[Eileen Munro](), Julie S. Taylor, Caroline Bradbury-Jones

Understanding the causal pathways to child maltreatment: implications for health and social care policy and practice

Article (Published version)
(Refereed)

This version available at: [http://eprints.lse.ac.uk/51053/]()

Available in LSE Research Online: August 2014

Understanding the Causal Pathways to Child Maltreatment: Implications for Health and Social Care Policy and Practice

Eileen Munro
Department of Social Policy, The London School of Economics and Political Science, London School of Economics, UK

Julie S. Taylor*
University of Edinburgh/NSPCC Child Protection Research Centre, UK

Caroline Bradbury-Jones
 School of Nursing & Midwifery, University of Dundee, UK

This article examines current understandings regarding the causes of child maltreatment and its prediction and prevention. The answers to why some people hurt children, when others in similar circumstances do not, remain obstinately elusive. We look to philosophy to help understand the complexity of causal pathways of maltreatment. We draw on the seminal work of Mackie (1965) on probabilistic causation and his notion of the 'INUS condition' (INUS is the acronym for insufficient but non-redundant part of a condition that is itself unnecessary but sufficient for the result). This theory holds particular relevance for exploring complex social phenomena. Taking child abuse as an issue, we show how the concept of the INUS condition offers a new way of thinking about causal factors when they are neither necessary nor sufficient. It can be applied to clarify the complex nexus of potential risk factors that may – or may not – 'cause' adult perpetration of abuse. It also provides a framework for integrating the research on resilience factors with that on risk. Finally, we discuss the lessons for research, policy and practice that arise from this way of conceptualising the underlying causality of child maltreatment. Copyright © 2013 John Wiley & Sons, Ltd.

'The concept of the INUS condition offers a new way of thinking about causal factors'

KEY PRACTITIONER MESSAGES:
- There have been major efforts to create models of risk and prediction in child protection but it remains an imprecise science.
- Risk factors appear to be neither necessary nor sufficient conditions for maltreatment to occur.
- In this article, we adopt a philosophical position to help make sense of the complex causation of maltreatment.
- We show the implications of these new perspectives for health and social care policy and practice.

KEY WORDS: prediction; risk; resilience; maltreatment

C hild maltreatment continues to be a major public health and social problem, with serious health and wellbeing consequences for the long-term development and wellbeing of victims. A definition of the term is provided by the World Health Organization:

'A definition of the term is provided by the World Health Organization'

*Correspondence to: Julie S. Taylor, University of Edinburgh/NSPCC Child Protection Research Centre, Moray House School of Education, Holyrood Road, Edinburgh EH8 8AQ, UK. E-mail: julie.taylor@ed.ac.uk

> 'Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power' (Butchart *et al.*, 2006).

The spectrum of abuse makes it clear why maltreatment has become such a public health scourge. In this article, we explore current understandings regarding the causes of child maltreatment and its prediction and prevention, turning to philosophy to help understand the complexity of causal pathways. We show how the concept of the INUS condition (INUS is the acronym for *insufficient* but *non-redundant* part of a condition that is itself *unnecessary* but *sufficient* for the result) offers a conceptual framework that links both the protective and risk factors identified by research on maltreatment.

Despite advances in recognition and response, our ability to predict and prevent maltreatment is still very limited and there is considerable public and political pressure to improve. Concerns arising from high-profile cases in England have resulted in the review of child protection (Munro, 2011) and of the health service response (Kennedy, 2010), where the low priority given to maltreatment has caused concern:

> 'Maltreatment is one of the biggest paediatric public health challenges, yet any research activity is dwarfed by work on more established childhood ills' (Horton, 2003, p. 443).

This article begins by setting out the scale of the problem of child maltreatment and the gaps in relation to understanding its causal pathways. In efforts to address child abuse and neglect, there is momentum towards public health approaches to abuse and neglect, in finding ways in which we can predict abuse before it happens. We discuss the current developments in predicting maltreatment in research and practice and ask why progress is so limited. Is it just a question of more research being needed or are there intrinsic obstacles to developing sufficient understanding of the causes of maltreatment to produce accurate prediction? The underlying assumptions about causality are then explored and we argue that risk factors appear to function neither as necessary nor sufficient conditions for maltreatment to occur. The work of Mackie (1965) on INUS conditions is drawn upon to provide a conceptual framework for understanding how these factors contribute to the chain of events that culminates in maltreatment. The implications of this are then explored in relation to both research and practice.

The Scale of the Problem

As stated, the scale of the problem of child abuse and neglect makes it a major public health issue. Although it is not possible to have definitive statistics since perpetrators and indeed victims, often conceal it successfully, there are estimates of incidence and prevalence that offer some idea of the magnitude. One estimate can be gained by examining the most severe form of maltreatment: statistics on child deaths attributed to abuse and neglect. UNICEF conducted a comparison of prevalence in industrialised societies:

> 'Almost 3,500 children under the age of 15 die from maltreatment (physical abuse and neglect) every year in the industrialized world. Two children die from abuse and neglect every

'A conceptual framework that links both the protective and risk factors identified by research on maltreatment'

'Are there intrinsic obstacles to developing sufficient understanding of the causes of maltreatment to produce accurate prediction?'

week in Germany and the United Kingdom, three a week in France, four a week in Japan, and 27 a week in the United States.' (UNICEF, 2003)

Variations in how deaths are categorised in different countries create some uncertainty in the statistics. The UK, for example, has a death rate of 0.4 per thousand children (ranking it 6th lowest in the group) when only deaths categorised as due to maltreatment are included, but this rises to 0.9 (putting it 14th lowest) if deaths categorised as 'of undetermined intent' are included (UNICEF, 2003).

Although definitive statistics regarding the extent of the issue in the UK are problematic, we do have some underpinning figures. Drawing on the latest published government statistical documents for England, we know that around 46 700 children are currently subject to a child protection plan. This means that they have been deemed officially to be suffering or at risk of suffering harm from maltreatment (Department for Education, 2010). Nearly half of these (45%) are recorded under the category of neglect (Department for Education, 2010). Many more go unnoticed: child maltreatment is known to be both under-reported and under-recorded. Every year around four to 16 per cent of children experience physical abuse, ten per cent are neglected and five to ten per cent sexually abused, yet less than a tenth of these appear in substantiated child maltreatment records (Gilbert *et al.*, 2009). Analysis of trends in six developed countries shows no consistent evidence of a decrease in maltreatment and, whilst differences exist between countries in relation to contact with child protection services, rates of violent deaths and maltreatment injuries remain about the same (Gilbert *et al.*, 2012).

Aside from government statistics, an alternative source of information is from empirical studies asking young people about their childhood experiences. Recent survey reports indicate that one in four young adults reports having been maltreated in childhood (Radford *et al.*, 2011).

The UK trends in violent child deaths seem to have fallen slightly over the last 30 years but they remain static in adolescence and are not recorded reliably enough to know how many violent deaths there actually are each year (Sidebotham *et al.*, 2012). In the UK, there is no single source of data for the number of children who are killed at the hands of another person, although reliable estimates are derived from the Home Office homicide statistics (Smith *et al.*, 2011) and mortality figures from the Office for National Statistics (2011) and the Department for Education (2011). Those aged under one year are most at risk: they are eight times more likely to be killed than older children (Smith *et al.*, 2011).

The scale and severity of the problem have prompted strong responses both in the research world and in professional practice. Numerous studies have sought to identify the common factors in the perpetrators, victims, or circumstances of maltreatment so that it becomes more possible to predict which children are at risk and take steps to prevent the harm from occurring. Professionals have found themselves charged with increased responsibilities to predict and prevent maltreatment, both by public opinion and by policy makers (Parton, 2006; Waldfogel, 2007). The charge is intensified by the growing case for prevention and early intervention instead of offering help only when serious maltreatment has occurred. This is prompted by the moral case that it is better for children to suffer as little as possible and also by the

'Variations in how deaths are categorised in different countries create some uncertainty in the statistics'

'Reports indicate that one in four young adults reports having been maltreated in childhood'

'Evidence that professionals are better able to prevent further maltreatment at early stages'

growing body of evidence that professionals are better able to prevent further maltreatment at early stages than to make families safe enough once the child has suffered severe harm (Munro, 2010). Professionals have therefore turned to researchers with urgent demands for help to meet these challenges.

Looking for Causes

Some progress has been made in understanding the causal pathways that lead to maltreatment, but it is limited. One of the challenges in child protection research is that large-scale trials or epidemiological studies are fairly rare and understanding of the phenomenon is limited. In the same way that someone might say that their father smoked 90 cigarettes a day until he was 85-years old and that smoking never did him any harm, similarly nuanced arguments are often used in child protection (e.g. 'I was smacked as a child and it didn't do me any damage'). However, we know that generalisations about smoking at an individual level are erroneous – there will always be exceptions – but we have enough convincing evidence about cancers, lung disease and cardiac damage to be persuaded at a population level about the harmful effects of tobacco inhalation.

'Evidence about the long-term harms caused by childhood maltreatment is likewise increasingly compelling'

The evidence about the long-term harms caused by childhood maltreatment is likewise increasingly compelling. The Adverse Childhood Experiences (ACE) Study is one of the largest investigations ever conducted on the links between childhood maltreatment and later-life health and wellbeing (Anda and Felitti, 2010). ACE are defined as experiences that represent medical and social problems of national importance, including childhood abuse and neglect, growing up with domestic violence, substance abuse or mental illness in the home, parental loss, or crime. Some 18 000 participants to date have undergone a comprehensive physical examination and provided detailed information about their childhood experience of abuse, neglect and family dysfunction. Participants are followed for a minimum of ten years. The study's premise is that risk factors for many common diseases, such as smoking, alcohol abuse and sexual behaviours, are not randomly distributed in the population and indeed risk factors for many chronic diseases tend to cluster (Anda and Felitti, 2010).

The ACE Study has progressively uncovered how childhood stressors are related strongly to the development and prevalence of risk factors for disease and health and social wellbeing throughout the lifespan. So, for example, in a study on lung cancer, mortality and morbidity were not just related to increased smoking behaviours, but strongly correlated also with the ACE listed previously (Brown *et al.*, 2010). Further, two or more ACE show a 70 per cent risk of hospitalisation for autoimmune disease (Dube *et al.*, 2009) and there are many other linkages, such as prescription drug use (Anda *et al.*, 2008a), chronic obstructive pulmonary disease (Anda *et al.*, 2008b) and poorer health-related quality of life (Corso *et al.*, 2008).

'Two or more ACE show a 70 per cent risk of hospitalisation for autoimmune disease'

Work on poly-victimisation in the USA shows the same kind of trends. Where children experience four or more kinds of victimisation in their childhood, they demonstrate increased trauma symptoms than repeated episodes of the same kinds of abuse (Finklehor *et al.*, 2007). So, if we can identify and target potentially modifiable connections between child abuse

and adult health, it may help reduce the lifelong burden of childhood violence (Springer, 2009).

As demonstrated then, there is increasing recognition that single risk factors alone are not necessarily harmful in and of themselves. A safety network can be put in place around a child whose parent has a problematic drug habit, using grandparents, for example. But when a number of risk factors come together, the risk gradient sharpens exponentially. The key is that 'multiples matter' (Spratt, 2012). Defining a weighting between multiple adversities or identifying which risk factors, for which children and under what circumstances, however, is much trickier.

'When a number of risk factors come together, the risk gradient sharpens exponentially'

Risks and Risk Factors: Models and Predictive Instrumentation

On the basis of the many studies that exist about risk factors, there have been considerable efforts to create models of risk and prediction in child protection to facilitate professional practice. Indeed, encouragement to do this has become standard in policy documents, where there are expectations on professionals to predict and prevent harm (Taylor *et al*., 2008).

Actuarial and consensus-based risk instruments have been developed and used in many jurisdictions, especially in the USA. However, most have not been tested and those that have reveal levels of specificity and sensitivity that are so low that they raise questions about the ethics of using them in practice (Munro, 2004; Peters and Barlow, 2003; Taylor *et al*., 2008). Studies have listed the characteristics of those who are identified as perpetrators of abuse (e.g. living in poverty, history of abuse in own childhood, parental mental ill-health, domestic abuse, substance misuse, teenage parenthood) and of victims (babies under one-year old and disabled children are at increased risk). (See, for example, Centers for Disease Control and Prevention, 2011; US Department of Health and Human Services, 2012). Lists vary in content and differ in length, with most offering little advice on how factors should be weighted. A systematic review on recognition and response to child neglect identified 74 different risk measurement tools across just 63 studies (Daniel *et al*., 2009), making comparisons difficult. The most widely used included the Child Abuse Potential Inventory, the Child Well-Being Scales and the Child Behavior Checklist.

'Studies have listed the characteristics of those who are identified as perpetrators of abuse'

To what extent can we hope that more research will solve these problems and improve accuracy enough to make risk instruments ethically as well as practically usable? There are some seriously complicating factors. First, the very concept of maltreatment is ambiguous. It is socially constructed with variations over time and between cultures. For example, severely beating a child was acceptable parenting in the UK in the first half of the 20th century but is now seen as abusive and has been made illegal. Child marriages are still culturally acceptable in many parts of the world, while seen as a form of sexual abuse in others. Therefore, researchers are limited on the range of evidence that they can draw on, since data from different countries will not be strictly comparable. Cultural variation applies also to the factors that make maltreatment more likely. For example, in Lebanon, the main maltreatment risks to children include the politicisation of children and child labour (UNICEF, 2010), factors that are more peripheral for children in the USA or UK perhaps.

'The very concept of maltreatment is ambiguous'

'Possibly only a minority of cases are known to the official child protection system'

'We largely do not know why some people hurt children, when others in similar circumstances do not'

'Resilience is an important concept because it acknowledges each individual's unique developmental trajectory'

Another complicating factor is that researchers must, from necessity, study only known cases of maltreatment and it is not clear how representative this sample is of the general population. Earlier we cited statistics on incidence that showed that possibly only a minority of cases are known to the official child protection system, with the sample being biased toward those in low-income families (Cawson *et al.*, 2000). Any risk instrument developed from the sample known to child protection services will absorb the income bias. If future practice is premised on cases identified by the instrument, then the bias will be compounded.

A third complicating factor is that risk factors appear to be neither necessary nor sufficient conditions for maltreatment to occur. Whilst most perpetrators of sexual abuse, for example, were abused themselves as children (Cawson, 2002), it cannot be a sufficient condition for becoming an adult perpetrator of abuse, because most children who have been abused do not become adult abusers (Harris and Dersch, 2001). Nor can it be a necessary condition since many perpetrators are *not* themselves victims of sexual abuse (Simons *et al.*, 2008).

Overall, there are a complex range of factors associated with the 'chances' of someone maltreating children and the truth of the matter is that largely we do not know why some people hurt children, when others in similar circumstances do not. The development of psychometric typologies in the sexual abuse arena shows promise in understanding the motivation and potential treatment of sex offenders (Finkelhor, 1991; Mandeville-Norden and Beech, 2009; Robertiello and Terry, 2007), but for physical abuse, neglect and emotional abuse, contributing factors and parental characteristics are far more diverse and most parents show strong commitment to their children even when they are involved in care proceedings (Thoburn *et al.*, 1995). The families known to child protection services tend to have a high incidence of domestic abuse, substance misuse and parental mental ill-health: Recent analysis of serious case reviews (undertaken in England when a child has died or there has been a 'near miss') showed that over half the children lived with current or past domestic abuse, almost two-thirds lived in a household where a parent or carer had a mental illness and a substantial number of parents were misusing drugs or alcohol (Brandon *et al.*, 2009). However, the mechanisms by which these factors come into play remain unclear.

A final complication to understanding the causes of maltreatment comes from the growing body of research studying resilience factors. Resilience is a term that describes the product of a combination of coping mechanisms in the context of adversity (Daniel *et al.*, 2008). Evidence from longitudinal studies indicates that a large proportion of children recover from short-lived childhood adversities with little detectable impact in adult life (Bifulco, 2013; Newman and Blackburn, 2006). Resilience is an important concept because it acknowledges each individual's unique developmental trajectory (Daniel *et al.*, 2008). It calls upon us to be cognisant that poor early experiences do not necessarily 'fix' a child's future trajectory (Newman, 2004). Resilient children are better equipped to resist stress and adversity, cope with change and uncertainty and to recover faster and more completely from traumatic events or episodes (Newman and Blackburn, 2011). Resilience is best seen as normal child development under difficult conditions (Bifulco, 2013), but identifying this prospectively or quantitatively in order to add to predictive models is beyond current research capability.

In summary, there have been major efforts to create models of risk and prediction in child protection, yet it remains an imprecise science with ethical, methodological and theoretical flaws (Taylor *et al*., 2008). Predictive tools have very low specificity and sensitivity (Peters and Barlow, 2003), raising ethical concerns about how they are used (Munro, 2004). The ambiguity of the concept of maltreatment, temporally and geographically, limits the comparability of data. There are discrepancies between substantiated cases and non-substantiated and unknown cases. Risk factors appear to be neither necessary nor sufficient conditions for maltreatment to occur. Finally, some children are more resilient than others.

We now turn to philosophy to help us make sense of the complex causation of maltreatment and consider how a clearer understanding can illuminate discussion of policy and practice.

INUS Conditions and Maltreatment

Mackie's (1965) philosophical work can be applied to address the issue of how we are to think of the factors that we cite as risk or protective factors for maltreatment. He postulated that when asked about a cause, we are usually tempted to say that it is 'an event that precedes the event of which it is the cause, and is both necessary and sufficient for the latter's occurrence' (p. 245). He argued, however, that this account of the causal statement needs modification. Thus, he proposed the 'INUS condition'; the underpinning assumption of which, is that effects have a plurality of causes.

Mackie used the example of a house fire to explain the concept. Investigators of a house fire may conclude that it was caused by an electrical short circuit. But when they talk of 'cause', what do they actually mean? They are not saying that the short circuit was a necessary condition for the house fire, because it could also have been caused by many things, for example, an overturned oil stove. Equally, the experts are not saying that the short circuit was a sufficient condition for the fire, because if the short circuit had occurred and there had been no flammable material nearby, then the fire would not have occurred. Mackie explains that there is a set of conditions, including the presence of flammable material that, combined with the short circuit, constituted a complex condition that was sufficient to 'cause' the house fire. It was sufficient – but not necessary – because the fire could have started in another way. The short circuit was an indispensible part of this particular complex condition because the fire would not have started without it. However, it is just a part, and not the whole, of a sufficient condition. It is thus part of a complex sufficient (but not necessary) condition of the fire. This whole sufficient condition is not necessary, since another cluster of conditions could have produced the fire, such as a discarded cigarette on flammable material. In this example, the 'cause' is an INUS (Mackie, 1965). Hence, it is in fact an *INUS* condition.

The research on the causes and effects of child maltreatment produces findings that fit Mackie's concept of INUS conditions. Being a substance-misusing mother, for example, is neither a necessary nor a sufficient condition for maltreating your child but it is a factor that is found more frequently than average in families where maltreatment occurs. High IQ provides no guaranteed protection against the adverse impact of suffering maltreatment but, when

> 'Predictive tools have very low specificity and sensitivity'

> 'He proposed the 'INUS condition'; the underpinning assumption of which, is that effects have a plurality of causes'

> 'Research on the causes and effects of child maltreatment produces findings that fit Mackie's concept of INUS conditions'

present, fewer than average victims will experience long-term adverse effect (Fonagy *et al*., 1994).

What we term an 'INUS pie' offers a simple way of visualising this complex interplay of factors. People's intuitive understanding of probabilities is very poor (Kahneman *et al*., 1982) but this visual aid might be useful for practitioners thinking about particular individuals or families, or in explaining or understanding the complexities of risk to others. For example, we see their potential use as a pedagogical tool with students or newly qualified practitioners, or as a discussion point at case conferences, preventing practitioners from falling into a simple determinism that leads to an over- or underestimation of families' ability to improve. They could also serve as a useful communication aid with families, in assisting discussions about risk and protection.

'The whole INUS pie is the '*sufficient* condition"

The whole INUS pie is the '*sufficient* condition'. It is *sufficient* in the sense that it can bring about the effect (adult perpetration). However, this happens if (and only if) all the constituent parts are present. Each *sufficient* condition is made up of *insufficient*, but *non-redundant* parts. They are *non-redundant* because, if they are removed, abuse will not occur. They are also *insufficient*, because none of these parts by themselves will result in adult perpetration. So, for example, Group A members are people who have abused a child because all the factors indicated are present at the same time (Figure 1).

In this *particular* context, for this *particular* group (Group A), all these factors are necessary to bring about the outcome of becoming an adult perpetrator of abuse. One slice of the pie is marked 'unknown factors' because the current state of knowledge does not allow us to identify all the conditions that contributed to individuals becoming an abuser. A history of child abuse is by itself insufficient to cause the effect. It requires all the other factors to be present at the same time in order to 'cause' the abuse. This fits with the observation that some people go through periods of abusing then not abusing; at some times, some factors will be missing and, at other times, present. So, in the same way as the short circuit was an indispensible part of the house fire but not the sole reason for it, a childhood history of abuse is only ever a part of a

'A history of child abuse is by itself insufficient to cause the effect'
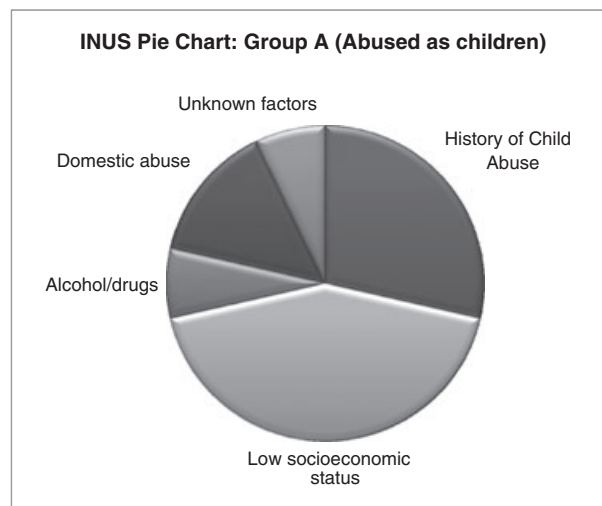
Figure 1. Group A.

sufficient condition. Practitioners are well aware that context is important and INUS mapping can be helpful in conceptualising this.

However, research findings do not lead to the simple conclusion that the factors that are present for Group A are applicable to all. The conditions vary between individuals, as demonstrated in Group B (Figure 2). Group B members are people who have not been abused as a child, but a different set of '*insufficient but non-redundant*' factors combine to lead to adult perpetration.

For Group B, a different set of factors are associated with being a perpetrator of abuse. Group B members were not abused as a child, but a number of factors combine to create an environment for perpetration of abuse to occur *in these particular people*.

INUS pies can also illustrate how someone can have many of the factors that appear in abusive adults yet, when they co-exist with other factors, they do not lead to abuse. For Group C (Figure 3), the positive relationship with the grandmother, for instance, may have produced a degree of resilience that counters the influence of the risk factors and so this person has not become a perpetrator. In practice, it is important always to think about protective factors as well as risk factors for maltreatment since interventions can seek to help the child by increasing resilience as well as reducing risk.

Implications for Policy and Practice

This account of probabilistic causality illustrates the scale of the task that we are facing in predicting who will maltreat children and what will be the impact. Research to date has helped to identify some of the factors that make becoming an abuser more or less likely or make a victim more or less likely to suffer long-term harm. However, the overall picture is of a complex chain of causation and we currently have limited ability to make predictions about individuals. When we consider how much extra information is needed to build up the full set of necessary parts to create a sufficient condition, it raises serious doubts about the extent to which we can ever hope to have accurate prediction.

> '*For Group B, a different set of factors are associated with being a perpetrator of abuse*'

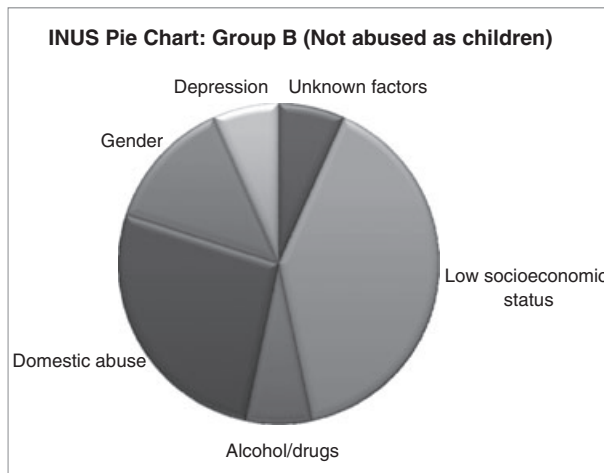> '*Research to date has helped to identify some of the factors*'

INUS Pie Chart: Group B (Not abused as children)

Depression   Unknown factors

Gender

Low socioeconomic status

Domestic abuse

Alcohol/drugs

Figure 2. Group B.

Figure 3. Group C.

This more modest view of what research can offer has significant implications for how much help policy makers and practitioners should expect from it.

The repeated exhortations to child protection services to predict and prevent maltreatment, and the associated blame when they fail to do so, should be replaced with more modest expectations. In many countries, there is an increasing focus on early intervention to improve children's outcomes. While this is to be encouraged, it is important that the individual families receiving help are not stigmatised on the basis that they have some characteristics that, at times, form part of the causal chain leading to being abusive.

In practice, there are many actuarial tools being used in child protection jurisdictions (Daniel *et al*., 2009) and there is a danger of them being misused if people overestimate their ability to make accurate predictions (Munro, 2004). While the creators of these tools may recommend their use as a guide only, in practice, they are used by some to determine decisions about how to manage the case (Gillingham, 2011). The decisions that practitioners have to make are difficult both intellectually and emotionally. Deciding that a parent cannot keep custody of their child, for instance, requires a complex weighing up of the risks and benefits of both leaving the child with the birth family and placing them in out-of-home care. It is also a painful conclusion to reach and to put into practice, causing anguish to the family members. It may therefore be tempting to avoid responsibility and place the onus on the 'tool' that dictates that this is the right decision to make. However, over-confidence in the decision may not only be unjustified at that decision point, but have harmful consequences later in case management. Evidence that challenges the judgment that the parent was abusive may be dismissed without serious consideration.

Also, in terms of practice, predictions need to be made about which parents will be abusive or which victims need most help. Knowing that a parent has been abusive does not determine that they will continue to be abusive. Who is capable of change? Who is capable of change if specific help is offered to them? These are the difficult predictions that child protection workers have to make. Many working in this field understandably hope to develop sufficient
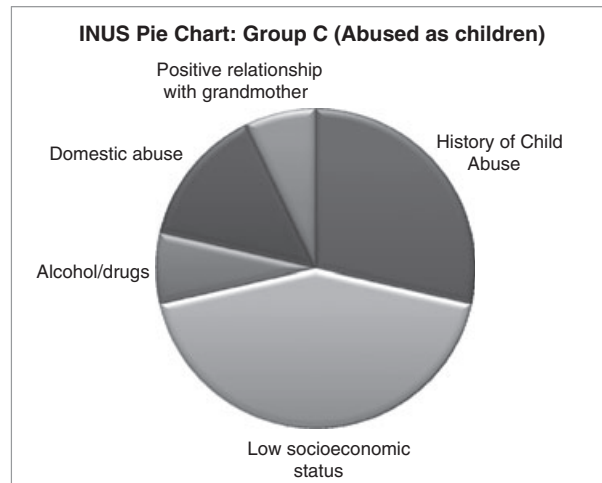
'It is important that the individual families receiving help are not stigmatised'

'Predictions need to be made about which parents will be abusive or which victims need most help'

understanding to be able to construct predictive instruments that will allow us to identify future abusers or re-abusers. Indeed, current policy in many countries seeks to identify 'high risk' parents and target them with preventive or early intervention services. However, the INUS pie helps to illustrate the complexity of the causal chain. Slight differences, either adding risk or protective factors, can tip the balance to a different outcome.

A more complex view of causality also raises questions about the wisdom of 'payment by results' (PBR), a growing trend in the UK, where a commissioning body agrees to fund a provider on the basis that they will achieve particular agreed user outcomes, rather than deliver particular service outputs. For example, the Department for Education has started trials of using PBR for Sure Start Children's Centres. In a letter to the Directors of Children's Services, the Director-General, Children, Young People and Families (Jeffery, 2011) said,

> '…the Government wants to use payment by results to incentivise a focus on the proposed core purpose of children's centres: to improve child development and school readiness among young children and to reduce inequalities. This includes identifying, reaching and supporting the most disadvantaged families to improve their parenting aspirations and skills and to promote family health and life chances. It will be crucial to explore the potential to join up with other payment by results schemes being developed across Government.'

This approach appears to make a simple inference from a failure to achieve a result to judging the intervention as a failure. However, it may be that the intervention successfully altered the INUS condition it was aimed at but, in a particular case, other new factors then entered the picture and the set of conditions produced failure. The short-term judgment may be of failure but, in the long term, the failure may be reversed. If the negative factors disappear, then the impact of the intervention may be part of the sufficient condition for success.

The importance of factors that may have no visible short-term effect but have long-term consequences is underestimated in the PBR policy but clearly understood in the appreciation of how adverse experiences in early childhood may not show up in adverse effects for many years. They are conditions that only contribute to a sufficient condition for a negative effect once the child has got old enough for the other necessary conditions to come into play.

Both poor parenting and good preventive services may lay down the conditions that influence a child's development later, whether negative or positive. Short-term judgments about human behaviour can be misleading in the long term. Long-term follow-up is needed to gain greater understanding of the complexity of human development. Looking to future methodological developments, child protection research is increasingly making use of large datasets that follow cohorts for many years, and exploring ways of making data linkages between different systems. There is potential to use INUS pies in explaining risk and protective factors in temporal and geographical clusters.

Conclusions

In this article, we have offered a conceptual framework for understanding causal pathways in child abuse and neglect, inspired by the philosophical work of Mackie (1965) and his work on the INUS. We have used this to unpick the

'Questions about the wisdom of 'payment by results' (PBR), a growing trend in the UK'

'If the negative factors disappear, then the impact of the intervention may be part of the sufficient condition for success'

'We have offered a conceptual framework for understanding causal pathways in child abuse and neglect'

challenging intricacies in relationships between the various factors that are known to be associated, to some degree, with maltreatment; and between these factors and the resilience factors that appear to reduce risk. INUS provides us with a framework to begin to understand these associations and connections in a visual and conceptual way.

The positive aspect of using INUS conditions in relation to child maltreatment is that it takes into account the multiplicity of factors that combine to create an environment in which abuse may occur. This emphasises the potential for intervening to suppress risk factors and enhance resilience factors and gives some grounds for optimism that the problem of maltreatment can at least be reduced.

'Some grounds for optimism that the problem of maltreatment can at least be reduced'

References

Anda R, Felitti V. 2010. The Adverse Childhood Experiences (ACE) Study [Online]. Available: <URL>www.acestudy.org/ [2 June 2010].

Anda R, Brown D, Felitti V, Dube S, Giles W. 2008a. Adverse childhood experiences and prescription drug use in a cohort study of adult HMO patients. *BMC Public Health* **8**: 198.

Anda R, Brown D, Dube S, Bremner J, Felitti V, Giles W. 2008b. Adverse childhood experiences and chronic obstructive pulmonary disease in adults. *American Journal of Preventive Medicine* **34**: 396–403.

Bifulco A. 2013. Risk and resilience in young Londoners. In Treating Traumatized Children: Risk, Resilience and Recovery, Brom D, Horenczyk RP, Ford J (eds). Routledge: London. In press.

Brandon M, Bailey S, Belderson P, Gardner R, Sidebotham P, Dodsworth J, Warren C, Black J. 2009. Understanding Serious Case Reviews and their Impact. A Biennnial Analysis of Serious Case Reviews 2005-2007. Department for Children, Schools and Families: London.

Brown D, Anda R, Felitti V, Edwards V, Malarcher A, Croft JB, Giles W. 2010. Adverse Childhood Experiences and the Risk of Lung Cancer. *BMC Public Health* **10**: 20.

Butchart A, Harvey AP, Fumiss T. 2006. Preventing Child Maltreatment: A Guide to Taking Action and Generating Evidence. WHO and ISPCAN: Geneva.

Cawson P. 2002. Child Maltreatment in the Family: The Experience of a National Sample of Young People. NSPCC: London.

Cawson P, Wattam C, Booker S, Kelly G. 2000. Child Maltreatment in the United Kingdom: a Study of the Prevalence of Child Abuse and Neglect. NSPCC: London.

Centers for Disease Control and Prevention. 2011. Child Maltreatment: Risk and Protective Factors [Online]. Available: <URL>http://www.cdc.gov/ViolencePrevention/childmaltreatment/riskprotectivefactors.html [18 March 2011].

Corso P, Edwards V, Fang X, Mercy J. 2008. Health-related quality of life among adults who experienced maltreatment during childhood. *American Journal of Public Health* **98**: 1094–1100.

Daniel B, Vincent S, Glover J, Robinson B, Vaughan L, Duffy M, Farrall E, Arney F, Lewig K, Michaux A. 2008. How is the Concept of Resilience Operationalised in Practice with Vulnerable Children? Final Report to the British Academy and the Australian Centre for Child Protection. University of Stirling, Stirling.

Daniel B, Taylor J, Scott J. 2009. Noticing and Helping the Neglected Child Literature Review [Research Brief DCSF-RBX-09003]. Department for Children, Schools and Families: London.

Department for Education. 2010. Children in need in England, including their characteristics and further information on children who were the subject of a child protection plan (Children in need census, final) year ending 31 March 2010. Department for Education: London. Available: <URL>http://www.education.gov.uk/rsgateway/DB/STR/d000970/osr28-2010.pdf

Department for Education. 2011. Child Death Reviews Completed in England: Year Ending March 2011 [Online]. Available: <URL>http://www.education.gov.uk/rsgateway/DB/STR/d001015/index.shtml [20 September 2011].

Dube S, Fairweather D, Pearson W, Felitti V, Anda R, Croft J. 2009. Cumulative childhood stress and autoimmune disease. *Psychosomatic Medicine* **71**: 243–250.

Finkelhor D. 1991. Child Sexual Abuse. In Violence in America. A Public Health Approach, Rosenberg M, Fenley MA (eds). Oxford University Press: New York; 79–94.

Finklehor D, Ormrod RK, Turner H. 2007. Poly-victimization: A neglected component in child victimization. *Child Abuse & Neglect* **31**: 7–26.

Fonagy P, Steele M, Steele H, Higgit A, Target M. 1994. The theory and practice of resilience. *Journal of Child Psychology and Psychiatry* **35**: 231–257.

Gilbert R, Widom CS, Browne K, Fergusson DM, Webb E, Janson S. 2009. Child Maltreatment 1: Burden and consequences of child maltreatment in high-income countries. *The Lancet* **373**: 68–81.

Gilbert R, Fluke J, O'Donnell M, Gozalez-Izquierdo A, Brownwell R, Gulliver P, Janson S, Sidebotham P. 2012. Child maltreatment: Variation in trends and policies in six developed countries. *The Lancet* **379**: 758–772.

Gillingham P. 2011. Decision-making tools and the development of expertise in child protection practitioners: are we 'just breeding workers who are good at ticking boxes'? *Child and Family Social Work* **16**: 412–421.

Harris, Dersch D. 2001. "I'm Just Not Like that": Investigating the intergenerational cycle of violence. *The Family Journal* **9**: 250–258.

Horton R. 2003. The neglect of child neglect [Editorial]. *The Lancet* **361**: 443.

Jeffery T. 2011. Payment by Results for Sure Start Children's Centres [Letter from Dept for Education to Directors of Children's Services] [Online]. Available: <URL>http://media.education.gov.uk/assets/files/pdf/t/tom%20jeffery%20letter%20to%20dcss%209%20june%202011.pdf [1 May 2012].

Kennedy I. 2010. Getting it Right for Children and Young People: Overcoming Cultural Barriers in the NHS so as to Meet Their Needs. Department of Health: London.

Mackie JL. 1965. Causes and conditions. *American Philosophical Quarterly* **2**: 245–264.

Mandeville-Norden R, Beech AR. 2009. Development of a psychometric typology of child molesters: implications for treatment. *Journal of Interpersonal Violence* **24**: 307–325.

Munro E. 2004. A simpler way to understand the results of risk assessment instruments. *Children and Youth Service Review* **26**: 881–891.

Munro E. 2010. The Munro Review of Child Protection. Part One: A Systems Analysis. Department for Education: London.

Munro E. 2011. The Munro Review of Child Protection. Final Report - A Child-Centred System. Department for Education: London.

Newman A. 2004. What works in building resilience? Barnardo's: London.

Newman A, Blackburn S. 2006. Transitions in the Lives of Children and Young People: Resilience Factors. Report for Scottish Executive Education and Young People Research Unit. Edinburgh.

Office for National Statistics. 2011. Child Mortality Statistics: Childhood, Infant and Perinatal 2009 [Online]. Available: <URL>http://www.ons.gov.uk/ons/rel/vsob1/child-mortality-statistics--childhood--infant-and-perinatal/2009/index.html [20 September 2011].

Parton N. 2006. Safeguarding Childhood: Early Intervention and Surveillance in a Late Modern Society. Palgrave Macmillan: Basingstoke.

Peters R, Barlow J. 2003. Systematic review of instruments designed to predict child maltreatment during the antenatal and postnatal periods. *Child Abuse Review* **12**: 416–439. DOI: 10.1002/car.821

Radford L, Corral S, Bradley C, Fisher H, Bassett C, Howat N, Collishaw S. 2011. Child cruelty in the UK 2011 - An NSPCC study into childhood abuse and neglect over the past 30 years. NSPCC: London.

Robertiello G, Terry KJ. 2007. Can we profile sex offenders? A review of sex offender typologies. *Aggression and Violent Behavior* **12**: 508–518.

Sidebotham P, Brandon M, Powell C, Solebo C, Koistinen J, Ellis C. 2010. Learning from Serious Case Reviews. Report of a Research Study on the Methods of Learning Lessons Nationally from Serious Case Reviews. Department for Education: London.

Sidebotham P, Atkins B, Hutton J. 2012. Changes in rates of violent child deaths in England and Wales between 1974 and 2008: An analysis of mortality data. *Archives of Disease in Childhood* **97**: 193–199.

Simons A, Wurtele D, Durham R. 2008. Developmental experiences of child sexual abusers and rapists. *Child Abuse & Neglect* **32**: 549–560.

Smith K, Coleman K, Eder S, Hall P. 2011. Homicides, firearms offences and intimate violence 2009/2010: Supplementary volume 2 to crime in England and Wales 2009/2010. Home Office: London.

Spratt T. 2012. Why multiples matter: Reconceptualising the population referred to child and family social workers. *British Journal of Social Work*, Early View. **42**: 1574–1591. DOI: 10.1093/bjsw/bcr165

Springer KW. 2009. Childhood physical abuse and midlife physical health: testing a multi-pathway life course model. *Social Science & Medicine* **69**: 138–146.

Taylor J, Baldwin N, Spencer N. 2008. Predicting child abuse and neglect: Ethical, theoretical and methodological challenges. *Journal of Clinical Nursing* **17**: 1193–1200.

Thoburn J, Lewis A, Shemmings D. 1995. Paternalism or partnership? Family involvement in the child protection process. HMSO: London.

UNICEF. 2003. A League Table of Child Maltreatment Deaths in Rich Countries. United Nations Children Fund Innocenti Research Centre: Florence.

UNICEF. 2010. Lebanon: Country Report. United Nations Children Fund Innocenti Research Centre: Florence.

US Department of Health and Human Services. 2012. Risk and Protective Factors for Mental, Emotional and Behavioral Disorders Across the Life Cycle [Online]. Available: <URL>http://www.childwelfare.gov/can/factors/ 25th October 2012

Waldfogel J. 2007. Welfare Reforms and Child Well-Being in the US and UK. Joint Centre for Poverty Research: London.