et al., 2010)	Problem-solving
				Safety-related protocols are enacted, including safety planning, training on managing safety risks such as unsecured prescription medication or physical hazards (Schaeffer et al., 2021)	Demonstration of the behaviour, Restructuring the physical environment, Instruction on how to perform the behaviour
				Discussion of age-appropriate child-rearing issues with the mothers; Breastfeeding, safe sleep (SIDS prevention), rashes, fever, bonding, postpartum depression, Introducing solids, Appropriate ED use, Sleep training, Teething, injury prevention (child proofing), reading (reach out and read), Walking, stranger anxiety, brushing teeth, screen time, poison control, Transition to whole milk, injury prevention, sleep (Taylor et al., 1998)	Information about health consequences, Information about social and environmental consequences
3	Child development	20	Enhancing parents' knowledge about child development	Infant cardiopulmonary resuscitation (CPR) and safety measures are taught (Britner et al., 1997)	Instruction on how to perform a behaviour

	education and information on health			Parents are taught child development including language, intellect, and motor development (Bugental et al., 2010)	Information about health consequences
				Helping adolescent mothers gain knowledge about a child's development (Fulton et al., 1991)	Social support (unspecified)
				Videos on Mental health in children: stages and characteristics of child development, barriers and opportunities for normal dev., attitude of parents and Information about effects of games on mental health and improvement of mental health in children as well as effect of parents on child mental health, and what conditions warrant seeing a mental health child specialist (Gulirmak et al., 2021)	Demonstration of the behaviour, Information about emotional consequences, Information about health consequences
4	Child maltreatment education and information	9	Enhancing parents' knowledge about child maltreatment, types, and its effect on children as well as information on child protection procedures	Modules on child maltreatment in the form of videos to educate parents on consequences of child abuse and neglect on child's wellbeing (Gulirmak et al., 2021)	Information about health consequences, Information about emotional consequences, Demonstration of the behaviour
				How to handle CPS, provided information on parental rights and the legal authority of CPS (Huebner et al., 2002)	Information about social and environmental consequences
				Family coaching or sensitization component designed to address normative beliefs related to protecting children from violence and exploitation (Ismayilova et al., 2020)	Social support (unspecified)
				All families engage in a maltreatment clarification/healing process - to prevent blame of the child for CPS involvement and to address other parent unhelpful thinking relating to the maltreatment (Schaeffer et al., 2021)	Framing/Reframing
5	Setting routines and boundaries	3	Parents are taught to enforce boundaries with children and set routines such as regular bedtime schedules	Parents were taught how to acquire, demonstrate, and maintain reasonable limits (Thomas et al., 2011)	Instruction on how to perform a behaviour
6	Role playing positive parenting	9	Using role play to model and practice positive interactions with child	Parents identified certain good practices and then used role play to put into practice (Arruabarrena et al., 2022)	Self-monitoring of behaviour, Behavioural practice/rehearsal
				Model and promote healthy parent-child interaction and development (Black et al., 1994)	Demonstration of the behaviour, Social support (unspecified)
				Practitioners modelled effective parent-child interaction (Duggan et al., 2004)	Demonstration of the behaviour
				Promote positive parent-child interaction (Gessner et al., 2008)	Social support (unspecified)

7	Strengthening relationships	17	Establishing a strong and nurturing relationship between practitioner and parent and teaching parents skills to enhance communication, strengthen family and other relationships and helping repair relationships as well as examine past romantic relationships	Nurses establish an enduring and trusting relationship with the participants (Mejdoubi et al., 2015)	Social support (unspecified)
				Helping parents with improving communication in intimate relationships. It also includes sections on defining the qualities of a good and loving intimate relationship for couples with a troubled relationship history (Barlow et al., 2019)	Information about emotional consequences
				Model respectful relationships and turn-taking, behaviours that are expected to be of benefit to any group members with poor social skills, especially if they are experiencing difficult interpersonal relationships (Barnes et al., 2017)	Demonstration of the behaviour
				Counselling sessions aim to improve effective communication between partners and to identify past unhelpful relationship patterns (Fyre et al., 2008)	Feedback on behaviour, Social support (unspecified)
				Parents are taught how to interact in a quiet, nonviolent manner with other adults in the home (Stevens-Simons et al., 2001)	Instruction on how to perform the behaviour
8	Child-parent attachment	14	Enhancing and developing the child-parent bond through a variety of ways	Mothers are also required to keep a 7-day diary of their interactions with their child which are used to work on bonding of mother to child and establishing the security of child attachment to mother (Britner et al., 1997)	Self-monitoring of behaviour
				Enhance the emotional attachment between the mother and her children by working individually with the mother (Dakof et al., 2010)	Social support (unspecified)
				Improving the parent-child relationship through instruction, reinforcement, modelling, and parent-child activities (DuMont et al., 2008)	Instruction on how to perform the behaviour, Demonstration of the behaviour, Verbal persuasion about capability
9	Positive interactions	12	Promoting use of praise and positive reinforcement with child, including use of behaviour charts and use of rewards and general positive communication with child	Mothers practiced not rejecting their children and providing labelled praises, while also reducing commands and negative talk (Scudder et al., 2014)	Behavioural practice/rehearsal
				Teaching parents how to read infant signals, responding with warm and sensitive behaviours maintaining infants' focus of attention (Baggett et al., 2017)	Instruction on how to perform the behaviour
				Promoting positive parent-infant interaction (Barlow et al., 2007)	Social support (unspecified)

10	Parenting skills for child learning	13	Promoting and facilitating specific skills to enhance child learning such as academic coaching of children	Mindfulness techniques are used to help parents maintain focus on their child (Dawe et al., 2007)	Conserving mental resources
				Parents are informed about the significance of supporting children's schoolwork, the importance of playing, involving children in daily activities, and understanding emotions (Francis et al., 2021)	Information about social and environmental consequences, Information about emotional consequences
				Parents are helped to support the child's education (LeTarte et al., 2010)	Social support (unspecified)
				Role modelling and practice in listening to and reading to children (Scott et al., 2021)	Behavioural practice/rehearsal
				Traditional skills are taught to enhance learning for children (Scudder et al., 2014)	Instruction on how to perform the behaviour
11	Managing child misbehaviour	19	Teaching parents ways of preventing misbehaviour and non-abusive alternatives to disciplining children	Teaching parents active ignoring of minor misbehaviour and to use a consistent step-by-step time-out protocol in response to child noncompliance, to use specific solutions to possible parenting challenges (e.g., managing child behaviour in public places). The goal is elimination of corporal punishment as a back-up for time out (Chaffin et al., 2011)	Instruction on how to perform the behaviour, Behaviour substitution, Problem-solving
				Teaching parents to discipline undesired behaviours of children by first explaining how environmental circumstances may have led to the undesired behaviour and then instructing them to practice desired behaviours (Donohue et al., 2014)	Instruction on how to perform the behaviour, Information about antecedents, Behavioural practice/rehearsal
				Educational videos detailing the methods of discipline (Gulirmak et al., 2021)	Demonstration of the behaviour
				Parenting skill guidance (e.g., appropriate discipline) (Guterman et al., 2013)	Social support (unspecified)
				Specific discipline techniques: how to structure the young child environment to minimize hazards and misbehaviour, the natural and logical consequences of different forms of discipline, when and how to use time out, and a debate about the pros and cons of spanking children (Huebner et al., 2002)	Instruction on how to perform the behaviour, Restructuring the physical environment, information about health consequences, information about emotional consequences
				Teaching mothers child behaviour management skills: direct instruction, practice, and feedback, mothers were taught skills with which to increase desirable child behaviour, decrease undesirable child behaviour. (Jouriles et al., 2010)	Instruction on how to perform the behaviour, Behavioural practice/rehearsal, Feedback on behaviour

12	Positive parenting practices	13	Facilitating positive parenting such as spending more time with children, addressing their social and emotional needs and other child-centred ways of parenting	Modelling positive parenting (Barth, 1988; 1991)	Demonstration of the behaviour
				Helping parents in obtaining skills for successful parenting (Bugental et al., 2010)	Social support (unspecified)
				Parents are taught child-centred play skills (Dawe et al., 2007)	Instruction on how to perform the behaviour
				Skills training, role modelling and behavioural practice to develop child-centred fathering (Scott et al., 2021)	Instruction on how to perform the behaviour, Behavioural practice/rehearsal
13	Video feedback on parent-child interactions	5	Videotaping parent-child interactions and using these to reinforce strengths and evaluate weaknesses and viewing examples of positive and negative parent-child interactions	Viewing videotapes depicting parent models interacting with their children in various situations (Arruabarrena et al., 2022)	Demonstration of the behaviour
				Self-directed learning through video-based examples and non-examples; video recorded practice creating a 5-min mother-infant interaction video demonstrating skills learned (Baggett et al., 2017)	Demonstration of the behaviour, Behavioural practice/rehearsal, Self-monitoring of behaviour
14	Reducing parental conflict	2	Specific component designed to manage conflict between parents	Social work intervention in the home for families with parental conflict (Armstrong et al., 2000)	Social support (unspecified)
15	Help with abusive relationships	2	Addressing patterns of maladaptive relationships	Help with maladaptive relationships with extended family members (including abuse) (Black et al., 1994)	Social support (unspecified)

The most commonly occurring intervention component, as seen in Table 20, was Child development education and health information which was identified in 20 interventions. This component emphasised the enhancement of parents' knowledge of child development along with information about child health. This component was linked to five BCTs as shown in Figure 25, for example, the BCT of Instruction on how to perform a behaviour was depicted in interventions which taught parents a skill or specific techniques to help with increasing their knowledge. Britner and colleagues' (1997) evaluated an intervention which taught parents cardiopulmonary resuscitation (CPR) and safety measures in case of a child emergency. Interventions also provided information to parents regarding developmental milestones of children, what to expect at each age and child nutrition (e.g., Gulirmak et al., 2021) and this was mapped to the BCT of Information about health consequences. Interventions used video feedback for parent-child interactions (BCT of Demonstration of a behaviour) and to teach parents about the effect of their parenting on children's emotional and mental health (BCT of Information about emotional consequences; Gulirmak et al., 2021; Knox et al., 2013).

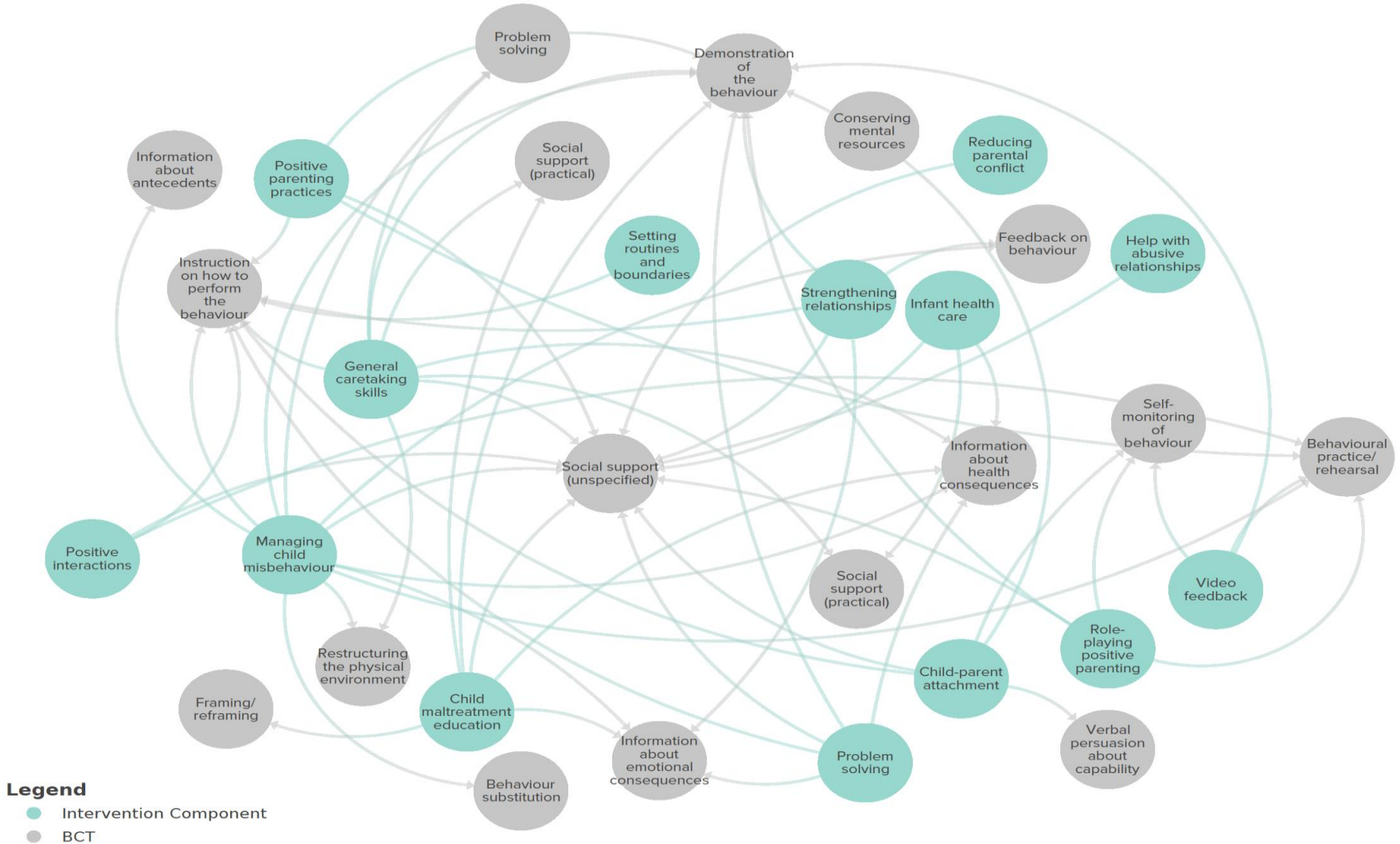
The second most frequent component was Managing child misbehaviour identified in 19 interventions and linked to 11 BCTs. This component taught parents ways to manage their children's behaviour and helped them identify alternative methods of discipline without resorting to abuse. For example, BCT of Instruction on how to perform a behaviour taught parents specific techniques such as active ignoring of misbehaviour (Chaffin et al., 2011), teaching specific commands and instructions (Thomas et al., 2011) and non-punitive methods of discipline (Jouriles et al., 2010). BCT of Behavioural practice/rehearsal engaged parents to repeatedly practice learnt skills and behaviours (Jouriles et al., 2010) and the BCT of Behaviour substitution enabled parents to substitute abusive or corporal punishments with other strategies like 'time-out' (Dawe et al., 2007). BCT of Framing/reframing and Information about antecedents was mapped to interventions which explained to parents reasons for child misbehaviour and helped them to identify environmental triggers which can cause such behaviours (Donohue et al., 2014) to replace parents attributing intention, such as deliberately angering parents, to their children's misbehaviour. BCT of Social support was mapped to strategies which employed a coaching or therapy element (Galanter et al., 2012) and Problem solving BCT was linked with helping parents deal with challenges like tantrums in public places (Chaffin et al., 2011). Video feedback for parent-child interactions (BCT of demonstration of a behaviour; Gulirmak et al., 2011), ways of minimising environmental hazards (BCT of Restructuring the physical environment; Huebner et al., 2002) and informing parents about consequences to the child of various types of discipline (BCT of information about health consequences; Huebner et al., 2002) were some of the other techniques used by interventions to implement the component of Managing child misbehaviour.

The Strengthening relationships component was identified in 17 interventions and linked to five BCTs. This component emphasised the creation and maintenance of relationships with family members, friends, and parents from the community as well as creating a bond and supportive partnership with intervention practitioners.

Parents were helped to improve their communication in intimate relationships and were informed about what constitutes a healthy and loving relationship and this was linked to the BCT of information about emotional consequences (Barlow et al., 2019). Parents were taught ways of remaining calm in hostile situations (BCT of Instruction on how to perform a behaviour; Stevens-Simon et al., 2011), counselling sessions (BCT of Social support – unspecified) and helped to identify unhelpful patterns in past relationships (BCT of Feedback on behaviour; Fyre et al., 2008).

Figure 26 shows links between BCTs (17) and intervention components (15) highlighting the overlapping nature of techniques used across different interventions to implement components at the micro-family ecological level. The most frequent BCTs were those of Social support (unspecified) linked to 12 intervention components, Instruction on how to perform a behaviour to nine, and Demonstration of the behaviour also to nine intervention components.

Figure 26: Micro-family components and BCTs



Mezzo intervention components and BCTs

Fourteen intervention components were identified and linked to 20 BCTs at the mezzo ecological level. Table 21 lists these with frequency, description, examples and corresponding BCTs. This section details three most commonly occurring intervention components and corresponding BCTs at the mezzo level.

Table 21: Mezzo level intervention components and BCTs

No	Intervention components	No. of studies	Description	Examples	BCTs
1	Flexible and tailored program	8	Services offered and implemented based on individual or family needs	Intervention was then tailored to meet the families' specific needs (Jouriles et al., 2010)	Social support (unspecified), Restructuring the social environment
2	Online classes or Internet-based program	2	Web-based, online parenting education classes that can be accessed from home	E-Pals Baby Net (Baggett et al., 2017)	Instruction on how to perform a behaviour, Restructuring the physical environment
3	Home visits	40	Practitioners visited the parents' home to observe and provide services	Social workers made regular home visits (Armstrong et al., 2000)	Monitoring of behaviour by others without feedback
4	Parenting group sessions	19	Group-based parenting discussions, workshops, lectures, or therapy headed by a group leader	A group leader facilitated interaction between group members and between group members and the nurses (Barnes et al., 2017)	Social support (unspecified), Restructuring the physical environment
5	Community setting	11	Includes a variety of community places where part of an intervention is offered, e.g., visits to hospitals or clinics, schools, housing authority.	Visiting treatment clinics for substance misuse (Schaeffer et al., 2021)	Restructuring the physical environment, Social support (practical)
6	Regular calls	4	Regular calls for update discussions and to address concerns	Weekly telephone calls with group leaders and parents for follow-up, any issues/questions, general update (Arruabarrena (2022)	Social support (unspecified)
7	Incentives	2	Provision of money, vouchers, or other gifts for participation in intervention	At the end of each session, parents were given a small snack (a boxed drink and a sweet roll) and mobile phone credit (Francis et al., 2021)	Reward (behaviour)
				Monetary vouchers for negative UDS tests (tests to detect substance use in urine) (Shaeffer et al., 2021)	Reward (outcome)

8	Feedback from practitioners	6	Feedback provided to parents based on their progress in achieving tasks and program milestones, highlighting strengths and general performance feedback	Feedback on the mother's actual performance during and following the training session (Feldman et al., 1992)	Feedback on behaviour
				Individualised feedback action plan outlining daily activities (Baggett et al., 2017)	Action planning, Feedback on behaviour
				Skills that were not fully mastered were revisited and mothers were given feedback in an iterative process to ensure competence in each skill before progressing to a new skill (Jouriles et al., 2010)	Feedback on outcome of behaviour, Discrepancy between current behaviour and goal
				Men are assigned individualized homework and their progress is tracked (Scott et al., 2021)	Monitoring of behaviour by others without feedback
				Parents are given immediate feedback and social reinforcement (Thomas et al., 2011)	Feedback on behaviour, Social reward
9	Social support	20	Provision of support through interventions, utilisation of community resources and general support from family, friends, and the community	Building a primary support system that may be lacking within members' own families and communities through calls between meetings which increase group communication and are intended to allow members to build trust outside of the group (Burnson et al., 2021)	Social support (unspecified), Restructuring the social environment
				This includes developing a practical and workable routine for everyday life; addressing how the mother will balance self-care, children, and work; outlining a plan to address common emergencies with children and families; and addressing how the mother will deal with potential problems, mistakes, slips, and relapses (Dakof et al., 2010)	Action planning, Goal setting (behaviour), Goal setting (outcome), Problem solving
				Collaborate with other agencies to maximize scarce resources, provide a comprehensive array of services to families; supports parent during crisis in family relationships, finances, housing, food, clothing - encourages caregivers to seek professional support for domestic violence, poor mental health and substance abuse and employment (Gessner et al., 2008)	Social support (unspecified), Social support (practical)
				Therapists provided emotional support to the women and helped them obtain material resources and social supports (Jouriles et al., 2010)	Social support (emotional), social support (unspecified)
10	Help with housing	4	Provision of direct help with housing and not linking to community services	Help with finding affordable housing (Black et al., 1994)	Social support (practical)
11	Referral to services	14	Referring, signposting parents to services in the community based on needs	Referrals for assistance with substance abuse, mental illness, and interpersonal violence	Social support (practical)
12	Help with education and employment	7	Provision of skills and training related to continuing	Parents may also attend GED classes at the centres (Reynolds et al., 2003)	Social support (practical)

			or acquiring education and employment as well as encouraging parents to stay or complete education and practical help to acquire employment	Staff encourage mothers to continue with their educations and are also connected with jobs programs (Britner et al., 1997)	Social support (unspecified), Social support (practical)
				Skills training specific to attaining employment and behavioural practice regarding job interviews (Donohue et al., 2014)	Instruction on how to perform a behaviour, Behavioural practice/rehearsal
				Discouraging school drop-out, encouraging the pursuit of careers that foster competency; information sheet about career opportunities (Stevens-Simon et al., 2001)	Social support (unspecified), Information about social and environmental consequences
13	Help with daily or practical tasks	7	Practical help with tasks and information on general life skills like diet and exercise	Driving together to church to pick up food and visiting a thrift shop in pursuit of a crib (Barth et al., 1988)	Social support (practical)
				Provide practical advice on diet and nutrition, health care and exercise (Dawe et al., 2007)	Information about health consequences
				Offering advice and support on other issues raised by the mother (e.g., finding a new apartment, reading a letter from an agency, discussing family problems) (Feldman et al., 1992)	Social support (unspecified)
14	Financial training	8	Providing information and teaching skills to help with financial including budgeting	Savings group formation and training, plus access to credit at reasonable interest rates (Ismayilova et al., 2020)	Instruction on how to perform a behaviour, Social support (practical)
				provides practical advice on budgeting (Dawe et al., 2007)	Social support (unspecified)

The most frequent intervention component at the mezzo level was home visiting and this was identified in 40 interventions. Practitioners visited families' homes to observe and support them. This component was linked to the BCT of Monitoring of behaviour by others without feedback. In one intervention aimed at women in custody, intervention was provided through prison visitation (Frye et al., 2008). Eddy and colleagues' (2020) evaluation identified the home visiting component in the intervention to include all family members living in the home.

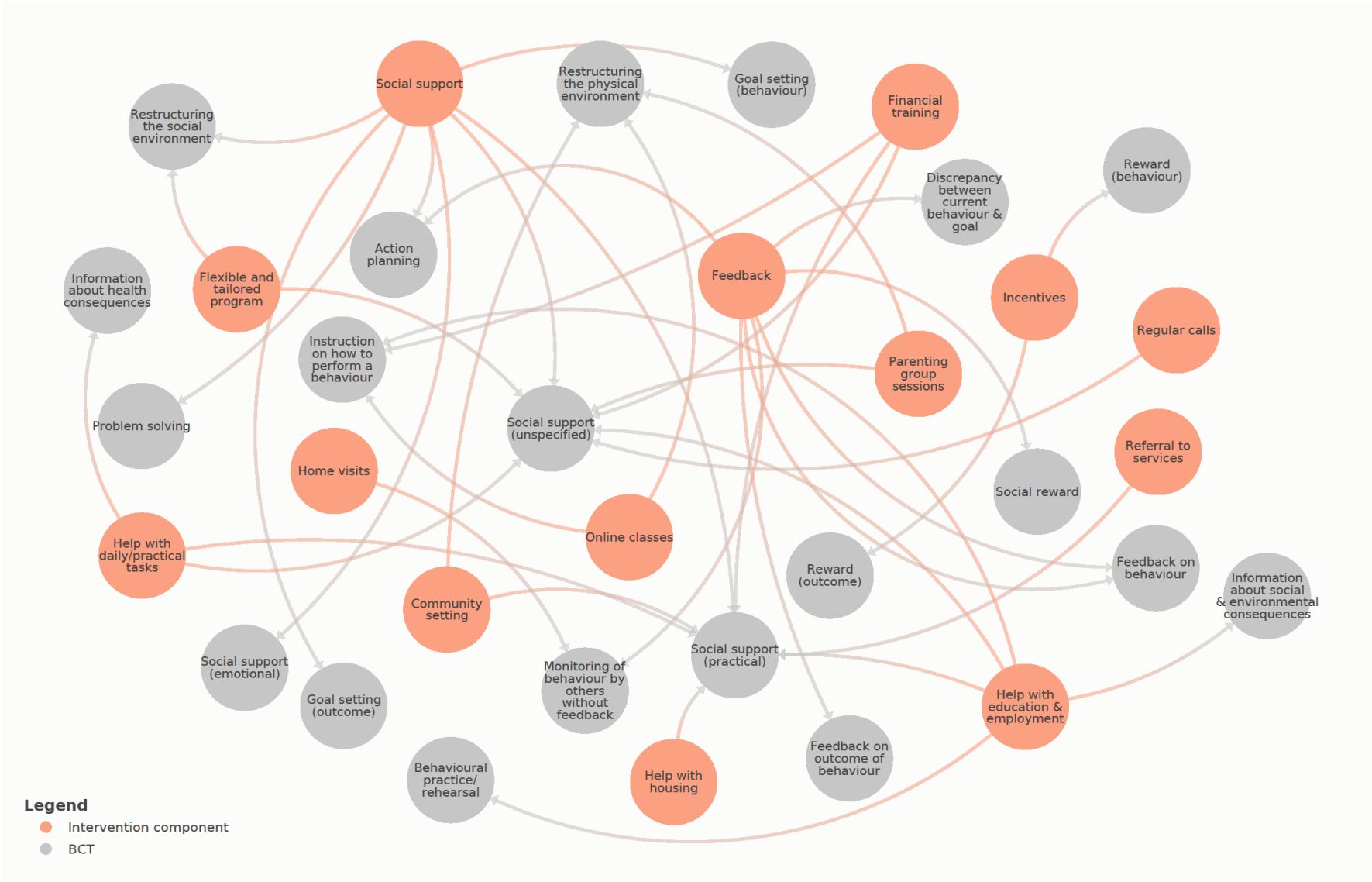
For some interventions (e.g., Baggett et al., 2017; Fulton et al., 1991), the home visiting element worked alongside other components (e.g., group parenting sessions, visits to clinics). Frequency of visitation varied with some visiting the home weekly (e.g., Barlow et al., 2007) while others monthly (Fulton et al., 1991). Visits tapered off as progress in the programme was made by parents.

Social support was the second most frequent intervention component identified in 20 interventions and linked to eight BCTs as shown in Figure 26. This component addressed enhancing access, availability, and use of support networks for parents. This included encouraging parents to extend their support networks (Dawe et al., 2007; Olds et al., 1986) which was linked to the BCT of Restructuring the social environment and Social support (unspecified). Dakof and colleagues' (2010) evaluation detailed the intervention as helping the mother prepare to function independently including planning daily routines and balancing work and parenting (BCTs of Action planning and Goal setting (behaviour/outcome) and solving problems such as family or child emergencies (BCT of Problem solving). BCT of Social support (practical) was associated with interventions which provided support with needed services such as finance (e.g., Gessner et al., 2008) and the BCT of Social support (emotional) and Social support (unspecified) was evidenced through therapists or coaches providing emotional support to parents and encouraging them to utilise their support networks (e.g., Jouriles et al., 2010).

The third most common intervention component at the mezzo level, as presented in Table 22, was Parenting group sessions which was found in 19 interventions and linked to the BCT of Restructuring the physical environment and BCT of Social support (unspecified). The former BCT was identified in all 19 interventions which implemented group sessions in the community to deliver whole or part of the intervention (e.g., LeTarte et al., 2017; Scaheffer et al., 2010). The latter BCT was linked to the provision of coaching or general support such as facilitation interaction between group members and creating a relationship of trust with intervention practitioners (e.g., Lachman et al., 2017) and this was also evidenced in all 19 interventions.

Figure 27 represents all the intervention components and associated BCTs at the mezzo level through a systems map. The most prevalent BCTs at this level were Social support (unspecified) and Social support (practical) which were both linked to seven intervention components each, Restructuring the physical environment and Instruction on how to perform a behaviour were both linked to three components each.

Figure 27: Mezzo components and BCTs



Effective interventions and summary characteristics

As represented in Tables 16 and 17, there were 41 interventions that showed an effect on child maltreatment outcomes. Nineteen of these had a maltreating sample while 22 had an at-risk sample. From the maltreating samples, majority of the effect sizes were small for 78% (n = 15) and only 21% (n=4) had a medium effect. For the 22 interventions with an at-risk population, 68% (n= 15) had small effect, 27% (n = 6) had a medium effect and 5% (n=1) had a large effect on child maltreatment outcomes. From the 41 effective interventions, three did not state length of intervention delivery, for the remaining 38 interventions, length varied from 1.2 months to 72 months (6 years) with an average of 11 months.

Intervention components in effective interventions and measures for child maltreatment outcomes

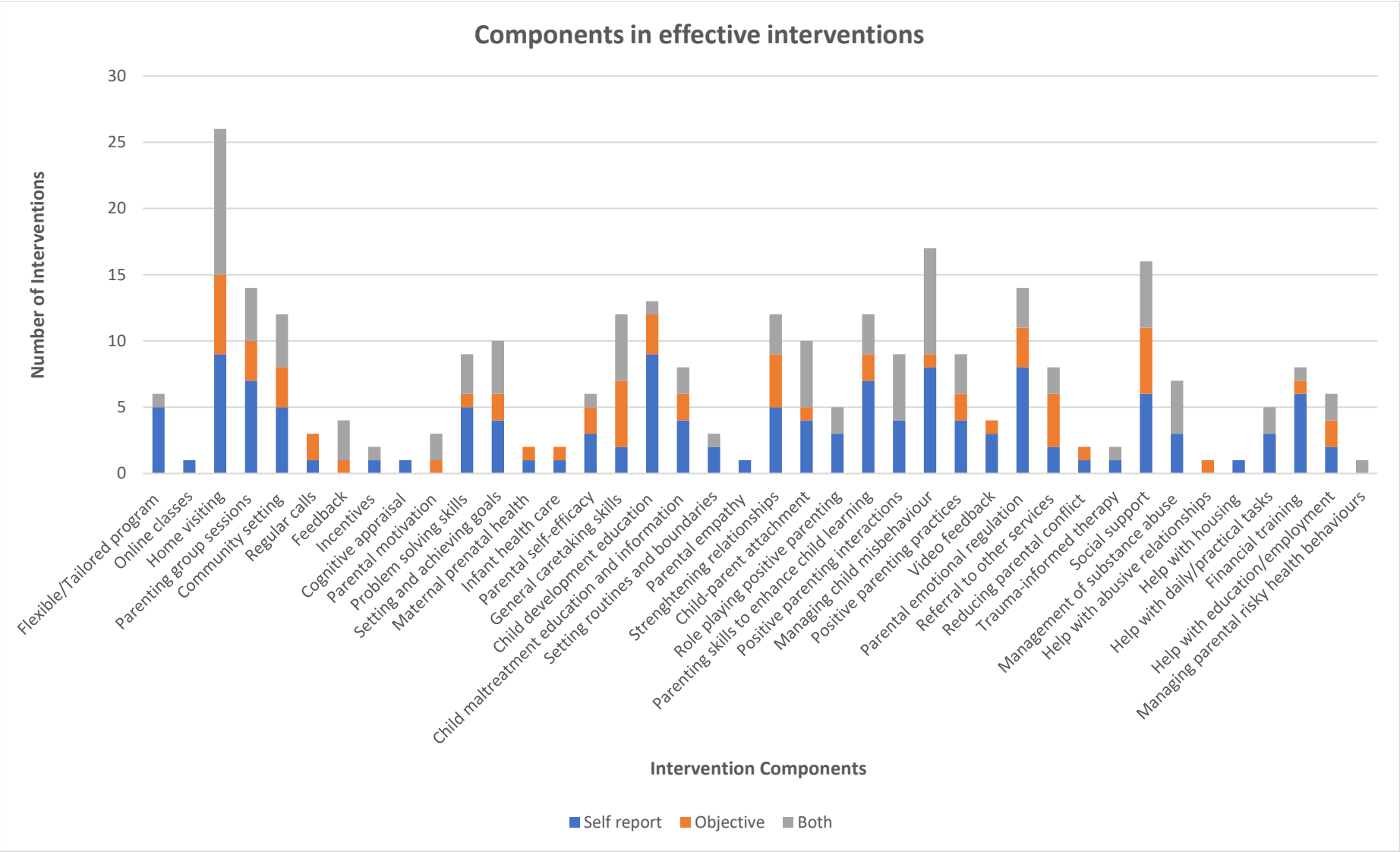
Intervention components within effective interventions and whether evaluations used self-report measures, objective measures, or both to assess child maltreatment outcomes are displayed in Figure 28. From the 41 intervention evaluations, 20 used only self-report measures (e.g., Eddy et al., 2020; Oveisi et al., 2010; Lachman et al., 2020), nine used objective measures such as child protective records (e.g., Burnson et al., 2021; Harder et al., 2005) or coded observations of the home environment (e.g., Huebner et al., 2002), and 12 used both self-report and objective measures.

Effect sizes ranged from small to medium with only two intervention evaluations showing a large effect. Fergusson and colleagues' (2005) evaluation of an intervention with 443 parents reported a large effect for contact with CPS *(d=0.91)* and a small effect for parents' self-reports of maltreatment behaviours *(d=0.26).* Another evaluation (Jouriles et al., 2010) of 35 families reported a large effect for harsh parenting based on parents' self-report on the CTS-R (Straus et al., 1996) but no effect for CPS referrals.

As shown in Figure 28, the most frequently occurring intervention component across all ecological levels and identified in 26 effective interventions was the Home visiting component (mezzo level). This was followed by Managing child misbehaviour (micro-family) in 17 interventions and the component of Social support (mezzo) in 16 interventions. Parental emotional regulation (micro-individual) and Parenting group sessions (mezzo) were each identified in 14 interventions. Many micro-family intervention components were identified across 10-13 interventions. For instance, Child development education was found in 13, General caretaking skills, Parenting skills to enhance child learning and Strengthening relationships were each found in 12 effective interventions. Enhancing child-parent attachment and Setting and achieving goals were found in 10 interventions each.

Many of the mezzo level components were found in less than five interventions. For example, Feedback from intervention practitioners was found in four interventions, Regular calls in three, Incentives in two and Help with housing were each only found in one intervention. There were no macro intervention components identified from the 41 effective intervention studies.

Figure 28: Intervention components in effective interventions



Interventions without effect

There were 19 interventions (e.g., Luthar et al., 2007; Siegel et al., 1980; Barth et al., 1991; Silovsky et al., 2011) from the 60 included evaluations that did not have an impact on child maltreatment outcomes (see Table 16 for details).

Table 22 shows the components which were not found in interventions without effect but were present in effective interventions. On the micro-individual level, cognitive appraisal and parental motivation were missing from ineffective interventions. On the micro-family level, components including setting routines and boundaries, and reducing parental conflict and mezzo components of financial training and incentives were also lacking.

Table 22: Components not found in interventions without effect

Ecological level	Intervention components
Micro-Individual	Cognitive appraisal
	Parental motivation
Micro-Family	Setting routines and boundaries
	Reducing parental conflict
Mezzo	Financial training
	Incentives

With the exception of two, all BCTs present in effective interventions were also found in interventions without effect. The BCT of Reward (outcome) was linked to interventions components of parental self-efficacy on the micro-individual level (Galanter et al., 2012) and incentives on the mezzo level while Reward (behaviour) was linked to Incentives on the mezzo level (Francis et al., 2021; Schaeffer et al., 2021). Both BCTs were not found in interventions without effect.

Two further BCTs were noted as prevalent in effective interventions and were only identified in one intervention without effect. The BCT of Monitoring of emotional consequences and the BCT of Reduce negative emotions were each identified in 14 effective interventions (e.g., Barlow et al., 2019; Frye et al., 2008) and only in one intervention without effect (Skar et al., 2021). Both these BCTs were linked to one intervention component on the micro-individual level: Parental emotional regulation.

3. Is there evidence that risk and intervention components differ by type of maltreatment?

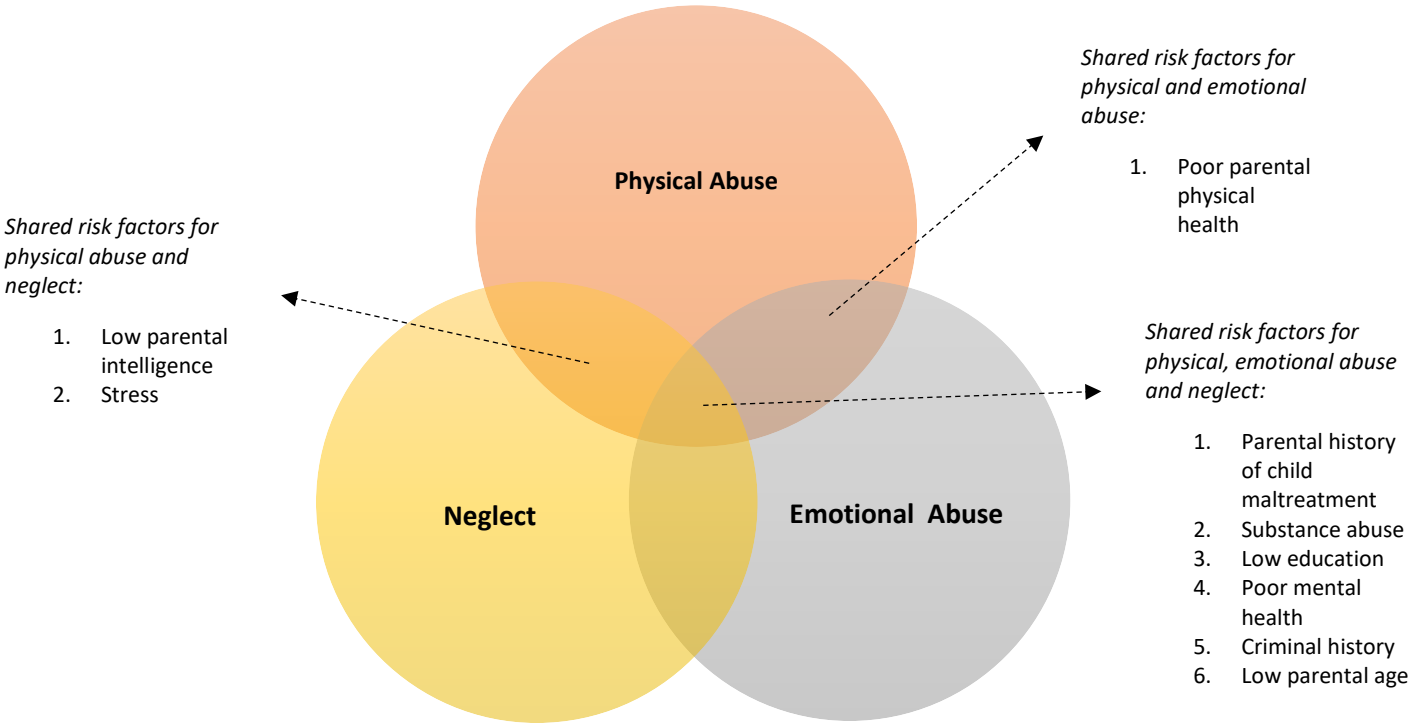
From the 60 included evaluations, 37 specified a type of maltreatment while the remaining 23 used umbrella terms of child maltreatment or child abuse and neglect. Within these 37 intervention evaluations, 12 focused on only one type of abuse with ten for physical abuse and two for neglect. Nineteen evaluations looked at two types

of abuse and six at three types of abuse. There were no evaluations which focused solely on emotional or sexual abuse.

Risk factors and maltreatment type: Micro-Individual Risk

There were nine micro-individual level risk characteristics as shown in Figure 29 that were observed in the intervention evaluations and these were noted across three maltreatment types. Common risk characteristics for the three types of maltreatment included parental history of childhood maltreatment (e.g., LeCroy et al., 2020), low education (e.g., Scudder et al., 2014), Poor parental mental health (e.g., DuMont et al., 2008), substance abuse (e.g., LeCroy et al., 2020), a parental criminal history (e.g., Scudder et al., 2014), and low parental age (DuMont et al., 2008). Low intelligence (Feldman et al., 1992) and stress (Guterman et al., 2013) were common for physical abuse and neglect while poor physical health was common for physical and emotional abuse (Lachman et al., 2017). There were no unique risk factors noted for any maltreatment type at the micro-individual level and no maltreatment type-specific risk factors for sexual abuse were studied at this ecological level.

Figure 29: Micro-individual risk factors and maltreatment types

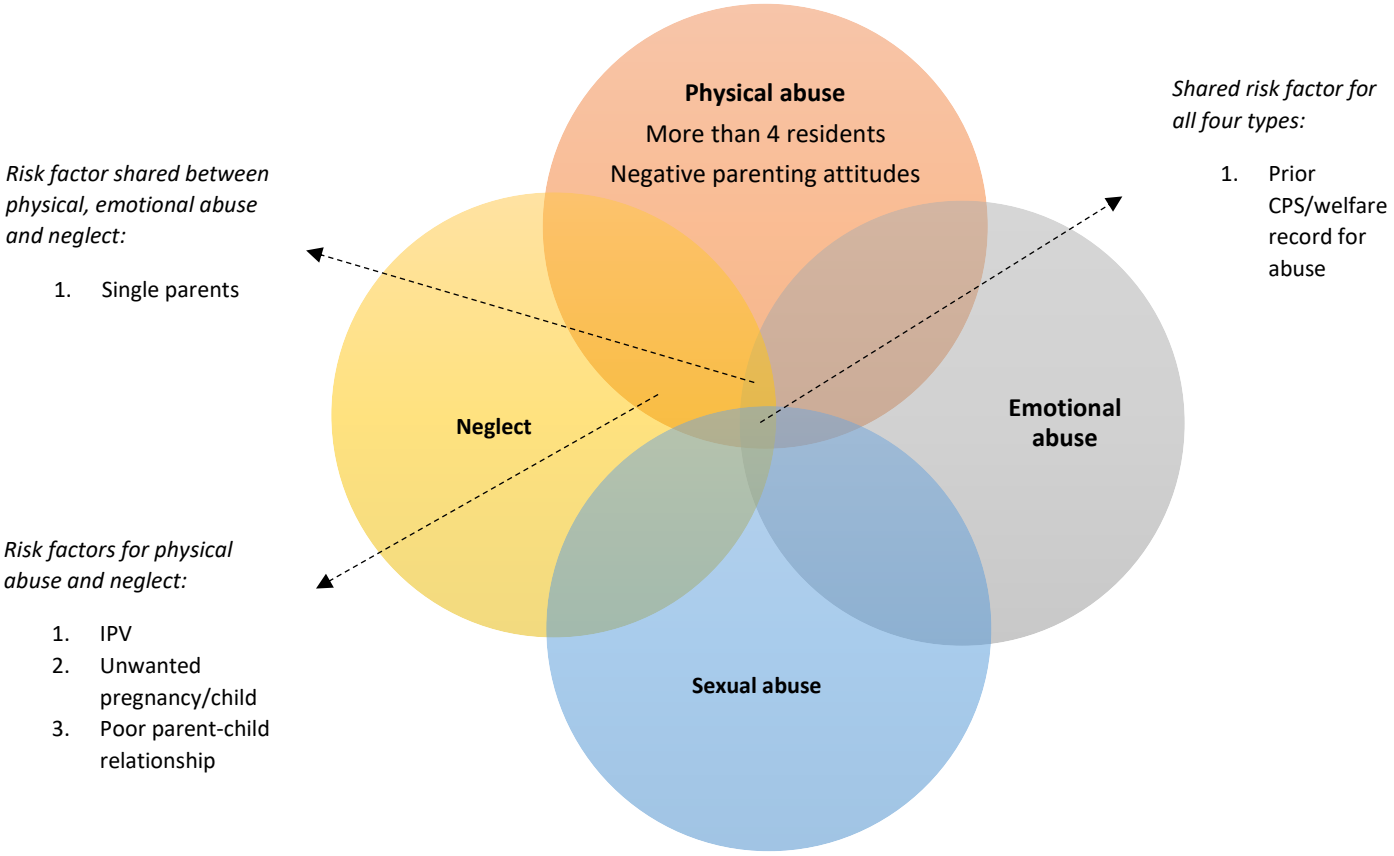


Micro-Family Risk

There were seven risk characteristics found at the micro-family ecological level among the intervention evaluations that specified a type of maltreatment, and these are displayed based on maltreatment type in Figure 30. Among these, a prior welfare or CPS (e.g., Khosravan et al., 2018) record was the only shared risk characteristic among all types of maltreatment. Fennell and colleagues' (1998)

evaluation of Systematic Training for Effective Parenting program with 18 maltreating parents focused on both sexual and physical abuse. Similarly, an evaluation of an intervention with 64 maltreating parents aimed to reduce abusive behaviours particularly for physical and emotional abuse and neglect (Khosrovan et al., 2018). Single parents (e.g., Scudder et al., 2014) was a risk factor shared between physical, emotional abuse and neglect. micro-family level risk factors of a poor parent-child relationship (Huebner et al., 2002), Intimate Partner Violence (IPV) and unwanted pregnancy or child (Fergusson et al., 2005) were common to both physical abuse and neglect. Negative parenting attitudes was one of the risk characteristics unique for physical abuse and this comprised of unrealistic expectations from child, child perceived to be difficult and a belief in harsh physical punishment (Bugental et al., 2010) and problems managing the child (Arruabarrena et al., 2022). Another characteristic specific to physical abuse was more than four residents at home and was noted in one evaluation of International Child Development Program with 176 low-income with children aged between three and four years (Skar et al., 2021). There were no unique risk factors identified for any other maltreatment type.

Figure 30: Micro-family risk factors and types of maltreatment

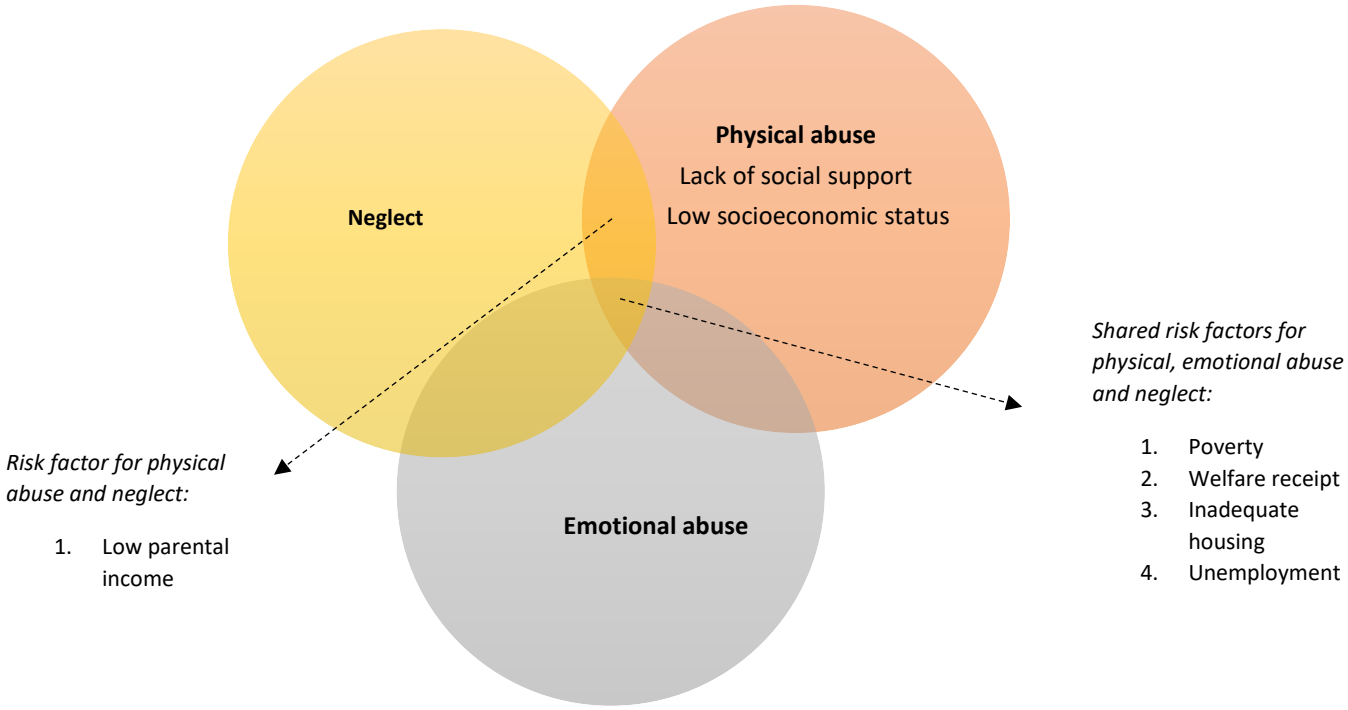


Mezzo Risk

Seven risk characteristics were noted at the mezzo ecological level, and these are displayed in Figure 31. Common to physical abuse, emotional abuse and neglect were poverty (e.g., Scudder et al., 2014), welfare receipt (e.g., DuMont et al., 2008),

inadequate housing (e.g., Lachman et al., 2017) and parental unemployment (e.g., LeCroy et al., 2020). Low parental income was a risk factor common to physical abuse and neglect (Guastaferro et al., 2018). Two unique risk characteristics of lack of social support (Armstrong et al., 2000) and low socioeconomic status (Sawasdipanich et al., 2010) was noted for physical abuse. There were no risk characteristics identified for sexual abuse.

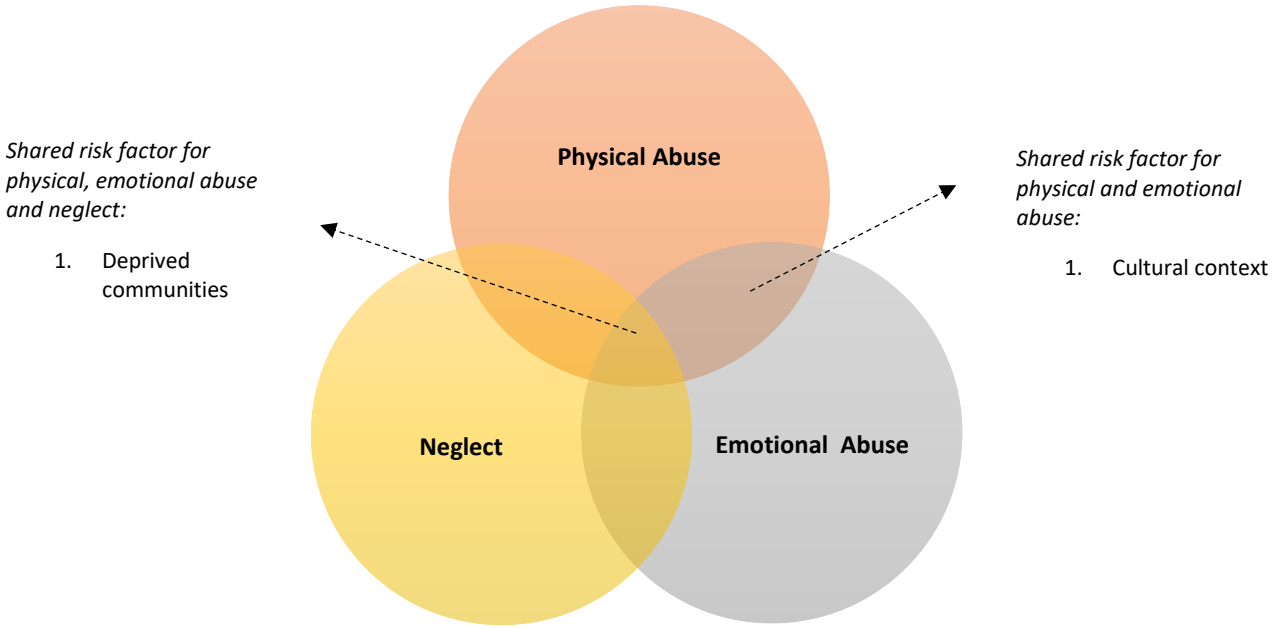
Figure 31: Mezzo risk factors and maltreatment types



Macro Risk

There were two macro-level risk characteristics found in four intervention evaluations from the 37 that specified a maltreatment type, and these are displayed in Figure 32. In DuMont and colleagues' (2008) evaluation of Healthy Families New York, an intensive home-visiting program, the intervention sample comprised of expectant parents and parents with an infant who lived in extremely deprived communities with high rates of teen pregnancy, infant mortality, high levels of welfare receipt and lack of or late prenatal care. The maltreatment types specified were physical abuse, neglect, and emotional abuse. The second macro-level risk characteristic was cultural context where certain parenting abusive practices were acceptable or more prevalent and these were specified for emotional (e.g., Iranian culture; Oveisi et al., 2010) and physical abuse (Thai and Jamaican cultures; Sawasdipanich et al., 2010; Francis et al., 2021). No unique risk factors were identified for any maltreatment type, and none were found for sexual abuse.

Figure 32: Macro risk factors and maltreatment types



Intervention components and maltreatment types

Twenty-seven intervention evaluations which showed an effect on child maltreatment outcomes specified a maltreatment type. Table 23 presents a breakdown of the number of interventions and associated types of maltreatment focused upon. Ten looked at one type of maltreatment of which nine included physical abuse and one neglect. Thirteen interventions focused on two types of maltreatment and from these four looked at physical abuse and emotional abuse, seven for physical abuse and neglect, one on physical abuse and sexual abuse and one on emotional abuse and neglect. There were four interventions which focused on three types of maltreatment namely physical abuse, emotional abuse, and neglect. There were no interventions that focused only on sexual abuse or on emotional abuse.

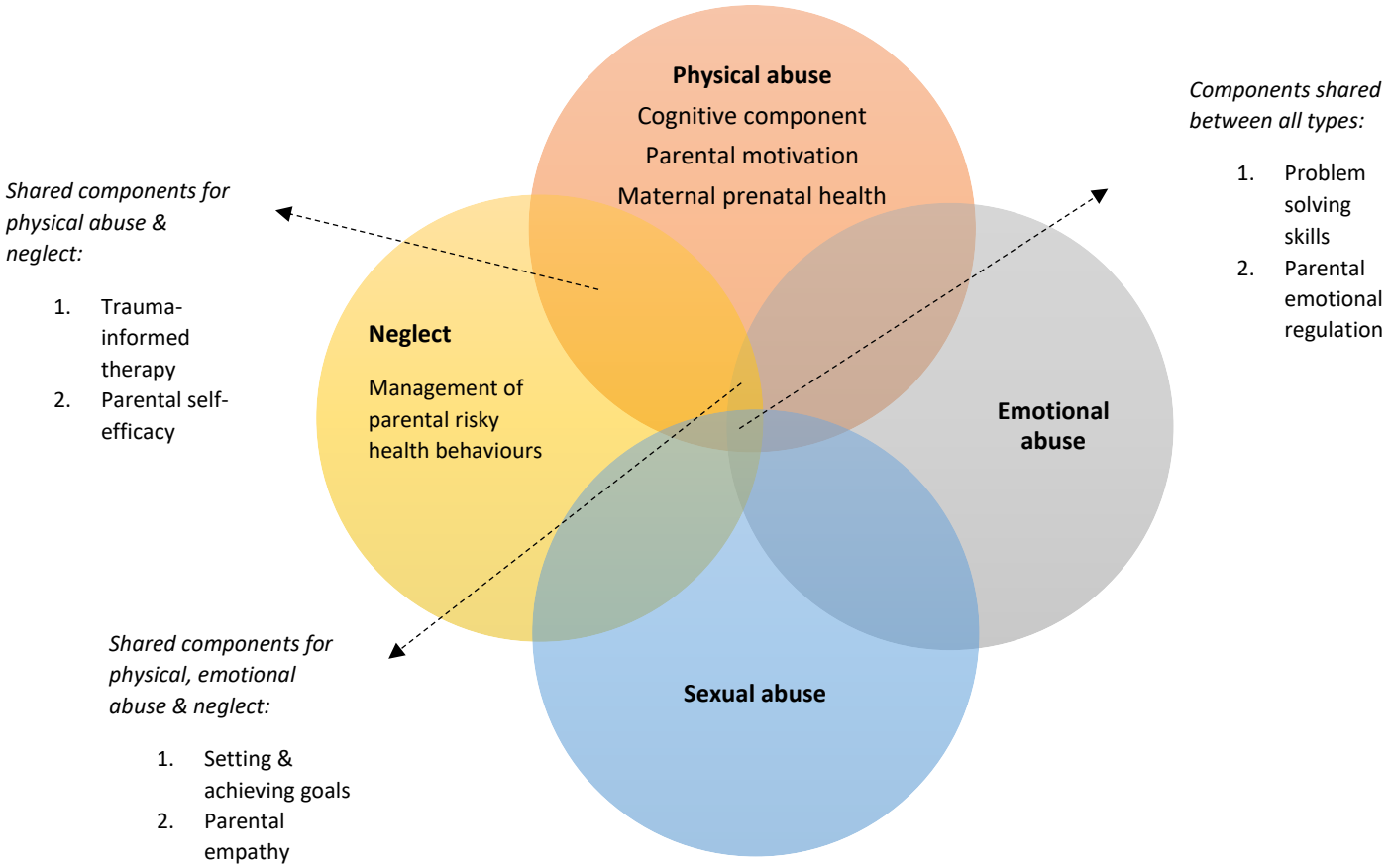
Table 23: Number of interventions and maltreatment types identified in effective interventions

Maltreatment type	No. of interventions
Physical abuse	9
Neglect	1
Physical & emotional abuse	4
Physical abuse & neglect	7
Physical & sexual abuse	1
Emotional abuse & neglect	1
Physical, emotional abuse & neglect	4

Micro-individual Intervention components and maltreatment types

There were eleven intervention components identified at the micro-individual ecological level. Figure 33 presents these along with types of maltreatment. Three intervention components were unique to physical abuse, and these included cognitive appraisal (Bugental et al., 2010), parental motivation (Dakof et al., 2010), and maternal prenatal health care (Fulton et al., 1991). Management of parental risky health behaviours was the only intervention component specific to neglect (Donohue et al., 2014). There were no unique intervention components for emotional and sexual abuse. Among shared components, problem solving skills and parental emotional regulation were shared between all four maltreatment types; physical abuse (e.g., Fergusson et al., 2005), sexual abuse (Fennell et al., 1998), neglect (e.g., Schaeffer et al., 2021) and emotional abuse (e.g., Knox et al., 2013). Setting and achieving goals and parental empathy were common to physical, emotional abuse and neglect (e.g., LeCroy et al., 2020; Guterman et al., 2013; Lachman et al., 2017). Trauma-informed therapy and parental self-efficacy were shared between physical abuse and neglect (Schaeffer et al., 2021; John et al., 1984).

Figure 33: Micro-individual level intervention components and types of maltreatment



Micro-family level components and maltreatment type

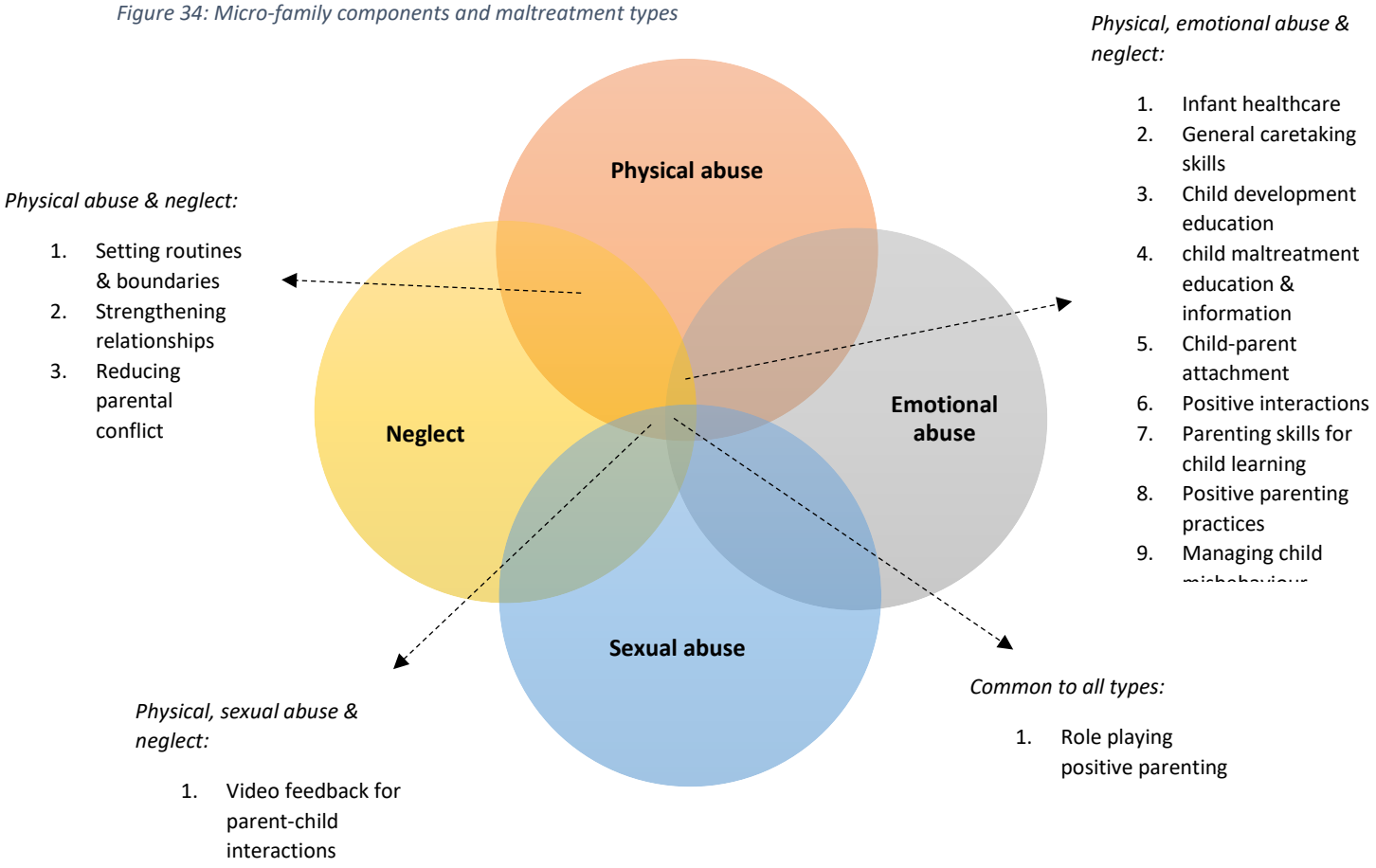
There were 15 intervention components at the micro-family ecological level but only 14 were associated with maltreatment types and the component Help with abusive relationships was not identified for any specific type of maltreatment. Figure 34 displays the 14 components based on maltreatment types.

Only one intervention component was shared between all four types of maltreatment - Role playing positive parenting (e.g., Fennell et al., 1998; Lachman et al., 2017). Physical, emotional abuse and neglect shared the most components (9) and these included Infant healthcare (LeCroy et al., 2020), General caretaking skills (e.g., Jouriles et al., 2010), Child development education (e.g., Khosravan et al., 2018), Child maltreatment education and information (e.g., Gulirmak et al., 2021), Child-parent attachment (e.g., LeCroy et al., 2020), Positive interactions (Knox et al., 2013), Parenting skills (e.g., Francis et al., 2021; Gulirmak et al., 2021), Managing child misbehaviour (e.g., Heubner et al., 2002; Jouriles et al., 2010), Positive parenting practices (e.g., Dawe et al., 2007; Lachman et al., 2017).

Physical abuse and neglect shared components of Setting routines and boundaries (Letarte et al., 2010), Strengthening relationships (Fergusson et al., 2005), and reducing parental conflict (e.g., John et al., 1984). There was only one common component between physical abuse, neglect and sexual abuse which was video feedback for parent-child interactions (e.g., Fennell et al., 1998; Huebner et al., 2002).

No unique components were identified at the micro-family level for any maltreatment type.

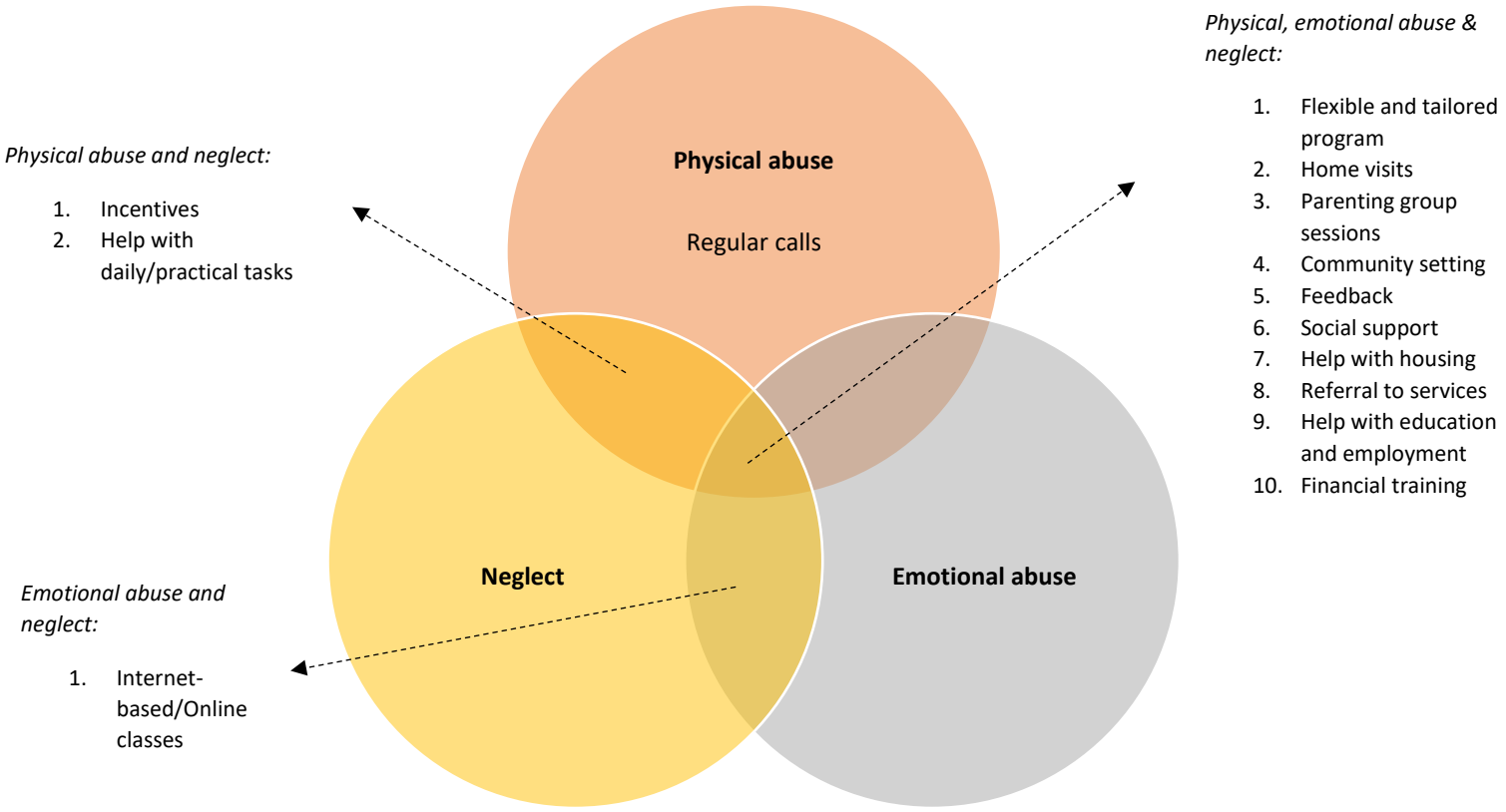
Figure 34: Micro-family components and maltreatment types



Mezzo level components and maltreatment type

There were 14 intervention components identified at the mezzo level and these along with associated maltreatment types are displayed in Figure 35.

Figure 35: Mezzo-level components and maltreatment types



At the mezzo level, no intervention components for sexual abuse were identified from the effective interventions. The component of regular calls to parents from intervention practitioners was unique to physical abuse (Arruabarrena et al., 2022) and no other unique component was identified for neglect or emotional abuse. There were several components which were shared between physical, emotional abuse and neglect. For instance, flexibility of intervention program (e.g., Jouriles et al., 2010), social support (e.g., Ismayilova et al., 2020; John et al., 1984), and home visiting (e.g., Khosravan et al., 2018) were some of the shared components for the three maltreatment types. Physical abuse and neglect shared components of incentives (Schaeffer et al., 2021) and help with daily or practical tasks (Feldman et al., 1992). Neglect and emotional abuse only shared one component of provision of an Internet based program or online classes (Gulirmak et al., 2021). There were no shared components between physical and emotional abuse at the mezzo level.

Chapter 10: Discussion of Review B findings

Summary of findings

Systematic Review B synthesised parental risk and intervention provision from child maltreatment intervention evaluations. The aim of Review B was to identify parental risk characteristics in samples of child maltreatment interventions and to examine intervention components and the techniques used to implement them across interventions. This synthesis was guided by the Risk and Resilience Ecological Framework (Bronfenbrenner, 1979; Fraser et al., 1999) and examination of intervention component delivery was further guided by Behaviour Change Techniques (BCT; Michie et al., 2011), the BCT Taxonomy (BCTTv1; Michie et al., 2013).

Findings of Systematic Review B suggest that parental risk characteristics in samples of child maltreatment interventions are most prevalent on the micro-Individual and micro-Family ecological levels with the least amount of risk characteristics found on the macro-level. Within the micro ecological level (individual and family), the most common parental risk characteristics included low education, poor mental health, substance abuse, prior child maltreatment record with child welfare services, single-parent families, and Intimate partner violence (IPV). On the mezzo level, low household income, receipt of welfare and poverty were the most prevalent risk characteristics. Finally, the macro ecological level included communities which had under-utilisation of available services, communities with multiple risk markers such as high infant mortality, high poverty, high levels of government funding and high teenage pregnancies. Parents belonging to a culture where there may be acceptance of certain abusive parenting practices was also identified as a macro level risk characteristic.

For intervention provision, a total of 40 intervention components from parenting interventions were extracted from the 60 evaluation studies and these were mapped onto ecological levels (micro - individual and family, and mezzo) No intervention components were found for the macro ecological level. The various techniques used to implement intervention components at each ecological level were coded using Behaviour Change Techniques (BCTs) and the Behaviour Change Technique Taxonomy (BCCTv1.; Michie et al., 2013). 25 BCTs were used to implement 11 intervention components at the micro-individual level, 17 BCTs were mapped onto 11 intervention components at the micro-family level and 20 BCTs were coded for the 14 intervention components at the mezzo level. No intervention components were identified on the macro ecological level.

Intervention components were also examined based on effectiveness of interventions. From the 60 intervention evaluations, 41 had an effect on child maltreatment outcomes. From these, the three most prevalent intervention components at the micro-individual level were Setting and achieving goals, Parental emotional regulation, and Problem-solving skills. At the micro-family level, the three most prevalent intervention components were Child development education,

Managing child misbehaviour and Strengthening relationships component. The three mezzo-level intervention components found to be most prevalent across effective interventions were Home visiting, Social support, and Parenting group sessions.

Techniques used to deliver intervention components were captured by the BCT Framework (Michie et al., 2013) and represented using systems maps. A considerable overlap was noted for BCTs across intervention components and across ecological levels. BCTs of Social support (unspecified) and Instruction on how to perform a behaviour were the two most prevalent and identified at the micro (individual and family) and mezzo levels. Social support (unspecified) was linked to 30 out of the 40 intervention components while Instruction on how to perform a behaviour was associated with 17 intervention components. Other prevalent BCTs included Self-monitoring of behaviour (micro-individual), Demonstration of the behaviour (micro-family), Social support (practical) and Restructuring the physical environment (mezzo level).

There were 19 interventions which did not show an effect on child maltreatment outcomes. There were some missing intervention components at each ecological level compared to effective ones. At the micro-individual level, interventions without effect did not have components of parental motivation and cognitive appraisal. Setting of routines and boundaries, and reducing parental conflict were two components not found in ineffective interventions at the micro-family level. Finally, at the mezzo level, components of financial training and Incentives were missing from interventions without effect.

For differences in risk based on maltreatment type, only 37 interventions specified a type of maltreatment from the 60 included evaluations. Low parental education on the micro-individual level was a prevalent risk characteristic for physical abuse, neglect, and emotional abuse, followed by parental substance abuse and parental history of childhood maltreatment. No risk characteristics on this level were found for sexual abuse. On the micro-family level, prior record of child maltreatment with welfare services was the most prevalent risk characteristic for physical abuse, neglect, and emotional abuse and the only risk factor for sexual abuse. Single-parent families was the second most common risk characteristic on the micro-family level for physical abuse, emotional abuse, and neglect. On the mezzo level, welfare receipt, poverty and unemployment were the most prevalent risk characteristics for physical and emotional abuse and neglect and no risk factors were found for sexual abuse. Finally, the macro ecological level had two risk characteristics of deprived communities and cultural context with culture associated with physical abuse.

Intervention components and maltreatment types were examined using only the 41 effective interventions. From these, only 27 specified a maltreatment type. On the micro-individual level, cognitive appraisal, parental motivation, and maternal prenatal health were unique to physical abuse and management of parental risky health behaviours was unique to neglect. No unique components were found for emotional and sexual abuse. Problem solving skills and parental emotional regulation were shared between all four maltreatment types. At the micro-family level, role playing positive parenting was common to all four types of maltreatment.

No unique components were identified for any maltreatment type at this level. The most shared components were between physical abuse, neglect and emotional abuse and included general caretaking skills, child development education and positive interactions, among others. Finally, the mezzo level, no intervention components for sexual abuse were identified. Physical abuse had one unique component of regular calls from intervention practitioners and no unique components were found for neglect or emotional abuse and none were shared between physical and emotional abuse. Several components were found to be common for neglect, physical and emotional abuse including flexibility of intervention program, home visiting, and social support, among others. Only one component was shared between neglect and emotional abuse which was provision of online classes.

Interpretation of Findings

Interpretation of findings of Review B are presented and discussed in this section.

The first section presents findings on risk factors in samples of child maltreatment interventions with the three most prevalent factors among the 60 evaluations at each ecological level (micro – indiviudal, micro – family, mezzo and macro). The second sections presents a discussion on included study characteristics such as intervention effect, sample, representation of countries, and measures used across studies. Then the most prevalent intervention components and BCTs for each ecological level are discussed. Following this, a brief discussion of differences between effective and non-effective interventions is also presented. Finally, a discussion of Review B's findings on differences in risk factors and intervention provision based on type of maltreatment are presented.

NB: As parental risk factors uncovered in Review B coincide with many of the parental risk factors found in Review A, especially on the micro (individual and family) level, this section limits their examination as these have already been discussed extensively in Review A.

Parental risk characteristics for child maltreatment

Micro-level (individual and family) parental risk

Among micro-individual risk factors, parental low education was the most common risk charcateristic found in the parenting samples of child maltreatment interventions. This finding from Review B is supported by prior research and coincides with findings from Review A. Prior research demonstrates a pathway in which a lack of parental education, especially maternal education, is linked to child maltreatment through insufficient knowledge of children and their development and adoption of inappropriate parenting attitudes and behaviours which can all contribute to increasing the risk of child maltreatment (Rafaiee et al., 2021). It is assumed that a higher education in parents can equip them to better deal with their children's needs and lower risk of maltreatment. For instance, Guterman and colleagues (2009) report

that fathers' college education or higher is significantly associated with lower risk of physical child abuse. A co-occurrence of other risk factors alongside low education can also exacerbate risk of harm to child. Parents' low education can result in lack of employment, poverty, low socio-economic status and living in deprived communities – all of which have been positively associated with parents' high stress and with perpetration of or risk of child maltreatment (Brown and De Cao, 2017; Gelles, 2016; Berger and Brooks-Gunn, 2005; Steele et al., 2016).

Review B also found that poor parental mental health (e.g., Taylor et al., 1998, Guterman et al., 2013) and parental substance abuse (e.g., Eddy et al., 2020; Frye et al., 2008) were two other prevalent micro-individual risk characteristics in the parent samples of child maltreatment interventions. Parental depression was the most commonly cited mental health issue in the included studies (e.g., Dishion et al., 2015). An association between poor parental mental health, especially depression, and child maltreatment risk has been established in prior literature (Berger and Brooks-Gunn, 2005; Stith et al., 2009) and recurrence of child maltreatment is associated with maternal mood and anxiety disorders (Kohl et al., 2011). Similarly, substance abuse among parents is consistently linked to a heightened risk of child maltreatment (Goldberg and Blaauw, 2019; Laslett et al., 2012).

Among micro-family level risk characteristics, Review B found the most prevalent parental risk characterisitic was a prior record of child maltreatment with child welfare services (e.g., DuMont et al., 2008) and majority of the records were based on non-substantiated referrals (e.g., MacMillan et al., 2005). This was not a surprising finding since a review on decision-making in CPS found that a prior history of referral to welfare services is founded on two tenets: i) a comorbidity of parental risk factors exists in the family and, ii) an increase in unsubstantiated referrals increases the risk of substantiation in the future (Child Welfare, 2003). For substantiated referrals, a systematic review of 76 studies (Hindley, Ramchandani and Jones, 2006) found that the most consistent factor associated with risk of future maltreatment was a history of child welfare service involvement.

Single-parent families (e.g., Eddy et al., 2020) was the second most common parental risk characteristic at the micro-family level in the included studies of Review B. There was a co-occurrence of mezzo level risk factors prevalent in this subgroup of parents and along with being a single parent, majority were unemployed or had low-income (e.g., Fergusson et al., 2005). This coincides with findings of Review A and with prior research which is clear that single parenthood can exacerbate economic disadvantage, and parenting stress which strengthens the likelihood of child maltreatment (Afifi et al., 2015).

Review B found the third prevalent micro-family risk factor to be intimate partner violence (IPV). The intergenerational transmission of violence hypothesis is applicable in the context of child maltreatment. Empirical evidence shows that victims of child maltreatment tend to have unsatisfactory intimate relationships as adults (Nguyen et al., 2017) and based on Social Learning Theory (Bandura, 1977), those witnessing IPV as children may perceive abusive interactions as normal solutions to conflict and repeat learnt behaviours from childhood (Wareham, Boots

and Chavez, 2009). A parental history of child maltreatment may also increase the risk of IPV victimization through feelings of inferiority, helplessness and being unlovable, reducing capacity to resist violence in adult intimate relationships (Brooks-Russel et al., 2013). Considering this, practitioners and researchers should emphasise a history of childhood maltreatment, witnessing IPV and links to future IPV and child maltreatment as co-occurring and tightly bound in the cycle of violence.

Mezzo-level parental risk

Review B found economic hardships of various kinds as most common among mezzo level risk characteristics. Low household income was most prevalent within samples of child maltreatment interventions. While categorisation of low income differed across studies, a co-occurrence of micro-individual factors such as low parental age (e.g., Taylor et al. 1998) and micro-family factors such as single parenthood (e.g., LeTarte et al., 2010) were also noted. Parents receiving welfare (e.g., Scudder et al., 2014; MacMillan et al., 2005) and those below the threshold of poverty (Fowler et al., 2017 and Silovsky et al., 2011) were the second and thirst most common risk characteristics, respectively. Research consistently establishes economic stress and its negative impact on parenting abilities (Conger et al., 2000; Magnuson and Duncan, 2002). Prior systematic reviews (Conrad-Heibner and Scanlon, 2015; Conrad-Heibner et al., 2018) conclude that parental economic insecurity, including low income, poverty, and welfare receipt, is the strongest and most reliable predictor of maltreatment. What is unknown, however, is the causal nature of the association between economic hardship and child maltreatment and influence of other factors which are under-researched. For instance, it is possible that parents receiving services such as income support or welfare are prone to surveillance bias (Cancian et al., 2013). More research in this area needs to be conducted. Furthermore, ameliorating economic distress among vulnerable families requires support from policy makers and practitioners to ensure the development and implementation of economic well-being strategies.

Macro-level parental risk

Among macro-level parental risk characteristics, Review B found limited studies (n=6) identifying these. The cultural context of three interventions were identified as a risk factor which included parents from Thailand (Sawasdipanich et al., 2010), Iran (Oveisi et al., 2010) and Jamaica (Franics et al., 2020). A systematic review and meta-analysis (Mohammadi et al., 2014) concluded that child maltreatment is common in Iran with child physical abuse as most prevalent and this is partly due to a lack of relevant policy on child maltreatment. Barriers to effective child maltreatment prevention in Iran include lack of legal support, an absence of mandated reporting along with cultural and religious beliefs (Borimnejad and Fomani, 2015). In Thailand, studies report that cultural beliefs such as common acceptance of corporal punishment, children viewed as possessions and a power hierarchy embedded in families, perpetuates child maltreatment (Chinlumprasert, 2004; Natamongkonchai et al., 2004; Watakakosol et al., 2019). In Jamaica, economic hardship, culturally accepted practice of physical abuse guised as corporal

punishment of children, along with fear from government interventions in the home, may account for high prevalence of child maltreatment in Jamaica (UNICEF, 2013; Delores and Gail, 2003).

Globalisation and diversity in culture among populations begs research and practice to take a culture-specific perspective of child maltreatment. For researchers, there is sparse exploration of culture's influence on parenting and child maltreatment and further exploration, especially among cultures where normative child abusive practices prevail, can help identify specific and targeted strategies for child maltreatment prevention.

Other macro level risk characteristics identified in studies (n=2) included parents who belonged to deprived areas. Deprivation consisted of areas of high poverty (Reynolds et al., 2013), low access to health care, high rates of adolescence pregnancy and high infant mortality (DuMont et al., 2008). An ecological overlap exists within this risk characteristic between mezzo and macro levels. Deprivation in the community is inextricably linked to parental economic disadvantage, however, it is the inequality (e.g., income, resources, services) underlying deprivation which seems to have an influence on child maltreatment. Prior reviews conclude that socio-economic inequality negatively impacts upon wellbeing and health, creates social distrust and frustration, and increases risk of violence both in the community and the home (Subramanian and Kawachi, 2004; Wilkinson and Pickett, 2009). On the other hand, studies have also found that low-income families living in more affluent neighbourhoods, have lowered risk of child maltreatment through utilisation of resources (e.g., health care) and services within the area (Maguire-Jack, 2014). While this finding of Review B was limited to two studies, it is an important one and supported by prior research as it highlights the need for policy to ensure provision of resources in areas is equal and indiscriminate of socio-economic levels. There is also further research required to show the explicit pathway through which deprivation in the wider community influences child maltreatment and underlying mechanisms.

A final, macro-level parental risk characteristic found in Review B was the underutilisation of services by adolescent mothers identified in one study (Barth et al., 1991). This consisted of adolescent mothers not accessing available health and social services. Prior research has consistently established higher risk for child maltreatment by adolescent parents (e.g., Putnam-Hornstein and Needell, 2011) due to several co-occurring risk factors including poverty, unemployment, and poor mental health (Patel and Sen, 2012). Literature also reveals that adolescent parents in receipt of services (e.g., income or housing assistance) are at an increased risk of coming under surveillance of child welfare services (King et al., 2019), have a higher incidence of being reported for child welfare concerns, have more intensive welfare services' involvement (Fallon et al., 2011), and are more likely to have their children removed following an investigation compared to older parents (Hovdestad et al., 2015). It is not surprising then that parents most in need of services avoid accessing them. While only found in one study, this finding from Review B has important implications for research and practice. Exploration of influences on utilisation of services among at-risk parents, especially from the perspective of such parents, can further knowledge in this area. Practitioners need to aim service provision to target

specific risk factors, including income support, housing, and mental health support, to reduce multiple adversities faced by adolescent parents, and minimise child maltreatment risk.

Intervention components and BCTs in child maltreatment interventions

This first section presents a discussion of the summary characteristics of included studies which are effective for child maltreatment, measures used across studies and representation of countries across the 60 evaluation studies.

The second section discusses the findings of Systematic Review B in respect to intervention components and BCTs of parenting interventions for child maltreatment. The three most common intervention components across effective studies are discussed for ecological levels (micro – individual and family, and mezzo) and the three most prevalent BCTs for the micro and mezzo ecological levels are also discussed. No intervention components were identified from the 60 included studies on the macro ecological level.

The final section presents a discussion of Review B's findings on differences in risk factors and intervention components based on type of maltreatment.

Characteristics of effective interventions

Review B found 41 interventions from the 60 included evaluation studies to influence child maltreatment outcomes from which RCTs (n = 28) generally reported a small effect size. This is supported by prior meta-analyses of parenting interventions for child maltreatment showing small effect sizes and modest effectiveness in preventing or reducing child maltreatment (van Ijzendoorn et al., 2019; Filene et al., 2013; Euser et al., 2015).

Review B also did not find any differences in child maltreatment outcomes based on maltreating or at-risk samples nor any differences in length of intervention delivery for effective and non-effective interventions. This contrasts with prior findings (Van der Put et al., 2018; Vlahovicova et al., 2017) in which child maltreatment interventions are more effective for maltreating parents compared to at-risk parents. Meta-analytic findings suggest that short term interventions (0-6 months) are more effective for at-risk parents (van der Put et al., 2018) while moderate length of delivery (6-12 months) is more effective for maltreating parents (Euser et al., 2015). However, these studies only focused on RCTs, and Euser et al. (2015) had smaller number of intervention studies (n=28) compared to Review B. It is possible that inclusion of a Quasi-experimental design in Review B resulted in this conflict with prior research. There is a need for evidence synthesis in child maltreatment to shift focus from RCTs to include other study designs to gain a fairer and comprehensive picture of intervention effectiveness and more detail on components. This can provide insight into which aspects of interventions, including delivery length, and differences in effect for at-risk and maltreating parents.

Measures

Majority of the included studies utilised parents' self-report measures for child maltreatment. For interventions showing an effect on child maltreatment outcomes (n = 41), there was an almost even split with 20 evaluations using self-report measures and 21 evaluations employing either objective measures alone (n = 9) or both self-report and objective measures (n = 12). Prior literature has consistently established the superiority of objective measures due to lowered risk of bias (e.g., social desirability bias) present in self-report measures (Hawes and Dadds, 2006). It is also difficult to assess whether an intervention is effective for child maltreatment outcomes based solely on parents' reports as there may be under-reporting of risk or actual incidence of child maltreatment and over-reporting of changed behaviour (Holzer et al., 2006; Oliver, 2009). There is a need for researchers to adopt uniformity in measurement of child maltreatment and either use only objective measures or a combination of objective measures and self-reports from parents to ensure a more accurate assessment of intervention effectiveness.

Representation of countries

A total of 15 countries were represented in the included evaluation studies and while 86% of the studies evaluated interventions from high-income countries (HIC) such as USA, Australia, European countries, and the UK, 14% included developing or low-income countries (LIC) such as Jamaica, Tanzania, Burkina Faso and Iran, among others. While several risk characteristics (e.g., mental health issues, substance abuse and IPV) and protective factors (e.g., social support, child development education, managing child misbehaviour) are universal, there are distinct characteristics which are unique to low-income or developing countries. For instance, Ismayilova and colleagues' (2020) evaluation of a child maltreatment intervention in Burkina Faso (West Africa) with maltreating parents included parents who had low literacy rates, extreme poverty (e.g., going to bed hungry) and extreme overcrowding and inadequate housing (e.g., 10 or more people residing in small huts). The intervention was effective in reducing physical and emotional abuse and the intervention components included enhancing parents' problem-solving skills on the micro-individual level and child maltreatment education at the micro-family level and mezzo level components included parenting group sessions, financial training, and social support. Most of these components were prevalent across interventions regardless of country, however, child maltreatment education and financial training were not the most common components. Similarly, as seen in Table 24, home visiting was the most common component in effective interventions, yet it was missing in the Burkina Faso intervention. Ismayilova et al. (2020) evaluation is an example of unique, region-specific risk indicators and targeted intervention components to address child maltreatment in different countries. It also highlights that what is effective in developed or HIC is not easily transferable to developing or LIC.

Many developing and low or even middle-income countries (e.g., Iran, Thailand, Turkey) have certain accepted cultural practices around parenting, especially with harsh and physical discipline of children some of which fits under the

definition of physical abuse (Levey et al., 2017). More intervention evaluations conducted in these parts of the world can enhance knowledge and child maltreatment intervention development. As majority of research in child maltreatment stems from HIC, it is not surprising that evidence tilts towards this part of the world (McCloskey, 2011). Since child maltreatment is a global concern, gaining insight into region-specific risk factors and effective intervention components can help promote uniformity in child maltreatment prevention and reduction efforts, globally.

Intervention components

Based on Review B's findings, Table 24 shows the three prevalent intervention components on each ecological level and their frequency across all included studies and across interventions that influenced child maltreatment outcomes.

Table 24: Prevalent intervention components, ecological level, and frequency – Review B

Ecological Level	Intervention components	Total frequency	Frequency in effective interventions
Micro-individual	Setting and achieving goals	17	10
	Parental emotional regulation	15	14
	Problem solving skills	12	9
Micro-family	Child development education and health information	20	13
	Managing child misbehaviour	19	17
	Strengthening relationships	17	12
Mezzo	Home visiting	40	26
	Social support	20	16
	Parenting groups	19	14

Micro-individual intervention components

Setting and achieving goals was one of the most prevalent components identified across interventions on the micro-individual level. A narrative systematic review by Ward et al (2014) of child protection cases highlights attainment of goals as a direct reflection of parents' capacity and motivation to change. Harnett (2007) proposes a goal setting approach for practitioners involved in child welfare to assess parents' ability to change. Setting and achieving goals has been included as an intervention component in studies of interventions for institutionally maltreated children (Finch et al., 2021). However, prior systematic reviews and meta-analysis focusing on components of child maltreatment interventions for parents do not identify this as either significant or prevalent (e.g., van der Put et al., 2018; Melendez-Torres et al., 2019). This may partly be based on varying definitions across studies of intervention components. Review B's findings can pave the way for researchers in the field to extract and highlight this component from parenting interventions to assess its value to child maltreatment prevention and reduction.

Parental emotional dysregulation is associated with parents' history of childhood maltreatment, lack of coping skills to manage anger and stress and a

higher child maltreatment risk, especially for physical abuse (Stith et al., 2009; Lavi et al., 2021; Wang, 2022). An updated systematic review on universal parenting interventions to prevent child maltreatment found that interventions promoting emotional and self-regulation in parents were effective in reducing child maltreatment risk (Branco et al., 2021). In line with this, Review B found emotional regulation of parents to be the second most prevalent micro-individual level intervention component found in 15 interventions of which 14 were effective for child maltreatment.

Helping parents to problem-solve was a common intervention component in the included studies for Review B. While Review B did not examine differences in effect sizes between interventions based on each intervention component, a prior meta-analysis found that problem solving skills in interventions have smaller effect on child maltreatment compared to those interventions that lack this component (Gubbels et al., 2019). However, this meta-analysis only included parent training interventions focusing on maltreatment prevention while Review B also includes curative interventions targeting maltreating parents. A prior meta-analysis of curative interventions found larger effects for programs that emphasised specific parenting skills, including problem solving (van der Put et al., 2018). In Review B, from the 12 interventions that included this component, the sample was split equally between at-risk (n=6) and maltreating (n=6), and with a maltreating sample, five out of six interventions were effective for child maltreatment outcomes while for the at-risk sample, four were. This is not significant to support van der Put et al (2018) findings nor reject Gubbels et al (2019) conclusion but suggests that the problem-solving component may have a neutral impact on child maltreatment outcomes. Further research in this area to specify the importance of equipping parents with problem solving skills and links to program effectiveness to prevent or reduce child maltreatment can offer insight, allowing development of interventions to include components which effect child maltreatment outcomes among parents and avoid wasting resources on those that do not.

Micro-family intervention components

Review B found Child development education and health information to be a prevalent component on the micro-family level and was found in 17 total interventions. There is abundant literature that emphasises the role of parent education as a protective factor. A greater knowledge of child development allows parents, especially young parents, to have age-appropriate expectations, develop parenting skills, have higher confidence in parenting and an increase in self-efficacy (Barber, 1992; Britner and Repucci, 1997; Avellar and Supple, 2013). Based on these established findings, it is noteworthy that out of 41 effective interventions in Systematic Review B, only 13 included this component. A recent systematic review and meta-analysis (Jeong et al., 2021) of 111 studies evaluating parenting interventions found that parent education improved child outcomes and parent-child interactions but did not affect other parent-related factors such as poor mental health. However, Jeong et al. (2021) only focused on interventions in the first three years of a child's life and did not examine child maltreatment outcomes for parents. A prior systematic review of reviews (Mikton and Butchatrt, 2009) of 29 studies with

a total of 298 evaluations of interventions for child maltreatment prevention, found parent education to be effective in reducing risk factors associated with child maltreatment but found inconclusive evidence for actual child maltreatment. Another systematic review and meta-analysis of 25 studies evaluating intervention effectiveness found no evidence of parent education as effective for prevention of infant head trauma, parents' emotional regulation or on postnatal depression (Scott et al., 2022).

It may be that parent education is more effective in universal programmes of parenting (Cullen et al., 2017) or more targeted programs for subgroups such as adolescent parents (Amin et al., 2018) who may lack knowledge of child development and child rearing and may not be as effective for parents who have multiple, co-occurring adversities. Similarly, most interventions that are educational in nature tend to target competent parenting or enhancement of parenting skills rather than direct prevention or reduction of child maltreatment (Holzer et al., 2006). It is possible that educating parents about child development or child health is redundant in directly affecting parental child maltreatment. A closer examination of the precise relationship between the two can help establish utility of this component in child maltreatment interventions.

Another prevalent micro-family level component found in Review B was Managing child misbehaviour identified in 19 interventions with 17 of these effective for child maltreatment. Most of these aimed to equip parents with alternative techniques of disciplining children either in place of physical abuse (sometimes referred to as harsh physical punishment) or to lower the risk of such abuse. A prior review of 14 RCTs of interventions aiming to reduce physical abuse recurrence found that parenting interventions that teach parents strategies to manage child misbehaviour, had a positive effect on reducing physical abuse recidivism (Melendez-Torres et al., 2017). While this review was restricted to physical abuse and only considered maltreating parents; in Review B, majority of the effective interventions (n=17) with this component were for at-risk parents (n=11). In their meta-analysis, Gubbels et al (2019) found this component to be prevalent in 70% of the included intervention evaluations (n=51) and found larger effect sizes for programs that included this versus those that did not. They also had a combination of at-risk and maltreating families with the latter representing 22% of intervention samples (n=50).

There also appears to be a link between the micro-individual level component of Emotional regulation of parents and the micro-family component of Managing child misbehaviour. Studies show that parental dysregulation of emotions is linked to use of harsh physical punishment and misattributing seriousness or intent to a child's misbehaviour (Ateah and Durrant, 2005; Holden, Coleman, and Schmidt, 1995). Research also finds that abusive parents tend to have higher negative affect, stress, depression, and hostility (Mammen et al., 2002, Francis and Wolfe, 2008). Given the significance of these co-occurring risk factors, it makes sense for interventions to include parental emotional regulation and management of child misbehaviour as a collective strategy. In Review B, 22% of effective interventions had both these components while none of the non-effective interventions included both. Based on

this finding, further research can help establish links between the presence or absence of both components to understand their impact on effectiveness of child maltreatment interventions for maltreating and at-risk parents.

Strengthening relationships was another common micro-family intervention component. This component included strengthening familial relationships, inter-parent, and practitioner-parent relationships. Longitudinal studies have established the protective nature of stable and nurturing relationships for child maltreatment, especially for parents with a childhood history of maltreatment (Jaffee et al., 2013; Schofield et al., 2013). The presence of warm and supportive relationships enables parents to learn acceptable ways of expressing emotions, develop coping skills, have reduced depression, higher confidence, and agency; all contributing to an increase in parental resilience and decline in child maltreatment risk (Herrenkohl, 2013).

A systematic review of parenting interventions identified ‘developing relationships’ (Vseteckova et al., 2021) between practitioner and parent as key in promoting trust resulting in higher engagement with the programme. There is also evidence of improving inter-parental relationships, especially in families at risk of IPV (Gordon et al., 2016). However, there is no systematic review or meta-analytic evidence supporting strengthening of familial relationships and their importance in ameliorating child maltreatment prevention. Review B’s finding in this context can pave the way for future reviews to evaluate the strength of this component and its effect on child maltreatment outcomes.

Mezzo intervention components

Review B found the home visiting component as the most prevalent at the mezzo level (and across all ecological levels) and was identified in 40 interventions of which 26 had a positive effect on child maltreatment outcomes. This finding is in line with previous systematic reviews and meta-analyses in which home visiting is shown to be effective to prevent recurrence of child maltreatment (Han and Oh, 2022), and to reduce child maltreatment risk especially when home visiting starts prenatally (Peacock et al., 2013). Nievar et al (2010) in their meta-analysis of home visiting interventions note that effectiveness of such programs depends on the length of delivery and frequency of home visiting. Review B found that for effective interventions, length of home visiting varied between 3 months to 6 years and no differences were found in frequency of visits. This is supported by systematic reviews which contradict Niever et al (2010) findings stating that no distinction between effective and non-effective home visiting programs is based on duration and intensity of visitation (Kendrick et al., 2000; Aslam and Kemp, 2005). Instead, a focus on characteristics of parents may be more significant in determining effectiveness of home visiting, with more vulnerable families with multiple co-occurring risk requiring lengthier, more intensive visits (Ammerman et al., 2010). More research exploring intensity of this component based on parental risk can provide a pathway of effectiveness and establish what type of parent populations benefit from this intervention component.

The second most prevalent mezzo-level intervention component was that of Social support found in 20 interventions of which 16 positively influenced child maltreatment outcomes. This is in line with prior evidence in the field whereby social support is consistently established as a protective factor for child maltreatment (Cutrona, 2000; Li, Godinet, & Arnsberger, 2011). For Review B, this component included intervention practitioners providing emotional (e.g., counselling) and practical (e.g., helping with problems such as balancing work and family) support including encouraging parents to widen their social network within their community. Given that child maltreatment risk is elevated with parental stress and isolation, help with these can provide a buffering effect and better parental functioning (Thompson, 2015).

Prior research also claims that social support needs vary by parental circumstances and identifying type of support based on individual needs can be more effective than provision of blanket social support for all families (Thompson, 2015). While previous systematic reviews and meta-analyses (e.g., Levey et al., 2017; MacLeod and Nelson, 2000) provide evidence of social support as a protective factor for child maltreatment, they do not, however, always offer a clear definition nor distinction between type of support. Review B, however, clarified a distinction between several types of Social support and even included elements typically classified under social support as independent intervention components (e.g., Help with housing). A consensus on definition as well as exploration of different types of support and the contribution each type has on intervention effectiveness can help develop insight.

There is also some overlap between the mezzo-level Home visiting and Social support components. In Review B, from the 16 effective interventions with this component, 14 also included home visiting. Thompson (1995) posits that social support without the additional ‘social monitoring’ aspect cannot be effective. He claims that informal social support (e.g., from family, friends, and neighbours) can even be harmful as it may lead to acceptance of abusive parenting practices, especially for families living in deprived communities (Thompson, 2015). This lends support to having a collective strategy of both tailored social support provision and a home visiting or monitoring component in child maltreatment interventions. This also raises the question of whether informal social support without formal monitoring is effective or not and further research in this area can help establish whether the absence of one impact effectiveness of child maltreatment prevention.

Finally, the third prevalent intervention component on the mezzo level was the provision of parenting groups and this was found in 19 interventions of which 14 were effective for child maltreatment. There is prior evidence suggesting that group-based parenting interventions are effective, especially for reducing parental mental health difficulties and enhancing social connections (Lyu, Lu and Ma, 2022). There is also meta-analytic evidence which suggests that individual settings are more effective compared to group settings, especially for reducing risk of child physical abuse and improving parenting behaviours (Lundahl et al., 2006). Review B did not find any difference in the type of sample and intervention’s effect on child maltreatment as all 14 effective interventions with this component were equally split

between maltreating and at-risk parents. Given the contradictory findings in prior literature, more research on provision of parenting groups and their effectiveness based on type of parenting risk can further knowledge on how this intervention component works to reduce actual or risk of child maltreatment.

There were no macro level intervention components identified in the included evaluation studies of systematic Review B. While the review did provide evidence on some macro risk characteristics such as cultural norms and acceptance of abusive parenting practices; no intervention provided a buffer against these risks. It may be argued that interventions are not the optimal vehicle to deliver these as local and national policy and government legislation are best suited to offer protection at the macro level. Prior evidence reveals that national child maltreatment educational campaigns and promotion of service utilisation have shown promise (Sanders and Prinz, 2008; Poole et al., 2014). Policy and legislation (such as an increase in minimum wage, affordable childcare, and employment opportunities) can improve families' socio-economic status in turn reducing the risk of child maltreatment (Raissian et al., 2017; Austin et al., 2020; Klevens et al., 2016).

Behaviour Change Techniques (BCTs)

It is evident from the results of Review B and as shown in Table 25 and Figure 36, that a combination of BCTs of Social support (unspecified), and Instruction on how to perform a behaviour are both prevalent and promising techniques to deliver various intervention components and reduce risk of child maltreatment at the micro-individual, micro-family, and mezzo levels. Further to this, the BCT of Self-monitoring of behaviour is also prevalent for intervention components at the micro-individual level, BCT of Demonstration of the behaviour at the micro-family level and BCTs of Restructuring the physical environment and Social support (practical) at the mezzo level.

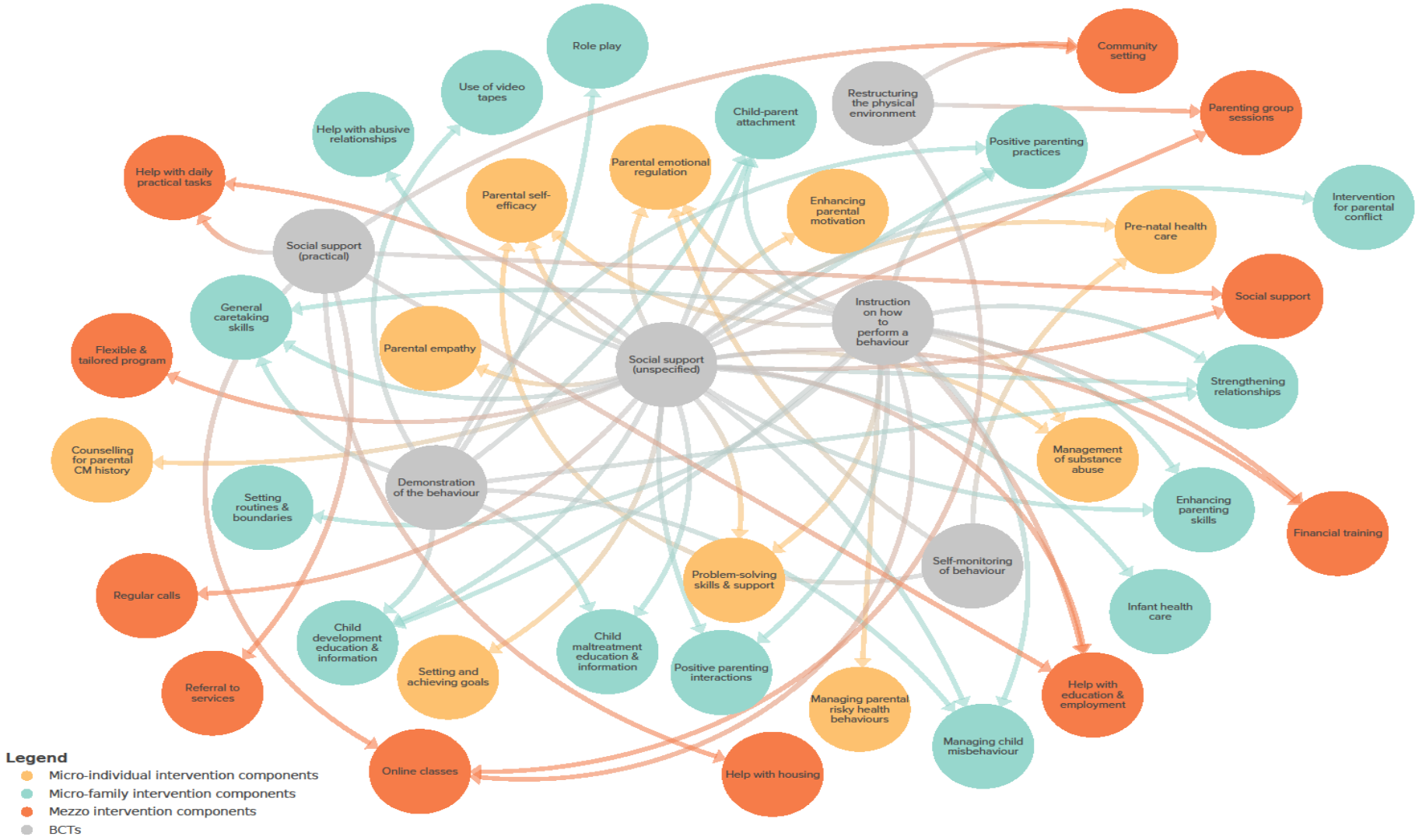
Table 25: Prevalent BCTs, number of intervention components and ecological levels

BCTs	Micro-Individual components	Micro-Family components	Mezzo components	Total Intervention components
Social support unspecified	11	12	7	30
Instruction on how to perform a behaviour	5	9	3	17
Self-monitoring of behaviour	3			3
Demonstration of the behaviour		9		9
Social support (practical)			7	7
Restructuring the physical environment			3	3

While there is sparsity of research on BCTs' effectiveness in child maltreatment interventions, one study did find Social support (unspecified), Restructuring the physical environment and Instruction on how to perform a behaviour as prevalent BCTs in intergenerational child maltreatment interventions for parents (Younas and Gutman, 2022). Similarly, a prior systematic review analysing BCTs for substance abuse interventions found Instruction on how to perform a behaviour and Social support (unspecified) as promising techniques (Howlett et al., 2022). A systematic meta-review of self-regulation in health behaviours found the BCT of Self-monitoring of behaviour to have mixed effectiveness evidence (Hennessey et al., 2020). In Review B, these BCTs were also associated with intervention components of Managing parental substance abuse and Parental emotional regulation.

Within child maltreatment research there are limited systematic reviews evaluating specific techniques for intervention delivery, for example, Melendez-Torres and colleagues' (2019) systematic review found *teaching* parents to be an effective technique in child maltreatment interventions lending support for Review B's finding of the BCT of Instruction on how to perform a behaviour. In Kaminski and colleagues' (2008) meta-analysis, *teaching* parents and *demonstrating* effective parenting skills are both techniques associated with positive parenting outcomes in child maltreatment interventions, supportive of the BCT of Demonstration of the behaviour in Review B. However, majority of prior reviews focus on intervention components (e.g., van der Put et al., 2018; Temcheff et al., 2018) and not many have attempted to delineate the specific techniques used to deliver these components and their effect on parental child maltreatment. The findings from Review B can pave the way for further exploration of highlighted BCTs. Research within the context of parenting interventions for child maltreatment can provide insight into whether these BCTs are indeed optimal.

Figure 36: BCTs & links to intervention components



Characteristics of non-effective interventions

Review B found a few intervention components missing in interventions that had no effect on parenting outcomes for child maltreatment (n = 19). Prior reviews have affirmed that having a large number of components in parenting programs for child maltreatment is not a guarantee of effectiveness (Euser et al., 2015; Kaminski et al., 2008). In Review B, the cognitive appraisal and parental motivation were absent at the micro-individual level. A narrative review of the literature found both these components to be promising in child maltreatment programs and especially effective for managing parental substance abuse and to reduce maltreatment recidivism (Shah et al., 2019). On the other hand, a systematic review of optimal intervention components for child physical abuse did not find enhancement of parental motivation or cognitive appraisal in interventions, including Cognitive Behavioural Therapy, to be effective (Melendez-Torres et al., 2019). A meta-analysis, however, did find enhancement of parental motivation to be effective in increasing parental engagement in interventions (Maltais et al., 2019). Enhancement of parental motivation is perhaps more effective in certain cases where parental engagement may be low, and cognitive appraisal could be useful with parents with mental health issues. However, based on conflicting findings in the literature, further research to determine the extent of effectiveness of these components on child maltreatment can better inform intervention practitioners and developers of their necessity in parenting programs for child maltreatment.

Review B also found the component of Setting routines and boundaries (with children) and reducing parental conflict to both be absent at the micro-family level in interventions without effect. In respect to the former, a prior systematic review suggests that enhancement of specific parental skills does not affect child maltreatment outcomes (Gubbells et al., 2019) while van der Put and colleagues' (2019) meta-analysis revealed that improving parenting effects child maltreatment outcomes, especially for maltreating parents. More research on specific parenting skills with maltreating versus at-risk samples may shed further light on the efficacy of developing parental skills and its association with child maltreatment outcomes.

In respect to BCTs, only two BCTs of Reward (behaviour) and Reward (outcome; see Appendix H for definitions) were missing from interventions without an effect on child maltreatment outcomes. Neither of the intervention components these BCTs were linked to were found to be prevalent in effective interventions (incentives and parental self-efficacy). However, it does shed light on the value of material and verbal reinforcement and how these may be optimal techniques to influence change in parenting behaviours. Schoeppe et al. (2014) propose that incentives and rewards can be useful for families which are difficult to engage in interventions and act as agents reinforcing adherence and commitment to the program. However, an RCT of Parent-Child Interaction Therapy (PCIT) providing low-cost incentives to parents to lower attrition did not show significant changes in attendance and engagement (Quetsch et al. 2020), suggesting provision of incentives may not be ideal. However, more research on various types of incentives (e.g., low to high cost, verbal

reinforcement) and whether these differ on effectiveness based on subgroups of parents (low socio- economic status, lack of appropriate childcare, low self-efficacy) and the kind of behaviour change required (e.g., attendance, changes in specific parenting behaviours) can provide insight into whether these BCTs are optimal or redundant for child maltreatment interventions.

Risk characteristics by maltreatment type

There were 37 evaluation studies out of 60 in Review B that specified a type of maltreatment. Figure 37 shows the maltreatment types across all four ecological levels and associated risk factors. There was considerable overlap of risk characteristics, and most were shared among two or more types of maltreatment with physical, emotional abuse and neglect sharing the most risk characteristics. Sexual abuse had the least shared risk and except for physical abuse, no unique risk factor was identified for any other maltreatment type.

For child physical abuse, the unique risk factors were negative parenting attitudes, more than four residents at home (micro-family) and lack of social support (mezzo). In respect to negative parenting attitudes, Review B defined this as belief in harsh physical punishment, child perceived as difficult, unrealistic expectations of child (e.g., Bugental et al., 2010) and problems managing child misbehaviour (e.g., Arruabarrena et al., 2022). These are supported by prior literature, but different terms have been used to categorise the same factors. For instance, Russa et al. (2014) use ‘rigid disciplinary attitudes’ and Sith et al. (2009) systematic review found parent ‘approval of corporal punishment’ and ‘perceives child as a problem’ as risk factors for child physical abuse. While there is abundant empirical literature supporting unrealistic expectations of child and its link to child physical abuse (e.g., Young et al., 2018), there is no known systematic review which has established this as significant. In fact, a recent meta-analysis (Milner et al., 2022) did not find an effect size for unrealistic child-related expectations and child physical abuse. This may partly be due to the interaction of risk factors and mediating effects of some of these on actual or risk of child physical abuse. Conceptualisation of child physical abuse in child maltreatment literature seems to be moving from single risk factor models to parent-specific interaction of risk. Lansford et al. (2014) state that negative parenting attitudes can be understood as unique parental biases based on their experience which in turn shapes their response. For instance, negative parenting attitudes mediate between other risk factors including parental stress, psychopathology, and childhood history of maltreatment (Beckerman et al., 2018; Rodriguez et al., 2019). Findings of Review B can pave the way for further systematic reviews to better understand the interaction of negative parenting attitudes with other parent-specific risk factors and their impact on child physical abuse, leading to more informed child maltreatment intervention strategies.

Review B’s findings on parental lack of social support for child physical abuse is supported by prior evidence (e.g., Milner et al., 2022). Similarly, for low socioeconomic status, an umbrella review of meta-analysis of risk factors for child

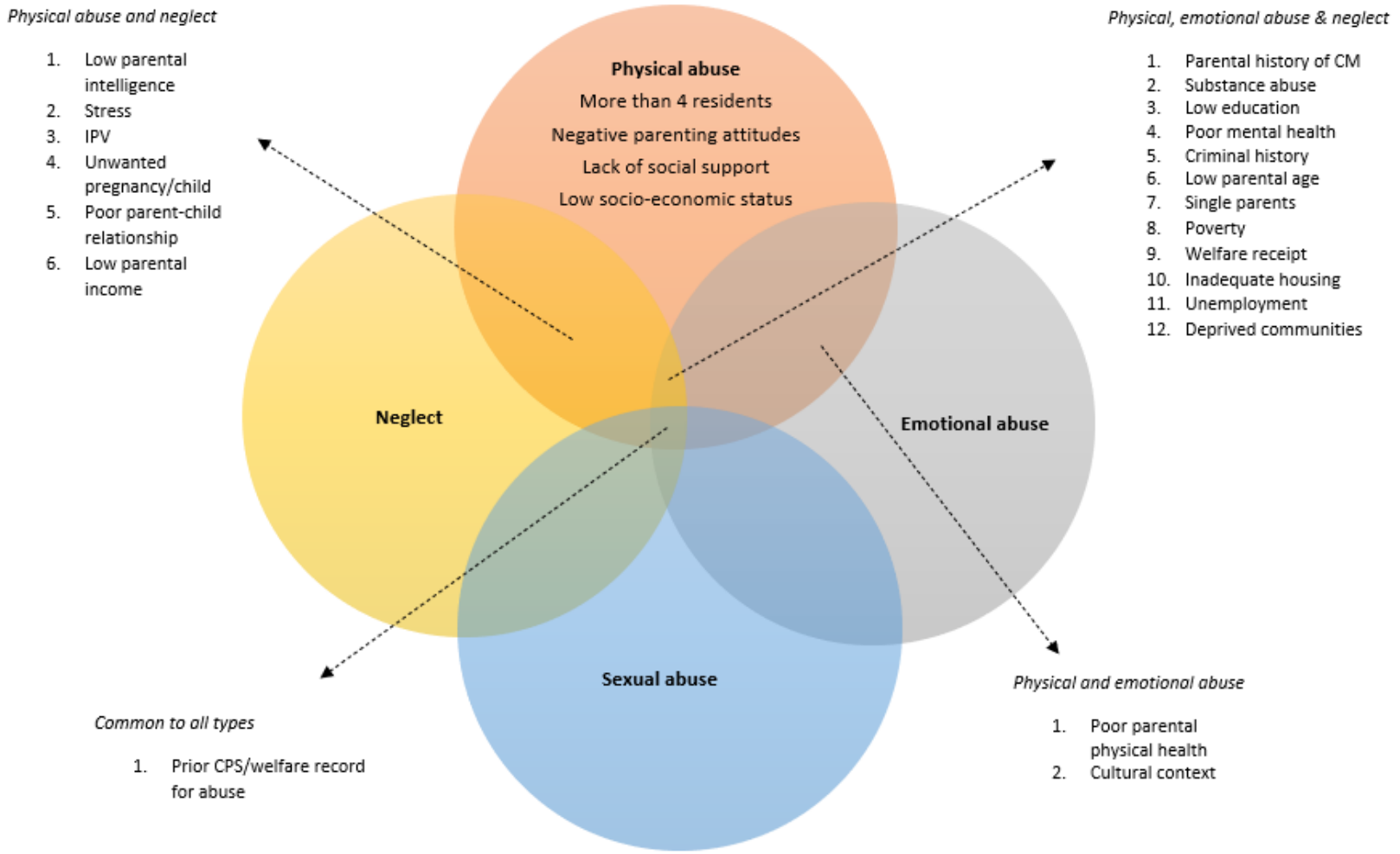
physical abuse (van Ijzendoorn et al., 2019) found a medium effect size for low socioeconomic status of family (d = .34). A recent systematic review also found unique risk factors for physical abuse at the mezzo level which included parental poorer social status (Younas and Gutman, 2022).

In respect to having more than 4 children at home, there is empirical literature supporting this finding (e.g., Wu et al., 2004) but no known synthesis of child maltreatment evidence (systematic review or meta-analysis) has highlighted this. This may be due to the indirect pathway through which this risk factor has an impact on physical abuse. For instance, having more children at home can increase economic pressures and/or parental stress, both established risk factors for child physical abuse (Qian et al., 2021; Maguire-Jack and Font, 2017).

What is not supported by prior evidence is the unique risk characteristic of low socioeconomic status and child physical abuse. While early child maltreatment research (e.g., Elmer, 1967; Young, 1964) posited a significant contribution of this risk factor to child physical abuse, later research concluded that lower socioeconomic status exacerbated other parental risk factors such as stress and negative parental behaviours (e.g., substance abuse, lack of impulse control), ultimately elevating risk of child physical abuse (Bywaters et al., 2016).

Shared risk factors for physical abuse and neglect such as stress and low parental income are supported by previous literature (e.g., Stith et al., 2009; Bywaters et al., 2022). Similarly, Review B's findings on all risk factors shared between physical, emotional abuse and neglect including parental history of child maltreatment, poor parental mental health, and substance abuse are also all established in prior research (e.g., van Ijzendoorn et al., 2019).

Figure 37: Risk factors and maltreatment type



Of note, and as shown in Figure 36, the risk factor common to all maltreatment types was prior CPS record or referral. Given that Review B was a synthesis of intervention evaluations where parents are already either known to child welfare services or have been assessed as high-risk, the finding itself is not surprising. Systematic reviews have found previous child protective records (substantiated or unsubstantiated) as significant for recurrent maltreatment and also as a catalyst for further involvement of child welfare services and referrals to parenting interventions (Hindley et al., 2006; Damman et al., 2020). This finding also brings to light the role of surveillance or detection bias which posits that families known to CPS have a higher likelihood of; i) additional welfare reports and ii) referral to services. This is particularly true of parents receiving an intervention especially where provision includes a monitoring component (e.g., home visiting; Chaffin et al., 2006; Drake et al., 2017). There is also some evidence which suggests that based on the intergenerational child maltreatment hypothesis, children referred to welfare services are also at risk of being reported to these services when they become parents themselves (Widom et al., 2015). Chaffin and Bard's (2006) study testing surveillance bias in interventions found that it only accounted for 6% (n = 9514) of child maltreatment reports suggesting a non-significant impact.

Another striking finding from Review B were the two shared parental risk factors for physical and emotional abuse which were poor physical health of parents and the larger cultural context in which there is acceptance of certain parenting practices that may be physically or emotionally abusive. In terms of the former, while there is abundant literature on poor parental mental health and its contribution to child maltreatment, there is limited research on the association between poor physical health of parents and the risk of child maltreatment. The evidence that does exist associates poor parental health with neglect and physical abuse (Chiang-Jen et al., 2020; Slack et al., 2011; Wolf, 2018) and only one known study associates it with emotional abuse (Wolf et al., 2021). There is also evidence linking chronic pain in adulthood (e.g., lower back pain and chronic headaches) and a childhood history of maltreatment which lend support to the intergenerational theory of child maltreatment (Marin et al., 2021) and further support for risk of perpetrating child maltreatment among such parents. What is yet unknown are the specific conditions in which parents' poor physical health can lead to child physical or emotional abuse. For example, does a lack of practical social support (e.g., help with childcare) increase physical and mental stress leading to an increase in physical or emotional aggression?

What is evident from Review B's finding on parental physical health (akin to the finding for parental negative attitudes on the micro level) is the possible interaction of various risk factors and their association with one or more types of maltreatment. It seems that maltreatment-specific risk is an amalgamation of risk factor interplay and the unique circumstance/experience of parents. Further research can highlight these specificities based on type of maltreatment and provide direction for policy and practice.

The macro-level risk factor for child physical and emotional abuse which includes cultural acceptance of certain abusive parenting practices is primarily based

on the evaluation studies included in Review B from countries such as Thailand, Jamaica, and Iran (e.g., Sawasdipanich et al., 2010; Francis et al., 2021). This risk factor has been discussed earlier in this chapter but there is limited evidence from child maltreatment systematic reviews or meta-analysis that links this to physical and emotional abuse. Stith et al. (2009) meta-analysis on risk factors for child maltreatment had an extensive search period (1963-2003) but only included two studies from other cultures (Hong Kong and Spain) and the remainder were from the USA. Similarly, Milner et al. (2022) meta-analysis on risk for child physical abuse stated that they wanted to avoid cross-cultural comparisons and hence, limited their included studies to USA. There is empirical evidence that variations across cultures in definitions of child maltreatment exist (Lansford et al., 2015; Hyun and Adams, 2016) and this may be part of the reason there is limited or no role of culture in synthesis of parental child maltreatment research. However, heterogeneity in definitions already exist in the child maltreatment field (Muela et al., 2012) regardless of culture so an exclusion of studies from diverse cultures may not have a significant effect on evidence synthesis. Incorporating such studies can only inform the field of child maltreatment and further emphasises the need for consensus in *universal* child maltreatment definitions.

Finally, there were no unique risk factors identified for parental sexual abuse and the only risk factor was one common to all maltreatment types (prior child welfare record of child maltreatment). Firstly, a significant conclusion can be drawn from this finding that parental sexual abuse is a relatively less researched area compared to physical, emotional abuse and neglect. Secondly, the synthesis of evidence that does exist in child sexual abuse (CSA) and associated risk factors does not focus on parental sexual abuse but rather CSA perpetrated by strangers (Ali et al., 2021) and is usually specific to a country (e.g., India; Choudhry et al., 2018). A systematic review by Black et al. (2001) for CSA included perpetrators which were ‘intra-familial’ (individuals from the family) and also those which were ‘extra-familial’ (outside of the family) and while these are not conclusive for parents perpetrating CSA, their findings did shed light on certain parent related risk factors such as higher stress and poorer mental health of mothers, mother-daughter rift in relationship and father-only families, among others. One meta-analysis (Assink et al., 2019) on CSA which also includes micro individual and family level parent risk factors, found presence of a stepparent in the family, parental mental health problems, presence of IPV in the home, lack of closeness between child and parent(s), and a slightly higher risk for girls than boys, as significant. However, these risk factors were for *all* CSA victimisation rather than that perpetrated by parents. Also, Assink et al. (2019) meta-analysis did not consider any mezzo or macro level risk factors. More research to examine and synthesise parent-perpetrated CSA and associated risk and protective factors on all ecological levels can inform this area of child maltreatment research and provide useful insight for intervention.

Intervention components by maltreatment type

Figure 38 shows the intervention components based on maltreatment type(s) on all ecological levels (except macro for which no components were identified) for those interventions that were effective in reducing and/or preventing parental child maltreatment. The majority of intervention components (n = 21) were shared by physical, emotional abuse and neglect.

While empirical literature associated with the most prevalent intervention components has already been discussed earlier in this chapter (see section on Intervention Components), there is limited meta-analytic and systematic review evidence on effectiveness of intervention components which is maltreatment type specific. Majority of them consider effectiveness based on all child maltreatment (e.g., van der Put et al., 2018; Euser et al., 2015; Levey et al., 2017). Geeraerts et al. (2004) meta-analysis did not specify any intervention component but found that early preventative interventions are effective for child physical abuse and neglect. Vlahovicova et al. (2017) systematic review of parenting interventions found that those based on Social Learning Theory are more effective in preventing physical abuse recurrence.

One systematic review (Barlow et al., 2008) for interventions specifically for physical abuse and neglect found that child behaviour management and strategies to lower parental stress, anger and frustration were promising techniques for physical abuse prevention and reduction, lending support to Review B's findings of two prevalent intervention components in interventions effecting child maltreatment outcomes; Managing child misbehaviour (micro-family) and Parental emotional regulation (micro-individual). However, Review B found both these components as shared between multiple maltreatment types and not specific to physical abuse. Another systematic review (Melendez-Toress et al., 2019) also mirrored Barlow et al. (2008) findings and their review concluded that teaching parents alternate techniques of discipline and regulating their emotions in interventions was effective for reducing and preventing child physical abuse.

The home visiting component in Review B was identified as effective for physical, emotional abuse and neglect but not for sexual abuse. Mikton and Butchart's (2009) review of 26 systematic reviews on child maltreatment prevention identified home visiting and parent education as effective in reducing risk factors for child maltreatment. However, their review did not delineate effect based on maltreatment type and only included systematic reviews of HIC countries.

Based on prior research, it is notable that 'parent education' is typically classified as a single component even though it is made up of multiple strategies. For instance, Mikton and Butchart's (2009) review defined it as "…centre-based and delivered in groups, aims to prevent child maltreatment by improving parents' child-rearing skills, increasing parental knowledge of child development, and encouraging positive child management strategies" (p. 355). In Review B, these specific strategies are all categorised as independent components (e.g., parenting group sessions). The specific educational components are also divided into child development education or child maltreatment education. Further to this, an educational aspect to implementing other intervention components is demonstrated

through the use of the BCT of Instruction on how to perform a behaviour which was the second most prevalent BCT and was used to implement 17 intervention components (see Table 25). These included the more traditional educational components such as teaching parents positive parenting strategies but also included components such as Financial training, Managing parental risky health behaviours and Help with education and employment (see Figure 36). Thus, highlighting that the use of umbrella terms such as ‘parent education’ can be misleading and fail to encapsulate the specificity of the intervention components and the techniques used to implement them. This can also help to determine effectiveness of intervention components based on maltreatment type.

In Review B, emotional abuse and neglect only shared one intervention component; Internet based or online classes. One meta-analysis (Nieuwboer et al., 2013) found a medium effect for online classes to enhance parenting competencies but did not measure direct child maltreatment outcomes. Their meta-analysis also included interventions targeted at foster parents and only included studies from USA. Another review (Hall and Bierman, 2016) concluded that a technology component in interventions (e.g., online classes) could be a promising strategy for child maltreatment if coupled with some personal contact (e.g., phone or face-to-face) between parents and intervention practitioners. A lack of extensive evaluation of online parenting programs for child maltreatment limits reaching conclusions about whether they are actually more effective for emotional abuse and neglect and Review B’s findings can pave the way for further research in this area. Especially since parenting programs for child maltreatment tend to be limited by program reach and low parental engagement (Rostad et al., 2018), an online alternative can be a promising way of engaging maltreating or at-risk parents. Further, due to the COVID-19 pandemic and the surge in child maltreatment as a consequence (Park and Walsh, 2022), online components of parenting programs for child maltreatment deserve more focus in implementation by practitioners and evaluation by researchers, especially for neglect and emotional abuse.

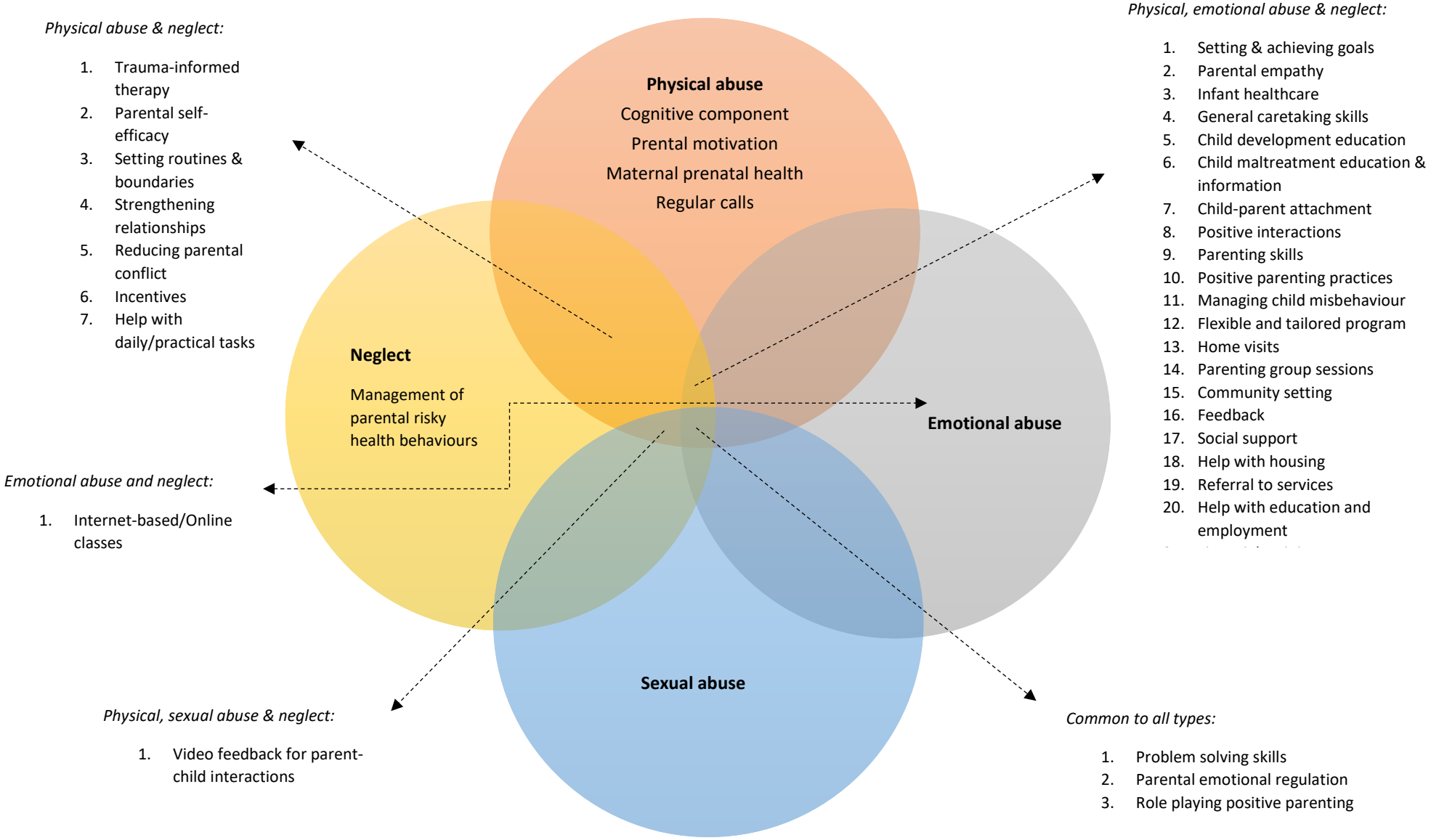


Figure 38: Intervention components and maltreatment types

Physical abuse, neglect and sexual abuse shared one intervention component: video feedback for parent-child interactions. A meta-analysis of video components in interventions showed that it improved parent-child interacting skills and improved general parenting behaviours for parents at risk of child maltreatment (Fukkink et al., 2008). Evidence evaluating this component suggests that video feedback is especially effective in reducing frightening caregiving behaviours, promoting more sensitive ways of disciplining children and general positive parenting (Alsancak-Akbulut et al., 2020; Cassiba et al., 2015), lending support to Review B's findings especially for physical abuse and neglect. Evidence also exists for its effectiveness with new and young mothers and infants especially in enhancing attachment, as practitioners record mother-infant interactions and discuss them with the mother, emphasising strengths (de Graaf et al., 2009). Adolescent mothers, in child maltreatment literature, have been consistently identified as being at high risk of child neglect (e.g., Lounds et al., 2006). Similarly, there is also evidence, albeit limited, on child sexual abuse prevention and the role of video modelling and feedback (e.g., MacIntyre and Carr, 2000).

Physical abuse had the most maltreatment-type-specific intervention components including cognitive appraisal which was only identified in one effective intervention (Bugental et al., 2010; see Table 19). This add-on to an already established Healthy Families intervention in the USA focused on reframing mothers' cognition especially for attributing intention to child misbehaviour. There is evidence of effectiveness of this component especially for physically abusive parents (e.g., Lawson et al., 2020). Research suggests that physically maltreating parents may have maladjustments in their cognitive schemas in which they attribute malintent even to perceived child misbehaviour (Azar and Weinzierl, 2005) and cognitive reframing of this can help shift this schema and reduce risk of physical abuse.

Other specific components for physical abuse included parental motivation and prior systematic review evidence (Barlow et al., 2008) supports this finding. It is unclear from prior evidence if enhancing Maternal prenatal health has any direct association with preventing child physical abuse. In Review B, only one study with this component (Fulton et al., 1991) was effective for physical abuse and it targeted adolescent pregnant women, included home visiting, provided information on optimal antenatal health, and helped with medical appointments during the pregnancy. It is possible that a combination of intervention components of Home visiting and enhancing Maternal prenatal health, along with specific strategies such as intervening during the antenatal period may be effective for child physical abuse prevention. Further research to explore these combinations and the mechanism through which they have an effect on physical abuse can provide more insight.

Regular calls from intervention practitioners was another unique intervention component for physical abuse and was identified in one effective intervention with at-risk parents (Arruabarrena et al., 2022). While there is lack of evidence exploring this specific intervention provision and its link to physical abuse, parents regular contact with intervention staff may have a surveillance and monitoring aspect, akin to home visiting, and this may contribute to its effectiveness.

For neglect, Review B identified only one unique component which was Management of parental risky health behaviours in one effective intervention with neglectful mothers who had misused substances during their pregnancy. Donohue et al. (2014) evaluated an intervention which provided advice and information on safe sexual behaviours including information on consent, contraception, and antecedents to sexually transmitted diseases (e.g., promiscuity and prostitution). Synthesis of evidence exploring a link between this component and its effect on child neglect does not exist. However, there is some empirical evidence of parental history of childhood physical, sexual abuse and neglect and later adult promiscuity and unsafe sex behaviours (Hillis et al., 2001; Widom and Kuhns, 1996). There is also some evidence for mothers who are sex workers, especially those also using substances, and links to limited parenting ability and to child neglect (McClelland and Newell, 2008). Given prior evidence and Review B's finding, it may be useful for both research and intervention development to explore utility of this component in reducing and preventing child neglect for this subgroup of mothers.

No unique intervention components for sexual and emotional abuse were identified in Review B's findings. There is generally less research on protective factors compared to risk factors in child maltreatment literature (Li et al., 2011) especially concerning intervention provision for parental perpetration of emotional and sexual abuse. More research specifying maltreatment type-specific factors is warranted and researchers evaluating child maltreatment interventions should specify support received by parents to minimise risk of sexual and emotional harm to children.

Limitations

Review B synthesised findings from 60 child maltreatment intervention evaluations on parental risk characteristics, intervention provision including intervention components and techniques of delivery and synthesised differences in risk factors and intervention components based on type of maltreatment. Like any systematic review, Review B has a few limitations that need consideration.

Firstly, the narrow inclusion criteria limited inclusion of studies to those published in peer-reviewed journals. This meant that unpublished literature which may have contributed to findings was missed. While this was a measure undertaken to ensure included studies are of high quality, unpublished evaluations of child maltreatment interventions could potentially have provided important insight and reduced publication bias. However, unpublished literature can be plagued with serious methodological issues, and this may have led to their exclusion after quality appraisal. Further, the copious amount of research that exists in the field of child maltreatment would make it non-pragmatic to widen the inclusion criteria. Moreover, the risk of bias in unpublished intervention evaluations is also high since many such evaluations are done by intervention practitioners themselves rather than independent researchers (Adams et al., 2016). Nonetheless, it is a limitation worth citing.

Potential bias may also have been introduced in searching and selecting intervention evaluation studies as the search criteria was designed to include interventions that measured child maltreatment outcomes for parents. Many studies evaluating child maltreatment interventions tend to focus on markers (e.g., parental sensitivity) instead as a large sample and a longer follow up is needed to check for significance of child maltreatment outcomes (Levey et al., 2017). Studies reporting on these markers may have provided useful insight but were excluded as it is also important to understand child maltreatment as a direct outcome of interventions.

A decision was made to not include a second reviewer to check for reliability in the systematic review, especially in searching and selection of studies and this may have led to study selection bias. While a second reviewer is recommended, there is some evidence suggesting that having two reviewers may not significantly reduce risk of bias in study selection. Comparing results of double screening and single screening in systematic reviews, researchers found that double screening led to the inclusion of 169 eligible studies while single screening led to inclusion of 168 studies (Shemilt et al., 2016). Alternative methods to using multiple reviewers to check for reliability (e.g., text mining) need more exploration to make the systematic review process less resource-intensive and more efficient. Moreover, steps were undertaken to ensure risk of missing relevant studies is minimised including revising keywords and doing multiple searching in databases and using snowballing from references of included studies and including primary studies from prior systematic reviews and meta-analysis. A second reviewer, however, was utilised to check reliability when coding BCTs to map delivery techniques of intervention components. This was done to ensure use of BCT definitions, identification, and specification of BCTs was not based on subjective inference since both knowledge and training is needed to utilise the BCTT (v1) and establishing inter-rater reliability is necessary (Abraham et al., 2015).

All data synthesised in Review B is based on what authors of evaluation studies described. While inclusion criteria specified a need for studies to report on intervention characteristics sufficiently to answer Review B questions, studies may have failed to report all risk factors or not included descriptions of certain intervention components and delivery techniques. While findings of Review B are comprehensive, they may not be complete. Studies identified for inclusion were RCTs and quasi-experimental and no qualitative studies emanated from the searches which were fit for inclusion. These could have added a more in-depth detail of interventions and provided further insight into how interventions implement and delivery their components.

Nearly half of the effective interventions (20 out of 41) used self-report measures and validity of responses from parents on these measures are questionable. Impact of interventions cannot be reliably ascertained through subjective measures alone especially since evidence suggests this may result in bias with parents under-reporting abusive behaviours and/or exaggerating changes in behaviour (Bennett et al., 2006). Although self-reports in included studies were based on valid and reliable measures (e.g., CTS; Straus et al., 1997), an inherent

social desirability bias exists in responses to sensitive questions (e.g., questions related to abusive behaviours) in such measures (Schaeffer, 2000).

The BCT framework (Michie et al., 2013) used to extract delivery techniques of intervention components is a novel approach for child maltreatment interventions and the findings synthesising BCTs are exploratory in nature and further research is needed to substantiate the findings. While BCTT (v1) taxonomy is internationally validated and two reviewers independently coded the BCTs and established reliability, it is unknown to what extent the reported descriptions of interventions were actually implemented or if there were techniques of delivery not adequately described in studies which may limit results. Review B also did not find many differences between interventions effecting child maltreatment outcomes and those that did not in the BCTs used. More research is needed to explore whether differences exist and their implications for child maltreatment interventions. The BCTT (Michie et al., 2013), however, did aid in presenting a depiction of the overlapping nature of delivery techniques of intervention components and the prevalent BCTs used in effective child maltreatment interventions.

The way in which intervention components were described using broad umbrella terms to represent multiple, individual components was consistently identified in included studies and particularly challenging when synthesising findings. In Review B, efforts were made to ensure intervention components were narrow and specific and data extraction reflected this. For instance, positive interactions, positive parenting practices and parenting skills to enhance child learning were categorised as separate components rather than classified under, for example, parent skills training as each had a different goal and enhanced different skills in parents. Similarly, child maltreatment education and child development education were distinct components rather than labelled under parent education. This allowed for components to reflect what specific skills and behaviours were targeted and how the interventions delivered them. Researchers need to develop a uniform approach to describing components of interventions and not to classify several under singular, broad terms especially since each diverse component requires unique skills and behaviours from parents. This uniformity can significantly reduce heterogeneity across studies and lessen complexity in synthesising findings from intervention evaluations.

Lack of evidence on emotional and sexual abuse and none on macro level intervention efforts does reflect some weaknesses of the trends in child maltreatment literature and limits conclusions about intervention components and delivery techniques specifically for these two maltreatment types and for all of maltreatment on the macro level. Intervention implementation and research in these relatively neglected areas can further develop knowledge in the field of child maltreatment.

In respect to diversity, representation of intervention evaluations in LIC was low. Systematic Review B did not limit search and inclusion of studies based on country hence, a more representative identification and examination of child maltreatment intervention evaluations could have resulted in more generalisable findings across the globe. However, this was a limitation as both implementation and

evaluations of child maltreatment interventions in LIC are relatively scarce. Badrfam and Zandifar (2021) stress on the need for culture-based child maltreatment interventions in Low and Middle-income countries. Given cultural variations, it is difficult to generalise that interventions that are effective in HIC will also show effect in LIC, limiting generalisability of findings.

A lack of representation of interventions aimed at fathers was also evident from the included studies in Review B. Many included interventions had both parents or only mothers and only one evaluation of an intervention was for fathers (Scott et al., 2021). As men are not traditionally involved or targeted in parenting interventions (Dolan, 2013), it can create a significant gap in knowledge and practice on optimal ways of supporting fathers presenting unique risks in child maltreatment interventions. Raikes et al. (2005) suggest that interventions that try to target and recruit fathers can substantially increase their engagement and this may ultimately help close the current evidence gap. Bearing this in mind, the findings from Review B cannot be generalised to all at-risk or maltreating fathers.

Finally, systematically reviewing evidence on multiple variables (e.g., risk, intervention components, delivery techniques, maltreatment-based differences) can result in an extremely detailed and information-heavy synthesis. Efforts have been made to present this information with the assistance of tables, charts, diagrams, and systems maps to allow for ease of understanding and manageability of complex information.

Implications of findings

This section summarises implications of key findings of Review B.

Parental risk factors in child maltreatment interventions

The most prevalent risk characteristic found on the micro-family level was a prior record of child maltreatment (referral or substantiated) with CPS. Causal and longitudinal research comparing both types of CPS records and actual instances of maltreatment is needed to establish evidence in this area. For practice, this finding is pertinent for interventions to ensure recruitment, retention, and engagement of these parents in child maltreatment interventions.

Single-parent families was another prevalent parental risk factor on the micro-family level and co-occurred with multiple mezzo level risk including unemployment and low-income resulting in potential increase in parental stress and a higher likelihood of future child maltreatment. More research is needed to emphasise co-occurrence of risk and its significance for child maltreatment rather than a focus on individual risk factors. Interventions need to be aware to not target single-parent families unless they are able to assess co-occurrence of other risk factors and overall impact on parenting.

IPV was a prevalent micro-family risk characteristic among parents involved in child maltreatment interventions. Prior evidence has linked IPV to parental childhood history of maltreatment (Brooks-Russell et al., 2013) supporting the intergenerational transmission hypothesis. Co-occurrence of these risks and assessment of future risk of child maltreatment need consideration by practitioners to ensure targeted support is available to break intergenerational cycles of violence.

An overlap of ecological levels for mezzo-level risk was noted from the studies whereby low-income co-occurred with single parenthood (micro-family) and low parental age (micro-individual). Economic disadvantage, including receipt of welfare by parents and families living below a threshold of poverty, were prevalent at the mezzo level. These were noted to be inevitably tied with exacerbation of parental stress. Surveillance bias among families in receipt of support services is an under-researched area and needs further insight to establish the nature of relationship between economic stress, receipt of welfare support and risk of child maltreatment (Cancian et al., 2013). Intervention support can develop and implement targeted strategies to relieve or enable parents to cope with economic stress, especially for young and single parents.

Macro-level risk factors were only identified in six studies but highlight culture-specific parenting practices in low- and middle-income countries (e.g., prevalence of child physical abuse often guised as corporal punishment in Jamaica and Iran; Delores and Gail, 2003; Borimnejad and Fomani, 2015) which may be classified as abusive. Child maltreatment research can benefit from a culture-specific exploration of risk, helping practitioners to specify targeted strategies for unique parental risk factors presented.

On the macro level, underutilisation of services (health, social) by teenage mothers was identified. There is prior literature associating co-occurrence of risk for adolescent mothers (e.g., unemployment, low education, single parenthood). Research also indicates the high role of surveillance bias with higher rates of adolescent mothers reported for child maltreatment concerns and having their children removed (Fallon et al., 2011; Hovdestad et al., 2015). This may account for some of the barriers to them accessing services. Research can benefit from exploration of barriers, especially from the perspective of adolescent mothers, for utilisation of services. Further research can also establish the contributory role of surveillance bias in underutilisation of health and support services. Interventions can use this to target support for adolescent mothers to tackle co-occurrence of risk and promote service use.

There were some links noted between all three macro-level risk factors whereby low- and middle-income countries would have higher deprivation in areas and lack of access to high quality health and support services, compounding risk of child maltreatment for parents. Both implementation and evaluation of child maltreatment interventions in such areas can contribute to knowledge on risk and protective factors of child maltreatment.

Characteristics of effective interventions

In respect to characteristics of parental interventions which influenced child maltreatment (n=41), Review B found no differences in effect nor length of delivery of intervention between maltreating and at-risk parents. There are conflicting findings in research whereby meta-analytic evidence suggests that interventions are generally more effective for maltreating parents (Van der put et al., 2018) especially those which are moderate length (6-12 months; Euser et al., 2015) and at-risk parents benefit more from short-term interventions (van der Put et al., 2018). While Review B did not examine this at length for each subgroup of parents, presence of conflicting evidence from past research suggests a need for further investigation to delineate specific intervention components and differences in effect for maltreating versus at-risk parents can ground evidence in this area and help interventions to develop and deliver components based on each parent type.

Reliance on self-report measures to assess child maltreatment outcomes in interventions was identified in 20 of the 41 effective interventions. Prior research has established superiority of using objective measures for child maltreatment (e.g., Hawes and Dadds, 2006) highlighting social desirability bias in parents' self-reporting. Hence, there is a need for evaluation researchers to use measures which are at least partly objective to ensure accuracy in assessing effectiveness.

Intervention components

Forty-one out of the 60 included studies were effective for parental outcomes for child maltreatment. Setting and achieving goals, an intervention component identified on the micro-ecological level has sparse support from prior synthesis of evidence of child maltreatment interventions. For the Problem-solving skills intervention component (micro-individual), there is research suggesting that this may be redundant for child maltreatment outcomes. Further research to establish efficacy of both these components can help practitioners understand the utility of each and determine whether they are indeed optimal in reducing or preventing child maltreatment among parents.

A link between micro-family level intervention component of Managing child misbehaviour and the micro- individual level component of Parental emotional regulation was also identified in Review B's findings. Providers of intervention support can utilise this finding to ensure that both components exist in child maltreatment interventions for parents as a collective strategy to combat child maltreatment.

Researchers need a consensus on definition of and difference between types of Social support as immense variation was found across studies. This intervention component was identified as prevalent at the mezzo level and further research is needed to distinguish between types of support (formal and informal) and whether combining provision of formal social support and home visiting as a collective monitoring strategy is more effective than provision of just one component. Further research to establish the efficacy of Parenting groups based on whether parents are maltreating or at-risk is also needed to provide insight on this prevalent mezzo level intervention component.

Finally, no macro level intervention components were identified in the 60 included evaluation studies in Review B. Further research to assess whether child maltreatment interventions are indeed suitable to deliver such components which may involve national and policy level efforts can contribute to knowledge in this area.

Behaviour Change Techniques (BCTs)

The BCT framework provided a novel method to explore delivery techniques of child maltreatment intervention components in effective interventions. Through systems mapping, a considerable overlap of BCTs across intervention components and across ecological levels was noted. Prevalent BCTs of Social support (unspecified) and Instruction on how to perform a behaviour, Self-monitoring of behaviour and Demonstration of the behaviour were identified across micro and mezzo levels while Social support (practical) and Restructuring the physical environment were only identified on the mezzo level. The BCT framework can be used in further studies to delineate intervention components and their delivery techniques and provides a systematic framework to identify whether BCTs found in Review B are indeed optimal ways of delivering child maltreatment intervention components.

Interventions without effect

A few intervention components were missing in interventions without effect on child maltreatment outcomes and included parental motivation, cognitive appraisal (micro-individual), and setting routines and boundaries (micro-family). Prior contradictory research findings for these components and their value in child maltreatment interventions require further research to establish whether they are optimal or not for intervention effectiveness.

Risk factors and maltreatment type

Findings of Review B suggest that for physical abuse, specific risk factors include negative parenting attitudes, more than four residents in the home, and a lack of social support. Synthesis of research is needed to encapsulate unique risk factors, especially negative parenting attitudes, and the mediating pathways for child physical abuse.

For physical and emotional abuse, a shared risk characteristic of poor parental physical health was identified. There is relatively less research on parental poor physical health compared to mental health and further research to clarify types of poor physical health and how they impact parents' risk of child physical and emotional abuse are needed to provide more insight. There also needs to be research on the interplay of various risk across maltreatment types to suggest whether absence or presence of one impact the other. For instance, does lack of social support lead to higher parental stress and exacerbates risk of physical or emotional abuse among parents with poor physical health?

An incorporation of a cultural perspective in research synthesis of child maltreatment intervention evaluations, especially for emotional and physical abuse, can provide relevant and beneficial insight for child maltreatment prevention and

reduction. A lack of specific risk factors identified for sexual abuse among included studies in Review B begs more research on *parental* sexual abuse and risk factor exploration.

Intervention components and maltreatment type

There is sparsity of research on maltreatment type-specific effect of intervention components. While some evidence does exist in support of Review B findings of intervention components for physical abuse and neglect (e.g., parental emotional regulation and managing child misbehaviour) there is a dearth of evidence for parental emotional and sexual abuse and which intervention components may be optimal for these types.

Prior research on interventions tends to classify several intervention components under one single label such as parent education. This fails to capture the different strands of education provision that may be optimal for different types of maltreatment. There is a need for researchers to delineate type of education provision and Review B's findings in this regard (e.g., child development, financial training, child maltreatment education) can help pave the way for future research to not use umbrella terms and classify each component distinctly.

A shared intervention component identified for neglect and emotional abuse was provision of online and internet-based classes to parents. More implementation and evaluation of online child maltreatment intervention programs for parents are needed.

A combination of some intervention components such as parental motivation and home visiting along with intervening during the prenatal period need to be investigated in further research to assess their combined effect on prevention or reduction of child physical abuse. Furthermore, the unique intervention component of management of parental risky health behaviours for child neglect needs further exploration especially for a subgroup of parents who may be at risk of practicing unsafe sex (e.g., sex workers).

Diversity in representation

Representation of diversity in evaluation studies was identified as low with 85% of included studies originating from USA. A few included studies highlighted some of the unique risk factors and type of support provided by child maltreatment interventions in low- and middle-income countries. To have a better understanding of how to combat child maltreatment on a global level, implementation, and evaluation of child maltreatment interventions across a wide range of cultures need further attention.

A lack of representation of father-only child maltreatment interventions was also evident in the included studies of Review B which presses the need for, i) implementation and evaluation of child maltreatment interventions aimed at fathers i) efforts by interventions to engage and retain fathers, and ii) intervention developers to develop components specifically targeting risk presented by fathers.

Conclusion

Systematic Review B synthesised evidence on parental risk factors and intervention provision from 60 child maltreatment intervention evaluation studies which comprised of 46 RCTs and 14 Quasi-experimental studies. Studies mostly used self-reporting measures (n=33) to assess parental child maltreatment outcomes. Far more risk factors were found on the micro levels (individual and family) compared to the mezzo and macro levels. On the micro-individual ecological level, parental substance abuse, low education, poor mental health (especially maternal depression), and childhood history of maltreatment are prevalent among parents in child maltreatment interventions and key indicators of actual or risk of future child maltreatment. The micro-family level risk factors included IPV, single-parent families and prior CPS record. On the mezzo level, low income, receipt of welfare, and living below the threshold of poverty were prevalent factors among parents in child maltreatment interventions.

Three prevalent parental risk factors were identified at the macro-level. These included, firstly, the wider cultural context where abusive parenting may be accepted and secondly, parents belonging to deprived areas. Deprived areas comprised areas with high poverty, high infant mortality, and high rates of teen pregnancy, among others. Finally, underutilisation of health and social services by teen mothers was also identified on the macro level.

Effective interventions (n = 41) were unpacked to identify prevalent intervention components on each ecological level and associated BCTs to understand the ways they are delivered. These were only identified on the micro (individual and family) and mezzo levels, and none were found on the macro level. On the micro-individual level, Setting and achieving goals, Parental emotional regulation and Problem-solving skills were found to be most prevalent. For micro-family components, review B found Child development education, Managing child misbehaviour, and Strengthening relationships as prevalent in child maltreatment interventions. Mezzo level provision of interventions were primarily structural components of interventions and included Home visiting and Parenting group sessions while one contextual component of Social support was also found to be prevalent.

The BCT framework (Michie et al., 2013) provided insight into the techniques used by interventions to deliver components and an overlap across ecological levels was found in some of the BCTs. Prevalent BCTs included Instruction on how to perform a behaviour mapped onto 17 intervention components, Social support (unspecified) linked to 30 intervention components and both these BCTs were identified on the micro and mezzo levels. Self-monitoring of behaviour was linked to three intervention components on the micro-individual level while Demonstration of the behaviour was linked to nine on the micro-family level. Finally, mezzo level BCTs comprised of Social support (practical) linked to seven intervention components and Restructuring the physical environment identified to deliver three intervention components.

Only 37 out of the 60 intervention evaluations specified a type of maltreatment. For maltreatment specific risk, a prior CPS record was identified as common to all types of maltreatment while physical abuse had the most unique risk factors including negative parenting attitudes and low socio-economic status. No other maltreatment had specific risk factors. Physical and emotional abuse shared risk of poor parental physical health and the wider cultural context. Physical abuse and neglect shared risk of stress, unwanted pregnancy/child, and low-income, among others. The most shared risk factors were identified for physical, emotional abuse and neglect which included parental history of child maltreatment, substance abuse, welfare receipt, unemployment, and poor mental health, among others.

Among the 41 effective child maltreatment interventions, only 27 specified a type of maltreatment. From these, maltreatment specific intervention components common to all types of maltreatment were identified as problem-solving skills, parental emotional regulation and role-playing positive parenting. Physical abuse and neglect shared video feedback for parent-child interactions and emotional abuse and neglect shared online provision of parenting classes. Unique intervention components for physical abuse included cognitive appraisal, parental motivation, maternal prenatal healthcare, and regular calls with parents. For neglect, only one unique intervention component was identified which was management of parental risky health behaviours. No unique components were identified for emotional and sexual abuse. The most shared components were identified for physical, emotional abuse and neglect and included parental empathy, setting and achieving goals, child-parent attachment, child development education and management of child misbehaviour, among others.

Some key findings and their implications are noteworthy. For risk, a shift from consideration of single risk factors and markers of risk (e.g., single parenthood) to co-occurrence of risk is warranted in assessing parents for child maltreatment interventions. Collective strategies in intervention provision, across ecological levels, may be more effective such as combining intervention components of Parental emotional regulation (micro-individual) and Managing child misbehaviour (micro-family) for prevention and reduction of physical abuse and merit additional research. A novel framework for delineating delivery techniques using the BCT framework (Michie et al., 2013) is used and exploratory findings from this can pave the way for future research. Findings of Review B suggest that maltreatment type-specific risk and intervention components need further examination in research as these are currently under-researched and warrant further attention. More research on macro-level intervention provision is needed and an examination of what national and policy-level support for parents can be provided through interventions is vital to bridge this knowledge gap.

In respect to secondary findings and their implications, researchers evaluating child maltreatment interventions need to specify intervention components rather than using broad umbrella terms to capture multiple components (e.g., parent education). A shift from reliance on self-reporting measures to objective measures can help with more reliable assessment of child maltreatment intervention effectiveness. Cultural representation in implementation and evaluation of child maltreatment interventions

is also needed, especially in low- and middle-income countries. Researchers should evaluate transferability of effective interventions in HIC and the culture-specific adjustments that may be required. Child maltreatment interventions aimed at fathers demand consideration in the field as they are disproportionately and significantly under-represented in evaluation studies.

Chapter 11: Final synthesis - Reviews A and B

This PhD thesis systematically reviewed 128 studies. Findings were synthesised using the Risk and Resilience Ecological Framework (Bronfenbrenner, 1979; Kirby and Fraser, 1997). Sixty-eight quantitative, empirical studies on parental risk factors and protective factors for child maltreatment and differences in both based on type of maltreatment (physical, sexual, emotional abuse and neglect) were synthesised for the first systematic review, Review A. The second systematic review, Review B, synthesised findings on parental risk characteristics and intervention provision from 60 evaluations of child maltreatment interventions for parents. Examination of intervention provision entailed unpacking of interventions for both structural and contextual components. Further, techniques to deliver intervention components were also extracted and synthesised using the BCT Framework (Michie et al., 2013). Finally, Review B delineated maltreatment type-specific risk and intervention components.

Both systematic reviews, A and B, were conducted to answer the overarching research question of the thesis; 'How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?'

Within the context of this PhD thesis, *resilience* refers to the processes through which a *parent(s)* can cope with adversity (Ungar, 2008) and not resort to child maltreatment. These coping or adaptive processes can be impacted upon by multiple, ecological level influences and their interaction (Rutter, 2006; Ungar et al., 2013). Resilience is difficult to explore in research mostly because it is difficult to measure. One way to capture parental resilience for child maltreatment is to infer it from an examination of adversity (risk factors) and positive influences (protective factors; Edmond et al., 2006).

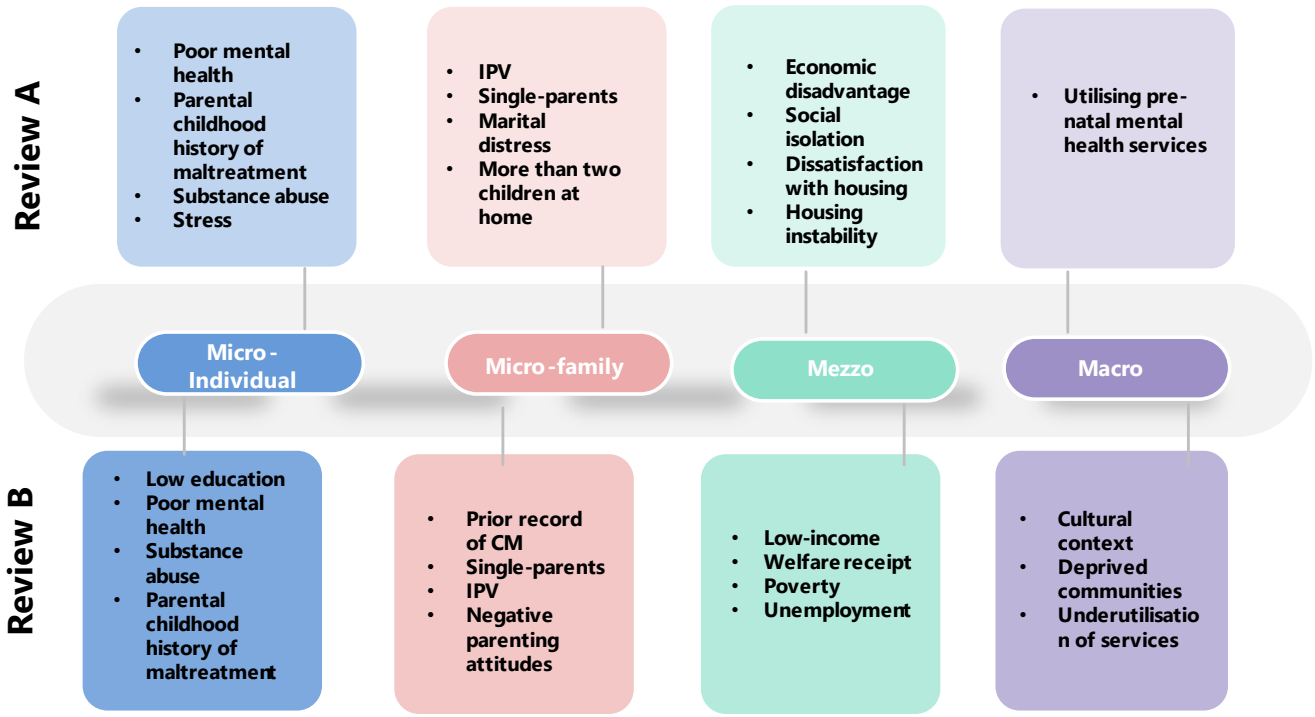
This section synthesises and discusses key findings from the two systematic reviews (Review A and B) on parental risk and positive influences for child maltreatment. For Review A, positive influences are the protective factors while for Review B these comprise intervention provision including interventions components and BCTs. The most prevalent risk factors and positive influences and maltreatment type-specific factors from both systematic reviews are presented on the various ecological levels. Identification of conflicting findings from both reviews and gaps in knowledge and research are delineated, providing insight into strengthening parental resilience in the face of adversity and combating child maltreatment.

Parental risk factors

Figure 39 represents the findings from systematic reviews A and B on parental risk factors. Majority of the risk factors on the micro (individual and family) levels were the same (e.g., substance abuse, IPV). Some minor differences between findings of both reviews were noted on the mezzo level. Observational studies in

Review A highlighted the risk of housing instability and dissatisfaction with housing which was not a risk factor finding from intervention evaluation studies in Review B. There is growing evidence linking issues with housing to parental stress (Warren and Font, 2015), increase in familial conflict (Ruiz-Tagle and Urria, 2022), and parental depression (Marcal, 2022), and higher rates of involvement with child welfare services (Dworsky, 2014). In reviewing the evidence from child maltreatment intervention studies, either this risk factor was not considered in assessing parental risk or it was classified under poverty or economic disadvantage. This illustrates the need for interventions to assess parents' housing issues as a distinct marker for child maltreatment.

Figure 39: Parental risk factors for child maltreatment



Variations of risk factors were also noted on the macro level. Both reviews yielded relatively fewer findings on this level, but Review A only identified one study in which utilisation of mental health services by pregnant adolescent mothers was considered as risk for child neglect (Bartlett et al., 2014). On the other hand, Review B identified more risk factors including parents living in deprived communities and the wider cultural context where abusive parenting practices may be accepted. It was, however, the underutilisation of services by parents which was a striking and contrasting finding.

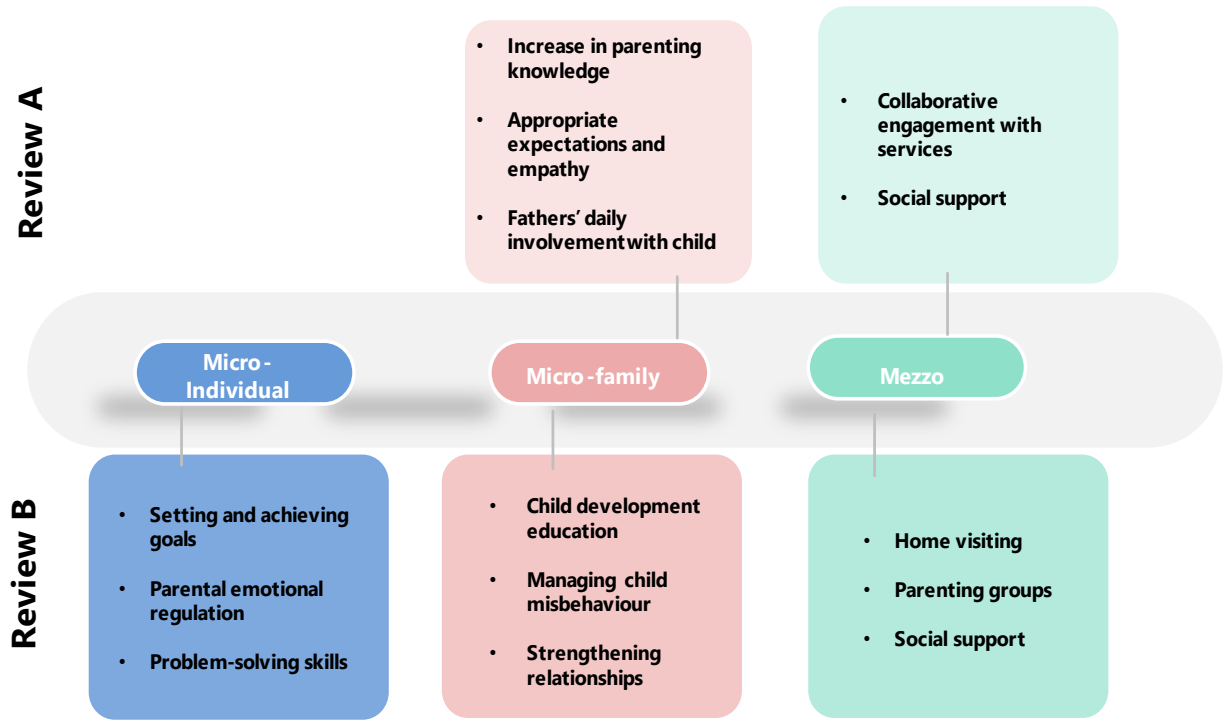
It appears, from Review A's findings, that utilising certain services (mental health) for a subgroup of parents (adolescent mothers) is indicative of risk whilst Review B suggests that parents not utilising available services (e.g., social or health)

is assessed as a risk characteristic in child maltreatment interventions. The issue of surveillance bias is noteworthy. Whilst this issue has been discussed in Review B's findings for parents' prior involvement with CPS (micro-family) and parents' receipt of welfare services (mezzo), it yields a discussion on the macro level based on the findings. Surveillance or visibility bias may be potentially and partly responsible for parents' underutilisation of services. Vulnerable parents facing multiple adversities navigate considerable barriers in accessing services (Purtell et al., 2021). A seemingly punitive approach of services in which seeking and receiving help may be viewed as risk for future child maltreatment can create further difficulties for parents, deterring parents from seeking needed support. Consideration of co-occurrence of multiple risk factors and a balanced assessment by service providers is required. Parents need not be penalised with the threat of scrutiny or referral to child welfare for accessing mental health services, but rather positive reinforcement with a view that it serves more as a protective rather than a risk factor. This may also help tackle parents' underutilisation of services.

Positive influences: Protective factors and Intervention provision

Findings on protective factors for child maltreatment were very few in Review A and social support was the most prevalent finding from ten studies. Intervention evaluations in Review B expanded these findings in the context of intervention provision for parents. Figure 40 illustrates the protective factors findings from Review A and the prevalent intervention components from effective child maltreatment interventions in Review B.

Figure 40: Protective factors from Review A and Intervention components from Review B



A lack of micro-individual level protective factors findings from Review A are not surprising since outside of an intervention context, there may be limited resources for parents to buffer risk. Managing substance abuse or coping with stress, for instance, may be difficult for parents to manage without external support. Hence, findings from intervention evaluation studies are valuable on this level. For the micro-family level, there were more similarities in findings from both Reviews such as educating parents about child development. Review A's finding on parents having appropriate expectations from child and empathy towards child and Review B's finding of managing child misbehaviour are also interlinked. A specific finding for fathers in Review A can inform interventions as fathers' role was not stressed upon in intervention evaluations studies, barring one (Scott et al., 2021) intervention in which fathers' abusive behaviours were addressed. However, fathers' participation and an active role with children and family life can offer protection, especially in counteracting mothers' risk of child maltreatment (Brandon et al., 2019). Interventions need to discern fathers' role as either beneficial or harmful and then implement components that specifically strengthen protective aspects or reduce risk. To do this, however, more effort in recruiting and engaging fathers in child maltreatment interventions is needed.

For the mezzo level, Social support was the common factor, and a few similarities were noted in what comprised social support such as counselling and provision of practical (e.g., help with tasks) support. Some variation was also identified. For instance, informal emotional support (e.g., from friends) was protective for mothers while companionship support (e.g., doing recreational activities together) was protective for fathers in Review A. However, in Review B, social support focused on, for instance, promoting engagement with various support services including the intervention itself, and promoting a wider social network in the community. These variations illustrate a need for researchers to, i) find a consensus on definition of social support and what it constitutes, ii) evaluate specific types of support to examine their effectiveness for various risks. Review A's findings do shed light on these nuances by identifying what type of support may be optimal for each parent. Further research is needed to establish these findings and to ensure that further findings are demarcated, and distinctions in social support and their effect are captured fully.

A lack of findings on the macro level from both reviews merit consideration in future research. While some prior research has shed light on a few national, policy level efforts (e.g., increase in minimum wage, Raissian et al., 2017)[3], there is a lack of research using a systematic and evidence-based method to delineate macro-level factors, especially for child maltreatment interventions. For this, use of the Behaviour Change Wheel (BCW; Michie et al., 2011) can provide much needed insight. Useful for intervention development, the BCW, like the ecological framework, has nesting of layers ranging from the individual/behaviour to external influences with a layer specifically for policy level categories including legislation, regulation, environmental

[3] See Chapter 6 for a detailed discussion

and social planning and communication or marketing. Use of this framework in future research can guide child maltreatment intervention development and allow policy makers, especially, to make evidence-based decisions on efforts to reduce and prevent child maltreatment.

A further finding in Review B was based on how intervention components are delivered to parents using Behaviour Change Techniques (BCTs) and the Behaviour Change Technique Taxonomy (BCTT v1; Michie et al., 2013). This helped provide insight into not only what optimal components in child maltreatment interventions may be but also how they are delivered. Table 26 shows the six prevalent BCTs and their links to the number of intervention components across ecological levels (micro and mezzo). Based on BCT groupings (see Appendix H), Shaping knowledge and Social support appear to be the most effective and prevalent techniques of delivering multiple intervention components to parents in child maltreatment interventions.

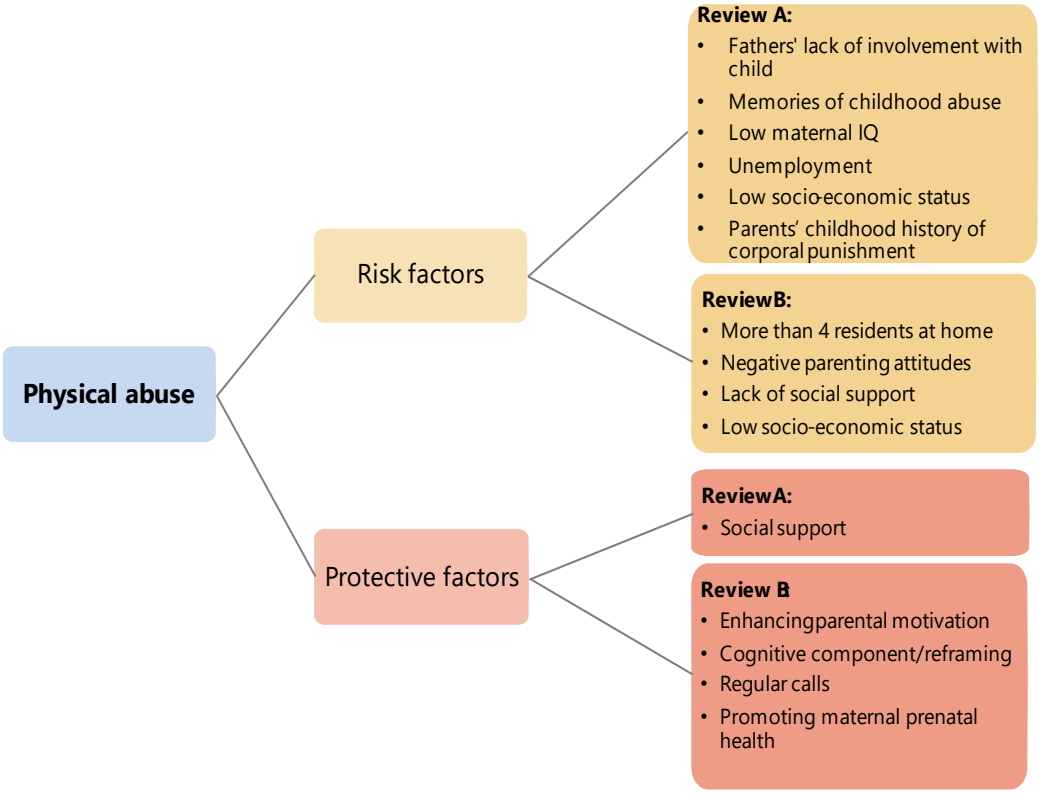
Table 26: BCTs and intervention components - Review B

BCTs	Intervention components
Social support (unspecified)	30
Instruction on how to perform a behaviour	17
Self-monitoring of behaviour	3
Demonstration of the behaviour	9
Social support (practical)	7
Restructuring the physical environment	3

Maltreatment type-specific risk and protective factors

Maltreatment type-specific and distinct risk and protective factors findings for each maltreatment type, physical, sexual, emotional abuse and neglect from both systematic reviews are presented in this section. Majority of the findings for unique risk and protective factors were for physical abuse from both reviews and these are illustrated in Figure 41.

Figure 41: Risk and Protective factors for Physical abuse



While there were some similarities in risk factors between both reviews (e.g., low socio-economic status), findings from Review A highlighted certain nuances that were not identified in Review B. For instance, memories of parental childhood abuse rather than the occurrence of abuse was a significant finding of risk. Similarly, fathers' lack of involvement with children was another important finding only identified in Review A. Child maltreatment interventions can benefit from these very specific findings as the presence of these may merit provision of support and help with risk assessment.

Of note was the finding of low maternal IQ as a risk factor for physical abuse identified in only one study in Review A (Pajer et al., 2014). This finding is controversial as research shows that parental intelligence may not be adequate measures of parenting capacity (Milton et al., 2003). However, there is longitudinal research positing that children who witness domestic violence and/or are maltreated may have lower IQs (Abel et al., 2019; Straethearn et al., 2020), suggesting an intergenerational link between intelligence, prior exposure to violence, and potential for future maltreatment. What is yet unknown is the pathway through which this is indicative of child physical abuse and more research in this area is needed to enable guidance and development of interventions for appropriate parental assessment of risk and provision of support.

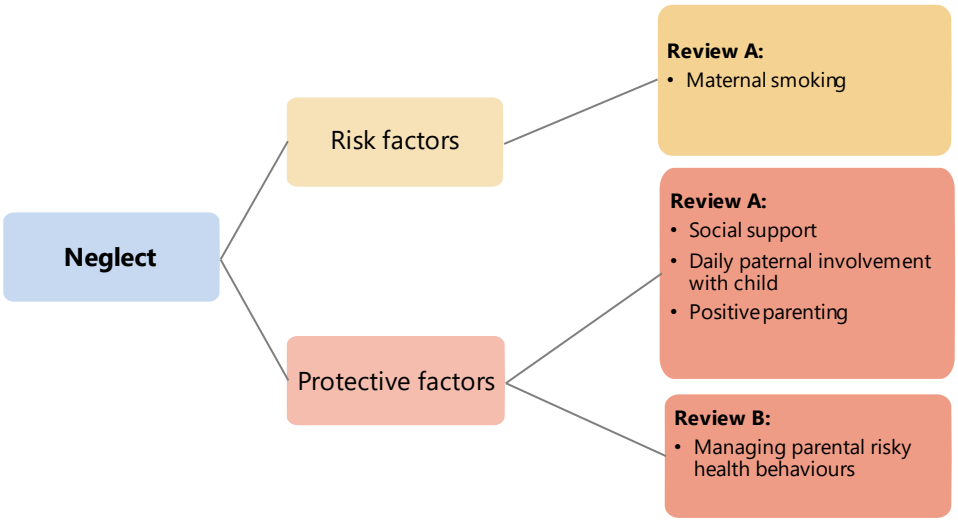
For protective factors, Review A specified specific types of social support to be protective for child physical abuse including instrumental support or help with

daily tasks and companionship support as protective for fathers but not for mothers (Price-Wolf et al., 2014). This can be linked to conclusions reached from Review B's findings on formal social support provision (e.g., through services) as opposed to informal (e.g., from friends and family) combined with a monitoring component (e.g., home visiting) as protective. Child maltreatment interventions can use these findings to target promotion of formal support and utilisation of services among parents rather than highlighting informal social support alone. More research to examine both types of social support and links to other risk factors can also help guide development of tailored intervention strategies.

The intervention component of cognitive appraisal in Review B also highlights reframing parents' ideas about acceptable parenting practices, especially in relation to child physical discipline, as potentially effective for physical abuse. Augmenting child maltreatment interventions by adding this component can potentially result in lowered risk of child physical abuse. Implementation and further evaluation of this component can help guide refinement of child maltreatment interventions for child physical abuse.

For neglect, as shown in Figure 42, Review A's findings were more informative compared to Review B as one unique risk factor and several protective factors were identified. While these factors are discussed individually in prior sections (see Chapters 6 and 10), of note is the lack of identification of distinct interventions components targeting child neglect in child maltreatment interventions barring the component of Managing parental risky health behaviours. Even though there is considerable overlap and sharing of protective factors between maltreatment types, there may be certain intervention components more effective for mitigating risk of neglect among parents, especially given its high prevalence, and Review A's findings can guide child maltreatment interventions to develop components to specifically target neglect.

Figure 42: Risk and protective factors for Neglect



For emotional and sexual abuse, both reviews had sparse findings. While there were a number of shared components with other maltreatment types, only one distinct factor was found for sexual abuse. Review A identified one unique risk factor for sexual abuse (lack of mother-daughter closeness; Paveza et al., 1988) and Review B did not identify any unique risk or protective factors for either maltreatment type. More attention in research is warranted for both child emotional and sexual abuse, especially for guiding intervention provision. Although there is immense overlap in risk and protective factors as well as co-occurrence of different maltreatment types, there are also distinct mechanisms for each (Hillis et al., 2016). Cicchetti (2016) posits that thresholds for different maltreatment types may vary among at-risk parents (e.g., lower threshold for emotional abuse compared to physical abuse). Researchers need to examine specific risk for each type and implement and evaluate specific intervention components targeting parental emotional and sexual abuse to further knowledge in child maltreatment prevention and reduction.

Secondary findings

Definitional issues and a lack of clarity across common terms used to describe risk and protective factors were a concern in both systematic reviews. In Review A, reference to certain types of maltreatment were misleading (e.g., harsh physical discipline instead of physical abuse) in many included studies. Researchers of included studies in Review A used terms like social support but tremendous variation existed in what social support encapsulated. Similarly, in Review B broad terms to describe intervention components (e.g., parent education) were used across

studies but variations existed in what the component actually delivered (e.g., positive interactions, child development education, child maltreatment information).

Sparsity in research on the macro level (risk and protective factors) and maltreatment type-specific factors for parental emotional and sexual abuse is another gap identified from findings of both reviews. Further, an imbalance in fathers' representation in included studies from both reviews was also important. Majority of the studies focused on mothers and a lack of examination of fathers' risk and protective factors in Review A and lack of child maltreatment interventions targeting fathers for provision of support in Review B was prevalent. A need for fathers' representation in child maltreatment research and interventions is warranted given the significance of their role and contribution to risk or protection for child maltreatment.

Finally, Review B highlighted the need for cultural representation in child maltreatment intervention evaluations and a general need for a cultural perspective in child maltreatment research. Inclusion of Low and Middle-income countries, where child maltreatment may be more prevalent, and unpacking cultural-specific risk and protective factors is crucial to understanding and preventing child maltreatment globally.

Overarching limitations

Limitations of each systematic review are discussed independently in the corresponding discussion chapters (6 & 10). Overarching limitations of the thesis are explored and discussed in this section.

The findings from both reviews rest on the evidence obtained from the 128 studies included in this research. The evidence highlighted does not represent *all* the risk, protective factors, and intervention provision for parental child maltreatment. It represents what researchers have studied, measured, and evaluated in this area restricting applicability of evidence and pointing to some bias in what researchers are prone to study in the field. The consistently neglected areas in child maltreatment research (over the last 40 or so years) further highlight this bias. Future empirical research needs to ensure better representation of fathers, integration of a cross-cultural perspective and investigation of under-researched areas such as macro level influences and parental perpetration of child emotional and sexual maltreatment.

Studies from both systematic reviews (A and B) rated as low quality were included in syntheses of both reviews and none were excluded based on quality appraisal. Quality considerations are especially important when using quantitative methods to calculate overall effect of treatment and/or when making evidence-based recommendations to practitioners which have a direct impact on services and treatments. For this thesis, low quality evidence was also included because findings are tentative, recommendations are for potential effectiveness of intervention components or consideration of influencing factors. There is a general call for researchers to shift attention to neglected or lesser-known areas, for practitioners to consider certain types of provision rather than recommendations based on efficacy.

For this research and on balance, even low-quality evidence adds to the findings in respect to their potential rather than absolute effect.

Implications

Parental risk findings common to both reviews, especially at the mezzo ecological level, such as economic disadvantage (including poverty, low household income and welfare receipt), housing instability or poor housing conditions and unemployment are amenable to policy. Given the evidence, economic policy (e.g., increase in minimum wage, lowered restrictions on welfare benefits, income tax credits; Klevens et al., 2016; Raissian et al., 2017; Ginther et al., 2017) which can help increase household income and lift families from under the poverty threshold, may result in significant reduction in parental stress and in risk and recurrence of child maltreatment.

Mezzo-level factors that can influence a supportive environment for vulnerable parents to reduce risk and recurrence of child maltreatment and which are also amenable to policy such as Review A's finding of social support and Review B's finding on the various intervention components (e.g., help with housing, education and employment, referral to services, financial training), offer insight to ways in which risk of child maltreatment can be mitigated. Findings also reveal, in line with findings of prior systematic reviews (e.g., Austin et al., 2020) that greater availability and access to parental support services in the community can buffer risk of child maltreatment. Policy garnered towards availability of educational, employment, health, and other services, especially in deprived areas, can help ensure parents that require these services are able to access them.

Moreover, ensuring that adequate funding is available for services, including interventions, to provide needed support is acquiescent to both policy and legislation. In the United States, for example, Maternal Infant and Early Childhood Home Visiting (MIECHV, 2022) legislation, a federal-state partnership, provides funding to support home visiting interventions for high-risk families across the United States.

On the Macro-level, findings from both reviews highlight a conflict in utilisation of services by parents. Review A found utilisation of mental health services by pregnant adolescents to be a risk factor while Review B found under-utilisation of services by at-risk parents as a risk factor. This warrants an evaluation of child welfare systems especially in relation to their assessment of parents, role of surveillance (Fong, 2020), as well as addressing other barriers that parents may face when accessing services. Policymakers can use this information then to ensure parents who may be potentially at-risk of child maltreatment utilise needed services without threat of punitiveness from child welfare agencies. Again, provision of funding for research and evaluation of barriers and risk assessment methods can be facilitated by appropriate policy and legislation. Furthermore, the few macro level findings, especially on parental risk factors from both reviews justify a need for policy-level intervention especially that which enables implementation and evaluation of child maltreatment interventions which target fathers and cultural-specific parental risk.

For intervention developers and practitioners, findings on maltreatment type-specific risk factors from both reviews are significant, highlighting the specific parental factors that need to be considered and the type of tailored support which may be effective to prevent and reduce different types of maltreatment. Further, Review B's findings on intervention components and BCTs offer intervention developers insight into the prevalent and potentially effective intervention components at each ecological level. For instance, combining two components, parental emotional regulation at the micro-individual level and managing child misbehaviour at the micro-family level may offer stronger protection against child physical abuse compared to the presence of just one. Similarly, using the BCT of Instruction on how to perform a behaviour (shaping knowledge), for example, as a technique to deliver multiple components informs intervention developers and practitioners on what may be optimal means of delivering intervention components to parents. These findings can also help developers to focus on those components which are supported by evidence and not waste resources on those that have none or conflicting evidence, resulting in higher likelihood of effective intervention efforts to prevent and reduce child maltreatment.

Conclusion

The symbiosis of both systematic reviews, A and B, provide valuable insight into parental risk and protective factors interplay and intervention provision in child maltreatment. Findings on risk highlight co-occurrence of risk factors, associations between certain factors as well as maltreatment type-specific risk, especially for physical abuse and neglect. Findings on intervention provision from Review B emphasise what intervention components may be effective to buffer parental risk and further provide a systematic and novel way of examining how intervention components can be optimally delivered to parents through BCTs. Some maltreatment type-specific findings on protective factors from Review A are useful in guiding child maltreatment intervention development and merit further examination in research. The findings provide insight into the pathway to enhancing parental resilience in the presence of multiple adversity for both at-risk and maltreating parents. Through a comprehensive examination of empirical, quantitative research and intervention evaluations, it can be concluded that not only does the research evidence inform child maltreatment interventions especially in assessment of parental risk, but the latter also provides valuable information to direct further examination of risk and protective factors and mediating pathways. Intervention evaluations of child maltreatment for parents offer insight into potential effectiveness of specific intervention components and the way they are delivered, and this knowledge helps demarcate the many ways in which parental resilience can be strengthened and risk for child maltreatment mitigated through intervention provision and support. While these findings may not provide a complete picture of child maltreatment risk and protective factors, they serve an important function, especially in delineating significant gaps that currently exist in the evidence, inform future

research, and lay the foundation to bridge the gap between research evidence and the practice of child maltreatment prevention and reduction for parents.

Key Summary

The overarching question of the thesis ‘How can evidence on parental risk and protection inform prevention and reduction of child maltreatment?’ has been informed by two strands of findings. One branch of findings is based on the differences and similarities between the two reviews regarding contextualising parental influences of risk and positive influences from two types of evidence (observational and evaluation studies). The second strand of findings informing the overarching question relate to identification of numerous avenues of further investigation in the field of parental child maltreatment. Both reviews inform each other with observational findings providing more nuanced evidence on risk factors and evaluation evidence shedding light on potentially effective service provision for parents. Areas requiring immediate and substantial attention from researchers include, **i) a significant and disproportionate underrepresentation of fathers in child maltreatment research, ii) a glaring lack of global and culturally relevant evidence and, iii) unequal representation of macro-level influences and influences for parent perpetrated child emotional and sexual maltreatment.**

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Appendices

Appendix A: Review A - Describing Study Characteristics

Administrative details

Data Extraction

- Section A: Administrative Details
    - Name of reviewer
    - Date of Review
    - Document Details
        - Unique Identifier
        - Title of paper
        - Authors of paper
        - Year
        - Name of Journal
        - Is the whole paper used for data extraction or a specific part?

- Section B: Study background
    - What is the purpose of the study?
    - Why was the study done?
    - Was the study linked to theoretical/empirical data?
    - When was the study carried out?
    - What are the study hypotheses and/or research questions?

- Section C: Study Focus
    - What area of child maltreatment is the study focused on?
    - What parental risk factors are studied?
    - What parental protective factors (if any) are studied?
    - What is the setting of the study?
    - In which country was the study carried out?
    - Describe in detail the specific phenomenon and factors the study is concerned with.
    - At what time (age of child) were the risk and protective factors studied, if stated?

- Section D: Actual Sample
    - Who is the sample of the study?
    - What was the total number of participants in the study? (Actual sample)

  - What proportion of the sample participated in the study?
  - What parental ages are covered in the sample?
  - What is the ethnicity of the sample?
  - What other useful information is provided about the sample?

- Section E: Study Method
  - Study timing
  - What is the method used in the study?

- Section F: Method-Groups
  - If comparisons made between groups, specify basis of division for making comparisons.
  - How do the groups differ?
  - Number of groups
  - If prospective allocation, what was the unit of allocation?
  - If prospective allocation, what method was used to generate allocation sequence?
  - If prospective allocation, was the sequence concealed?

- Section G: Method-Sampling Strategy
  - Are the authors trying to produce findings representative of a population?
  - What is the sampling frame (if any)?
  - If the study involves studying samples prospectively over time, what proportion of the sample dropped out over the course of the study?
  - If study involves following samples prospectively over time, do authors provide baseline value of key variables?

- Section H: Recruitment and Consent
  - What method was used to recruit people in the study?
  - Were incentives provided to recruit people?
  - Was consent sought?

- Section I: Data Collection
  - Which variables does the study aim to measure/examine?
  - What method was used to collect data?
  - What tools/instruments were used to collect data?
  - Who collected the data?
  - Do authors describe ways in which reliability and validity of data collection methods/tools was addressed?

    - Where was the data collected?

- Section J: Data Analysis
    - What rationale do authors give for the method of analysis for the study?
    - What statistical method was used to analyse the data?
    - Do the authors describe strategies used to control for bias from confounding variables?
    - Do authors describe any ways in which they have addressed the reliability and replicability of data analysis?
    - Do authors describe any way they have addressed the validity/trustworthiness of data analysis?

- Section K: Results and conclusion
    - What are the results of the study?
    - Give details of how the results of the study are represented.
    - Provide details of the authors conclusions

Appendix B: Review A - Quality Appraisal Criteria

- Section A: Population
  - Is the source population well described?
  - Are participants representative of source population?
  - Do selected participants represent eligible population?
  - CASE SERIES ONLY: Was there consecutive and complete inclusion of all participants?
  - Was selection bias minimised in selecting exposure and comparison group?
  - Were confounding factors identified and controlled?

- Section B: Outcomes
  - Were outcome measures and procedures reliable?
  - Were all important outcomes assessed?
  - Was follow-up similar between groups?
  - Was follow up time meaningful?
  - Were strategies to address incomplete follow up described?

- SECTION C: Analysis
  - Were methods of analysis appropriate and valid?
  - Was the precision of association given or calculable and is the association meaningful?

- Section D: Relevance to Review
  - Can the study findings be trusted in answering review questions?
  - Is the research design and analysis appropriate to answer the review questions?
  - Is the focus of the study relevant to answer the review questions?

Appendix C: Review A - Quality Appraisal Results

Study	Population	Outcome	Analysis	Quality of evidence	Relevance to Review	Weight of evidence
Ajdukovic, 2018	⊕	⊕	⊕	High	⊕	High
Anderson, 2018	⊕	⊕	⊗	Moderate	⊕	High
Appleyard K, 2011	⊕	⊕	⊕	High	⊕	High
Banyard, 2003	⊕	⊕	⊗	Moderate	⊕	High
Bartlett, 2014	⊕	⊕	⊕	High	⊕	High
Bartlett, 2015	⊕	⊕	⊕	High	⊕	High
Bartlett, 2017	⊕	⊗	⊕	Moderate	⊕	High
Berkout, 2016	⊕	⊕	⊕	High	⊕	High
Milner J S, 1990	⊕	⊕	⊕	High	⊕	High
Sedlak, 1997	⊕	⊕	⊗	Moderate	⊕	High
Paveza, 1988	⊕	⊕	⊕	High	⊕	High
Drake B, 1996	⊕	⊕	⊕	High	⊕	High
Lesnik-Oberstein, 1995	⊕	⊕	⊕	High	⊕	High
Whipple, 1991	⊕	⊕	⊕	High	⊕	High
Cantos, 1997	⊕	⊕	⊕	High	⊕	High
Chaffin M, 1996	⊕	⊕	⊕	High	⊕	High
Romero-Martinez, 2013	⊕	⊕	⊕	High	⊕	High
Caliso, 1992	⊕	⊕	⊕	High	⊕	High
Chan, 1994	⊕	⊕	⊕	High	⊕	High
Mash, 1983	⊕	⊕	⊗	Moderate	⊕	High
Wolfner, 1993	⊕	⊕	⊕	High	⊕	High
Connelly, 1992	⊕	⊕	⊕	High	⊕	High
Ross, 1996	⊕	⊕	⊕	High	⊕	High
Zuravin, 1987	⊕	⊗	⊕	Moderate	⊗	Moderate
Corse, 1990	⊕	⊕	⊕	High	⊕	High
Chang, 2008	⊕	⊕	⊕	High	⊗	Moderate
Cheng, 2015	⊕	⊕	⊕	High	⊕	High
Christensen, 1994	⊕	⊕	⊕	High	⊕	High
Connell, 2009	⊗	⊕	⊕	Moderate	⊗	Moderate
Dixon, 2009	⊕	⊕	⊕	High	⊕	High
Doidge, 2017	⊕	⊕	⊕	High	⊕	High
Doris, 2006	⊕	⊕	⊗	Moderate	⊕	High
Dubowitz, 2011	⊕	⊕	⊕	High	⊕	High
Duffy, 2015	⊕	⊕	⊕	High	⊕	High
DuMont, 2012	⊕	⊕	⊕	High	⊕	High
Freisthler, 2017	⊕	⊕	⊕	High	⊕	High
Fuller, 2003	⊕	⊕	⊕	High	⊕	High
Grumi, 2017	⊕	⊕	⊕	High	⊕	High
Guterman, 2009	⊕	⊕	⊕	High	⊗	Moderate
Herrenkohl, 2013	⊕	⊕	⊕	High	⊕	High

Bert, 2009	⊕	⊕	⊕	High	⊕	High
de Paul, 2000	⊕	⊕	⊕	High	⊕	High
Haapasalo, 1999	⊕	⊕	⊕	High	⊕	High
Wanda, 2000	⊕	⊕	⊕	High	⊕	High
Tanyaradzwa, 2011	⊕	⊕	⊗	Moderate	⊗	Moderate
Kelly, 2017	⊕	⊕	⊕	High	⊕	High
Bomi, 2015	⊕	⊕	⊕	High	⊕	High
Leea, 2012	⊕	⊕	⊕	High	⊕	High
Li, 2011	⊕	⊕	⊕	High	⊕	High
Lowell, 2017	⊗	⊕	⊕	Moderate	⊕	High
Maguire-Jack, 2016	⊗	⊕	⊕	Moderate	⊕	High
McGuigan, 2001	⊗	⊕	⊕	Moderate	⊕	High
Metzner, 2017	⊗	⊕	⊕	Moderate	⊕	High
Negash, 2016	⊕	⊕	⊕	High	⊕	High
Pajer, 2014	⊗	⊕	⊕	Moderate	⊕	High
Price-Wolf, 2014	⊗	⊕	⊕	Moderate	⊕	High
Lawrence, 2003	⊗	⊕	⊕	Moderate	⊗	Moderate
Rodriguez, 2010	⊕	⊕	⊕	High	⊕	High
Rodriguez, 2015	⊕	⊕	⊕	High	⊕	High
Schick, 2015	⊕	⊕	⊕	High	⊕	High
Slack, 2011	⊕	⊕	⊕	High	⊕	High
Slack, 2017	⊗	⊕	⊕	Moderate	⊕	High
Thornberry, 2013	⊕	⊕	⊕	High	⊕	High
Thornberry, 2014	⊕	⊕	⊕	High	⊕	High
Tracy, 2018	⊕	⊕	⊕	High	⊕	High
Valentino, 2012	⊕	⊕	⊕	High	⊕	High
Wu, 2004	⊕	⊕	⊕	High	⊕	High
Zhao, 2018	⊕	⊕	⊕	High	⊗	Moderate

Appendix Table C: Quality Appraisal Results for Review A included studies

Appendix D: Review A – Variables in included studies

Study	Bivariate	Controlled variables
Ajduković (2018)	N/A	Maternal SES status and exposure to stress
Anderson (2018)	Yes	N/A
Appleyard (2011)	Yes	N/A
Banyard (2003)	N/A	Demographics (income and education)
Bartlett (2014)	Yes	Infant variables (sex, age, birth weight)
Bartlett (2015)	Yes, for descriptive variables	Maternal demographics, participation in programme, family resources
Bartlett (2017)	N/A	Program status, child age, maternal age at birth and race/ethnicity
Berkout (2016)	N/A	Demographic variables like parenting age
Bert, (2009)	Yes	Controlling for type of mother (low resource and high resource)
Caliso, (1992)	Yes	N/A
Chaffin, (1996)	Yes - for demographic data comparisons	Demographic factors - age, sex, SE status
Chan, (1994)	Yes	N/A
Chang (2008)	Yes	N/A
Cheng (2015)	N/A	Parents' substance abuse, mental disorder, DV and type of initial substantiated maltreatment report and demographic characteristics
CHRISTENSEN (1994)	Yes	N/A
Connell (2009)	N/A	Demographic factors (child factors e.g., age, race and parenting demographics, age, SE status)
Connelly (1992)	N/A	Family income, race, number of minor children, age of abused child, mother's education, single parent families
Corse, (1990)	N/A	Demographic factors - age, education, income
de (2000)	Yes	N/A
Dixon (2009)	Yes	N/A

Doidge (2017)	Yes	N/A
Doris (2006)	Yes, for child welfare outcomes and exploration of risk factor associations	Demographics - marital status, gravidity, maternal age
Drake, (1996)	Yes	N/A
Dubowitz (2011)	N/A	Mothers' education level, marital status, and number of children at home
Duffy (2015)	N/A	Demographic factors - mother's age, race, and child's gender
DuMont (2012)	Yes - correlations with protective factors	N/A
Freisthler (2017)	N/A	Demographic factors like child age, marital status, parent gender, parent age
Fuller (2003)	Bivariate association between each predictor variable (risk factors) and maltreatment recurrence	Demographic factors - age, race, gender, no. of children at home, type of household (single vs. two parent)
Grumi (2017)	Bivariate - distal (e.g., chronic poverty, low education level, lack of social network) and proximal risk factors (e.g., psychopathology, childhood maltreatment of parents) and association with maltreatment type	Demographic factors
Guterman (2009)	Yes	Parents' social/demographic factors
Haapasalo, (1999)	Yes - comparison groups	N/A
Herrenkohl (2013)	N/A	Parents' socioeconomic status and gender (G1)
Hunter (2000)	Yes - to test association between each predictor variable (risk factors, e.g., mother's depression, father's alcohol abuse, mother's education, age of child, domestic violence) and physical abuse	Logistic regression for each type of predictor variable (while controlling for other predictor variables)
Kajese (2011)	Yes	N/A
Kelly (2017)	Comparison with control group on multiple variables	N/A
Kim (2015)	N/A	Demographic such as household variables and psychosocial control variables

Lee (2012)	N/A	Paternal stress and paternal alcohol use and demographic factors
Lesnik-Oberstein, (1995)	N/A	Child's age, mother's education level and absence/presence of mother's partner
Li (2011)	N/A	Child demographic factors (age, gender, race), parents' demographic factors (marital status, education, education level)
Lowell (2017)	N/A	Demographic (age of child, age of parent, gender of child, SE status, marital status, and ethnicity)
Maguire-Jack (2016)	N/A	Age, race, sex, marital status, number of children, economic hardship, and mental health outcomes
Mash, (1983)	Yes	N/A
McGuigan (2001)	N/A	Composite risk variable, mothers' score on KFSI (to assess maltreatment risk)
Metzner (2017)	Yes	N/A
Milner, (1990)	Yes	N/A
Negash (2016)	N/A	Parents' age, education, gender, marital status, economic hardship, mental health issues, no. of children at home
Pajer (2014)	Yes	N/A
Paveza, (1988)	Yes	N/A
Price-Wolf (2014)	N/A	Neighbourhood disadvantage score (unemployment in households, no vehicle, less than high school diploma), personality score (parenting stress and impulsivity), psychosocial and demographic variables (incl. income, age, ethnicity, marital status, age and gender of child)
Ricci (2003)	Yes	N/A
Rodriguez (2010)	Yes	Income, parenting stress, parenting hostility
Rodriguez (2015)	N/A	Demographic controls - income, parent age, education level, relationship status and ethnicity

Romero-Martinez, (2013)	Yes - ANOVA for gender and timing of abuse; t-tests gender differences and socio-demographic variables	Number of children, employment status, marital status, children at home and family income
Ross, (1996)	N/A	Age and gender of child, parents' age, race, SES
Schick (2015)	N/A	Sociodemographic factors - gender of adolescent, education level
Sedlak, (1997)	N/A	Child demographic factors (sex, race) family structure, family income
Cantos, (1997)	Yes	N/A
Slack (2011)	Yes	N/A
Slack (2017)	Yes	N/A
Thornberry (2013)	N/A	Gender, neighbourhood arrest rate, race, age, SES, neighbourhood poverty
Thornberry (2014)	Yes	N/A
Tracy (2018)	N/A	Maternal age at delivery, marital status, gender of infant, maternal education level
Valentino (2012)	N/A	Race, authoritarian parenting
Whipple, (1991)	Yes	N/A
Wolfner (1993)	Yes	N/A
Wu (2004)	N/A	Maternal race, education, age during pregnancy, smoking
Zhao (2018)	Yes	N/A
Zuravin, (1987)	N/A	Income, race, marital status., employment status, age, and education level

Appendix Table D: Variables in Review A studies

Appendix E: Review B – Describing Study Characteristics

- Section 1: Administrative Details
    - Name of Reviewer
    - Date of Review
    - Title of Evaluation
    - Year of publication
    - Authors
    - Country
    - Study reference
    - Whole or part of evaluation used?

- Section 2: Intervention Background
    - Name of Intervention
    - Intervention Type
    - Goals of Intervention
        - Primary Goals
        - Secondary Goals
    - Type of Maltreatment
        - Stated
        - Not stated
    - What is the target population?
        - Stated
        - Not stated
    - Intervention Setting
        - Home
        - Clinic
        - Other
    - Intervention Length and intensity
    - Intervention Delivered by
        - Social Workers
        - Therapists
        - Clinicians
        - Researchers
        - Other
    - Intervention Outcome Indicators
    - Intervention Components
    - Intervention Measures Used

- Section 3: Intervention Population
    - Risk Characteristics
        - Stated
        - Not stated

- Section 4: Intervention Evaluation
    - Goal of evaluation
    - Type of Evaluation
        - RCT
        - Quasi-Experimental
        - Other
    - How is child maltreatment outcome assessed?
    - Participants
        - Groups
            - Yes
            - No
        - If group, method of allocation?
            - Random
            - Equal
            - Other
    - Follow up period
        - Stated
        - Not stated
    - How many completed the intervention?
    - Data Collection Procedures
        - Baseline attributes
        - Outcome data
    - Analysis
        - Programme effect on child maltreatment outcome
        - Significant secondary outcomes
    - Limitations of evaluation
    - Conclusion of evaluation

Appendix F: Review B - Quality Assessment Criteria

- **FOR RCTs ONLY (GRADE)**
  - SECTION A: Risk of Bias
    - Are participants randomised?
    - Is there allocation concealment?
    - Is there blinding (single or double)?
    - Is there loss to follow up and if yes, is it accounted for (intention-to-treat analysis)?
    - Any other risk of bias in study?
    - Were the groups similar?
  - SECTION B: Indirectness
    - Are all outcomes reported?
    - Is the population representative?
  - SECTION D: Imprecision
    - Is there enough information to detect a precise effect? (consider: sample size)
    - Are there wide (95%) confidence intervals around the effect estimate?

- **FOR QUASI-EXPERIMENTAL DESIGNS ONLY - JBI**
  - Is it clear in the study what is the cause and what is the effect?
  - Were the participants included in the comparisons similar?
  - Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?
  - Was there a control group?
  - Were there multiple measurements of the outcome both pre and post the intervention/exposure?
  - Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?
  - Were the outcomes of participants included in any comparisons measured in the same way?
  - Were outcomes measured in a reliable way?
  - Was appropriate statistical analysis used?

Appendix G: Review B – BCT Taxonomy (v1)

BCT Taxonomy (v1): 93 hierarchically-clustered techniques

Page	Grouping and BCTs
1	**1. Goals and planning**
	1.1. Goal setting (behavior) 1.2. Problem solving 1.3. Goal setting (outcome) 1.4. Action planning 1.5. Review behavior goal(s) 1.6. Discrepancy between current behavior and goal 1.7. Review outcome goal(s) 1.8. Behavioral contract 1.9. Commitment
3	**2. Feedback and monitoring**
	2.1. Monitoring of behavior by others without feedback 2.2. Feedback on behaviour 2.3. Self-monitoring of behaviour 2.4. Self-monitoring of outcome(s) of behaviour 2.5. Monitoring of outcome(s) of behavior without feedback 2.6. Biofeedback 2.7. Feedback on outcome(s) of behavior
5	**3. Social support**
	3.1. Social support (unspecified) 3.2. Social support (practical) 3.3. Social support (emotional)
6	**4. Shaping knowledge**
	4.1. Instruction on how to perform the behavior 4.2. Information about Antecedents 4.3. Re-attribution 4.4. Behavioral experiments
7	**5. Natural consequences**
	5.1. Information about health consequences 5.2. Salience of consequences 5.3. Information about social and environmental consequences 5.4. Monitoring of emotional consequences 5.5. Anticipated regret 5.6. Information about emotional consequences
8	**6. Comparison of behaviour**
	6.1. Demonstration of the behavior 6.2. Social comparison 6.3. Information about others' approval
9	**7. Associations**
	7.1. Prompts/cues 7.2. Cue signalling reward 7.3. Reduce prompts/cues 7.4. Remove access to the reward 7.5. Remove aversive stimulus 7.6. Satiation 7.7. Exposure 7.8. Associative learning
10	**8. Repetition and substitution**
	8.1. Behavioral practice/rehearsal 8.2. Behavior substitution 8.3. Habit formation 8.4. Habit reversal 8.5. Overcorrection 8.6. Generalisation of target behavior 8.7. Graded tasks
11	**9. Comparison of outcomes**
	9.1. Credible source 9.2. Pros and cons 9.3. Comparative imagining of future outcomes
12	**10. Reward and threat**
	10.1. Material incentive (behavior) 10.2. Material reward (behavior) 10.3. Non-specific reward 10.4. Social reward 10.5. Social incentive 10.6. Non-specific incentive 10.7. Self-incentive 10.8. Incentive (outcome) 10.9. Self-reward 10.10. Reward (outcome) 10.11. Future punishment
15	**11. Regulation**
	11.1. Pharmacological support 11.2. Reduce negative emotions 11.3. Conserving mental resources 11.4. Paradoxical instructions
16	**12. Antecedents**
	12.1. Restructuring the physical environment 12.2. Restructuring the social environment 12.3. Avoidance/reducing exposure to cues for the behavior 12.4. Distraction 12.5. Adding objects to the environment 12.6. Body changes
17	**13. Identity**
	13.1. Identification of self as role model 13.2. Framing/reframing 13.3. Incompatible beliefs 13.4. Valued self-identify 13.5. Identity associated with changed behavior
18	**14. Scheduled consequences**
	14.1. Behavior cost 14.2. Punishment 14.3. Remove reward 14.4. Reward approximation 14.5. Rewarding completion 14.6. Situation-specific reward 14.7. Reward incompatible behavior 14.8. Reward alternative behavior 14.9. Reduce reward frequency 14.10. Remove punishment
19	**15. Self-belief**
	15.1. Verbal persuasion about capability 15.2. Mental rehearsal of successful performance 15.3. Focus on past success 15.4. Self-talk
19	**16. Covert learning**
	16.1. Imaginary punishment 16.2. Imaginary reward 16.3. Vicarious consequences

i

Appendix Table G: BCT Taxonomy v1. Source: https://digitalwellbeing.org/wp-content/uploads/2016/11/BCTTv1_PDF_version.pdf

Appendix H: Review B - BCT definitions

The table below shows the BCTs identified in Review B and their definitions.

BCT Groupings	BCTs	Definitions
Goals and planning	Goal setting (behaviour)	Set or agree on a goal defined in terms of the behaviour to be achieved
	Goal setting (outcome)	Set or agree on a goal defined in terms of a positive outcome of wanted behaviour
	Problem solving	Analyse, or prompt the person to analyse, factors influencing the behaviour and generate strategies that include overcoming barriers and/or increasing facilitators
	Action planning	Prompt detailed planning of performance of the behaviour
	Discrepancy between current behaviour and goal	Draw attention to discrepancies between a person's current behaviour and previously set goals
	Review outcome goal	Review behaviour goal(s) jointly with the person and consider modifying goal(s) or behaviour change strategy in light of achievement
Feedback and monitoring	Monitoring of behaviour by others without feedback	Observe or record behaviour with the person's knowledge as part of a behaviour change strategy
	Feedback on behaviour	Monitor and provide informative or evaluative feedback on performance of the behaviour
	Self-monitoring of behaviour	Establish a method for the person to monitor and record their behaviour(s) as part of a behaviour change strategy
	Feedback on outcome of behaviour	Monitor and provide feedback on the outcome of performance of the behaviour
Social support	Social support (unspecified)	Advise on, arrange, or provide social support or noncontingent praise or reward for performance of the behaviour. It includes encouragement and counselling, but only when it is directed at the behaviour
	Social support (practical)	Advise on, arrange, or provide practical help for performance of the behaviour
	Social support (emotional)	Advise on, arrange, or provide emotional social support for performance of the behaviour
Shaping knowledge	Instruction on how to perform a behaviour	Advise or agree on how to perform the behaviour (includes 'Skills training')
	Information about antecedents	Provide information about antecedents that reliably predict performance of the behaviour
Natural consequences	Information about health consequences	Provide information about health consequences of performing the behaviour
	Information about emotional consequences	Provide information about emotional consequences of performing the behaviour
	Information about social and environmental consequences	Provide information about social and environmental consequences of performing the behaviour
	Monitoring of emotional consequences	Prompt assessment of feelings after attempts at performing the behaviour
Comparison of behaviour	Demonstration of the behaviour	Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g., via film, pictures, for the person to aspire to or imitate
Associations	Remove aversive stimuli	Advise or arrange for the removal of an aversive stimulus to facilitate behaviour change
Repetition and substitution	Behaviour substitution	Prompt substitution of the unwanted behaviour with a wanted or neutral behaviour
	Behavioural practice & rehearsal	Prompt practice or rehearsal of the performance of the behaviour one or more times in a context or at a

		time when the performance may not be necessary, in order to increase habit and skill
	Habit reversal	Prompt rehearsal and repetition of an alternative behaviour to replace an unwanted habitual behaviour
Reward and threat	Reward (outcome)	Arrange for the delivery of a reward if and only if there has been effort and/or progress in achieving the behavioural outcome (includes positive reinforcement)
	Material reward (behaviour)	Arrange for the delivery of money, vouchers, or other valued objects if and only if there has been effort and/or progress in performing the behaviour
	Future punishment	Inform that future punishment or removal of reward will be a consequence of performance of an unwanted behaviour
	Social reward	Arrange verbal or non-verbal reward if and only if there has been effort and/or progress in performing the behaviour (includes positive reinforcement)
Regulation	Pharmacological support	Provide, or encourage the use of or adherence to, drugs to facilitate behaviour change
	Reduce negative emotions	Advise on ways of reducing negative emotions to facilitate performance of the behaviour (includes 'Stress Management')
	Conserving mental resources	Advise on ways of minimising demands on mental resources to facilitate behaviour change
Antecedents	Restructuring the physical environment	Change, or advise to change the physical environment in order to facilitate performance of the wanted behaviour or create barriers to the unwanted behaviour
	Restructuring the social environment	Change, or advise to change the social environment in order to facilitate performance of the wanted behaviour or create barriers to the unwanted behaviour
	Distraction	Advise or arrange to use an alternative focus for attention to avoid triggers for unwanted behaviour
Identity	Framing/reframing	Suggest the deliberate adoption of a perspective or new perspective on behaviour (e.g., its purpose) in order to change cognitions or emotions about performing the behaviour
Self-belief	Focus on past success	Advise to think about or list previous successes in performing the behaviour
	Verbal persuasion about capability	Tell the person that they can successfully perform the wanted behaviour, arguing against self-doubts and asserting that they can and will succeed

Appendix Table H: BCT groupings and definitions (identified in Review B). Source: https://digitalwellbeing.org/wp-content/uploads/2016/11/BCTTv1_PDF_version.pdf