Risk Factors for Notifications to Child Protection Services in the Early Start Project

Early Intervention Service

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Abstract

Data from a prospective study of an early intervention cohort of 314 New Zealanders was used to examine the associations between familial risk factors and reports to child protection services (CPS) for child maltreatment. The primary aim of this study was to identify the risk factors that were associated with a subsequent notification to CPS. Two different approaches were employed. In the first approach, risk factors were clustered into categories and tested for associations with CPS notifications. In a second approach with supplementary analyses, individual risk factors were examined for associations with CPS notifications according to the type of maltreatment risk. The second aim of this study attempted to gain a better understanding of families' experiences of the CPS process through a retrospective descriptive analysis of the patterns of CPS notifications and timing of participation with Early Start. The multivariate results showed two categories of risk, pregnancy adversity and economic challenges were significant predictors of a CPS notification, along with the sum of all risk factors across categories. When analysing all 58 individual risk factors, hospital admissions in pregnancy, lack of formal qualifications, and history of an eating disorder were all significant predictors of a notification to CPS, although the predictive utility was small. The analyses also demonstrated that there were no patterns of specific associations between risk factors and the type of CPS notification. Descriptive analysis of the care and protection data found just under a third of all mothers who had experienced a notification to CPS experienced one or more subsequent notifications after their CPS case had been closed. There were fewer actions taken by CPS that monitored a family's level of risk, but a substantial number of children were uplifted from the family home. The average time between family enrolment with the Early Start early intervention service and a notification to CPS was two years, and the most frequent time between a CPS case closure and subsequent notification

was between three and five months. The results of this study highlight the challenges of predicting CPS notifications in a high-risk homogeneous cohort, the inconsistencies in the CPS process, and the potential to revise and strengthen the Early Start intake assessment.

Introduction

Article 19 of the United Nations Convention on the Rights of the Child (1989) requires that signatories take all appropriate measures to protect children from maltreatment and abuse (UNICEF, 2005). Every nation in the world (except South Sudan) has signed the Convention and only two (United States and Somalia) have failed to ratify it (UNICEF, 2005). Despite such widespread acceptance of this right and the billions of dollars spent to give it effect, child maltreatment remains a major social problem across the globe.

The World Health Organisation (2001) reported that an estimated 40 million children were victims of abuse or neglect by age 14; however, according to other statistics this figure could be as high as 150 million (Andrews, Corry, Slade, Issakidis, & Swanston, 2004). Developed nations are not exempt from these trends. Up to 5% of all children in the United Kingdom, United States, New Zealand, Australia and Canada are referred to child protection agencies concerning child maltreatment (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009; Vaithianathan, et al., 2012), and as with the global statistics, the actual occurrence of child maltreatment in the developed world is thought to be considerably higher than official records. Studies using self-reports from children, adolescents and parents indicate that levels of physical abuse and neglect are up to three times more prevalent than statistics from social welfare services (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009; Vaithianathan, et al., 2012). Researchers have discussed a number of reasons for this discrepancy in prevalence estimates, including; under reporting to child protection agencies, lack of identification and monitoring by child protection agencies, and lack of evidence to substantiate maltreatment (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009).

Early and repeated exposure to maltreatment has a significant effect on neural development in young children and is associated with a range of developmental problems throughout the lifespan (Gilbert, Kemp, Thoburn, Sidebotham, Radford, Glaser, et al. 2009). These include learning and behavioural problems, alcohol and drug abuse, teenage suicide, criminal behaviour, physical health problems, eating disorders, and teenage pregnancy. Maltreatment also increases the risk of a number of mental health issues; specifically, depression, anxiety, post traumatic stress, self harming behaviours and suicide attempts (White & Walsh, 2006; Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009). In light of the substantial evidence concerning the alarming prevalence of child maltreatment and associations with poorer mental and physical health and social adversity, there is considerable interest in identifying the range of factors that predict child maltreatment. Four types of maltreatment are commonly identified in the literature; physical abuse, sexual abuse, emotional abuse, and neglect, with exposure to domestic violence widely accepted as a fifth category. The following sections provide a brief overview of each of these types of maltreatment.

Physical Abuse

Physical abuse is any action that results in physical harm to a child and includes excessive or inappropriate corporal punishment, regardless of intentions. The consequences of physical abuse can range from bruising through to death (Child, Youth and Family, 2011). The prevalence of physical abuse differs between official statistics and self-reports. In 2013, according to New Zealand statistics, 0.34% of children below the age of 17 experienced substantiated reports of physical abuse (Statistics NZ, 2013: Child,Youth and Family, 2014). However, studies using self-report indicate a much higher prevalence. Two New Zealand studies using retrospective self-report found 6% of the cohort had experienced harsh physical

punishment from one or both of their parents (Fergusson, Boden, & Horwood, 2006;

Millichamp, Martin, & Langley, 2006).

Physical abuse can have diverse and pervasive psychological impacts, increasing the risk of later substance abuse, mental health problems, and criminality (Gilbert, Kemp, Thoburn, Sidebotham, Radford, Glaser, et al., 2009). These psychological problems have also been documented as subsequent parental risk factors for child maltreatment helping to partially account for intergenerational continuity. One longitudinal study of adolescent mental health found an association between the timing of such abuse and later mental health problems (Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013). The study collected data on physical abuse using retrospective self-reports, via two interviews. Results found young adults who reported having their first incident of physical abuse in the preschool years were more likely to suffer from depression than those who reported having their first incident of physical abuse as a teenager. Specifically, those children who reported exposure to physical abuse before the age of five had a 77 % increase in the likelihood of suffering from depression in young adulthood compared to those who reported physical abuse as a teenager. This highlights the need for early identification of risk to ameliorate later problems.

Neglect

The definition of neglect is characterised by omissions rather than acts. It is a failure to provide for a child's basic needs that over time results in impaired development. Neglect may be physical, medical, supervisory, or characterised by a caregiver's lack of responsibility towards their child (Child, Youth and Family, n.d., b). In 2014 over 4,230 children in New Zealand had substantiated reports of neglect; a third higher than the rate of substantiated notifications for physical abuse (Child, Youth and Family, 2014). Neglected children often remain in that situation for a significant period of time due to the very nature of neglect,

posing a serious risk to development. Neglect affects all children in the family as opposed to physical abuse which tends to be directed towards specific individuals at various times. The chronic and pervasive nature of neglect often leads to children having more cognitive and behavioural problems as the maltreatment is spread over multiple developmental periods. Children suffering neglect have been shown to have smaller brains with abnormal development of cortical, limbic and mid-brain structures (Black & Laugesen, 2012). Not surprisingly, neglect is also associated with poor neurocognitive functioning, leading to problems with memory, learning, decision making and attention (Eckenrode, Laird, & Doris, 1993). Half of neglected children perform at lower academic rates, posing a risk of school failure and drop out.

Research suggests neglected children have a higher rate of mental health disorders and dysfunctional communication styles. These rates remain high throughout adolescence and adulthood. As adults, those with a history of neglect have higher rates of depression, suicide, and personality disorders (Brown, Cohen, Johnson, & Smailes, 1999). Furthermore, neglect adversely affects parent-child attachment. Where a child's first relationship is based on fear and inconsistency they are likely to develop dysfunctional coping strategies and communication styles leading to poor relationships in general (Pianta, Egeland, & Erickson, 1989). Neglected children are more likely to experience abusive relationships as adults, both as victims and perpetrators (Wolfe, Scott, Wekerle, & Pittman, 2001).

Sexual Abuse

Sexual abuse is defined as any behaviour exhibited by a person more powerful than the child that uses the child for sexual purposes (Saul & Audage, 2007). This includes direct acts of touching and indirect acts of abuse such as exhibitionism and involving the child in pornographic activities (Saul & Audage, 2007). Most child sexual abuse is carried out by

someone the child knows and trusts (Rankin, 2011). The number of children experiencing child sexual abuse (CSA) is concerning. It is estimated that globally 7.9 % of men and 19.7 % of women experience sexual abuse prior to the age of 18 years (Pereda, Guilera, Forns, & Gomez-Benito, 2009). Rates for New Zealand are similar to global statistics, estimating that 20 % of girls and 9% of boys will experience sexual abuse at some point in their childhood (Family Violence Clearinghouse, 2014).

Children who have experienced sexual abuse struggle to develop healthy adult behaviours. A New Zealand birth cohort study examined the presence of CSA prior to age 16 years and the association of mental health, psychological wellbeing, sexual risk-taking behaviours, physical health, and socioeconomic outcomes to age 30 years (Fergusson, McLeod & Horwood, 2013). Results suggested child sexual abuse victims are less satisfied with their life, more likely to experience mental health problems, have increased alcohol and drug problems, poorer partner relationships, increased suicide attempts, more intimate partners, and engage in sexual activity earlier in life. Furthermore they visit the General Practitioner more often with physical complaints and have greater dependence on the welfare system. The severity of the adverse effects increased in line with the severity of the abuse. This further highlights the need for early identification of risk factors to ameliorate the suffering of thousands of children as they grow into adulthood.

Emotional Abuse

Emotional abuse is a pattern of behaviour that harms a child's emotional and psychological development. It can result from a pattern of rejecting, degrading, isolating, exploiting, and domestic violence, and almost always occurs with other forms of abuse (Child, Youth and Family, n.d., b). In New Zealand, child protection services documented 9,499 cases of substantiated emotional abuse, twice the number recorded for neglect and

three times that of physical abuse (Child, Youth and Family, 2014); an expected outcome if it co-occurs with other forms of abuse. Emotional abuse is hard to detect and the effects are often not visible until the child shows signs of maladaptive behaviours. Emotional abuse can have profound effects on mental health. As children grow into adolescents and adults they have less emotional regulation, more reliance on substance abuse and increased suicide ideation (Burns, Jackson, & Harding, 2010).

Domestic Violence

Domestic violence is any physical, psychological or sexual harm by one family member to another, within a home environment. The violence is typically controlling and evokes fear in the victim, alongside intimidation and emotional abuse (Ministry of Social Development, 2002). Domestic violence can be committed against a child if he is witness to abuse between people he has a family relationship with. For this reason, domestic violence can be classified as a form of maltreatment. In 2013, New Zealand Women's Refuge reported that 24% of children had witnessed domestic violence, according to self-reports by the mother (Women's Refuge, 2014). However, New Zealand Police suggest that as few as 18% of domestic violence situations are actually reported (NZ Family Violence Clearinghouse, 2009).

Although studies have shown that men and women report equal degrees of perpetration of domestic violence (Desmarias, Reeves, Nicholls, Telfor, & Fiebert, 2012), the New Zealand police have documented 87,622 cases of family violence investigations in 2012, of which 72% involved a male offender (New Zealand Family Violence Clearinghouse, 2013). This statistic is concerning as a New Zealand study showed violence by men to have the biggest impact on children. Violence initiated by the father was associated with an increased risk of conduct disorder, anxiety and property crime as children grew into young

adulthood (Fergusson & Horwood, 1998). Furthermore, young adults from the most violent homes in the study were six times more likely to experience mental health problems, substance abuse, and commit juvenile crime compared to those not experiencing parental violence.

Risk Factors

A risk factor is any variable that increases the probability that a negative outcome will occur. Risk factors may be either correlative or causative (Cicchetti, 2006). Correlative risk factors are evident alongside the negative event, and are generally easier to identify and measure. For example, if it was found that children whose parents were engaging in substance use were maltreated, this would be classed as correlative as the substance use and maltreatment occurred concurrently. Correlative risk factors in a child protection context are termed 'risk markers' (Cicchetti 2006). Risk markers can either be fixed and unchangeable, as in sex and low birth weight or variable and changeable, as in substance use. Causative risk factors can be identified by testing whether the reduction of a risk marker reduces the magnitude of the maltreatment (Cicchetti, 2006). For example, if an intervention helps parents to stop abusing alcohol and harsh abusive parenting is also eliminated, then alcohol abuse would be considered a causal risk factor for abusive parenting.

While the identification of causal factors and processes is an important scientific goal, it is widely acknowledged that child maltreatment is predicted by multiple risk factors rather than a single causal mechanism (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009). For the purpose of this study a risk factor is defined as any variable that increases the probability that child maltreatment will occur. Thus, risk factors are generally thought to have a probabilistic rather than a deterministic association with the outcome, and in the case of child maltreatment, the combination of risk factors may impact the level of risk in a dose-

response relationship or they could combine in more complex interactions or transactions. Specific variables discussed in the literature as risk factors for child maltreatment include parental drug and alcohol use, mental health problems, attachment problems, domestic violence, poverty, young maternal age, criminal convictions, smoking in pregnancy, multiple siblings, low maternal education, single parenthood, low birth weight, and child behaviour problems (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009; Dakil, Cox, Lin, & Flores, 2012; Fielding, 2011;Wu et al., 2004; Browne & Chou, 2008). The importance of undestanding the links between risk factors and the various forms of child maltreatment is particularly relevant for agencies that work with vulnerable children and their families. These agencies range from small non-government, early intervention organisations to large government funded social service and child protection agencies.

The Child Protection System

The goal of a child protection system is to promote the wellbeing and safety of children. To reach this goal, child protection systems are designed to protect children from maltreatment, prevent further harm once maltreatment has occurred, and place children in alternative care when it is not safe for them to stay in the family home (Child Welfare Information Gateway, 2013; Child, Youth and Family, n.d, a). The New Zealand (NZ) child protection system, Child, Youth and Family (CYF), will be examined in relation to the United States Child Protection Services (CPS) to create an understanding from an international context. The majority of published research in this domain seems to originate in the United States (US), therefore an understanding of this system would be advantageous for comparative purposes. It should be noted that within the US, child protection organisations are governed by each state, and therefore may have subtle differences in their procedures. For the purposes of this paper, the overarching federal care and protection framework will be described.

In New Zealand, during the 1980's, the child protection system shifted its focus to a family-centred approach. In 1989, the new principles were formalised in the Children, Young Persons, and Their Families Act. At its inception the Act was widely regarded as revolutionary because of its focus on the family (Dalley, 1998). This approach used family collaboration to identify problems and solutions, which included the use of familial strengths and resources to ameliorate risk (Dalley, 1998). Specifically the Family Group Conference (FGC) and the Family Whanau Agreement were central components to this change. A Family Whanau Agreement is a contractual agreement drawn up between the caregiver and CYF. It identifies specific goals in liaison with the family to support the ongoing safety and wellbeing of the child. The Family Group Conference is a legal meeting involving the family, CYF, and community professionals. This meeting facilitates the creation of a plan to ensure the safety of the child, where children are at serious risk of maltreatment (Child, Youth and Family, 2011).

However, during the 1990s, demand for the new services exceeded capacity and the system was overwhelmed (Doolan & Connolly, 2007). At this time there was also a global shift in thinking towards child-centred approaches to child protection services. This thinking was reflected in the United States enacting the Adoption and Safe Families Act in 1997, and New Zealand amending their legislation to include the policy-defining 'paramountcy principle' in 1995. Ultimately, New Zealand's family-centred policy was slowly eroded until in 2006 the government introduced sweeping policy changes that solidified the child-centred approach and brought New Zealand in line with many other countries. Today, both New Zealand and the United States child protection systems are built around child-centred, investigative, research based methods with an emphasis on risk assessment.

In the US and NZ all reports to child protection services are carefully screened to determine whether they require further investigation (Child Welfare Information Gateway,

2013; Child, Youth and Family, n.d, a). Further investigation typically involves a child protection worker talking to parents, children, and other professionals involved with the care of the child to gather more information. Any child believed to be at immediate harm is removed from the home. An investigator also assesses the family's strengths and needs, and connects them with community resources where necessary. Investigations conclude with a finding of, "substantiated" or "unsubstantiated". Whether a case is substantiated is based on whether there is sufficient evidence of maltreatment, but the exact definition changes in the US, from state to state. Some states even have a third category, "unable to determine", to cover where there is insufficient evidence to decide either way.

In the US substantiated cases are classified by category according to the degree of risk; no to low risk, low to moderate risk, and moderate to high risk (Child Welfare Information Gateway, 2013). A classification of "no to low risk" is recorded when there are no safety concerns for the child, and the case is subsequently closed. A classification of "low to moderate risk" is recorded when a family would benefit from a referral to a community based organisation to promote the safety and wellbeing of the child. A classification of "moderate to high risk" is recorded when there are more serious concerns about the child's safety. When there are more serious concerns, referrals to residential programmes, or in-home interventions are recommended. Accountability is sought through the courts if the parent refuses to comply with the interventions. For very serious cases of harm, CPS may get a court order to remove the child from the home.

New Zealand's approach to low and moderate risk cases are virtually indistinguishable from the US system. However, there is some divergence when dealing with moderate to high risk cases, possibly as a result of principles remaining from New Zealand's family-centred approach. As mentioned above, in New Zealand, the Family Whanau Agreement and Family Group Conference are used when a child is classified as "high risk".

For serious cases of harm, CYF may get a court order to remove the child from the home (Child, Youth and Family, n.d, a).

Another similarity between US and NZ is the use of the 'differential response system'. The purpose of a 'differential response system' is to make a preliminary assessment as to the most appropriate response to a notification. This response will depend on the severity of the notification, and can include; a child and family assessment, an investigation, a referral to a community based organisation, and a recommendation of no follow up (Waldergrave & Coy, 2005; Child Welfare Information Gateway, 2014). Currently 27 states in the US have some level of differential response implemented (Allen & Howard, 2014). New Zealand has used differential response nationwide since its adoption in 2005 (Waldergrave & Coy, 2005). Differential response allows the child protection system to offer alternative, often tailored services, when there is low to moderate risk of child maltreatment, regardless of whether maltreatment has been substantiated (Child Welfare Information Gateway, 2014; Child, Youth and Family, n.d, a). It is at this stage that early intervention agencies are usually employed.

Notifications

For the purposes of the present study, a 'notification' is an issue that has been brought to CYF attention and investigated, whether or not it is substantiated. According to this definition, there are two essential elements; an allegation of potential child maltreatment brought to the attention of CYF, and the investigation of this allegation. The data this study is based on is limited to notifications made and does not differentiate between substantiated and non substantiated cases. However, just because a notification was unsubstantiated does not mean it was not worthy of investigation. Investigations are helpful for several reasons. Most importantly they allow a child protection service to find out whether or not there has been

maltreatment. Investigating notifications may also uncover problems that do not meet the definitions of maltreatment, but allow the case worker to collect information and assess risk factors. The identification of families experiencing problems, but who do not meet criteria for an investigation are often referred to early intervention agencies.

Statistically, finding a case of non-maltreatment is as important as finding a positive case. It is analogous to all at-risk women having breast screening tests. It is important for health services to find out who does and does not have breast cancer so they know who requires treatment and can allocate resources accordingly. Furthermore, research has documented the importance of identifying those cases that were followed up with an investigation but unsubstantiated. Research highlights the high number (40-60%) of unsubstantiated reports in preschoolers that have been associated with a later substantiated notification to CPS by the age of eight years (Kotch, Browne, Dufort, Winsor & Catellier, 1999). To truly reduce child maltreatment, prevention is the key, and this is the primary purpose of early intervention agencies. The goal is to provide intervention services to families who are at risk for child maltreatment before there is a need for child protection agencies to become involved. In New Zealand, early intervention agencies can become involved with families through referrals from the community and professionals; one such agency is the Early Start Project in Christchurch.

Early intervention agencies are commisioned to prevent child maltreatment, by working with cohorts of individuals (parents and children), all of whom have a number of risk factors in their lives that are known to threaten the safety, health, and well-being of their children. To effectively intervene, these agencies need to adequately identify and monitor these risk factors as the participants progress through the intervention, optimally identifying those risk factors that are predictive of ongoing threats to the child out of the many which have been identified in the literature from general population samples. In that regard, this

study aims to help early intervention providers work more effectively by identifying key risk factors within the cohort of intervention participants that predict referrals to the child protection system, subsequent to enrolling in the intervention.

Identifying Risk Factors for Child Maltreatment and Notifications to Child Protective Services

Historically, risk factors pertaining to parent psychopathology were the focus of attention in studies of child maltreatment (Belsky, 1980). However, over the last three decades parental psychopathology has not been found to be one of the strongest nor even a consistent predictor of child maltreatment. Increasing pressure developed for a viewpoint that looked beyond this simplistic approach. Research has moved from a static model that focused on traits, to a multi-dimensional and bidirectional process-oriented model that examined the transaction between parent, child, and the environment in association with child maltreatment. Inspired by Bronfenbrenner's (1979) bioecological theory, two models specific to predicting child maltreatment have attempted to capture the complexity of contexts and individual and family characteristics that predict child maltreatment (Belsky, 1980; Cicchetti & Lynch, 1993).

Belsky (1980) advanced the concept of multi-dimensional and bidirectional processes associated with child maltreatment by considering different levels of the social system. He proposed that child maltreatment was best understood by looking at it from a developmental-ecological perspective in which the developmental, psychological, and behavioural characteristics of parents and children are examined together. Firstly, the developmental context focused on parent factors (personality, developmental history and psychological resources) and child factors (age, health and behaviour). Secondly, the immediate

interactional context focused on parent-child interactions, and lastly, the broader context focused on community, social support, and cultural context. Concurrent factors in each of the ecological contexts act to decrease or increase the potential for child maltreatment. Risk factors more proximal to the child are thought to exert the most influence, for example maternal drug abuse. However, mechanisms of more distal factors, for example financial hardship, can create additional maternal stress that negatively impacts the parent-child relationship, thus impacting the child's proximal environment (Cicchetti, Toth, & Maughan, 2000).

Cicchetti and Lynch (1993) extended the work of Belsky (1980) by considering the role of protective factors within the ecological system. Specifically, they discussed potentiating and compensatory factors within an ecological framework. This framework proposed that factors could be divided into the following four categories. Firstly, vulnerability factors consist of more enduring ecological conditions and individual characteristics at the ontogenetic, microsystem, and exosystem level that increase the risk of maltreatment. Secondly, transient challenges consist of temporary life stressors that also act to increase the likelihood of maltreatment. Thirdly, protective factors consist of enduring relationships, ecological contexts and individual characteristics that reduce the risk of maltreatment. Lastly, buffers are similar to protective factors in that they reduce the risk of maltreatment, but their presence is temporary. According to this model, maltreatment is more likely to occur when the challenges and vulnerability factors outweigh the buffers and protective factors.

National and international research has frequently identified risk factors for child maltreatment that exist at different levels of the ecological system. Risk factors at the ontogenetic level include low birth weight, child disability, and medical problems (Wu et al., 2004; Brown, Chen, Johnson, & Salzinger, 1998; Palusci, 2011). Risk factors at the

microsystem level include parents with problems related to drugs, alcohol, smoking in pregnancy, psychopathology, attachment problems, domestic violence, maternal age, criminal convictions, more than two siblings, low maternal education, and single parenthood (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009;Dakil et al., 2012; Fielding, 2011;Wu et al. , 2004; Browne & Chou, 2008; Brown, Cohen, Johnson, & Salzinger, 1998; Stith et al., 2009; U.S. Department of Health and Human Services, 2011). Risk factors at the exosystem level include poverty, poor housing, poor neighbourhood, and lack of social support (Lee & Goerge, 1999; Palusic, 2011; Epstein, 2001; MacKenzie, Kotch, & Lee, 2011; Kotch et al, 1999). Most studies find combinations of risk factors that act together to predict maltreatment rather than specific risk factors that act in isolation (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009; Brown et al.,1998;Wu et al., 2004; Begle, Dumas, & Hanson, 2010; Dakil et al., 2012). Studies analysing risk factors that take into consideration multiple areas of the ecological system are of particular interest, as it is the combination of these risks across ecological systems that increase the risk of maltreatment.

In order to identify previous research examining the potential risk factors that could predict child maltreatment, searches of PsycInfo, Science Direct and Psyc Articles were conducted. The database searches were restricted to papers that consisted of the following words in the title, keyword, topic, or abstract: Child maltreatment, child abuse, risk prediction, risk detection and risk factors. To concentrate the search, the following inclusion criteria were applied; quantitative studies with documented referrals to a child protection system.

The present study focuses on risk factors associated with notifications to CPS. It cannot be assumed that maltreatment has taken place solely because a notification has been made, as a notification is a report to the child protection system regardless of any subsequent verification of actual maltreatment. Nevertheless, to adequately gain a broad understanding of

the range of risk factors identified in previous studies, literature is reviewed from studies that have focused on both notifications to CPS and verified cases of maltreatment as the dependant variable.

Risk Factors Associated with Substantiated Cases of Child Maltreatment

Across studies, the sample sizes, and study designs varied considerably. Three international studies used large cohorts of participants between 59,000 and 1,297,400, using administrative data from large scale governmental databases (Lee and Goerge, 1999; Palusci, 2011; Wu et al., 2004). In comparison, a New Zealand study was much smaller, although administrative data was also utilised (Vaithianathan et al., 2012). There was a mixture of retrospective and prospective designs, with one study (Wu et al., 2004) utilising a community sample and the remaining studies analysing populations that were already considered at risk. All studies considered more than one ecological context when investigating the association between risk factors and child maltreatment.

Lee and Goerge (1999) conducted a retrospective study of a birth cohort of 59,062 children between 1982 and 1988, using administrative data taken from the Illinois Integrated Database on Children and Family Services and Illinois birth certificates. Administrative data pertains to information about the child and family, which is often gathered by organisations for the purpose of accountability and service delivery, rather than specifically for research purposes. The authors examined the correlates of substantiated cases of child maltreatment, specifically focusing on early childbearing and poverty. The following seven variables were included from the administrative data; maternal age, poverty, birth year, sex of the child, birth order, ethnicity, and birth region. These variables were compared against child protection data, for children who had at least one incident of substantiated maltreatment documented before the age of five years.

Results found child gender, birth order, ethnicity, maternal age, and poverty to have significant effects. Mothers aged seventeen years or less were three and half times more likely to have a substantiated case of child maltreatment than those mothers aged 22 years or more. Furthermore, children living in communities where 40% or more of the children were living in poverty were three times as likely to have a substantiated case of child maltreatment. Gender of the child was found significant only with sexual abuse; girls had a threefold increase in child maltreatment compared to boys. Later born children were more at risk, as were mothers of African American race. When these risk factors were analysed using multivariate analysis, all continued to be significant determinants. Overall, maternal age and poverty were the strongest predictors for all types of maltreatment.

A later retrospective study by Palusci (2011) examined data from the Child Files of the National Abuse and Neglect Data System at Cornell University, to ascertain correlations and patterns between risk factors and substantiated cases of child maltreatment. The data range was 2003-2007 and 1,297,400 cases of first reported and substantiated child maltreatment were identified in children 0-18 years. The objective of the study was to examine the characteristics of first confirmed maltreatment reports by CPS for those under the age of five. The study separated the variables into the following two categories: Child variables included the child's age, gender, ethnicity, developmental disability and/or delay, behaviour problems, medical problems, and drug exposure. Parental variables included drug problems, alcohol problems, mental or physical problems, intellectual impairment or disability, medical problems, domestic violence, financial assistance, and problems with housing and money.

Results found children less than five years of age had the most substantiated reports of child maltreatment. Younger children exhibited different risk factors compared to children who experienced maltreatment when they were older. They were more likely to have

experienced drug exposure and medical problems and more likely to have families that had drug and alcohol problems, medical problems, domestic violence, and emotional and learning problems. Furthermore, 20% of children under the age of five experienced inadequate housing, 16% experienced financial problems and 33.8% received public assistance. Families with risk factors predominately at the exosystem level, specifically financial and housing were more likely to experience a second report to CPS for child maltreatment.

Wu et al. (2004), examined the type and accumulation of risk factors, and went one step further by generating a risk assessment tool. The authors used a prospective design to examine both the number and type of risk factors associated with child maltreatment in children under one year of age with a very large scale study in Florida. An extremely large sample of 189,055 families were identified from the birth register and examined in conjunction with risk factors during pregnancy and child protection data. Four thousand, four hundred and ninety six children (2.4%) between the age of three days and one year old were found to have reports of child maltreatment. Child maltreatment was classed as physical abuse, neglect or threatened harm. Fifteen risk factors were analysed in total, and twelve came from births statistics gathered by the Department of Health, including ethnicity, maternal education, maternal age, marital status, number of children, previous pregnancy terminations, pregnancy intervals, prenatal care, multiple births, smoking during pregnancy, infant's sex, and low birth weight. The other three risk factors were from other data sources, and included being a Medicaid beneficiary, participation in Women, Infants and Children Nutritional Supplement Programme (WIC), and the prenatal risk screen score.

Results found eleven of the fifteen risk factors to be significantly associated with child maltreatment; lack of maternal education, young maternal age, single parenthood, previous pregnancy terminations or baby died after birth, short pregnancy intervals, smoking in pregnancy, low birth weight, beneficiary of social welfare, more than two siblings living in

the home, lack of prenatal care, and the prenatal screen score. The prenatal screen score is derived from the prenatal risk screening questionnaire which is offered to all pregnant women in Florida. It is a sixteen item questionnaire pertaining to medical and environmental factors (for example, frequent house moves and maternal illness). A score of four or more prompts a referral to appropriate community services for support.

The authors went on to construct an epidemiologic risk-assessment tool using the top five risk factors, those with a relative risk of two or more from the statistical analysis. These risk factors included; mothers smoking during pregnancy, more than two siblings, beneficiary of social welfare, unmarried marital status, and infant low birth weight. Results showed that pregnant women with three or more risk factors were more likely to subsequently maltreat their child; this group accounted for half of all infant maltreatment cases. In general, the population average for children referred to CPS for child maltreatment was 0.85%, whereas participants with four or more risk factors in this study exhibited a maltreatment rate of 6.3%, seven times higher than the population average. Despite those mothers appearing in the high risk category, the vast majority (93.7%) of the high risk group were not identified as maltreating their children. A suggested reason for this low rate of maltreatment is that the study used a community sample and not a high risk population.

A key objective of one New Zealand government working paper was to provide risk assessment tools that could be used to determine which children were most at risk of maltreatment (New Zealand Government, 2012). A risk prediction tool was developed to examine a number of risk factors in association with a substantiated case of maltreatment (Vaithianathan et al., 2012). This was designed to apply to children under the age of two and aimed to predict maltreatment by the age of five. Participants were selected from the benefit system, as the study suggested the majority of vulnerable children could be found on this system. The study identified 83% of all maltreated children on the benefit system, equating to

13% of all children on a benefit being maltreated, compared to 1.4% of children not on a benefit.

The risk prediction tool used computer generated information from specific government departments. Specifically, the risk prediction tool accounted for the caregiver's characteristics (age, gender, qualifications) and the makeup of the family (single or dual caregivers, number of children, interval between children's ages and multiple births). Other information was collected on the parents' benefit history and care and protection data before the age of 16 years. These variables were all assigned weights and were summed to produce a risk score. The risk score was dynamic, it changed over time as the family's circumstances changed (e.g., the birth of a baby) (Vaithianathan et al., 2012). The tool performed at a predictive level of fair to good, based on the area under the Receiver Operating Characteristic (ROC) curve estimate of 76%; evidencing similar results to the use of mammograms for breast cancer screening. Results for predictive validity were positive with almost half of the most 'at risk' group having at least one substantiated case of child abuse/maltreatment by age five (Vaithianathan et al., 2012). Interestingly, the cumulative risk model identified a two and a half year window for those children in the highest 20% of risk between risk onset and occurrence of maltreatment (Vaithianathan et al., 2012). This temporal gap between risk onset and maltreatment makes a compelling case for early intervention services.

In summary, the risk factors most frequently measured across three levels of the ecological system included; ethnicity, gender of the child, financial hardship, lack of maternal education, and young maternal age. Results showed that those mothers who were young, lacked formal education, and who were experiencing financial hardship were more likely to maltreat their child. However, young mothers who were struggling financially were most at risk; maternal age was found significant in the majority of studies, including the community

cohort and the high risk populations. Furthermore, all studies found that low income or increased financial problems were significantly associated with child maltreatment.

Risk Factors Associated with Notifications to Child Protection Services

All studies included in this section examined risk factors for notifications to CPS for potential maltreatment. The studies used a longitudinal design and administered questionnaires and standardised tests to obtain data on risk factors. Sample types were varied, with a mixture of community based samples and "high risk" populations. The community samples were smaller than the studies with "high risk" families but all measured a number of risk factors across more than one level of the ecological system.

Brown, Cohen, Johnson, and Salzinger (1998) conducted a longitudinal study with a community sample in New York (n=644), assessing the association between multiple risk factors and suspected maltreatment. The study combined the number of substantiated reports and self-reports to ascertain the overall number of suspected maltreatment cases. To gather child protection data, self-report was carried out via a three item questionnaire pertaining to physical abuse, neglect and sexual abuse in childhood. Child protection records were also accessed to gather the number of official maltreatment statistics. To gather information about risk factors, only self-report was used. Mothers and children were interviewed using a 39 item questionnaire pertaining to risk factors from three levels of the ecological system; onotogenic, microsystem and exosystem. Logistical regression was used to analyse the risk factors in association with suspected maltreatment (self-report and official substantiated cases).

Results found risk factors from three levels of the ecological system were significant predictors of suspected maltreatment when combining self-reports and official records. Specifically, ontogenetic risk factors included the child's temperament, and microsystem risk

factors included maternal age, single status, lack of education, large family, ethnicity, poor marital quality, maternal low self esteem, parental criminality, serious illness in the family, maternal anger and alienation, low maternal involvement, low paternal involvement, and warmth. Exosystem risk factors included low income, beneficiary of social welfare, and low attendance at religious activities. The largest risk factors with an odds ratio of three or more included low paternal involvement, large family size, maternal sociopathy, maternal dissatisfaction, low income, maternal education, and social welfare beneficiary. It is interesting to note that being a social welfare beneficiary had the highest odds ratio of just over five. The authors suggested the number, type, and combination of risk factors were important variables in the identification of child abuse. Maltreatment increased when the number of risk factors increased. When the number of risk factors increased from 0 to 3, the risk of physical abuse increased from 0 to 16%, the risk of neglect increased from 2 to 15%, the risk of sexual abuse increased from 1 to 33%, and the risk of any abuse increased from 3 to 24%.

The number of reported maltreatment cases differed according to the type of report. Self-report of child maltreatment found a total of 58 cases; 29 for physical abuse, 18 for sexual abuse, and 16 for neglect. In comparison, official CPS records found 46 cases of maltreatment; 20 for physical abuse, 7 for sexual abuse, and 37 for neglect. Forty-eight self-report cases were not confirmed by official CPS records, and 27 cases from official CPS records were not confirmed by self-report. Overall, the self–reported statistics were 20% higher than the official CPS statistics. However, the rates for the different types of abuse varied greatly. Self-reports for physical abuse were 50% higher, and sexual abuse nearly 250% higher than the official CPS statistics, whereas the self-report rates for neglect were 50% less than the official CPS statistics. This suggests that physical and sexual abuse may be under represented in the official figures. However, neglect may be harder to define by self-

report given its more heterogeneous nature, leading to more reported incidents by professionals. Overall, the authors recommended that a significant number of risk factors should be assessed to ascertain the level of risk. Furthermore, they recommend revised screening tools to reflect the level of risk, concluding that state home visiting programmes do work once the appropriate degree of risk is identified.

A more recent prospective study was conducted by Dubowitz, Kim, Black, Weisbart, Semiatin and Magder (2011) with ten year longitudinal data from mothers and their children who visited one of three university based paediatric clinics serving low income families ($N = 332$). The study sample consisted of three groups. The first group included children diagnosed with failure to thrive (n=132). The second group included children at risk of HIV due to maternal drug use (n=89), and the third group had no identified risk factors (n=111). The study used information from CPS reports (all reports to CPS regardless of substantiation) as the outcome measure.

Assessed risk factors included lack of formal education, marital status, financial challenges, drug use, depressive symptoms, large family size, the child's low performance on the Bayley Scales, maternal age, and social supports; perceived maternal support from family and non family members. The results showed that 43% of the families were reported to CPS at least once. Interestingly, failure to thrive was not identified as a risk factor for CPS referrals. Families reported to CPS were less likely to be married, less educated, have more children, more depressive symptoms, and more financial challenges. Furthermore, a history of maternal drug use was associated with a report to CPS at some later point in the child's life. When the variables were analysed together in a multivariate backward stepwise regression, five variables were found to be predictive of a report to CPS, including; lack of formal education, drug use, depressive symptoms, large family size, and a child's low performance on a standard developmental assessment.

It is interesting to note that mothers who did not finish high school were 1.55 times more likely to be reported to CPS for potential child maltreatment, according to the multivariate analysis. Mothers who used drugs at some point in their life were 1.7 times more likely to have a report compared with those that never used drugs. A one standard deviation improvement in the Bayley's developmental test was associated with a 19% lower likelihood of a CPS report. However, as the depressive symptom score and the number of children in the family increased by one standard deviation, the risk of a report to CPS rose by 28% and 26% respectively. The researchers concluded that risk factors found at the child, parent, and family level, and identified early in life are predictive of later CPS involvement.

The following study specifically examined a cohort of mothers with sociodemographic risk factors, for example young maternal age or infants with medical problems at birth, including low birth weight. The authors (Kotch, et al., 1995) recruited 1,111 mothers and their infants from 42 hospitals in North Carolina, specifically those mothers engaged with North Carolina's High Priority Infant Programme (NCHPP). For every mother in the NCHPP, the next baby born without participation in this programme was selected. Mothers were questioned after birth and information pertaining to the following areas was collected; maternal history, general health, mental health, socio demographic background, family composition, parenting attitudes, child behaviour, child health, child temperament, social networks, perceived social support, life events, and perceived stressors. Standardised scales were used to measure all variables except the general demographic data. The dependent variable of a report to CPS was measured by collecting data from the child abuse registry for all reported cases of child maltreatment (substantiated and unsubstantiated cases) up until the infants were one year of age.

Results found five variables to be significantly associated with a report to CPS by age one year. These included low maternal education, mother separated from her birth mother at

14 years, large number of siblings living in the home, maternal depression, and low income. None of the social support variables had a main effect with the five risk factors above.

Kotch, Browne, Dufort, Winsor and Catellier (1999) extended the study by Kotch et al., (1995), using data from 708 participants enrolled in the "Stress, Social Support, and Abuse and Neglect in High Risk Infants Study" (SSS). They aimed to evaluate the effects of the risk factors over time. The study showed the same five risk factors were predictive of child maltreatment up until the child's fourth birthday. Findings of this study identified two additional risk factors to be predictive of child maltreatment, including maternal psychosomatic symptoms and alcohol use. Furthermore, there was an interaction between those with the lowest levels of stress and/or depression and social support. Somewhat surprising, mothers identified as having low levels of stress or depression but also low levels of social support were four times more likely to be at risk of child maltreatment. This suggests that social support acts as a protective factor, irrespective of mental health. The researchers concluded that some predisposing risk factors measured soon after birth continue to be significant predictors of child maltreatment reports through the child's fourth year of life.

A recent study by MacKenzie, Kotch and Lee (2011) built on the work of the two previous studies (Kotch et al., 1999; Kotch et al., 1999). Participant data was extracted from the Stress, Social Support, and Abuse and Neglect in High Risk Infants Study and examined over the first 16 years of life. Ten risk factors were measured, they included; maternal education, large family size, family structure, maternal age, maternal childhood history of abuse, any social assistance, low family income, maternal depression, low maternal self-esteem, and unsafe neighbourhood. Families were subdivided into three risk categories; low (0–2 risks), medium (3–5 risks), and high (6 or more risks). The aim of the study was to bring

to light the number of risk factors that put a family at risk of child maltreatment and compare this to the predictive utility of specific risk factors, over time.

The ten risk factors were analysed for associations with reports to CPS when the child was 1 year of age. Seven of the ten risk factors were significant at the bivariate level. However, when analysed at the multivariate level, only two risk factors, unsafe neighbourhood and large family size, were found to be significant. However, the predictive significance of these factors was found to be much weaker than the cumulative risk model. The cumulative risk model showed linear increases in risk factors to be significant. That is, those families in the lowest risk category had a 2.4% chance of a report for child maltreatment, but this increased to 16% for those in the medium risk group, a relative risk ratio of 6.7:1.

The next step in the analysis examined the risk factors present in the first year of life to see if they remained predictive of a report to CPS by age four years. Six of the ten risk factors were associated with reports to CPS at the bivariate level. When analysed at the multivariate level, only unsafe neighbourhood and a history of maternal abuse remained significant. However, when compared to the cumulative risk model, the number of risk factors was a much better predictor of reports to CPS over the first four years of life. The cumulative risk model evidenced a 2.39 fold increase in risk for maltreatment with each move from the lowest to the highest risk group. There was also a linear increase in the number of children maltreated during this four year period, from 11% in the lowest risk group to 53% in the highest risk group; a relative risk ratio of 4.8 to 1.

Over the first 16 years of life, nine out of the ten risk factors were associated with a report to CPS. However, after multivariate analysis, only maternal age, beneficiary of social welfare, low household income, and unsafe neighbourhood were significant predictors of

notifications to CPS. Once again, these were not as predictive as the cumulative risk model, which showed an increase in child maltreatment from those in the lowest risk group (17.1%) to those in the medium risk group (44.9%), and those in the highest risk group (56.6%). MacKenzie, Kotch, and Lee (2011) recommended that screening tools be used to identify the level of stress and social supports as well as the assessment of more traditional risk factors form the ecological system.

In summary, the risk factors most frequently measured across the studies included financial hardship, low maternal education, multiple children living in the home, maternal age, and maternal depression. At an exosystem level, all studies found that mothers on a low income and who received a social welfare benefit were more likely to have experienced a notification to CPS. Specifically, Brown, Cohen, Johnson, and Salzinger (1998) found low income to be one of the largest risk factors, with a relative risk of 3:1, and an even higher risk of 5:1 for mothers who received a welfare benefit.

At the microsystem level, certain risk factors were more frequently associated with notifications to child protection services. Lack of maternal education was one of the biggest risk factors, found in studies that comprised of community samples and "high risk" populations (Kotch et al., 1995). One specific study with "high risk" families found maternal education to be a significant predictor of notifications to CPS until the child turned four years of age (Kotch et al., 1995). However, a later study with a subgroup of these participants found maternal education to remain significant only at the bivariate level at age one, four, and sixteen years (MacKenzie et al., 2011).

Two other microsystem risk factors, large family size and maternal depression, were both found predictive of notifications across community studies and "at risk" populations. However, once again MacKenzie, Kotch and Lee (2011) found depression to be significant

only at the bivariate level for ages one, four, and 16 years, and large family size at age one year. Maternal age was a point of difference between studies. Brown, Cohen, Johnson and Salzinger (1998) found maternal age to be one of the top five risk factors, whereas Dubowitz, Kim, Black, Weisbart, Semiatin and Magder (2011) found no significant results. However, MacKenzie, Kotch and Lee (2011) found maternal age to be a significant risk factor at the bivariate and multivariate level for notifications to CPS when the child was 16 years of age.

Comparison between Studies that Measured Child Maltreatment and those Measuring Notifications

The following section will compare and contrast the studies that examined cases of child maltreatment with those that measured notifications.This section will begin by highlighting two specific studies that compared substantiated cases of child maltreatment directly with notifications to CPS. Following this, a general overview of the findings will be discussed.

A prospective study by Epstein (2001) examined individual and combinations of risk factors associated with both notifications to CPS and substantiated cases of child maltreatment, in the first two years of life. The study used administrative data from a sample of 839 mothers and their children (18 to 30 months) recruited from the state run Comprehensive Perinatal Services Program (CPSP). Results found 150 infants (18%) had been referred to CPS for suspected abuse or neglect within their first two years of life. Three-quarters of the children were reported by age one year, with 40% of substantiated cases reported within the first month of life compared to 25% of cases with inconclusive findings. Nearly a third of the children with a substantiated incident of maltreatment had a previous report to CPS that had been unsubstantiated. Mothers reported to CPS for child maltreatment, but whose cases were found inconclusive, reported on average 7.6 risk factors compared to

10.6 risk factors for those with substantiated maltreatment, and 5.4 risk factors for those with no report of maltreatment.

Mothers who had four or more children living in the home, who were unmarried, and who had experienced financial hardship were at increased risk of having a substantiated case of child maltreatment. Sixty five percent of mothers with substantiated cases of child maltreatment experienced financial hardship compared to 32% with no reports. Furthermore, 46% of mothers with substantiated cases of child maltreatment experienced housing problems compared to 17% of mothers with no reports. Of those mothers who maltreated their children, over two thirds had used illicit drugs, nearly half had smoked during pregnancy, and nearly 80% self reported being depressed at some point in their life. However, there were also specific demographic variables that were not associated with substantiated maltreatment, they included; gender of the child, mother's age, years of education, planned/unplanned pregnancy, moved house in the last year, attendance at prenatal care, low birth weight infants, and mothers that reported they felt out of control of important life events.

Epstein (2001) went one step further and separated the maltreatment by type, comparing poverty rates against cases of neglect and physical abuse. The results showed that mothers with financial and housing problems were three times more likely to experience a substantiated report for neglect, and mothers in need of emergency food assistance were eight times more likely to experience a substantiated report for physical abuse.

In the multivariate analyses, only the following risk factors were associated with a substantiated case of maltreatment: multiple children living in the family, domestic violence, maternal learning problems, ethnicity, maternal or paternal drug use, either parent involved in crime, financial problems, and housing problems. However, specific risk factors differed between those families with either a substantiated finding or an inconclusive finding of maltreatment and those with no report.Those with a substantiated or inconclusive finding

evidenced the following risk factors; having a biological child living with caregivers outside the home, non-Hispanic ethnicity, two children under the age of six, maternal learning problems, financial problems, and paternal substance abuse.

Furthermore, there were specific risk factors that were significantly associated with mothers with inconclusive findings, including mothers who smoked in pregnancy, mothers who reported nothing to be happy about during pregnancy, mothers who had considered terminating their pregnancy, and infants with a medical condition present at birth. Inconclusive cases were more likely to be made by neighbours, family or landlords (19% compared to 12%). This could be explained by considering that neighbours and family members are in closer proximity, and therefore in a better position to detect familial problems than child protection workers who lack the resources to constantly monitor a family.

Using the administrative data from the standardised risk assessments carried out during the prenatal and delivery period, the study was able to correctly identify three-quarters of the infants who were abused or neglected in their first two years of life. However, three quarters of those with no report to CPS were falsely classified as having a report for child maltreatment. Overall, this study tested a large array of risk factors from the ontogenetic, microsystem and exosystem levels. Together, two exosystem risk factors and six microsystem risk factors were found to be predictive of a substantiated case of child maltreatement. However, this was reduced to one exosystem risk factor and five microsystem risk factors when considering either a substantiated case or one with inconclusive findings. Mothers with inconclusive findings evidenced unique risk factors not found in substantiated cases or those with no reports to CPS. It was interesting to note that educational attainment was not found significant at the multivariate level for cases of maltreatment or notifications to CPS, in constrast to previous research (Brown et al, 1998; Kotch et al., 1999; Dubowitz et al. 2011). However, despite correctly classifying three quarters of the children who experienced

child maltreatment, the study incorrectly classified three quarters of those that did not. A risk prediction tool based on this data would result in a "broad brush" approach, meaning that time consuming expensive interventions would be put into place for those that did not need it.

Duffy (2013) examined risk factors associated with notifications to CPS using administrative data from a child abuse and neglect prevention programme in the US (Duffy, 2013). Participants were 1,125 high risk families enrolled in the Nurturing Families Network (NFN) home visiting programme. A ten category questionnaire was administered, which gathered information on three main areas; potential for violent behaviour, parenting risk of abuse, and parenting stress levels. It should be noted that the data was not originally collected for the purpose of the study and the author notes the relatively large amount of missing data which affected sample size and potential bias. Parents' answers were rated as zero (no risk), five (moderate risk) and ten (severe risk) within each category, with a maximum score of 100.

The author examined the risk factors associated for both substantiated cases of maltreatment and notifications to CPS. Results from the chi-square analysis showed maternal history of child abuse, maternal and paternal domestic violence, parental risk score, and maternal criminal history to be significantly associated with substantiated cases of child maltreatment. However, once these variables were placed into a multivariate logistical regression, only the paternal risk score remained a significant predictor. In comparison, notifications to CPS were significantly associated with the following risk factors; maternal history of child abuse, criminality, substance abuse, mental health history, and discipline of children. However, when these risk factors were analysed in the multivariate analysis, only the mother's history of abuse in her own childhood remained a significant predictor of CPS notifications.

In summary, both studies measured a variety of risk factors. The risk factors in Epstein (2001) were spread across three levels of the ecological system, whereas Duffy (2013) focused soley on microsystem risk factors. There were specific microsystem risk factors found significant across both studies. Mothers who engaged in substance use had increased rates of notifications to CPS, whilst mothers who had experienced domestic violence or criminality had increased rates of substantiated cases of child maltreatment. However, only results from Epstein (2001) remained significant at the multivariate level.

Overall, the majority of risk factors measured across all studies were heterogeneous in nature. This made comparisons between studies that measured child maltreatment and those that measured notifications challenging. However, there were specific microsystem risk factors that were more commonly measured across studies regardless of substantiation, these included; maternal age, single status, multiple children, maternal education, and economic status. These risk factors pertain to demographic information that is often routinely collected by agencies and easier to access than risk factors pertaining to more specialised data, for example, depression. Results showed that families on a low income, with mothers who lacked formal education, were at risk of both notifications and substantiated findings of maltreatment. The exception was Epstein (2001) who found that lack of maternal education was not a significant predictor of either child maltreatment or notifications. However, Epstein studied a "high risk" population, likely a homogeneous group of mothers who were predominatly younger and lacking in education. Therefore, identifying these risk factors as predictors of notifications to CPS would be problematic.

Although there was support for the association of young maternal age and notifications to CPS, this risk factor was more strongly associated with substantiated cases of child maltreatment. Single parent status was more frequently found in community samples compared to "high risk" populations. It could be hypothesised that the high number of single

mothers participating in the studies with"high risk" populations made this a homogeneous variable and reduced its ability to distinguish between those with and without a history of maltreatment or CPS notification. Similarly, multiple children were found to be significant in the majority of studies that measured it, across studies that measured both substantiated child maltreatment and notifications to CPS. Furthermore, this risk factor was found across studies with "high risk" populations and community samples, and was one of the largest risk factors in multiple studies (Brown et al., 1998; Wu et al., 2004).

It is interesting to note that risk factors involving the mother's level of involvement with her child, her self esteem, her feelings toward her child, and the level of social support were only measured in notification studies. Results showed there was a significant association between these risk factors and a notification to CPS.

Identifying risk factors in families is fraught with complexities. Health professionals can identify general areas of risk and refer families to early intervention programmes. However, engagement in early intervention programmes is not enough. There needs to be an ongoing assessment of risk during a family's engagement with the service. Family risk factors need to be monitored throughout an intervention to allow for tailored planning. Although scientific studies have examined risk factors and risk prediction in a myriad of ways, with small community samples, prevention programmes, and larger cohort studies, there are limitations that need to be considered.

Limitations in the Current Literature

While the research has documented support for an association between some of the most discussed risk factors in the literature and both substantiated cases of child maltreatment and notifications to CPS, there still remain methodological and practical problems that limit the ability to draw causal links. Methodological problems point towards measurement and

sampling problems. More specifically these problems include inconsistencies in the measurement of child maltreatment, problems with definition, and disparities in the research samples.

Measurement Problems

There are inconsistencies in the way child maltreatment is measured and conceptualised in the literature. Dubowitz, Kim, Black, Weisbart, Semiatin and Magder (2011) described assessing child maltreatment via CPS reports. The author went on to say that specific risk factors in the study predicted maltreatment. However, the author clearly discussed the fact that all reports to CPS were considered, whether substantiated or not. Therefore, it is misleading to the reader, for the author to claim risk factors predict child maltreatment when actually they are predicting notifications to CPS. The accuracy of the information is another consideration. The use of administrative data can be problematic if it is not accurately recorded at source. Two problems that have come to light are missing data and inaccurate data, as evidenced in the research by Duffy (2013). Inaccurate information or data that has been collected with less than scientific scrutiny has limited value. The sensitive nature of the data, the value placed on it, and the ease or difficulty of accessing the data all influence the frequency and accuracy of its use. Although administrative data has its advantages, it is only as good as the quality of the original data collection.

Definition and Inconsistencies

There are differences in the way researchers conceptualise the various types of abuse and what constitutes a report to the child protection system; this can vary greatly between geographical areas within the same country. Three studies noted the inconsistencies and underreporting of child maltreatment cases on child protection records (Kotch et al., 1995; Wu et al., 2004; Palusci, 2011). Specifically, Palusci (2011) stated that reporting child

maltreatment cases on the CPS database is not mandatory. Not all states in the US document the child protection data on the main CPS database. This stresses the importance of understanding the child protection system from a geographical perspective, to create a greater understanding of child maltreatment findings.

General Population versus High Risk Samples

There were different rates of reports to CPS between general populations and high risk samples. One study utilising a community sample found that 24% of families with three or more risk factors had notifications to CPS (Brown et al., 1998), whereas a study utilising a high risk population found nearly double that number; 44.9% (MacKenzie, et al., 2011).There were a number of risk factors associated with both cases of child maltreatment and notifications to child protection. However, it is important to identify the key risk factors associated with notifications to the child protection system, and that would remain so, with a high risk early intervention population.We need to know the key risk factors that need modifying to direct services in a way that would enable effective ongoing monitoring with the ultimate aim of reducing notifications for potential child maltreatment.

Early Intervention Initiatives to Reduce Risk Factors and Subsequent Maltreatment

There has been a broad range of interventions aimed at reducing child maltreatment over many decades but these have met with limited success. Home visiting programmes for families with children under the age of five years have shown the most promise. While results have evidenced benefits of home visiting programmes, their success cannot be assumed. Most can boast an array of positive effects but results rarely evidence programme effectiveness for the reduction of child maltreatment.

The Hawaii Healthy Start Programme (HHSP)

The Hawaii Healthy Start Programme (HHSP) was designed to prevent child abuse and neglect and increase positive parent and child outcomes (Myron B.Thompson School of Social Work, 2015). The HHSP enrols families who face multiple stressors, and multiple risk factors. Families are enrolled when the mother is pregnant or shortly after birth. The aim of the programme is to reduce the risk factors and strengthen the protective factors. Hawaii's Healthy Start families are screened to assess their eligibility for the programme, and once eligible, they enrol in a home visiting service. The service involves providing families with the following; social and emotional support, basic necessities (food and clothing), education around interacting with baby, child development education, parenting skills, coping skills, and support around planning family goals. The service also monitors the baby's immunisations and carries out developmental screening with referrals to a specialist for developmental delays. A clinical specialist is also available to work with families who experience problems in the area of parent-child attachment, domestic violence, substance abuse and mental health (Myron B.Thompson School of Social Work, 2015).

The research literature on HHSP has evidenced mixed results. An evaluation of the programme after two years of service utilising a retrospective study design found increases in maternal parenting efficacy, lower maternal parental stress, less injuries resulting from domestic violence, more children linked with appropriate medical care but no impact on the number of reports to CPS for child maltreatment (Duggan et al., 1999). However, in a later study, Dew and Breakey (2014) used a retrospective design to assess the effectiveness of the HHSP. The study used perinatal screening and assessment tools to identify those families at high risk of maltreatment. Four thousand, four hundred and sixty four families were found to

be at risk of child maltreatment, of which 1,738 received the HHSP, and 2,728 did not. Results found a seven fold increase for those children admitted to hospital for child maltreatment in the control group compared to those engaged with HHSP.

MacMillan, Wathen, Barlow, Fergusson, Leventhal, & Taussig (2009) reported that only those programmes that have been evaluated and found effective using randomised controlled trials can truly boast the superiority of their effectiveness. Specifically, only two interventions can boast that accomplishment, Nurse Family Partnership and Early Start Project (MacMillan et al., 2009; Fergusson, Horwood, Ridder, & Grant, 2005).

Nurse Family Partnership

The Nurse Family Partnership has evidenced the best, consistent, effective results in the literature for reducing child abuse and neglect through an early intervention programme. The intervention facilitates positive change in both maternal factors and child health, across ethnicities, race and historical period. The intervention is based on gold standard methodology, with three longitudinal randomised controlled trials (RCT) across various states in the US. The intervention is a home based programme aimed at low income, first time mothers. The intervention commences either prenatally or when the baby is very young and trained nurses visit the families on a regular basis. The intervention is comprised of three main components; building a good relationship with the mother, education around child development, and improving the mother's personal life course and development (Nurse Family Partnership, 2011). Of the three RCTs, one study, the Elmira trial, looked specifically at rates of child abuse and neglect (Olds, Henderson, Tatelbaum, and Chamberlin, 1986). They found children in the intervention group experienced 32% less emergency visits to the hospital than the control group. They also had a 56% reduction in injuries and ingestion compared with controls. A sub group of very high risk mothers, specifically single, teen, low income mothers, who after engagement had 80% less substantiated referrals for child

maltreatment. There was doubt placed over these results as they were based on a subgroup of the sample population (Olds et al., 1986). The authors discussed the need for caution with these results as there was no conclusive evidence that the Nurse Family Partnership programme was effective with all teenagers, irrespective of their marital status and poverty.

However, a 15 year follow up study by Olds et al. (1997) found fewer incidents of child abuse and neglect in the intervention group compared to the control group; this did not include those families where domestic violence was present. Further support can be found for the effectiveness of Nurse Family Partnership in the Memphis trial. This study measured the rate of injury and ingestions for children aged two years. Results found children in the intervention group had 23% less health care visits for injury and ingestion compared with controls. Interestingly, by nine years of age, children in the control group were four and a half times more likely to have died, but this was only marginally significant with a statistical value of $p = .08,$ meaning there was an eight per cent chance that the result occurred by statistical accidental.

The Early Start Project

Born out of the Christchurch Health and Development Study the Christchurch-based Early Start Project is an early intervention service aimed at reducing child maltreatment (Fergusson, et al., 2005). The Christchurch Health and Development Study is a long-term, longitudinal study of a birth cohort of 1265 children born in the Christchurch greater metropolitan area in 1977 (Fergusson, Horwood, & Lynskey, 1994) that provided the epidemiological evidence of a cluster of risk factors that appeared to undermine child health and wellbeing. The Christchurch Heath and Development Study found that young people in the most disadvantaged 5% of the cohort had risks of severe maladjustment. Those risks were 100 times the risks compared to young people in the most advantaged 50% of the cohort

(Fergusson et al., 1994). More specifically, in regards to child maltreatment, the study found that adults exposed to harsh or abusive parenting as a child were 1.5 to 4 times more likely to have mental health problems, conduct problems, and involvement in crime (Fergusson et al., 1994). In response to this evidence, the Early Start early intervention service was created as a way to effectively address the needs of the most "at risk" families with very young children. One of the primary goals of Early Start (ES) is to increase positive parent-child interactions, decrease harsh abusive parenting, and increase positive child outcomes (Fergusson, Boden, & Horwood, 2013). Through a long term, early intervention, home visiting service based in Christchurch, families enrolled in ES have multiple emotional, financial and social risk factors that are known to potentially impact the health and well being of their children (Fergusson et al, 2005; Fergusson, Boden, & Horwood, 2013).

A randomised control trial 36 months after commencement of the programme evidenced a number of benefits, including; lower parental reports of child physical abuse and neglect, less harsh punishment, and more positive parenting (Fergusson et al., 2005). By the nine year follow-up, there was evidence to show that children from families provided with Early Start intervention continued to have lower rates of parental reported physical child abuse; more than 50% lower than those of the control group (Early Start; 9.8%, Controls; 21.8%), increased rates of non punitive parenting were also observed (Fergusson, Boden, & Horwood, 2013). Furthermore, at the nine year follow up the control group had nearly twice the rates of agency contact for physical abuse but there was no noticeable difference in the overall contact with Child Youth and Family (CYF) between groups and this was puzzling. One explanation for this surprising finding is that the professional family workers at ES were more vigilant with child protection concerns and would more readily connect families with child protection support. Thus, they were in effect under more surveillance than the control group (Fergusson, Boden, & Horwood, 2013). The ES evaluation showed equally effective

results with Maori and New Zealand European participants (Fergusson, Boden, & Horwood, 2013).

In summary, home based early intervention programmes have shown the most promise in reducing child maltreatment. Despite partial evidence supporting the reduction of child maltreatment in the Hawaii Healthy Start Programme, only two studies can truly demonstrate their effectiveness: Nurse Family Partnership and Early Start Project. Both these programmes have found positive results using longitudinal randomised control trials. Evaluation of these programmes found families to have fewer cases of child maltreatment. Specifically, Nurse Family Partnership evidenced less emergency room visits, less injuries and ingestions, less substantiated referrals to CPS, and fewer incidents of abuse and neglect. In comparison, the Early Start evaluation evidenced less harsh punishment, fewer hospital visits for accidents, less parental reported physical abuse, less parent reported child behaviour problems, and reduced contact with the child protection system for child abuse and neglect.

The Present Study

Families identified by the child protection system or early intervention agencies are in need of monitoring. Across the US, UK and eight other European countries, around a quarter of maltreated children were re-referred to CPS 24-27 months after the first referral (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009). Even in early intervention services such as Early Start, statistics show that around 12% of children have notifications to CPS subsequent to enrolling in the intervention (Early Start Project, 2013). This raises an important concern regarding the ability of early intervention agencies to adequately identify a family's level of risk. The best way to increase the probability of families in early intervention programmes having positive outcomes is to create an evidence based risk assessment tool. This would allow better prediction of notifications to CYF for child

maltreatment for families in the Early Start service. Early interventions are most likely to succeed if effective and practical screening assessments are in place to ensure that those children most at risk of maltreatment are appropriately targeted (Browne & Chou, 2008).

The present study aims to support ES services to work more effectively by identifying key risk factors associated with notifications to CYF. This could benefit Early Start in two ways. Firstly, it could contribute valuable data towards the creation of a risk assessment tool. Secondly, it could create an opportunity for Early Start to tailor their service with those most at risk. Specifically, the aims of this study are to (a) investigate the relationship between the number and type of risk factors and a notification to CYF for child maltreatment, and (b) compare the predictive ability of these risk categories to an omnibus single category which summed all risk factors.

The Early Start Programme and Participation

The Early Start Project is an early intervention service that is free, long-term, home-based, and promotes healthy child development within a nurturing family environment. Early Start families have multiple challenges that may put at risk the health and wellbeing of their children. Families participate on a voluntary basis and work alongside professionally qualified Family Support Workers (FSW). Family Support Workers use a planned, systematic approach to support families to provide each of their children with a positive and enjoyable childhood experience. Referrals come from multiple sources; family, friends, professionals in the community, and self-referral. Referrals for assessments can be made for young mothers less than 24 years of age, from three months antenatal to nine months postnatal, and for mothers over 24 years of age, from six months antenatal to nine months postnatal. On receipt of a referral the family is placed onto Early Start's waiting list and the referrer and client will be notified of the expected waiting time.

Once a vacancy becomes available the referral moves off the waiting list and into the intake phase. The intake phase is the first stage, of a two stage assessment process. The goal of the intake phase is to gather information regarding familial risk factors and strengths, answer any questions the family has about the service, and to determine whether ES is the most appropriate service for the family. Furthermore, the goal of the intake phase is to facilitate a good match between the potential client and their future FSW, and to monitor the family until a permanent FSW can be allocated. To obtain this information the intake FSW carries out an interview with the primary caregiver, which in the majority of cases is the mother.

The main focus of the interview is to administer the initial service entry assessment questionnaire. The questionnaire has 16 categories which address a variety of family challenges, including: maternal age ($<$ 18 years); late or no antenatal care; past or present mental health problems; challenges with drugs, alcohol or gambling; problematic family relationships; past or present involvement with CYF; infant risk factors (prematurity, low birth weight, special needs, breastfeeding, bed sharing, mother smokes, and bonding issues); mother's experience of abuse as a child; conflict in present partner relationship; financial difficulties; history with the criminal justice system; challenges at school; frequently moved house; low self-esteem; difficulties getting along with others; problems taking care of themselves and their children; limited experience in parenting; and limited support networks. The intake FSW, together with the parent, explores each of these topics and the parent indicates which challenges they feel applies to their family. The parent rates each challenge from one to three; one equals a large problem causing considerable concern, two equals a medium problem causing some concern, and three equals a small problem causing only minor concern.

Once the visit is completed, the intake FSW rates each of the family's challenges according to her perception of the situation and summarises the family's main risk factors and strengths. Next, the intake FSW meets with the clinical manager to discuss the family's situation and talk about any immediate safety concerns. The family's details are now entered into the ES database and a new file is opened with a unique four digit code. The intake FSW makes weekly telephone calls to the primary caregiver and keeps written case notes until the file is allocated to a permanent (FSW).

The second and final stage of the assessment process consists of a four week assessment phase. The client's file is allocated to a permanent FSW who visits the family once a week, for four weeks to carry out an assessment. The first week is a brief introductory visit for the FSW and client to get to know each other and talk about the programme. The second visit builds on the first, getting to know the family and drawing a genogram. The third visit is generally much longer (around two hours) to give enough time to administer the Individual Family Assessment questionnaire (IFA). The fourth and final visit in the assessment phase comprises of a short parent education session, to give the client a taste of the ES parenting programme. At the end of the four week period the client decides if she would like to be part of ES, and ES evaluates the assessment data to see if they can offer the client a place.

The evaluation of the assessment data occurs at a meeting between each FSW and their supervisor using a scoring tool; the Client Assessment Questionnaire (CAQ). The CAQ is scored based on the IFA data, specifically data that pertains to risk factors and protective factors. The IFA records information on family demographics, history and known risk factors for child maltreatment previously identified in the empirical literature. The IFA consists of 92 questions, extending its assessment data well beyond that of the initial service entry assessment questionnaire. The IFA questionnaire goes into more depth and is designed to

gather more extensive data. It contains 15 sections: client child; house and household; maternal demographics; paternal demographics; pregnancy; medical and social service contacts; maternal childhood; maternal depression and mental health; alcohol and drug use; arrests and convictions; vehicle and drivers licence information; relationship with partner; social supports; family finances; parental attitudes to child rearing (specific questions within each section of the IFA are discussed in the method section). Although the ES service focuses on family-level intervention, the target of the assessment is focused on the mother and one child; the youngest infant at the time of referral.

The CAQ scores information from all 15 sections of the IFA, that pertain to adverse risk factors and protective factors, and records the data under the following 10 sections of the CAQ: Abuse and neglect in the parent's own childhood; parental substance abuse; history of child abuse and neglect by the parent; parental social contact and coping; family stress and crisis; family violence; parental expectations of the child; punishment and child abuse; child rearing problems and parental-child bonding. The number of individual items in each section range from six to sixteen and are scored on the CAQ with a one for "yes", zero for "no". The scores for each section are tallied and an overall score is recorded. This overall score is compared against a cut off score; those families with a score of 25 or above are invited to enrol with ES.

On entry to the programme the client signs the agency consent form, and alongside their FSW makes an Individual Family Plan (IFP). This plan identifies the family's hopes and challenges and helps them set small, achievable goals. In conjunction with the IFP, each FSW makes a forward case work plan (FCWP). A FCWP documents the familial risk factors from the assessment data and makes an intervention plan to decrease them. For example, a suggested plan for a mother engaging in substance use would involve two essential components. Firstly, planned education sessions on the dangers of drug use especially

pertaining to the safety of the child. Secondly, collaboration with specialised drug intervention services where appropriate. These plans are reviewed at three monthly intervals.

The present study used administrative data, routinely collected as part of the Early Start Project to examine several issues regarding the associations between inidividual, parental, and environmental risk factors previously identified in the literature, and notifications to CYF. The two most important dimensions extracted from this data were the number and type of risk factors experienced by each family on entry to the ES programme, and the number of CYF notifications per family after entry to the programme. The primary aim of this study is to identify the risk factors that are associated with a subsequent notification to CYF. Two different approaches are used. In the first approach, risk factors are clustered into categories and tested for associations with CYF notifications. In the second approach with supplementary analyses, individual risk factors are examined for associations with CYF notifications on their own, and according to the type of maltreatment risk. The second aim of this study attempts to gain a better understanding of families' experiences of the CYF process through a retrospective descriptive analysis of the patterns of CYF notifications and timing of participation with Early Start.

METHOD

Participants

The sample of Early Start participants consisted of 314 mothers aged between 14 and 44 years (M=24.7, SD=6.2) and their enrolled child (> 9 months) (see Table 1 below). Most of the mothers in the sample identified themselves as belonging to a specific ethnic group (98.1%). The majority identified as a New Zealand European/Pakeha ethnicity (75.5%), forty six mothers identified as Maori (14.7%), nineteen identified as other European (6.1 %), five identified as Pacific Islanders (1.6%), and one mother identified as Asian. Just under half of the sample (45.5%) had more than one child living in the home, and just over half were single parents (52.9%). The majority of families were experiencing socioeconomic disadvantage with 84.1% receiving a welfare benefit. Just under two thirds of mothers left school without any formal qualifications, and the average age of first pregnancy was 19.4 years (SD=4.6). Each mother had their youngest child enrolled in the Early Start Project early intervention service before they turned nine months of age (M= 18.8 weeks, SD= 12.9). Although the length of service was designed for the first five years of a child's life, most families were engaged with the service between 24 and 53.8 months (M= 42.5, SD= 11.3).

Table 1. *Demographics of Participants.*

Demographics	Mean	SD
Early Start Service		
Mothers age on enrolment	24.70	6.23
Number of months service completed	42.48	11.30
Baby's age(weeks) on enrolment	18.75	12.94
Pregnancy		
Age mother first became a parent	19.39	4.61
	%	**n**
Ethnicity (mother)		
Pakeha	75.48	237
Maori	14.65	46
Other European	6.05	19
Pacific Islander	1.59	5
Asian	0.32	1
Other, not disclosed.	1.91	6
Family Structure		
% of families with siblings living in the home	45.54	143
% Single parent family	52.87	166
Number of siblings living in home		
1	25.80	81
2	9.87	31
3 +	9.87	31
Educational and financial resources		
%Families receiving welfare	84.08	264
% No formal qualifications	63.06	198

Note: N=314

Data Extraction and Ethics Approval

The Early Start Project was originally designed as a pilot study and received ethical approval by the Canterbury Ethics Committee. Following this pilot study, further approval was granted by the Canterbury Ethics Committee in 2001 and 2004 for the undertaking of two ES randomised controlled trials. All Early Start primary caregivers signed informed

consent detailing the research aspect of the ES Project and releasing their information for research and publication purposes, provided their individual and personal information was kept private and confidential.

The analyses for the present study were approved by the manager of the Early Start Project. The study was approved by the University of Canterbury Human Ethics Committee after which the data was drawn from the ES database. The Initial Family Assessment (IFA) and Child Protection Data (CPD) were drawn by the ES information technology technician who entered the information onto an ES password protected computer. Data was drawn from 935 files between the years 2008 and 2012 but only those participants with a clear enrolment date with at least two years' completed in the service and recorded IFA and child protection data had their information extracted. It is important to note that due to an earthquake the number of clients with the specific data recorded was much smaller than predicted. The earthquake resulted in a loss of client data, much of which was previously stored on paper files in a locked cupboard. Therefore a random sample could not be used and all 361 clients, who met criteria, were selected.

Materials from Early Start Assessments

Initial Family Assessment: Risk factors

The IFA is a booklet comprising 92 questions within 15 domains; details of these are outlined below. Parental responses to the IFA questions are recorded by either a categorical, dichotomous, or qualitative response. The IFA data is copyrighted to Early Start Project; therefore it will not be included in the appendices.

Maternal childhood: This category was divided into two sections and pertained to abuse and neglect in the mothers' own childhood. Firstly, mothers were asked if they had

experienced any of the following up to age 13 years; mothers family was poor, mother experienced frequent arguments between her caregivers, mother witnessed physical violence between her caregivers, mother was subjected to frequent beatings, mother was frequently left alone to look after herself, mother was constantly a scapegoat and black sheep of the family, mother was sexually abused, mothers own caregivers were frequently drunk or drugged, family had problems making ends meet, and not enough food in the house.

Eight of the 10 questions were included from the maternal childhood section in the IFA, coded as dichotomous variables (1, 0): Mothers family was poor; mother experienced frequent arguments between her caregivers; mother witnessed physical violence between her caregivers; mother was subjected to frequent beatings; mother was frequently left alone to look after herself; mother was constantly a scapegoat and black sheep of the family; mother was sexually abused; mothers own caregivers were frequently drunk or drugged. The remaining two questions from this section; family had problems making ends meet and not enough food in the house were omitted as, "family was poor" incorporated information from both the previous two questions.

Secondly, mothers were asked 10 questions relating to their physical and emotional experiences from age 13 to 16 years, these included; mother ran away from home, in trouble with the police, problems with alcohol, started using illicit drugs, attended youth court, started hanging out with a bad crowd, became pregnant, raped, sexually assaulted but not raped, and attempted suicide. All 10 items were included from this section, coded as dichotomous variables (1, 0).

Family finances: Mothers were asked for details of their weekly income and whether this was sourced from a benefit or wage. In addition, mothers were asked about the adequacy of their income and accommodation and if they currently had debts totalling $500 or more.

Mothers were also asked about their weekly expenditure and the number of financial challenges they had experienced in the previous three months. These challenges included the following; visited a food bank, cut down on electricity, bought clothing from "op shops" (not from choice), moved to cheaper accommodation, sold or pawned something to meet living costs, borrowed money to meet living costs, and had telephone cut off.

Eight of the sixteen items were included from the family finances section of the IFA, coded as dichotomous variables (1, 0): Mothers benefit status; family visited a food bank, cut down on electricity, bought clothing from "op shops" (not from choice), moved to cheaper accommodation, sold or pawned something to meet living costs, borrowed money to meet living costs, and had telephone cut off. Information regarding large debts was not recorded as some mothers owned their own home and consequently paid a mortgage; this debt was not necessarily an indication of financial hardship. In addition, the mother's views of the adequacy of her income and accommodation were omitted due to the perceptual nature of the question. Electricity cut off due to problems paying the bill was omitted due to less than 20 clients having data recorded as "yes", and finally, information concerning the client's specific weekly income and expenditure was not recorded on the ES database.

Pregnancy: Mothers were asked if their pregnancy was planned and how they felt about the conception of their baby. Mothers were also asked when they started regular antenatal care. In addition, mothers were asked if they had engaged in substance abuse, specifically the frequency and intensity of smoking, drug, and alcohol use during each trimester of pregnancy. They were questioned regarding the number of hospital admissions they experienced during pregnancy and the reasons for these. Mothers were also questioned about the birth of their baby, this included; length of labour, length of stay in hospital, complications at delivery and admission of baby to intensive care. More general questions

were asked regarding the mother's age at first pregnancy, the number of previous pregnancies, and the number of children currently living at home.

Nine of the fifteen items were included from the pregnancy section of the IFA. Four of the fifteen items were taken directly from this section, coded as dichotomous variables (1, 0); hospital admissions, unplanned pregnancy, complications at delivery, and baby admitted to intensive care following birth. For the purpose of identifying the key predictor variables that may contribute to a CYF notification, risk factors with continuous variables were changed into binary variables, indicating the presence or absence of a particular risk factor; one for yes and zero for no. Five items were re-coded from continuous to dichotomous variables in this section; smoking, drug use, alcohol consumption, number of siblings, and mother experienced first pregnancy as a teenager. Smoking, drug use and alcohol consumption recorded the frequency of addictive behaviours during each trimester of pregnancy. These continuous variables were re-coded into three dichotomous variables (1, 0), for every instance of smoking, drug or alcohol behaviour anytime during pregnancy. The continuous variable for the number of siblings living at home was re-coded into three new variables (one, two and three plus siblings) for demographic purposes. In addition, the two plus sibling variable was re-coded into a dichotomous variable for the purpose of analysis. Finally, the continuous variable documenting the mother's age on first pregnancy was re-coded. Mothers experiencing their first pregnancy before age 20 years was coded as a dichotomous variable (1, 0), and recorded under the new variable, teenage pregnancy.

However, the mother's reaction to the conception of her baby, the length of stay in hospital, the duration of labour, and current use of contraception were omitted due to inconsistent recording on the ES database. The timing of antenatal care and the number of previous pregnancies was recorded but deemed less relevant to include as risk factors.

Child: Data pertaining to the time of the child's birth was recorded, including; gestational age, weight, and disability. Mothers were asked about the general day to day care of their baby, including; the baby's sleep habits, type and frequency of feeding, and difficulties managing the baby. Three of the ten items were included from the child section in the IFA; baby's weight, gestation period and disability. Two of the items, baby's weight and gestational period, were re-coded into two new variables. Firstly, babies weighing less than 2500gms were classified under the new variable, low birth weight, coded as a dichotomous variable (1, 0). Secondly, babies born prior to 37 weeks were classified under the new variable, premature, coded as a dichotomous variable (1, 0). Information from the IFA pertaining to the general day to day care of the child (sleep and type of feeding) was excluded as they were not major risk factors directly correlated with child maltreatment. The mothers' difficulties managing baby and frequency of feeding were also excluded as they were not recorded on the ES database.

Relationship with your partner: This section asked questions pertaining to the mothers married, de facto or cohabiting relationship. The frequency of the father's involvement with the baby was also documented. There were three subsections to the partner relationship category. The first subsection pertained to the mothers relationship with their partner and included the following; frequent arguments and rows, mother used "put downs" with their partner, partner used "put downs" with the mother, verbal abuse, threats of violence, physical assault, either partner throws things at each other. The second subsection pertained to information concerning domestic violence, and included information pertaining to the mother being assaulted. The final section documented the father's criminal offending, addictions and mental health.

All seven questions from the first subsection, mother's relationship with her partner, were included: frequent arguments and rows, mother has used "put downs" with their partner,

partner has used "put downs" with the mother, verbal abuse, threats of violence, physical assault, either partner throwing things at each other. One question from the second subsection concerning domestic violence was included; mother has received medical attention for domestic violence. No information was included from the third section as this pertained directly to the father. Only information concerning the primary caregiver, the mother, was selected.

Maternal depression and mental health: This section asked 21 questions pertaining to depressive symptoms. A mother who scored five or higher and had experienced symptoms for more than two weeks was recorded as having current depressive symptoms. In addition, mothers were asked if they had ever received treatment for any of the following mental health conditions; depression, anxiety, eating disorder, bi-polar, schizophrenia, and any other mental health problem. Mothers were asked if they had been admitted to a psychiatric ward at any point during their life.

Eight of the nine items were included from the mental health section in the IFA, coded as dichotomous variables (1, 0): current depressive symptoms; history of treatment for depression; history of treatment for anxiety treatment; history of treatment for an eating disorder; history of treatment for bi-polar; history of treatment for any other mental health condition; present treatment for a mental health condition; admitted to a psychiatric hospital at some point in life. Treatment for schizophrenia was the only item excluded due to a very small number of people answering "yes" ($n = 1$).

Maternal demographic background: The mother's ethnicity and educational qualifications were recorded. Qualifications were included from the maternal demographic background section of the IFA, coded as a dichotomous variable (1, 0) for any qualification (high school, university or trade). Ethnicity was only recorded as a demographic but not used in the analysis.

Arrest and convictions: Mothers were asked if they had been arrested or convicted of a criminal offense, and if so, when and what was the outcome. One item was included from this section; mother had been arrested. Information pertaining to the timing and outcome of these arrests was not included, due to the lack of direct relevance with risk factors in the literature.

Medical and social service contacts: Mothers were asked if they had contact with any agency or social service provider that addressed health issues, substance abuse, gambling problems, financial challenges, and children's education in the previous 12 months or any medical professional in the last three months. One item was included from this section; mother's contact with Child Youth and Family (CYF) in the previous 12 months. All other items were omitted due to limited qualitative information. A mother's contact with a specific agency did not provide the qualitative information about that contact, e.g. did the mother attend a prolonged treatment programme for a drug problem or did she attend only once and then withdraw.

Alcohol and drug use: Mothers were asked if they presently smoked cigarettes and how many. They were also asked about the frequency and severity of alcohol and drug use over the past six months. Only smoking behaviour could be extracted from the drug and alcohol section as no quantitative information on drug and alcohol use was recorded on the ES database.

The researcher placed 51 of the selected 58 risk factors from the 10 sections above into seven new categories or risk: (a) Childhood adversity (mothers family was poor, mother experienced frequent arguments between her caregivers, mother witnessed physical violence between her caregivers, mother was subjected to frequent beatings, mother was frequently left alone to look after herself, mother was constantly a scapegoat and black sheep of the

family, mother was sexually abused, and mothers own caregivers were frequently drunk or drugged); (b) teenage adversity (ran away from home, in trouble with the police, problems with alcohol, started using illicit drugs, attended youth court, started hanging out with a bad crowd, became pregnant, raped, sexually assaulted but not raped, and attempted suicide); (c) economic stress (benefit status, family visited a food bank, cut down on electricity, bought clothing from "op shops" (not from choice), moved to cheaper accommodation, sold or pawned something to meet living costs, borrowed money to meet living costs, and telephone cut off); (d) adversity in pregnancy (hospital admissions, addictive behaviours during pregnancy (smoking, alcohol and drugs); (e) relationship conflict (frequent arguments and rows, mother uses "put downs" to their partner, partner uses "put downs" with the mother, verbal abuse, threats of violence, physical assault, either partner throws things at each other, and mother received medical attention for domestic violence); (f) caregiver mental health (current depressive symptoms, currently receiving treatment for a mental health condition, history of treatment for depression, history of treatment for anxiety, history of treatment for an eating disorder, history of treatment for bi-polar, history of treatment for any other mental health condition, and admitted to a psychiatric hospital at some point in life); (g) infant risk factors (birth weight, gestational age, child disability, complications at birth, and child admitted to intensive care after birth).

The remaining seven variables were kept as individual risk factors as they did not specifically fit into any one category. These individual risk factors included mother presently smokes cigarettes, two or more siblings living with mother, mother lacks formal educational qualifications, CYF contact in 12 months prior to enrolment with the Early Start service, unplanned pregnancy, mother arrested at some point in her life, first pregnancy as a teenager. These questions were chosen based on their association with risk factors in the empirical literature and the availability of the data.

Information from the following five categories in the IFA was omitted.

House and household: This section sought information on the family's accommodation and household composition. Information from this section of the IFA was excluded due to limited recorded information on the ES database.

Paternal demographic background: The father's ethnicity and educational qualifications were recorded. Paternal demographic background was not analysed as the present research focused on the mother as the primary caregiver.

Vehicle and driver's license information: Mothers were asked if they held a current driver's license and owned a motor vehicle. Mothers were also questioned about present and past illegal behaviours related to driving, including; no current warrant of fitness, no car registration and present or past suspension of a driving license. Information from this section of the IFA was excluded as no specific risk factors from the empirical literature were identified.

Social supports: Mothers were asked about the frequency and quality of their social interactions and to describe their social life at present. Information from this section was omitted due to limited recorded information on the ES database.

Parental attitudes to child rearing: Mothers were asked 13 questions pertaining to child development to assess their views on parenting, for example; 'a child will stop crying more quickly if they are ignored?' Mothers were also asked if they had concerns, that they, or their partner may lose their temper and hit or shake baby, they were asked to select from three possible answers; very concerned, somewhat concerned and not concerned. Due to less than 20 responses recorded as either very, or somewhat concerned, this information was not

included in the analysis. Information from the child development questions was also omitted as it was not recorded on the ES database.

Child Protection Data

The Early Start Care and Protection Database (CPD) holds information on families where children are at risk of harm. "At risk" is defined as having at least one CYF notification. Ongoing information regarding care and protection issues for each client is documented over the course of the family's participation with Early Start. Concerns around child protection are discussed between each FSW and their supervisor at weekly meetings and documented by each supervisor on Early Start's care and protection database (CPD). The CPD has an existing coding system that documents CYF notifications and types of maltreatment. The remainder of the care and protection notes are documented in narrative form. The narrative contains information on positive and negative change in family circumstances, CYF closures, Family Whanau Agreements, Family Group Conferences, Family Group Conference reviews, children uplifted from home, and children placed back in the care of their mother.

All participants' records were examined on the CPD for notes regarding CYF referrals, resulting in a binary variable of the presence (coded as 1) or absence (coded as 0) of a CYF referral anytime during a family's enrolment with ES. The researcher carefully coded and entered the child protection data from all 314 client files extracted from the CPD, into a Microsoft Excel spreadsheet. In addition to the presence of a CYF notification, the nature of these referrals was examined to identify and record the following characteristics:

Age of child at time of notification. The child's age was calculated by subtracting the date of notification from the date of birth, giving the child's age in number of months, this was transferred into age in years.

Number of notifications. The total number of notifications to CYF was counted for each family.

Type of notification. The reason for each notification was documented, including; physical abuse, neglect, domestic violence, maternal mental health, emotional abuse, sexual abuse, and cases with no documented reasons.

Time from enrolment with ES to a CYF notification. The date of the family's enrolment with ES was subtracted from the date of the CYF notification, giving the time lapse between the two.

Documented changes from the ES care and protection database. The narrative on the CPD was critically analysed and a coding system created for the following items: (a) positive change included every documented incident of positive caregiving (e.g. mother taking her child to preschool); (b) negative change included every documented incident of detrimental caregiving (e.g. child left unattended in the bath); (c) CYF closure included families who had been enrolled with CYF and the case had been closed; (d) Family Whanau Agreement included those families who had entered into a voluntary agreement with CYF. The Family Whanau agreement sets out specific goals the family needs to achieve by a specified date to support the ongoing safety and wellbeing of the child; (e) the Family Group Conference (FGC) included families involved in a meeting with CYF and community professionals. This meeting facilitated the creation of a plan that addressed CYF concerns, where children were at serious risk of maltreatment; (f) Family Group Conference reviews included families attending a review meeting held after the initial FGC, to review the family's situation in regards to the children's safety and best interests; (g) children who had been uplifted from their home by CYF because of immediate safety concerns; (h) children placed back in the

care of their mother included children returned to the family home at some point after the initial uplift . Each item was recorded as a binary variable (1 = yes, 0 = no).

Number of notifications proceeding CYF closures. Each family's information was analysed for the number of notifications following a CYF closure and the number recorded as a continuous variable.

Data Cleaning

All the variables were recorded in specific tables in Microsoft spreadsheets. The researcher cleaned the data by editing outliers from continuous variables, creating new variables where necessary, and removing client data with more than 40% missing information. Variables with extreme outlying data were modified by placing upper and/or lower limits on the distribution of scores for those variables.

For the purpose of identifying the key predictor variables that may contribute to a CYF notification, the risk scores for each of the seven categories were summed for each participant, giving an overall score. In addition, all seven categories were summed to give an overall risk score for each participant. This allowed the researcher to critically analyse any association of specific categories of risk with notifications to CYF. This data was recorded on SPSS statistical software. Data was checked for accuracy and 47 participants removed prior to data analysis, due to excessive missing data or inaccurate responses. This resulted in a total of 314 participants (mothers) with a referred child.

Statistical Analyses

The main purpose of the analyses was to examine the relationship between familial

risk factors and notifications to CYF.

1. *Bivariate Analysis*

The associations between number of risk factors in each category and notifications to

CYF were tested by fitting the data from each category of risk to a chi-square test of linearity.

Each category of risk was divided into quartiles (or approximate quartiles depending on the

distribution of the scores) ranging from mothers with no or few risk factors to those that had a

high number of risk factors.

2. *Multivariate Analysis*

In order to examine and compare the predictive utility for those risk categories

significantly associated with CYF notifications, the predictive ability of the risk categories

was compared to an omnibus single category which summed all risk factors. Two binary

logistic regression models were tested. In the first analysis, the binary variable of CYF

notifications was regressed onto the various risk factor categories that were marginally

significant ($p \leq .10$) or significantly associated with CYF notifications ($p \leq .05$). In the

second analysis, and for comparative purposes, CYF notifications were regressed onto the

omnibus total of all risk factors.

Supplementary Analysis

Individual risk factors and CYF notifications. In light of the aims of this research, to

find out if specific risk factors precede a notification to CYF, it was deemed important to

look not only at the categories of risk but all individual variables. To ascertain if there were

any single risk factors within the larger risk categories that were highly associated with CYF

notifications, further tests were carried out with multiple chi-square analyses. The analysis

consisted of all 58 individual risk factors, 51 from the main seven categories (childhood

adversity, teenage adversity, economic stress, adversity in pregnancy, relationship conflict,

mental health, and infant risk factors) and seven individual risk factors (no formal

qualifications, mother arrested, presently smokes, first pregnancy as a teenager, two or more

siblings living at home, contact with CYF in the last 12 months, and unplanned pregnancy).

These supplementary post-hoc analyses should be treated with caution and as exploratory due

to the increased risk of Type 1 error from multiple repetitions of the bivariate chi-square

analyses. Risk factors with a significant association of $p \leq .10$ or below were selected for

multivaraite analysis. These individual risk factors were put into a binary logistical regression

model to ascertain predictive power. Two regression models were compared; one with all

significant risk factors entered simultaneously and a parsimonious model limited to only

those variables that maintained a significant net association predicting CYF notifications.

Reasons for notification: Associations with individual risk factors. A second

supplementary analysis examined the reasons for CYF notifications, and sought to understand

if specific risk factors were associated with specific types of notifications. The reasons for

notifications spanned six categories of concern; physical abuse, neglect, domestic violence,

sexual abuse, emotional abuse, and mothers mental health. The four categories with the

highest number of notifications were selected for further analysis (physical abuse, neglect,

domestic violence, and mother's mental health). Associations between all risk factors and

reason for notification were examined by using a chi-square test of independence. Analyses

were run across all 58 risk factors for physical abuse, neglect, domestic violence and maternal

mental health, but only those where $p \leq .10$ were reported.

ES Care and Protection Database: Positive and negative change. Descriptive

statistics examined positive and negative change to the family situation and actions taken by

CYF following a notification. The number of clients experiencing these issues was

documented, including; positive change, adverse risk factors, Family Whanau agreements, FGC, FGC reviews, child removed from the home, child returned to the family home, and CYF closures. The average for all child protection clients and the number of individual clients experiencing these factors was calculated. This information will provide more qualitative descriptive data to the circumstances of those families notified to CYF. In addition, the time between enrolment at ES and a notification to CYF was evaluated to see if there was a particular period of time where notifications were more prevalent. This was an important question to ask as the aim of this research is to identify those children at risk of maltreatment. If a specific time period exists where notifications are more prevalent, this could provide an opportunity for ES to be extra vigilant.

Negative change post CYF closure. In contrast to the positive and negative changes made by families with open CYF notifications, another set of descriptive statistics examined the number of clients experiencing negative change and notifications ***after*** their case was closed by CYF. That is, these families were deemed not at risk of child maltreatment by CYF and subsequently had further adverse experiences. This was carried out by calculating and comparing the percentage of clients experiencing either a notification or an instance of negative change, as documented on the CPD.

Time between a CYF closure and subsequent notification: The final set of descriptive statistics examined the timing from a CYF case closure to a subsequent CYF notification. The average time lapse between a CYF closure and subsequent notification was calculated. Some families had multiple notifications post closure. However, the data only accounts for whether there was a notification post closure, not the frequency of closures. The data calculates the time from CYF closure to the first re notification and records this in period of months.

Results

Bivariate Analyses

Table 2 shows the sample subdivided into quartiles, ranging from those with the fewest risk factors (group 1) to those with the highest accumulation of risk factors (group 4). The table presents the descriptive statistics for each of the risk categories and the linear trends of risk factors associated with notifications to CYF. The average number of risk factors for seven of the eight categories was below the midpoint of the range, whereas the average number of risk factors for pregnancy adversity was almost exactly at the midpoint. The number of risk factors experienced by any one client for the individual categories ranged from the minimum of zero to either the maximum or almost maximum. For the sum of all risk factors the minimum was 1 and the maximum 28, amounting to just over half the total amount of risk factors in that group.

Table 2

Linear Trends for Risk Factors Associated with Notifications to Child Youth and Family (CYF).

Composite Risk Factors	*M (SD)*	Range	1	2	3	4	Chi Square	*p*
Childhood adversity (8 Items)	3.09 (2.29)	0-8	26.9% (25)	33.7% (31)	34.8% (24)	36.7% (22)	1.70	*.19*
Teenage adversity (10 Items)	3.00 (2.44)	0-9	28.1% (18)	36.2% (29)	21.1% (19)	45% (36)	1.98	*.16*
Economic stress (8 items)	3.37 (1.63)	0-8	28.0% (30)	28.2% (22)	35.1% (33)	48.6% (17)	4.31	*.04*
Pregnancy adversity (4 Items)	2.09 (1.20)	0-4	21.3% (16)	31.6% (31)	34.7% (33)	47.8% (22)	8.77	*.003*
Infant risk factors (5 Items)	0.98 (1.09)	0-5	27% (33)	37.6% (47)	35.1% (13)	30% (9)	0.62	*.43*
Relationship conflict (8 Items)	2.32 (1.92)	0-7	23.9% (11)	26.1% (12)	34% (17)	29.2% (19)	0.61	*.43*
Mental health (8 Items)	2.14 (1.86)	0-7	21.8% (17)	37.7% (23)	32% (33)	40.0% (28)	4.21	*.04*
Sum all risk factors (51 items)	12.91(4.96)	1-28	26.0% (20)	28.7 % (23)	30.2% (26)	46.5% (33)	6.39	.01

Each category clearly shows a percentage increase in CYF notifications from those with the fewest risk factors (group 1) to those with the highest accumulation of risk factors (group 4). Apart from infant risk factors (which only showed a 3% change from group 1 to group 4), there was a 10 to 26.5% increase in notifications to CYF between participants in group 1 and group 4. Somewhat surprisingly, Table 2 shows that in each of the risk categories, even for participants in the first group who had experienced just one or two of the risks in that category, there was still a relatively high referral rate to CYF; between one in five for the mental health category to over one in four for many of the other risk categories. For the families who had experienced the most risk factors in group four, the referral rates had risen to almost one in three for infant risk factors and almost one in two for economic stress, pregnancy history, and sum of all risk factors. Even though there were linear increases between risk exposure and rates of CYF notifications for each domain (apart from infant factors which appeared more curvilinear), the chi-square tests of independence showed that only four of these associations were statistically significant; economic stress, pregnancy adversity, mental health problems, and the sum of all risk factors (see Table 2).

Multivariate Regression Analyses

In order to examine and compare the predictive utility for those risk factors significantly associated with CYF notifications, the predictive ability of the three risk categories was compared to the single category which summed all risk factors. Two binary logistic regression models were tested (see Table 3 below). In the first analysis, the binary variable of CYF notifications was regressed onto the three categories of risk (economic adversity, pregnancy adversity and mental health) that were significantly associated with CYF notifications. In the second analysis, and for comparative purposes, CYF notifications were regressed onto the sum of all risk factors across all risk categories (see Table 3).

Table 3

Binary Logistical Regression: Notification to Child Youth and Family.

					95 % C.I for EXP (B)	
Measure	B	(SE)	Exp(B)	p	Lower	Upper
First Analysis:						
Economic adversity	.16	.08	1.18	.03	1.01	1.37
Pregnancy adversity	.29	.12	1.34	.02	1.06	1.70
Mental health	.09	.07	1.10	.16	0.96	1.25
Second Analysis:						
Sum of all risk factors	**.07**	**(.03)**	**1.07**	**.005**	**1.02**	**1.13**

The first analysis in Table 3 shows that when all three of the risk domains were considered simultaneously, economic adversity and pregnancy adversity were still significant predictors of CYF notifications, while mental health was not. Thus, for every added risk factor for economic adversity, participants were 1.18 times more likely to have a CYF notification, and for every added risk factor for pregnancy adversity, participants were 1.34 times more likely to have a CYF notification. The odds ratios (Exp (B)) showed the effect to be a little stronger for pregnancy adversity than economic adversity, but the confidence interval for both these risk factors supports the predictive odds.

In contrast, the second analysis in Table 3 used the sum of all risk factors across all domains to predict CYF notifications. Although the variable by itself was a statistically significant predictor, the effect size was quite small. The odds ratio showed that for each additional risk factor participants were 1.07 times more likely to have a CYF notification. This small but significant effect could be due to some individual risk categories having little or no effect on notifications to CYF.

The estimates of model fit and sensitivity showed that both regression models were relatively poor in predicting the number of CYF notifications for this sample of Early Start mothers. For the first analysis with the three predictors (economic adversity, pregnancy adversity, and mental

health) the total variance explained was just over 5% (Cox & Snell R^2 = .05; Nagelkerke R^2 = .07), and the sensitivity of this predictor in accounting for CYF notifications only increased to 70.2% from a baseline of 67.5%. For the second analysis with the single predictor sum of all risk categories, the total variance explained was less than 5% (Cox & Snell R^2 = .02; Nagelkerke R^2 = .03), and the sensitivity of this predictor in accounting for CYF notifications only increased to 68.5%. Thus, the model with multiple predictors performed slightly better than the model with the single overall predictor. However, overall both analyses showed these models to be limited in their ability to predict CYF notifications.

Supplementary Analyses

Due to the surprising high number of null results in the analyses reported above, a series of supplementary analyses were conducted to examine possible explanations for the limited associations between risk categories and CYF notifications. First, to ascertain the possibility that single risk factors within each risk domain were highly associated with CYF notifications, the chi-square analyses were repeated for each individual risk factor and those significantly associated with CYF notifications were further tested with logistic regression (see Table 4). Second, due to the heterogeneous nature of the CYF notification variable, it may be possible that some risk factors are only associated with specific forms of child maltreatment. To test this possibility, a retrospective analysis (again using chi-square) examined the associations between the most common reasons for CYF notifications (neglect, exposure to domestic violence, physical abuse, and parental mental health problems; see Table 5 and Table 6) and each risk factor from the IFA. These post-hoc supplementary analyses should be treated with caution and as exploratory due to the increased risk of Type 1 error from multiple repetitions of the bivariate chi-square analyses.

Table 4

Binary Logistical Regression: Notification to CYF.

	(a) Full Model					(b) Parsimonious Model				
				(95% C.I.)					(95% C.I.)	
Measure	*B (SE)*	*Exp (B)*	*P*	*Lower*	*Upper*	*B (SE)*	*Exp(B)*	*p*	*lower*	*upper*
Sold/pawned something due to financial stress (*n*=81)	0.46 (.30)	1.59	.12	0.89	2.84	-	-	-	-	-
Phone cut off due to financial stress (*n*=28)	0.67(.45)	1.95	.14	0.81	4.71	-	-	-	-	-
Smoked in pregnancy (*n*=185)	0.24(.28)	1.28	.38	0.74	2.21	-	-	-	-	-
Hospital admissions in pregnancy (*n*=114)	0.51(.28)	1.67	.07	0.97	2.87	0.65(.27)	1.91	.01	1.14	3.21
History of bi-polar treatment (*n*=24)	0.35(.49)	1.42	.48	0.54	3.71	-	-	-	-	-
History of depression treatment (*n*=195)	0.30(.29)	1.35	.30	0.77	2.37	-	-	-	-	-
History of eating disorder treatment (*n*=29)	1.01(.45)	2.74	.03	1.13	6.62	1.22(.41)	3.39	.003	1.50	7.62
No formal qualifications (n=198)	0.63(.28)	1.88	.02	1.09	3.23	0.64(.27)	1.89	.02	1.12	3.17

Table 4 (above) presents the eight risk factors that were statistically significant from the chi-square test of independence. When the binary variable of a CYF notification was regressed onto these eight risk factors only history of an eating disorder and no formal qualifications was a significant predictor of a CYF notification, while hospital admissions was marginally significant at .07. Thus for every added risk factor for an eating disorder, participants were 2.74 times more likely to experience a CYF notification and for every added risk factor of no formal qualifications, participants were 1.88 times more likely to experience a CYF notification. Hospital admissions showed participants to be 1.67 times more likely to have a CYF notification despite having marginal significance. However, the confidence intervals for hospital admissions fell below 1, bringing doubt over the trustworthiness of the estimates. Eating disorders showed the largest odds ratio with a sizeable confidence interval.

Next, all three significant or marginally significant risk factors were entered into the parsimonious model to predict CYF notifications. All three continued to show statistically significant associations. For every added risk factor, that is either a hospital admission or no formal qualification, participants were nearly twice as likely to experience a notification to CYF. However, for every added risk factor of an eating disorder participants were 3.39 times more likely to have a CYF notification. The effect sizes for all three risk factors were fairly large bringing confidence to the estimates.

Reasons for notification: Associations with individual risk factors. To ascertain the possibility that certain individual risk factors were associated with different types of maltreatment, the bivariate chi-square analyses were repeated again but for each maltreatment category. There were 222 notifications to CYF across 114 clients, this equates to just over a third of the total research sample having at least one notification. However, of these clients, 34 had no specific reason for notification recorded, even though they had at least one notification. The reasons for the 188 notifications were spread across six categories (see Table 5). It should be noted that the data is

only concerned with the reasons for notification, not the frequency of notifications. For example, whether a client had multiple notifications for domestic violence is not taken into account, only that domestic violence has been a reason for at least one notification. Twenty nine clients received multiple notifications under the same category.

Table 5

Reasons for clients receiving at least one CYF notification

Reason for Notification	Number of Clients
Neglect	53
Domestic violence	47
Physical abuse	21
Maternal mental health	18
Emotional abuse	13
Sexual abuse	7
Missing explanation	34
Multiple types of maltreatment	29
TOTAL Notifications	**222**

In regard to multiple and different reasons for notifications, 37.72% of the Early Start children with CYF notifications experienced multiple reasons (29.82% = two reasons; 6.14% = three reasons; 0.88% = four reasons; and 0.88% = five reasons). Of the reasons for CYF notifications in Table 5, the top four categories were extracted; neglect (experienced by 46.49% of children), domestic violence (41.23%), physical abuse (18.42%) and poor maternal mental health (15.79%). Analyses were run across all risk factors for each type of notification, but only those that with statistical associations where $p \leq .10$ are shown in Table 6.

Table 6. *Risk Factors Associated with Reason for Notification.*

Risk Factor	46.49%(53) Neglect		41.23%(47) Domestic Violence		18.42%(21) Physical Abuse		15.79%(18) Mental Health	
	Chi Square	*p*	Chi Square	*p*	Chi Square	*p*	Chi Square	*p*
Childhood/teen adversity								
Sexually abused					3.64	.06	3.55	.06
Raped			2.35	.10				
Pregnant as a teenager			9.37	.002				
Ran away from home	2.32	.10	3.71	.05			2.27	.10
Mothers parents frequently drunk/drugged			3.63	.06				
Family was poor					2.14	.10		
In trouble with police			2.48	.10				
Witnessed arguments							3.13	.08
Black sheep of family							3.04	.08
Economic								
Sold or pawned something in the last 3 months	2.68	.10			5.69	.02		
Used a food bank in last 3 months			8.35	.004				
Cut down on heating	2.16	.10						
Phone cut off			2.68	.10				
Mother on a benefit			6.34	.01			3.65	.06
Borrowed money							8.76	.003
Pregnancy								
Smoked in pregnancy			2.40	.10				
Unplanned pregnancy					2.26	.10	4.70	.03
1st pregnancy as a teenager			2.21	.10				
Hospital admissions							6.73	.009

Table 6 (continued). *Risk Factors Associated with Reasons for Notification*

	46.49%(53) Neglect		41.23%(47) Domestic Violence		18.42%(21) Physical Abuse		15.79%(18) Mental Health	
	Chi Square	*p*	Chi Square	*p*	Chi Square	*p*	Chi Square	*p*
Relationship Conflict								
Physical assault			4.37	.04	3.45	.06		
Threats			2.47	.10	10.95	.001		
Verbal abuse					5.45	.02		
Throws things							3.32	.07
Mental Health								
Eating disorder treatment	4.02	.05	8.37	.004				
Anxiety treatment	7.05	.008					8.06	.005
Current depressive symptoms			2.22	.10			5.15	.02
Treatment for depression at some time in life							7.86	.005
Past/present mental health problem			16.18	.024			9.40	.002
Bipolar treatment							6.34	.01
Current treatment for mental health							12.19	<.001
Infant risk factors								
Special needs	2.38	.10						
Intensive care after birth			4.46	.04				
Other								
Mother has been arrested	5.46	.02	5.75	.02				
Presently smokes	2.48	.10	3.89	.05				
No formal qualifications	2.89	.09	11.94	.001	4.99	.025		
Contact with CYF in the last 12 months					8.28	.004		

Table 6 shows the thirty six out of fifty eight risk factors that were significantly associated ($p \leq .10$ or below) with at least one type of notification. There were almost twice as many risk factors significantly associated with domestic violence (19) than both physical abuse (9) and neglect (9). Surprisingly, mental health had the second largest number of risk factors (15), only four less than the domestic violence category, despite being applicable to a smaller minority of those with CYF notifications.

The chi-square analyses in Table 6 show that none of the risk factors were associated with all four of the CYF notification categories and only two (*ran away from home* and *no formal qualifications*) was associated with three of the categories. *Ran away from home* was associatetd with notifications for neglect, domestic violence and caregiver mental health problems, whereas, *no formal qualifications* was associated with notifications for neglect, domestic violence and physical abuse. Twelve of the 36 risk factors (33.3%) were significantly associated with two notification categories, and 22 (66.1%) risk factors were only associated with one of the CYF notification categories.

Unsurprisingly, mental health challenges were most frequently associated with a CYF notification for caregiver mental health issues. However, other categories of risk factors were not so straightforward. For example, of the four risk factors for relationship conflict only two were associated with domestic violence while three were associated with physical abuse. Of the two risk factors for infant risk, one was associated with neglect and one with domestic violence. Of the four risk factors for pregnancy adversity only two were associated with domestic violence, two for mental health, and one for physical abuse. Of the six risk factors for economic stress, three were associated with domestic violence, two for neglect, one for physical abuse, and two for mental health. Of the nine risk factors for childhood adversity, five were associated with domestic violence, four for mental health, two for physical abuse, and one in neglect. For the independent risk factors, mother currently smokes and mother arrested were both associated with domestic violence and

neglect. There was no specific pattern for each category of risk, the majority of risk factors were only associated with one or two CYF categories.

Early Start Care and Protection Database: Increasing and Decreasing Risk Factors

The Early Start Care and Protection Database (CPD) holds information on families who have been notified to CYF. The average number of notifications was 1.95. The average time from enrolment in the ES service and a notification to CYF was 24.18 months (SD; 15.57 months, range 3 to 60 months). Table 7 shows the number of positive and negative changes and the actions taken by CYF following a notification. The total number of instances, the average for all child protection clients, and the number of individual clients experiencing these factors is illustrated in Table 7 below.

Table 7

Documented Changes from the Early Start Care and Protection Database.

	Positive Change	Negative Change	Family Whanau Agreement	FGC	FGC Review	Uplift	Back in Care of MOB	Closed by CYF
Total instances	230	780	4	36	5	37	11	88
Average for all child protection clients	2.02	6.84	0.04	0.32	0.04	0.32	0.10	0.77
Clients with issue	77	110	4	27	3	31	11	68
Percent of care and protection clients	67.54%	96.49%	3.51%	23.68%	2.63%	27.19%	9.65%	59.65%
Average for clients with issue	2.99	7.09	1.00	1.33	1.67	1.19	1.00	1.29

There were a total of 230 instances of positive change for families compared to 780 instances of negative change. Seventy seven (67.54%) families experienced at least one instance of positive change while 110 (96.49%) experienced at least one instance of negative change. There were only a small percentage of families receiving a Family Whanau Agreement (4 clients; 3.51%) but the number of FGCs was nearly seven fold (27; 23.68%). These figures are heavily outweighed by the negative change and notifications; an average of 6.84 instances of negative change and 1.95 notifications for each CPD client. Surprisingly, there were very few FGC reviews in comparison to FGCs and only 11.11% of clients who had an FGC went on to have a review. It is also interesting to note that more families experienced their child being uplifted from home than they did an FGC meeting.

Just over a quarter of the 114 families had children removed from their home and placed in "out of home care". Of the 31 children who were removed from their home, just under a third were returned back to their home at a later date and six families had children uplifted on multiple occasions. A number of families experienced multiple notifications as illustrated by the fact that 88 total CYF closures were shared between 68 families (59.65%) with an average of 1.29 closures per client, see Table 7.

Risk Factors Post CYF Closure

Table 8 shows negative change and CYF notifications post closure and compares this to the number of clients on the CPD experiencing these issues. Sixty eight of the families on the CPD had their case closed by CYF, meaning the children were no longer deemed at risk. However, 36 of these clients continued to experience negative change, subsequent CYF notifications or both. Interestingly, 31.53% of all notifications were for families whose cases had been closed by CYF, despite these families accounting for only 26.32% of the CPD sample. This suggests that there is a portion of Early Start families whose children are repeatedly exposed to maltreatment despite Early Start and CYF involvement.

Table 8

*Risk Factors Post CYF Closure*

	Closures Preceding Subsequent Notification or Negative Change	Negative Change Post Closure	Subsequent Notifications Post Closure
Total	47	249	70
Percent of all instances	53.41%	31.92%	31.53%
Number of clients	36	35	30
Percent of care and protection clients	31.58%	30.70%	26.32%

Time between a CYF Closure and Subsequent Notification.

The time between CYF closure and subsequent notifications was examined in Figure 1 below. Note that some families had multiple notifications post closure. However, the Figure only accounts for whether there was a notification post closure, not the frequency of notifications. The average time between closure and notifications ranged from less than one month (one case) to over 12 months (nine cases), with the most frequent time being between three and five months (11 cases). The risk of re-notification grew from one to eleven cases in the first five months and then levelled off in the following six months. This suggests children are more at risk during the five months following a notification.

Figure 1

Time between CYF closure and subsequent notification
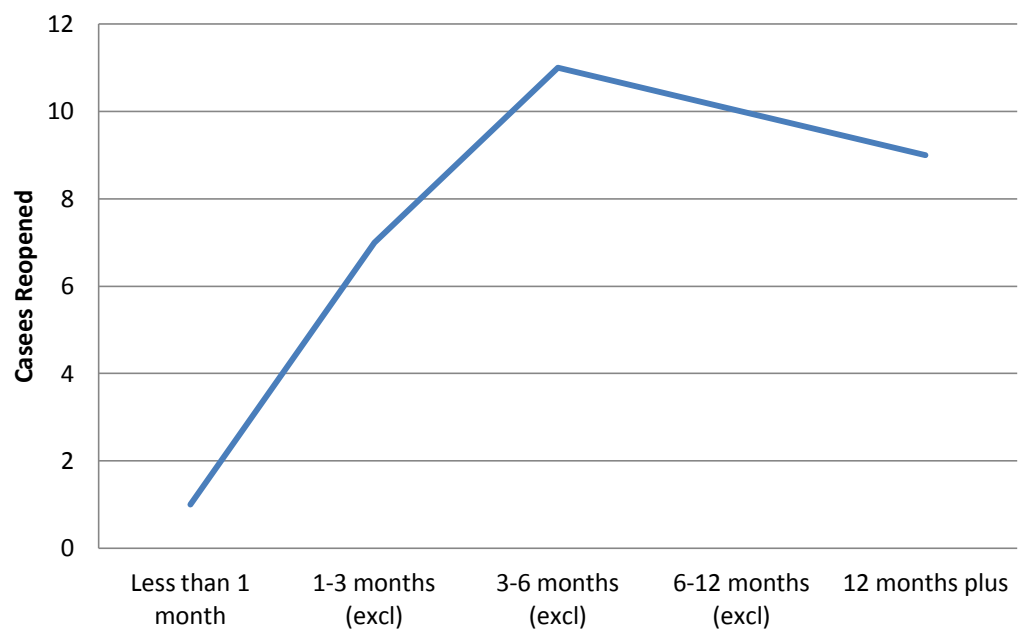
DISCUSSION

The scientific research provides empirical evidence that familial risk factors are associated with child maltreatment. Research has suggested that children who come from families with multiple risk factors have a higher probability of a report to the child protection system compared to those with no risk factors. This study aimed to identify key risk factors that preceded a notification to CYF using a prospective research design with an early intervention cohort. First, this study investigated the association between the number and type of risk factors and a notification to CYF. Second, supplementary analyses were carried out to test for the possibility that individual risk factors were associated with notifications to CYF on their own. Analyses were also carried out to find out if specific clusters of risk factors may be associated with specific types of maltreatment. Finally, a retrospective descriptive analysis of the patterns of CYF notifications for Early Start families was conducted to gain a better understanding of the process and experience of a notification to CYF for at risk families. The major findings and conclusions are outlined below.

Association between the Number and Type of Risk Factors and a Notification to CYF

The first stage of the analysis examined the association between the number of risk factors in each risk category and a subsequent notification to CYF, by fitting the data from each category of risk to a chi-square test of linearity, see Table 2. Each category of risk was divided into quartiles (or approximate quartiles depending on the distribution of the scores) ranging from mothers with no or few risk factors to those that had a high number of risk factors. Results showed that families with a greater number of risk factors experienced a greater number of CYF notifications. Each category of risk clearly showed a percentage increase in CYF notifications from those with the fewest risk factors to those with the highest accumulation of risk factors. Apart from infant risk factors (which only showed a 3 % change from lowest to highest), there was a 10% to 26.5% increase in notifications to CYF between

participants in the lowest and highest risk groups. However, even for participants in the lowest risk group who had experienced just one or two of the risks in that category, there was still a relatively high referral rate to CYF: between one in five for the mental health category, to over one in four for many of the other risk categories. The largest percentage increase from those with the least risk factors in a category to those with the most risk factors in that category was for economic stress (20.6% increase), pregnancy adversity (26.5% increase), and mental health (18.2% increase). The chi-square analyses (Table 2) showed that only these three risk categories were statistically significant predictors of a notification to CYF, along with the sum of all risk factors.

These findings are consistent with previous research that has shown a linear trend between the number of familial risk factors and both notifications to child protection services and cases of child maltreatment (Brown et al., 1998; Wu et al.; 2004; MacKenzie et al., 2011). However, the percentage of risk differed across quartiles in the present study compared to previous research. The present study found a relatively high percentage of risk in the lowest risk group. Previous studies measuring notifications to CPS have found a much smaller percentage of risk in the lowest risk group, with the percentage risk rising more rapidly between the low and moderate categories (Makenzie et al, 2011). For example, MacKenzie, Kotch and Lee (2011) divided their participants into three risk groups and the results showed a large increase between the 'low' to 'moderate' category, 17.1% to 44.9% whereas, the present study showed a large percentage of risk across all quartiles. It could be suggested that although both studies used a high risk population, differences in the inclusion criteria altered the results. MacKenzie, Kotch and Lee (2011) selected 80% of mothers that exhibited risk factors as opposed to Early Start clients for which the presence of risk is necessary for admission into the intervention. As the Early Start population were a very high risk group that exhibited more risk factors, a higher percentage of notifications could be

evidenced across all categories compared to specific categories, as evidenced in the MacKenzie, Kotch and Lee (2011) study.

Predictive Utility of the Risk Categories

The second stage of the analysis examined the predictive utility of the three risk categories significantly associated with CYF notifications; economic stress, pregnancy adversity and mental health. In the first logistic regression model (Table 3) when all three risk categories were considered simultaneously, economic adversity and pregnancy adversity were still significant predictors of CYF notifications, while the association with mental health issues was substantively reduced. For every added risk factor for economic adversity, participants were 1.18 times more likely to have a CYF notification, and for every added risk factor for pregnancy adversity, participants were 1.34 times more likely to have a CYF notification.

In the second logistic regression, and for comparative purposes, CYF notifications were regressed onto the sum of all risk factors to examine the predictive ability of this category, see Table 3. The odds ratio showed that for each additional risk factor, participants were 1.07 times more likely to have a CYF notification. Although the variable by itself was a statistically significant predictor, the effect size was quite small. This small but significant effect could be due to some individual risk categories having little or no effect on notifications to CYF. Overall both analyses showed these models to be limited in their ability to predict CYF notifications.

Economic Adversity

The conceptualisation of economic stress in the current study is similar to previous research; both focus on beneficiaries or financial problems. Only one study focused on

poverty as measured by community poverty, this was defined by identifying families living 40% or more below the US state's poverty line (Lee & Goerge, 1999). The current findings are consistent with previous research which has shown that economic adversity, whether defined as recipients of social welfare benefits, poverty, or financial challenges, are significantly associated with both notifications to CPS and substantiated cases of maltreatment. Wu et al. (2004) found economic challenges to be one of the top five risk factors associated with child maltreatment, whilst, Brown, Cohen, Johnson and Salzinger (1998) found low income to be one of the largest risk factors associated with notifications to CPS. Furthermore, they found that mothers receiving a social welfare benefit had a fivefold increase of a notification to CPS compared to other risk factors. Further support was provided by Lee & Goerge (1999), who found that communities where 40% or more of children were living in poverty were three times more likely to have a substantiated report to CPS.

Early intervention agencies cannot ameliorate financial hardship by giving people more money, and thus reducing child maltreatment. Firstly, resources are not available, and secondly there is not simply a linear association between financial stress and child maltreatment. Lee and Goerge (1999) proposed that a complex relationship exists between the two. It could be suggested that factors contributing to economic hardship create additional risk. Being a young, single parent, with no formal qualifications, and multiple children can create financial problems, but these variables can also act as separate risk factors. It could be proposed that a young single mum with a lack of formal education and multiple children would be likely to have financial problems, but she may also struggle to cope with the demands of parenting multiple children at a young age, therefore leading to a greater risk of child maltreatment.

Examining the model from Cicchetti and Lynch (1993) in conjuction with economic risk factors, potential associations could be suggested. There is the potential to change a person's

education level and employment opportunities; this refers to more temporary vulnerability factors. However, gaining employment or engaging in study relies on other environmental variables. For example, a mother gaining employment would need adequate childcare, and to improve her education she would need the ability to fund her study, which can be challenging for a mother who is struggling financially. Families need enough money to feed themselves and adequate resources to provide for the basic necessities. Without a family's basic needs being met, a mother will find it difficult to concentrate on other higher order skills, for example, parenting (Maslow, 1943). This is a huge challenge for early intervention agencies, and one I suggest that needs a collaborative approach. Mothers may benefit from receiving support from specialised budgeting agencies that can help them manage their finances, and advocate for them with social welfare departments, enabling the families basic needs to be met. This would act as a protective buffer. Cicchetti and Lynch (1993) discuss potentiating and compensatory factors, and suggest that protective buffers need to outweigh vulnerability factors and transient challenges if child maltreatment is going to be reduced.

Pregnancy Adversity

The current study incorporated hospital admissions and substance use (smoking, drugs, and alcohol) into this category. There is no direct link between these four combined variables and the research, however associations exist between general substance use and reports to CPS and cases of child maltreatment. Unfortunately, the data for the present study only recorded drug use in pregnancy, and this restricted the ability to compare this risk factor more generally with the literature. However, the previous research has shown drug use to be one of the most analysed risk factors, evidencing significance in the majority of studies that measured it. Epstein (2001) found two thirds of mothers who maltreated their child had used illicit drugs; this remained significant after inclusion in the multivariate logistic regression.

Results from a study by Dubowitz, Kim, Black, Weisbart, Semiantin and Madger (2011) further support the consistency of this association. Dubowitz and colleagues documented a 1.7 increase in notifications to CPS for mothers who had used drugs at some point during their life.

Alcohol and smoking in pregnancy were measured less frequently in the literature, but support for these risk factors in association with both child maltreatment cases and reports to CPS are evident. Mothers who used alcohol had a significantly higher rate of both child maltreatment and notifications to CPS (Palusci, 2011; Kotch et al., 1999). Similar findings were evident for drug use. Epstein (2001) found half of all mothers with a substantiated case of child maltreatment smoked in pregnancy, although this was not significant after logistical regression was carried out. Wu et al. (2004) found smoking in pregnancy to be one of the top five risk factors in predicting substantiated cases of child maltreatment. Furthermore, mothers who smoked in pregnancy, even if they no longer engaged in this behaviour, were found to have significantly more reports to CPS (Epstein, 2001).

Mental Health

The mental health category was not a significant predictor of notifications to CPS in the multivariate analysis. However, previous research has found depression to be a significant risk factor (Dubowitz et al., 2011; Kotch et al., 1995). While the mental health category in the current study was comprised of multiple mental health disorders, including depression, anxiety, bi-polar, and eating disorder; this category was a composite of dichotimised responses that primarily assessed the history of maternal treatment for these mental health issues. In contrast, previous research focused on depression and assessed this with screening tools. For example, Dubowitz, Kim, Black, Weisbart, Semiantin and Madger (2011) used the Brief Symptom Inventory (Derogatis & Melisarators, 1983), to assess for depression.

Mothers were asked seventeen questions in relation to depressive symptoms during the past week and answers were recorded on a 5-point Likert scale. Knowing a mother has depressive symptoms is not sufficient; professionals need to know how many and how intense the symptoms are to allow for the magnitude to be evaluated.

Supplementary Analyses

Due to the surprising high number of null results for the risk categories, supplementary analyses were conducted to examine possible explanations for the limited associations between risk categories and CYF notifications. Analyses were conducted and included the following three sets of data; individual risk factors associated with notifications to CYF, type of risk factors associated with the type of notification to CYF, and data from Early Start's child protection database. These will be discussed in more detail below.

Individual Risk Factors versus Risk Categories.

All individual risk factors were placed into a chi-square test of independence to ascertain the possibility that single risk factors within each risk domain were highly associated with CYF notifications on their own. The chi-square analyses were repeated for each individual risk factor, to find those significantly associated with CYF notifications. These post-hoc supplementary analyses should be treated with caution and as exploratory due to the increased risk of Type 1 error from multiple repetitions of the bivariate chi-square analyses.

Results found eight risk factors to be statistically significant from the chi-square test of independence (see Table 4). These included Early Start families who had sold/pawned something due to financial stress, had their phone cut off due to financial stress, smoked in pregnancy, had experienced a hospital admission during pregnancy, a history of bi-polar

treatment, depression treatment, eating disorder treatment, and participants without formal educational qualifications. Unsurprisingly, most of these risk factors were from the three risk categories (pregnancy adversity, mental health, and economic stress) that were significant in the first set of chi-square analyses.

These eight risk factors were placed into a binary logistic regression (see Table 4). Results showed only history of an eating disorder and no formal qualifications to be significant predictors of notifications to CYF, while hospital admissions were marginally significant at .07. Thus for every added risk factor for an eating disorder, participants were 2.74 times more likely to experience a CYF notification and for every added risk factor of no formal qualifications, participants were 1.88 times more likely to experience a CYF notification. Hospital admissions showed participants to be 1.67 times more likely to have a CYF notification despite having marginal significance.

When all three significant or marginally significant risk factors were entered into the parsimonious model (see Table 4) all three continued to show statistically significant associations. For every added risk factor, that is either a hospital admission or no formal qualification, participants were nearly twice as likely to experience a notification to CYF. Furthermore, the significance became stronger for both hospital admissions and an eating disorder. The predictive odds of a report to CYF for mothers with a history of an eating disorder were particularly strong at 3.39. Furthermore, just over one third of the total sample experienced hospital admissions, with an odds ratio of 1.91.

The previous research did not measure hospital admissions or eating disorders so comparisons could not be drawn. However, it could be proposed that those mothers with an eating disorder or a hospital admission were more frequently identified by health professionals who relayed concerns to the child protection system. However, the findings on

lack of education are consistent with previous research, which suggests that mothers who lack formal educational qualifications are at increased risk of notifications to child protection services and substantiated cases of maltreatment (Wu et al, 2004; Dubowitz et al., 2011). In accordance with findings by Dubowitz, Kim, Black, Weisbart, Semiantin and Madger (2011), the current study documented a similar odds ratio of 1.89, to the previous research of 1.55.

Individual Risk Factors and Types of Maltreatment Notifications

In the second analysis, the types of risk factors were examined in association with the type of notifications. Due to the heterogeneous nature of the CYF notification variable, it was thought possible that some risk factors were only associated with specific types of maltreatment notifications, therefore diluting the effects of each risk category. To test this possibility, a retrospective analysis (again using chi-square) examined the associations between the most common reasons for CYF notifications (neglect, exposure to domestic violence, physical abuse, and mental health) and each individual risk factor from the IFA (see Table 6). These post-hoc supplementary analyses should be treated with caution and as exploratory due to the increased risk of Type 1 error from multiple repetitions of the bivariate chi-square analyses.

Results found no specific pattern for each category of risk. The majority of risk factors were only associated with one or two notification categories. The only exception was mothers with mental health problems who were more frequently notified under the mental health category, and not abuse and neglect per se. However, on examination of all individual risk factors from the economic risk category, results showed that although economic risk factors were found in all types of notification, they appeared more frequently under the category of domestic violence. Findings from Palusci (2011) showed that families with economic adversity and domestic violence were at increased risk of a substantiated case of

child maltreatment. Similarly, Epstein's study (2001) showed that among those mothers who had a notification to CPS, 20% felt threatened by their partner and 65% had financial problems. It could be suggested that financial hardship causes problems; stress, frustration, changes in mood, and isolation that could lead to decreased social supports, and an increase in relationship conflict. This combined with other risk factors exhibited from the Early Start vulnerable population could potentially lead to domestic violence. No other patterns of risk factors were associated with specific types of maltreatment notifications.

Early Start Care and Protection Data for Families Notified to Child Protection Services

The third set of supplementary analyses was conducted to examine the care and protection data. This analysis was split into two parts.The first examined increasing and decreasing risk factors and actions taken by CYF, post notification (see Table 7). The narrative on the Early Start CPD was critically analysed and a coding system created for the following items; (a) positive change, (b) negative change, (c) CYF closure, (d) Family Whanau Agreement, (e) Family Group Conference (FGC), (f) Family Group Conference reviews, (g) children who had been uplifted from their home by CYF, and (h) children placed back in the care of their mother. Each item was recorded as a binary variable (1 = yes, 0 = no).

Results showed that documented actions taken by CYF demonstrated an interesting pattern. Nearly a third of all mothers had repeat notifications, placing a question mark over the possibility of premature closure and insufficient monitoring of families over time. Support for insufficient monitoring was found in the very low numbers of Family Whanau Agreements. These make the family accountable for carrying out specific tasks that reduce familial risk. In contrast to this is the large number of children uplifted from their home, this is detrimental to the child's wellbeing, although sometimes necessary for their safety. Thirty one children were uplifted, making this action nine times more frequent than a Family

Whanau Agreement. It is interesting to note that a third of those children uplifted were later placed back in the care of their mother. It could be proposed that too little is done too late, and greater accountability at an earlier stage could prevent some of these children being removed from their home and then returned; an action that can be extremely detrimental to their wellbeing. Further support for a lack of CYF monitoring can be seen in the small number of FGC reviews in relation to FGC's. Twenty seven clients had an FGC but only three had a review. These factors point to a lack of accountability and monitoring of risk factors. This is where early intervention agencies come in, they need to be able to identify those families most at risk, before the need for CYF involvement.

However, there is a portion of Early Start families whose children are repeatedly exposed to maltreatment despite ES and CYF involvement. The number of instances of negative change and CYF notifications post closure were recorded from the Early Start CPD, (see Table 8) and compared with the number of clients on the CPD generally experiencing these issues. Sixty-eight mothers had their cases closed by CYF. However, thirty six continued to experience adversity in the form of a negative change, or had a further CYF notification, or both. Interestingly, 31.53% of all notifications were for families whose cases had been closed by CYF, despite these families accounting for only 26.32% of the care and protection sample. If just under a third of all care and protection clients are experiencing negative change post closure (30.70%) and just under a third are experiencing repeat notifications post closure (26.32%), it could be proposed that more targeted intervention needs to be in place when clients are experiencing negative change, to ameliorate the risk factors before a notification becomes necessary. Helping ES to identify the key risk factors associated with a notification to CYF would be advantageous.

The second part of the descriptive analysis of the care and protection data included examination of the timing of notifications. The time between CYF closures and subsequent

notifications was calculated (see Figure 1). For early intervention agencies to be able to identify those families most at risk before the need for CYF involvement, they need to know the optimal time to intervene. The results showed two important findings. First, the most frequent time between a CYF closure and subsequent notification was between three and five months, based on the data from the Early Start care and protection database. Second, there was an average of a two year window between ES enrolment and a notification to CYF. However, the range varied dramatically (between 3 and 60 months). Similarly, Vaithianathan and colleagues (2012) found a two and half year gap for those children in the highest 20% of risk between onset of risk factors and occurrence of maltreatment. This suggests two things. First, ES has a three to five month window of opportunity to intervene following the first notification, and secondly a formal periodical assessment of risk would be advantageous, given the disparity between time of enrolment and a notification to CYF.

Strengths and Limitations

The current study has a number of methodological strengths. It used a prospective design, fifty eight risk factors, and a combination of self report data and administrative data. However, these strengths also pose limitations. The answers to the assessment questionnaires were gained by maternal self report and filled in by family support workers. There is a potential for social desirability bias in the mother's answers and inaccurate recording by family support workers, making it possible that error in reporting or recording of these outcomes may have weakened the association with notifications to CYF. Furthermore, not all risk factors were recorded on the ES database from the assessment questionnaire, thus omitting potentially valuable risk and protective factors that could have compromised the data.

Another limitation is the heterogeneity of the child protection notifications. The notifications to CYF were indicative of maltreatment but not necessarily substantiated. The variations in the types of notification bring validity into question. Furthermore, the recording of the CYF notifications were gained from the ES care and protection database and not directly from CYF, highlighting the possibility of missing data.

A further limitation to this study is that of sample selection bias. In order to give the study enough power, the participants were unable to be selected at random, and all participants that met criteria for the study were selected. This sample was a specifically selected population who were exposed to greater levels of risk factors than the general population, and therefore the homogeneity of the sample limits the ability of the study to generalise to wider populations.

Implications and Future Directions

The link between risk factors and notifications to child protection services is an important one. Identifying those children at risk of child maltreatment is paramount. Previous research has suggested that children who experience maltreatment are at risk of a number of adverse psychosocial outcomes, including poor lifelong mental health, criminality, substance use, learning problems, behaviour problems, eating disorders, teenage pregnancy, and suicide. Early identification of risk factors enables early intervention to be carefully tailored to ameliorate such factors that place children at risk of maltreatment, and consequently at risk of poor developmental outcomes.

To effectively address these risk factors, specific actions are suggested. First, changes to the recording of the assessment data on the ES database need to be considered. There needs to be a more efficient way of recording the data that would gather a wide array of risk factors that could be easily extracted for research purposes. These assessment variables would ultimately consist of protective and risk factors, enabling interactional effects to be

examined. This would enable a higher degree of monitoring and allow more rigorous research studies to be carried out.

Second, more scientific research is needed to examine the effects of risk factors over time, with the end goal of creating a risk prediction tool that could be utilised with the vulnerable families that engage with ES. Currently there is no tool that predicts the level of risk for a particular child. This means that families receive the same level of resources regardless of how much they are needed. Wu et al. (2004) recommended that risk screening tools be developed to highlight those at risk of maltreatment so appropriate intervention can be put into place.

To truly reduce child maltreatment there needs to be early recognition of risk factors by ES. Given that the average time from enrolment in the ES service and a notification to CYF was between 3 and 60 months, there would be huge advantages to having a risk assessment tool that could periodically monitor each family from enrolment through to exit. This would allow the families with a high level of risk to be identified early and for ES to tailor their service accordingly. Brown, Cohen, Johnson and Salzinger (1998) recommended the use of screening tools to reflect the level of risk, concluding that state home visiting programmes do work once the appropriate degree of risk is identified.

Conclusion

This thesis studied the risk factors associated with a notification to the child protection system for child maltreatment. Overall, the study demonstrated trends in the data for those families notified to CYF. Hospital admissions in pregnancy, lack of formal qualifications, economic challenges, and an eating disorder were all significantly predictive of a CYF notification, although the predictive utility was small. This study provides valuable information to ES on the type of risk factors that increase the probability of a notification to

CYF. Furthermore, it highlights the advantages of adapting the ES assessment data, to allow for the recording of a greater number of risk factors and protective factors, with due consideration given to their magnitude. This would allow further research to be carried out to build on the current study, identifying those risk factors that would more accurately predict a notification to CYF. This would allow ES to create a risk prediction tool that would enhance the effectiveness of their programme.

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