Multidisciplinary systematic review of the relationships between poverty and stress, low level anxiety and depression across the life course.

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Poverty, stress, low level anxiety and depression are associated in some way, but the exact nature of these relationships has not been clearly articulated. This report aims to provide further understanding of these relationships, and the influences which mediate and moderate these.

Key points:

- The relationships between poverty, stress, low level anxiety and depression are highly complex.
- There is very little direct evidence of causal relationships between the factors; with the exception of data showing that poverty causes stress.
- The relationship between poverty and anxiety/depression is largely mediated by stress.
- A large number of moderating factors act on this relationship at individual, relationship and community levels.
- A feedback loop reinforces the relationships linking anxiety and depression back to poverty.
- Interventions targeted at the individual level aimed to improve coping with living in poverty, and at the family level to promote positive parenting and family functioning.

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Executive summary

It has been known for some time that poverty, stress, low level anxiety and depression are associated in some way, but the exact nature of these relationships has not been clearly articulated. The purpose of this report is to present a systematic review and logic model of the relationships between poverty, stress, low level anxiety and depression. A logic model is a summary diagram which maps out a pathway, the potential links in the pathway, and the anticipated outcomes in order to develop a summarised theory of change or logic. The aim is to identify assumptions which underpin links between factors of interest, and the intended short and long term outcomes and broader impacts (Baxter 2014).

This multi-disciplinary systematic evidence review considers the main ways in which poverty and stress, low level anxiety and depression are linked in order to answer two key questions:

- Does poverty cause stress, low level anxiety and depression?
- Do stress, low level anxiety and depression cause poverty?

Systematic review methods were used to construct a logic model to help to understand the relationships between poverty, stress, low level anxiety and depression. The evidence included in the study is extensive and based on a large number of review level studies (n=68) as well as additional primary level data (n=29) from the last three years. The included papers were used to generate a typology of the reported associations between poverty, stress, low level anxiety and depression. Papers which reported on the factors which shape the pathways between these variables were also considered. The vast majority of the evidence base discusses associations between poverty, stress, anxiety and depression (and the factors which moderate these relationships) rather than considering the potential for direct causal pathways between them.

Poverty and stress: The research provides evidence that poverty causes stress, and that there is a causal link between experiencing poverty and a resultant triggering of both self-reported stress and activation of the biological stress responses. Eight papers (including seven reviews and a primary study) which reported on stress described causal relationships with poverty (which were defined by the authors as causal, or likely to be causal). The papers gave narrative discussions of causation and did not quantify the relationships. A further eight papers (five reviews and three primary studies) also reported associations between poverty and stress without giving direction to the relationship.

Stress (both in terms of self-reported measures and biological measures) can be considered a mediating factor in the relationship between poverty and anxiety and depression related outcomes. The evidence is less clear about the distinction between the impacts of experiencing long term poverty and exposure to acute or short term episodes. There is also

only very limited evidence on how the pathways are applicable in childhood, and no evidence on whether the relationships will differ for other sectors of the population (e.g. older people).

Poverty and depression/anxiety: Evidence on the relationship between poverty and low level anxiety and depression was more complex than that seen for poverty and stress. Causal links were reported between poverty (often reported as low socioeconomic status (SES)) and common mental health problems (primarily, but not specifically, anxiety and depression) in the general population in five reviews and three primarily studies, as well as specifically in reviews of childhood, adolescents, and single mothers. The available evidence did not consider anxiety and depression individually.

There is also evidence to suggest that stress, low level anxiety and depression can lead to poverty through the concept of "social drift" (the process of slipping into poverty as a result of suffering from stress, anxiety and/or depression), reported in 4 papers. Social drift is reported as an overall phenomenon, without consideration of whether any of the moderating factors which act on the relationship between poverty/stress and anxiety/depression are also relevant for the reverse pathway. In this case, the anxiety and depression an individual experiences is likely to be caused, at least in part, by factors other than poverty. However, a "reinforcing loop" created by long term poverty and cumulative exposure to stress and other risk factors can amplify the relationships seen here.

The relationships between poverty and common mental health problems are affected by a large volume of risk and protective factors (as discussed below). For this reason, the links from poverty/stress towards anxiety and depression appear to be a result, at least in part, of the way that an individual handles the stress they experience. Many of the factors which moderate this relationship are concerned with the wider societal context as well as the immediate circumstances within which the individual or family lives, and the extent to which these present additional sources of stress, or rather offer some kind of a buffer.

It appears that the quality of relationships an individual experiences plays a key role in moderating their ability to cope with the experience of poverty and the resulting stress that this causes. Family relationships (including relationships with a partner as well as parent-child relationships) are particularly important in moderating these effects, and they have the potential to impact on the mental health of both adults and children. In particular, relationship strain and family breakdown along with disrupted family functioning (where problems in communication, behaviour and family roles are experienced) are key moderating variables. Specific relationships such as being a single parent or a grandparent in a primary caring role can also have a negative impact.

It is of course likely that specific factors will be more or less important given an individual's particular circumstances and the environment in which they are living, as well as the quality of relationships that they experience. Further, in a real life rather than a research setting, in

the vast majority of cases, the risk and protective factors listed tend to co-exist in individuals, families and communities, adding a further aspect of complexity to the relationships. It is important to acknowledge that the relationships between poverty, stress, low level anxiety and depression are highly complex, and reliant upon a vast array of moderating factors, which in turn are dependent upon an individual and the circumstances in which they are living. Our logic model (Figure 7) summaries our current understanding of these complex relationships.

The main evidence gap relates to the lack of evidence on causal links between the factors known to be associated. Although a few papers reported causal relationships (particularly from poverty to stress, but also between poverty and common mental health problems), the majority of the evidence was reported at the associational level. It is challenging to anticipate how this gap could be filled given that the relationships are so complex. Demonstrating a conclusive temporal relationship between any of these factors would require further long term studies, and the use of the highest quality study designs would be challenging (for example, it would not be possible to randomise individuals to live in poverty or experience a particular life event). Existing longitudinal cohort studies to address these gaps could be relevant (e.g. The Millennium Child Cohort Study).

The identified interventions were mostly targeted at the individual level and aimed to improve ability to cope with living in poverty, or at the family level to promote positive parenting relationships and family functioning. It is important to further understand if people in poverty access interventions available to them, and if not, what it is that limits that access. It would also be beneficial to further understand the percentage of people living in poverty who report being stressed. Further data on the impact of gender and ethnicity on the relationship between poverty and mental health, as well as more up to date figures on the cost of anxiety and depression for people living in poverty would also be helpful.

Introduction

The purpose of this report is to present a systematic review and logic model of the relationships between poverty, stress, low level anxiety and depression. The report provides a brief overview of the background to the research, our methods, the results of the review, details on developing the logic model and the conclusions and implications drawn from our research.

Background and project aims

Earlier reviews have concluded that poverty in childhood affects children's cognitive, social-behavioural and health outcomes (Cooper and Stewart 2013), as well as their socioeconomic circumstances and health in adulthood (Graham and Power 2004, Gibbons and Blanden 2006). A recent review also found evidence that reduced poverty (as a result of access to additional financial resources) during adulthood makes people happier and can reduce common mental health problems such as depression and anxiety (Cooper and Stewart 2015).

There is evidence that poverty and stress, low level anxiety and depression are associated in some way, even if there is not a simple causal link. This multi-disciplinary systematic evidence review considers the main ways in which poverty and stress, low level anxiety and depression are linked. In particular, it investigates the two-way causality between poverty and stress, low level anxiety and depression in order to answer two key questions:

- Does poverty cause stress, low level anxiety and depression?
- Do stress, low level anxiety and depression cause poverty?

Understanding the direction and strength of the association (including causality) between poverty, stress, low level anxiety and depression, and the influences which mediate and moderate these is needed. It is important to understand the patterns of associations, including both the individual and contextual factors (e.g. income and prospects, relationships) as well as the social and biological aspects of the relationships. It is also necessary to consider the life course effects of poverty and the effects of prolonged periods of stress. In addition, as outcomes are not inevitable, it is important to consider policy and intervention approaches that might moderate the relationships. There are challenges in terms of terminology (particularly in relation to defining stress), measurement and study designs in exploring these relationships.

This project aimed to use innovative methods to undertake a systematic review of diverse evidence and present the findings as an evidence-based logic model. The authors believe that such an approach was needed to efficiently identify the key literature in relation to the research questions. The logic model output was intended to provide a concise summary of the available evidence as well as a model which can be used to explore the implications for effective policy and practice.

The prevalence and cost of stress, low level anxiety and depression

Over 13 million people in the UK live in low-income households (MacInnes et al. 2015). There were 3.7 million children living in poverty in the UK in 2013-14 (DWP 2015). The DWP defines a household as in relative poverty if its income is below 60% of the median household income. One in three people have experienced poverty in recent years, and 6.5% of the UK the population is living in persistent poverty (amounting to approximately 3.9 million people in 2014) (ONS 2015). Persistent poverty is defined as being in relative income poverty both in the current year and at least two out of the three preceding years.

Anxiety/depression and poverty

People in the lowest income quintile are more likely to have common mental health problems (including anxiety and depression) than those in the highest quintile, with a linear trend through the income quintiles. In the UK, women are at higher risk of mental ill health than men, with the poorest quintile at greatest risk in both genders (26 per cent of women and 23 per cent of men) and the highest at least risk (16% per cent of women and &% per cent of men) (MacInnes 2015). While men's risk of mental ill health declines as income increases (10% of the median and 7% of the richest quintile are at high risk of mental ill-health), for women, all quintiles except the bottom quintile are more or less equal in terms of high risk of mental ill-health (with just under one in six women at high risk of mental ill-health) (MacInnes 2015).

McManus et al. (2007) reported that the risks of having at least one common mental health problem is higher for White, Black and South Asian women (19.3, 21.0 and 34,3% respectively) than for White, Black and South Asian men respectively (12.0, 12.9 and 10.3% respectively). The greatest difference was among South Asian adults where the age-standardised rate among women (34.3% of South Asian women) was three times that of men (10.3% of South Asian men) (McManus 2007). Further information on the distribution across income groups by ethnicity was not found.

After adjusting for age, men in the lowest household income group were three times more likely to have a CMD than those in the highest income households (23.5% and 8.8% respectively). The variation also existed for women, but was less marked (25.0% and 17.3% respectively) (McManus et al. 2007). Of the individual disorders, depressive episodes showed the largest difference across income groups, especially among men, rising from 0.2% of men in the highest quintile to 6.9% of men in the lowest quintile (McManus et al. 2007).

Children and adults from the lowest quintile (20 per cent) of household income are more likely to have common mental health problems (including anxiety and depression) than those in the richest quintile (Green et al. 2004, McManus et al. 2007). The overall prevalence of mental disorder increases from 4 per cent among children with a parent

educated to degree level, to 17 per cent for those whose parent had no educational qualifications (Green 2004). The prevalence of common mental disorders was also greater for those living in areas classed as 'hard pressed' (15 per cent) compared with areas classed as 'wealthy achievers' or 'urban prosperity' (6 per cent and 7 per cent) (Green 2004).The proportion of children with a mental disorder was also reported to decrease from 16 per cent among families with a gross weekly income of under £100 to 5 per cent for those earning £600 a week or more (McCrone et al. 2008). It is important to note that these figures are relatively old.

Estimates from 2010 placed the annual cost of depression in England at around £7.5 billion, and anxiety £8.9 billion (RCP position statement 2010). The average annual service cost in 2007 for people in treatment for anxiety, or where their condition was at least recognised, was £1,104. Including lost employment costs brought the total to £2,402 per person (McCrone et al. 2008). For depression, the average service costs for those in contact with services were £2,085 per person in 2007, while the average cost of lost employment was £9,311 (McCrone et al. 2008).

Stress and poverty

Overall prevalence rates for stress could not be identified. However, data was available on work related stress: the professional occupations category has statistically significantly higher rates of work related stress than the overall rate for all occupations (the professional occupations category had 1930 cases per 100,000 people employed, compared with 1220 cases averaged for all occupational groups) (Labour Force Survey 2016). In comparison, the broad category of skilled and elementary trades had significantly lower rates of work related stress (560 and 640 cases per 100,000 respectively). It is interesting to note that the conclusion that stress increases higher up the occupational ladder is contrary to the trends on common mental health problems discussed above.

Available data relating to the costs and impacts of stress is also focused on work related stress rather than overall stress. Estimates placed the cost of work related stress at between £1.16 to £10 billion a year (Sainsbury Centre for Mental Health 2007, Chandola 2010, HSE, 2010/11) demonstrating the variability in the use of the term "stress",

Definitions

This work adopted inclusive definitions of poverty, stress, low level anxiety and depression and did not choose to exclude studies based on their perspectives or the definitions they used, as all evidence which could inform the logic model was included. Our working definitions are outlined as:

Poverty:

Poverty is defined by JRF as "when your resources are substantially below your needs" (Goulden and D'Arcy 2014). Poverty can be chronic or intermittent and many people move in and out of poverty (Kemp et al. 2004). Overall poverty (also known as cross-sectional poverty) is the percentage of the population that are in poverty in the current year only, without any consideration of their poverty status in earlier years (ONS 2015).Persistent poverty has been defined as being in poverty in the current year and in at least two out of the three preceding years (ONS 2015). In the absence of a reliable definition, for the purpose of this study episodic poverty was defined as moving in and out of poverty at an accelerated rate (greater than once a year). Our searches also included the terms low socioeconomic status (SES), low income, and unemployed/workless, as some of the evidence used these terms to define people living in poverty.

Stress:

Stress can be defined as an imbalance between demands and resources (Lazarus and Folkman 1984) arising when individuals cannot cope with the demands made on them (Lazarus 1966). Self-reported stress was defined as any stress which was perceived and reported by the individual experiencing it. This was in particular in contrast with the biological stress response which relates to the biological response systems that maintain equilibrium (and therefore wellbeing) within the organism. This includes the regulation of stress response hormones (Fell and Hewstone 2015) and the management of allostatic load (the adaptive regulatory process that maintains homeostasis during exposure to physical and behavioural stressors).

Anxiety and depression:

Depression is defined as a common mental health problem causing low mood, loss of pleasure, guilt, low self-worth, disturbed sleep, low energy, and poor concentration (Mentalhealth.org 2015). Low level depression has a limited negative effect on daily life.

Anxiety is defined as a feeling of unease, worry or fear (NHS 2015) associated with the thought of a threat or something going wrong (Mentalhealth.org.uk 2015). Some anxiety is a normal human experience. Problematic anxiety at low level becomes detached from an identifiable event, and begins to interfere with normal life (MIND 2015).

Common mental health problems are defined as mental health conditions that cause marked emotional distress and interfere with daily function, but do not usually affect insight or cognition (McManus 2007). They comprise different types of depression and anxiety. More than half of people with a common mental health problem present with mixed anxiety and depressive disorders, and symptoms of depression and anxiety frequently co-exist (McManus 2007).

Project design

This work assessed the links between poverty, and stress, low level anxiety and depression across the life course by undertaking a systematic review and presenting the findings in an evidence based logic model. It looked at the relationships as they play out for different age-groups or life stages, and takes a longitudinal approach, looking at how exposures at one age or life-stage might have an effect at a later age or life stage. The research questions for this project are given in Appendix 1.

Complex literature, and the evidence it presents, creates challenges as to how to effectively present review findings. A logic model is a summary diagram which maps out an intervention or process (Baxter et al. 2014) in order to develop hypothesised links or a 'theory of change between factors" (Weiss 1995), and can clarify interpretation of results when drawing policy-relevant conclusions (Anderson et al. 2011). Therefore, a logic model is an ideal means to provide a strategic perspective on complex, policy focused relationships (Blamey and Mackenzie 2007). This approach has been successfully used by the research team in previous work (Baxter et al. 2014).

To build an evidence based logic model, the project began with a synthesis of the available evidence which was then validated and refined in consultation with community and professional stakeholders. Consultation at key stages in the project helped to identify data sources, provide feedback on the evidence identified, and validate the applicability, authenticity and comprehensibility of the final logic model.

Methods

The project consisted of three elements: identifying evidence (by conducting a systematic review), synthesising and presenting findings (by developing a logic model), and ensuring validity and relevance (by consulting with community and professional stakeholders).

Inclusion criteria

In order to identify the evidence most relevant to our research questions, the following inclusion criteria were applied to select the studies to include in the systematic review:

- Population groups: no limits were placed on the studies or reviews selected in terms of their study participants or the settings in which the work was conducted. Where studies were conducted with, or report on, individuals with a clinically defined mental health condition (other than low level anxiety and depression) the suitability of each study for inclusion in the review was considered on an individual basis.
- Activities/interventions: Any intervention studies which could contribute to answering the research questions were considered along with studies of non-intervention designs.
- Comparators: Studies of any design, with or without a comparator group were considered for inclusion where the results of the study contained data that could inform the logic model. Discursive reviews were included but the potential for bias in this type of review was noted in the quality appraisals.
- Outcomes: No limits were placed on outcome measures where the study might help to answer the research questions and inform development of the logic model. All outcomes related to poverty, stress, anxiety and depression were considered as well as related outcome measures where these were also relevant. Variables could be considered as both exposures and outcomes depending on the study.

Searching for evidence

First, relevant evidence which was able to answer the research questions was requested from the consultation group. This group consisted of community and professional stakeholders. Full details of the group membership is given in the acknowledgements. In addition to evidence suggested by members of the group and topic experts within the review team, a range of bibliographic databases and additional data sources were searched. A wide range of databases and other sources were used to reflect the diversity of literature which could contribute to building the logic model.

There were four iterations of searching:

In the first instance, relevant earlier reviews were searched for. Following an examination of these review papers, a search using the same concepts, but without restriction of study type was undertaken. This search was limited to material published between January 2013 to February 2016, in order to capture primary studies which were not included in the reviews.

In addition citation searches of five key reviews were undertaken to identify further papers which have referenced these key reviews and which may not have been identified in the previous searching approaches.

Finally searches of grey literature sources such as Open Grey and the Poverty and Social Exclusion website were conducted.

Selection of papers and data extraction strategies

In the first instance the titles and abstracts of papers were screened for inclusion. Full-paper copies of the potentially relevant research articles were retrieved for further screening. At this stage, papers were either selected as relevant to the research questions, or excluded, with a specific reason given for this decision. Data extraction forms were adapted from templates used in previous similar work, and were tailored to the type of data identified. The data extractions were completed by one reviewer and a sample was checked for accuracy by a second reviewer.

The data extracted from the studies included: country of the study (or the location in which the review was undertaken), type of study, broad detail of participants (e.g. adults, children, and whole population), main results, and reported associations between elements (for use in developing the typology/logic model). It was noted whether the relationships were reported as associations or causal pathways. As the study mostly focused on review level studies, in many cases there was not sufficient information in the papers to critically appraise author assertion about causation. Where this information was lacking author assertions of causality were accepted and noted in the text. In addition, for papers reporting interventions, brief details on the intervention and its approach were included.

Data synthesis

As anticipated, the heterogeneity (variability) of study aim, design and outcome measures precluded a meta-analysis (statistical summary) of study results. The team therefore built on its members' previous methodological work and used thematic synthesis and narrative methods to summarise the key research findings within the included studies. The data was then used to develop a diagrammatic representation (logic model) of the relationships between poverty, stress, low level anxiety and depression.

Studies reporting similar research findings were grouped together to generate a typology of associations, and ultimately to form each element of the model. This grouping occurred for example, where studies reported on similar interventions, or where the same moderating factor is discussed. Data from studies has been included in several parts of the model where they are relevant.

Appraising the strength of the evidence:

The quality of study design and execution were evaluated using checklists based on work by the Critical Appraisal Skills Program (CASP 2015), the Centre for Evidence Based Management (CEBMA 2015) and Guyatt et al. (1993). A suitable checklist for each type of study design was selected. The study did not use quality as an inclusion/criterion therefore a range of types of evidence was included.

Although there is debate regarding rating of quality of individual studies, there is also considerable variation in views regarding methods for appraising strength of evidence across studies. It is argued that a higher number of papers in an area indicate not necessarily greater strength of evidence, but only that more work has been carried out. To build the logic model, volume and consistency of evidence have also been considered, alongside quality of evidence. This approach is based on work by Hoogendoorn et al. (1999) and considers strength of evidence across the literature. For each reported association in the typology, the group of evidence reporting on that association was graded as stronger (evidence from more than one high quality study), or weaker (evidence from one high quality study, or one or more lower quality studies).

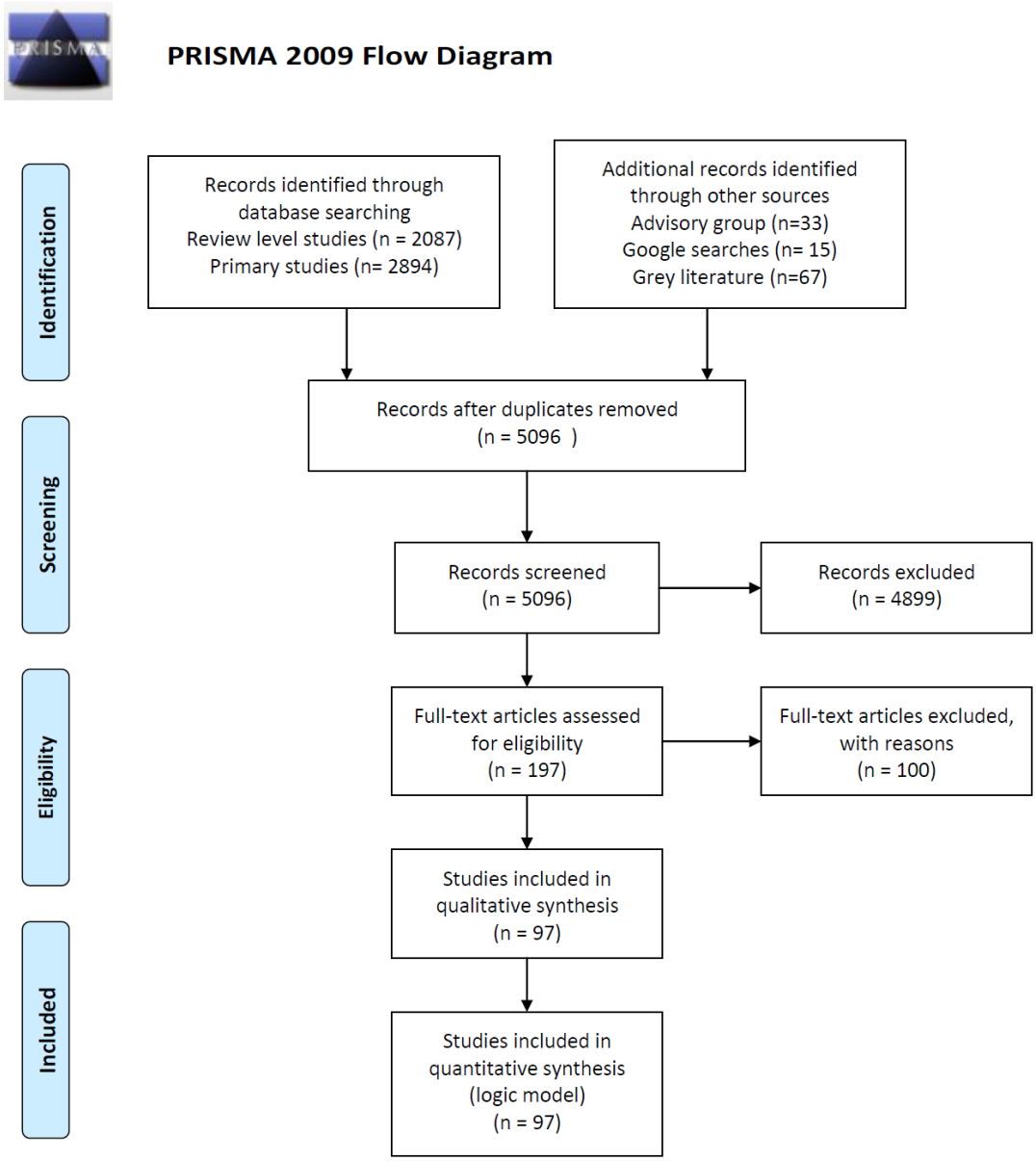
Validation and applicability of the findings:

The project began with an initial stakeholder consultation phase. Participants were provided with details of the project and asked to suggest relevant evidence. A workshop session to mind map the potential links thought to be important in the relationships between poverty, stress, anxiety and depression was also undertaken. A further period of stakeholder consultation was then undertaken to seek feedback on the identified evidence, a draft of the logic model, and the applicability of the findings. In total, 34 individuals contributed to the consultation phases. A full list of the organisations they represent is given in the acknowledgements.

Quantity of the evidence available:

In total, searches of published papers generated a database of 5096 unique papers. Of these, 197 papers were selected for consideration at the full-paper stage. Of these papers, 97 full papers were included in the review. A total of 100 papers were excluded which were obtained as full papers but were subsequently found to be outside the scope of the review. This information is summarised in Figure 1. The studies consisted of 36 discursive review papers and 32 systematic reviews (of which one employed a rapid review methodology), 28 primary studies and one website.

Figure 1. Prima Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). *P*referred *R*eporting *I*tems for *S*ystematic Reviews and *M*eta-*A*nalyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Quality of the evidence available:

Of the 187 full papers considered for inclusion, 151 were graded as being of lower risk of bias. No studies were identified from the results of the quality appraisal tools which were

clearly at higher risk of bias. However, 36 papers were discursive reviews and therefore beyond the scope of the appraisal tools. To highlight this these reviews have been labelled as (potentially) higher risk of bias as it was not possible or appropriate to complete a formal quality appraisal of these papers.

Although the higher-risk studies were not excluded from the synthesis and model, the risk of bias was accounted for in assessing the strength of evidence for each element of the model (see below).

Populations and settings:

The chosen populations of the identified reviews and studies were: whole population (n=27; 18 reviews and 9 primary studies), adults (n=45; 31 reviews and 14 primary studies), and children/adolescents (n=25; 20 reviews and 5 primary studies). Of the studies of adult populations, most included all adults (n=37), with others focusing on older adults (n=2), and parents (n=6). The six parental studies focused on all parents (n=2), single parents (n=2) and mothers (n=3) including one conducted in a post-natal population. Of the studies of child populations, most focused on all children (n=17 primary studies), with a further set of studies on adolescents (n=7; 2 reviews and 5 primary studies) and one which described their population as "families".

Of the 28 included primary study papers, eight were conducted in the UK with 14 studies from the USA. Further studies were also identified from Finland, Slovakia, Spain, Norway, The Netherlands and New Zealand (n=1 in each case). The review papers were mostly conducted by authors from the UK and USA but included primary studies from outside their home nations.

Study limitations

The scope and content of the study presented here was necessarily limited by the time and funding available in which to conduct the work. Despite taking a broad approach to inclusion criteria, these restrictions mean that limits had to be imposed on the amount of searching to undertake, and as a result, the breadth of literature to consider. The way this was approached was to undertake an analysis of review level data complemented with the most up to date primary research. Although this may have meant that some relevant papers were missed, the authors believe, given the broad range of reviews identified, that this risk has been minimised.

The study did not include any of the wider literature on poverty, stress, or anxiety/depression *per se* and focused only on the literature which considered the links between them (and the additional moderating factors in those relationships).

Results of the systematic review: developing a typology

The study completed a narrative synthesis of the identified literature and used this to build a typology of the associations and causal links which were reported between poverty, stress, low level anxiety and depression. These associations and causal links were then used to develop a logic model to outline the relationships and interactions between these factors. Where data was obtained at the review level there was often a lack of information on the strength of relationships or what it was that made a relationship causal. Further information would be obtained by going back to the original primary studies, but this was beyond the scope and resources of this work. Therefore where this information was lacking author assertions of causality were accepted and noted in the text. The References section of this report includes information on which papers were defined as systematic reviews (SR), discursive reviews (DR) or primary studies (PS).

The included papers were used to generate a typology of the reported associations between poverty, stress, low level anxiety and depression. Papers which reported on the factors which shape the pathways between these variables were also considered. Appendix 2 provides a summary of the studies grouped by association typology. The first step was to review the papers which considered direct links between two or more of the four main factors under consideration. Associations (and in some cases causal links) were reported between poverty and stress, poverty and depression or anxiety, and stress and depression. These are set out in the typology (Appendix 2a). A further body of evidence was also identified which reported on the role of potential moderating factors impacting on the relationships between stress, low level anxiety and depression in the context of poverty (Appendix 2b).

To what extent is there evidence that poverty causes or increases the amount and the nature of stress, low level anxiety and depression?

Poverty and stress:

The research provides evidence that poverty causes stress, and that there is a causal link between experiencing poverty and a resultant triggering of both self-reported stress and activation of the biological stress responses. Eight papers (including seven reviews and a primary study) which reported on stress described relationships with poverty which were defined by the authors as causal, or likely to be causal. The papers gave narrative discussions of causation and did not quantify the relationship. A further eight papers (five reviews and three primary studies) also reported associations between poverty and stress without giving direction to the relationship (Appendix 1a).

Self-reported stress: The link between poverty and self-reported stress makes sense from a pragmatic viewpoint as it is easy to understand how the experience of living in poverty is likely to be stressful for the individual where resources are substantially below needs. Low

income exposes people to stressful circumstances such as limited control and autonomy at work, and poor balance between home and work life (Benzeval et al. 2014). Although most papers did not quantify the relationship, The Good Child Report (2014) stated that children who felt poorer were twice as likely to say they were unhappy and almost three times more likely to say they had low life satisfaction.

Biological stress response: The relationship between poverty and activation of the biological stress response was discussed in three review papers (Fell and Hewstone 2015, Szanton et al. 2015, Evans et al. 2013). In low SES, adults were found to possess genetically based alterations in the regulation of stress response hormones, representing an adaptation in those whose development takes place in a deprived environment (Fell and Hewstone 2015). Allostatic load (the adaptive regulatory process that maintains homeostasis during exposure to physical and behavioural stressors) has been found to be elevated in those of low SES as compared to those of high SES (Szanton et al. 2015). Childhood poverty has also been shown to damage the mechanisms that help children manage environmental demands (Evans et al. 2013).

Stress (both in terms of self-reported measures and biological measures) can be considered a mediating factor in the relationship between poverty and anxiety and depression related outcomes as discussed below.

It is unclear from the available evidence whether differential impacts result from experiencing long term poverty as opposed to acute or short term episodes. There is also only very limited evidence on how the pathways are applicable in childhood, and evidence is not available on whether impacts vary by age, since studies did not produce age-disaggregated estimates of effect.

Poverty and depression/anxiety

Evidence on the relationship between poverty and low level anxiety and depression was more complex than that seen for poverty and stress. Causal links were reported between poverty (often reported as low SES) and common mental health problems (primary, but not specifically anxiety and depression) in the general population in five reviews and three primary studies (Appendix 1a) as well as specifically in reviews of childhood (Reiss 2013), adolescents (Quon and McGrath2014), and single mothers (Broussard et al. 2010). These studies did not examine relationships with anxiety or depression separately as individual outcomes. In addition, Ohuoha (1991) reported that poverty causes low self-esteem, which in turn leads to depression.

Of these, four papers reported data pertaining to the size of the causal relationship. These all looked at common mental health problems (including anxiety and depression) rather than anxiety or depression specifically:

- Businelle (2014) reported a causal relationship between low SES and poor mental health in their model (B = 0.647, p< 0.001)
- Evans and Cassels (2014) reported that the more time spent living in poverty from birth to age 9, the worse mental health related outcomes are for these individuals as emerging adults : more time in poverty significantly predicted externalizing symptoms (B = 2.75, SE = 1.05, p < .01) and learned helplessness (B = −0.17, SE = 0.05, p < .01).
- Quon and McGrath (2014) reported that low SES leads to poor mental health during adolescence (Fisher's Z .10).
- Hanandita and Tampubolon (2014) reported that poverty causes poor mental health although the reported changes are small: halving one's consumption expenditure raises the probability of suffering mental illness by 0.06 point; in terms of elasticity, a 1% decrease in consumption brings about 0.62% more symptoms of common mental health problems; therefore highlighting the effect of experiencing new or short term poverty.

In addition, a much larger body of evidence reporting an association between poverty (most usually low SES) and common mental health problems or depression/anxiety was found (Appendix 1a).

Stress and depression/anxiety

One discursive review paper reported a direct causal relationship between stress and depression (Williams and Kurina 2002) with a further six reporting a causal link between stress and common mental health problems (including anxiety and depression) (Evans and Kim 2013, Diez Roux et al. 2011, Fell and Hewstone 2015, Thoits 2010, Cervantes and Castro 1985, Businelle 2014).

Therefore, there is again greater volume of evidence supporting a causal link between stress and common mental disorders including anxiety and depression, than between stress and low level anxiety or depression specifically. In most cases, low level anxiety and depression are a central part of this wider category and researchers have simply chosen to focus on the wider category rather than anxiety or depression. However, some papers gave poor descriptions of the operational definitions of common mental health problems in use (e.g. the use of terms such as low level mental health problems, or sub-clinical mental health, without clear definitions).

To what extent is there evidence that stress, low level anxiety and depression cause or increase poverty?

There is evidence to suggest that stress, low level anxiety and depression can also lead to poverty through the concept of "social drift" (the process of slipping into poverty as a result

of suffering from stress, anxiety and/or depression) (Fell and Hewstone 2015, Kuruvilla and Jacob 2007, Murali and Oyebode 2004, Miech et al. 1999). In these papers, social drift is reported as an overall phenomenon, without consideration of whether any of the moderating factors which act on the relationship between poverty/stress and anxiety/depression are also relevant for the reverse pathway. In this case, the anxiety and depression an individual experiences is likely to be caused, at least in part, by factors other than poverty. However, a "reinforcing loop" created by long term poverty and cumulative exposure to stress and other risk factors can amplify the relationships seen here (Fell and Hewstone 2015, Kuruvilla and Jacob 2007, Murali and Oyebode 2004, Miech et al. 1999).

What evidence is there about the risk and protective factors that relate to poverty and stress, low level anxiety and depression?

The relationships between poverty, stress and anxiety/depression are affected by a large volume of moderating factors. For this reason, the links from poverty towards anxiety and depression appear to be as a result, at least in part, of the way that an individual handles the stress they experience. Many of the factors which moderate this relationship are concerned with the wider societal context and immediate circumstances within which the individual or family lives and the extent to which these present additional sources of stress, or rather, offer some kind of a buffer. In addition, the link between poverty, stress and anxiety and depression has been found to vary by some individual level factors.

It was hypothesised that differential risk factor exposure over the life course results in cumulative disadvantage (Seabrook and Avison 2012). Therefore these moderating factors are all likely to interact to some extent (and vary from person to person depending on their individual circumstances).

Some of these moderating factors are also causes of poverty (e.g. worklessness) whereas others are more likely to be a specific consequence of poverty (eg. low self-esteem, housing insecurity). In addition some of the factors arise independently of the links with poverty, stress, anxiety and depression (e.g. loneliness). Here we have reported the factors as they appeared in the original papers reviewed, giving a moderating focus.

It is important to note that, given the evidence base identified, it is not possible to definitively identify whether any of these key moderating factors have a greater impact on the relationships between poverty and stress, low level anxiety and depression than others. It is of course likely that specific factors will be more or less important given an individual's particular circumstances and the environment in which they are living, as well as the quality of relationships that they experience. Further, in a real life rather than a research setting, in the vast majority of cases, the risk and protective factors listed tend to co-exist in individuals, families and communities, adding a further aspect of complexity to the relationships.

The study has attempted to group the factors to bring some clarity to the complex nature of the evidence. The moderating factors have been grouped as those which look at: coping with stress caused by living in poverty; social and family networks; neighbourhood effects; employment and finances; child factors; and demographics.

Coping with poverty and stress

A number of papers reported on moderating factors which reflected aspects of ability to cope with the stress caused by living in poverty (often described as taking a positive approach to managing stress, or having a positive outlook on life). There is a potential problem of conceptual clarity given that an inability to cope may be an alternative way of saying that a situation is experienced as stressful (interpreting stress as a sign of not being able to cope with the situation). However the outcomes have been reported as described in these papers. Discursive reviews also discussed that living in poverty was reported to result in feeling of shame (Walker and Chase 2015, Kuruvilla and Jacob 2007), and pride was shown to be associated with increased resilience or increased difficulties in coping, depending on the individual (Perry 2015). These terms may also relate to both stress and the ability to cope with stress.

Two review papers reported directly that low SES resulted in poor ability to cope with stress (Myers 2009, Benzeval et al. 2014). In addition, having good coping strategies was associated with the ability to manage stress in two reviews and a primary study (Williams and Kurina 2002, Culpin et al. 2015, Evans and Kim 2013). The ability to cope was also described in the literature as:

- having a positive attitude or approach (Fischer and Boer 2011, Perry 2015, Ohuoha 1991, Murali and Oyebode 2004, Haushofer and Fehr 2014, Turunen and Hiilamo 2014 , Salami and Walker 2014)
- having high cultural, interpersonal and intrapersonal resources (not further described) (Myers 2009)
- social competence (possessing adequate social skills) (Grant et al. 2006)

Social and family networks

It appears that the quality of relationships an individual experiences play a key role in moderating their ability to cope with poverty and the resulting stress that this causes (Lau 2002, Abrahams and Curran 2007, Samaan 2000), Brody et al. 2014). Strong social networks are particularly associated with reduced stress in previously socially isolated individuals (Belle and Doucet 2003, Attree 2002).

Family relationships (including relationships with a partner as well as parent child relationships) are particularly important in moderating these effects, with the potential for impact on the mental health of both adults and children. Family SES was also associated with parental emotional wellbeing and parenting practices, which were in turn associated with child mental health and could be moderated by depression (Boe et al. 2014, Lovejoy et al. 2000).

In particular, relationship strain (Perry 2015, Murali and Oyebode 2004, Belle and Doucet 2003) and family breakdown (Goldie 2013, Seabrook and Avison 2012), along with disrupted family functioning (where problems in communication, behaviour and family roles are experienced) (Banovcinova et al. 2014) act as potentially interacting moderating variables. Specific relationships such as being a single parent (Johner 2007, Reiss 2013, Belle and Doucet 2003) or a grandparent in a primary caring role (Broussard et al. 2010) can also have a negative impact.

Neighbourhood effects

Living in a neighbourhood with low SES was reported to be associated with increased rates of depression in eight review papers (Richardson et al. 2015, Julien et al. 2012, Gottlieb 2011, Marshall et al. 2014, Fone et al. 2014, Albor et al. 2014, Blair et al. 2014, Kelley Moore et al. 2016), although one additional primary study paper looked at this relationship and reported no association (Airaksinen et al. 2015). Living in a neighbourhood with low SES was also reported to increase stress in a primary study and a review (Barrington et al. 2014, Blair et al. 2014). In addition, one further primary study paper reported on the association between living in a neighbourhood where race interactions were poor, and increased risk of anxiety and depression (Alegria et al. 2014). However, care should be taken over the applicability of this US study in the UK.

Employment and finances

Unsurprisingly, factors related to unemployment and job loss were also reported as moderating factors in the relationships between poverty, stress, and low level anxiety and depression. It is important to note that these factors in particular are key causes of poverty as well as acting as moderators in the relationships as outlined here.

Unemployment or worklessness was reported to cause stress as well as income loss (Paul and Moser 2009, Bambra 2010), leading to increased incidence of mental disorders including anxiety and depression (Kuruvilla and Jacob 2007, Murphy and Athanasou 1999, Murali and Oyebode 2004, Barbaglia et al. 2015, Gottlieb 2011). Experiencing income inequality within the local area was also reported to cause stress (Kondo 2012).

A number of papers also reported associations with general mental health including experiencing inequalities (Goldie 2013, RCP Position Statement 2010, Pickett and Wilkinson 2015) and unequal income distribution (Hanandita and Tampubolon 2014), as well as job loss and the resultant increased personal deprivation (Mckenzie et al. 2014).

In addition, Montpetit et al. (2015) reported association between financial stress (current financial situation), neighbourhood stress (perceptions of the safety and physical condition in participant neighborhoods), social integration and wellbeing. Debt was also reported to financially impact on mental health and family wellbeing (Fitch et al. 2009) and to be associated with both increased stress and depression (Turunen and Hiilamo 2014, Richardson et al. 2013). Housing insecurity (due to income loss or instability) was also reported to be associated with depression (Gottlieb 2011).

Child factors

The literature discussed the links between child poverty and mental illness as well as the links between these and parental outcomes. Child poverty is associated with greater risk of child mental illness (Murali and Oyebode 2004), and parental poverty was also reported as leading to anxiety and depression in the child (Samaan 2000). Child mental health was reported to be influenced to some extent by parental mental health (Kuruvilla and Jacob 2007), with the same being true for childhood depression (Lau 2002, Beardslee et al. 2012, Bramesfeld et al. 2006, Bulter 2014). Any family history of poor mental health was associated with increased risk of poor mental health in the child (Reiss 2013). Lifetime risk of depression was also associated with parental occupation level, with having parents of low SES associated with the greatest lifetime risk of depression (Beardslee et al. 2012). Low parental education level was also reported to be associated with low self-esteem and increased risk of depression in adolescents (Mossakowski 2015). Treanor (2012) reported that living in poverty results in poor child psychosocial development.

In children, a discursive review discussed how stress was caused by bullying, academic failure and parental discord (Sparrow 2007). Resilience in children was reportedly associated with connection / attachment to caring adults, positive family systems, normal IQ, self-regulatory systems, having a positive outlook, and having motivation for achievement (Beardslee et al. 2012). Greater academic competence in the child was also reported to be associated with increased resilience to stress (Grant et al. 2006).

Demographic variables

Demographic variables were not frequently reported as moderating factors (perhaps being overlooked in many cases). This is not necessarily surprising given that they can be

considered markers for other, underlying factors. However, there is direct evidence to suggest that gender and ethnicity play a role in determining the likelihood of an individual living in poverty experiencing anxiety or depression. In terms of gender, being female living in poverty was reported to cause stress and depression above that experienced by a male in a similar situation (Thoits 2010, Piccinnelli and Wilkinson 2000, van der Waerden et al. 2010, Williams and Kurina 2002), In addition, (Businelle et al. 2014) reported that low SES, older age, minority race/ethnicity, gender (female) and marital status (single) all independently predicted poor mental health ratings. Being from an ethnic minority group was also reported to be associated with experiencing more financially related stress (Turunen and Hiilamo 2014).

The study did not identify any literature which examined the role of age, disability or sexuality on the relationships between poverty, stress, anxiety and depression. However, the role of age (with greater risk of experiencing anxiety, depression or stress in older age) was mentioned as a likely moderating factor during our consultation phase and has been added to the model as a potential additional moderating factor.

What does the evidence say about effective policies and interventions to address the links between poverty and stress, low level anxiety and depression across the life-course?

The searches yielded fifteen papers which related to policies and intervention approaches targeting people living in poverty. The vast majority of policies and interventions were targeted at the individual level and aimed to improve ability to cope with living in poverty, or at the family level to promote positive parenting relationships and family functioning. Around half of these aimed to prevent anxiety and depression and the other half aimed to reduce the impact of anxiety and depression where it had already occurred. Within the parameters of this study, no interventions were identified which aimed to prevent or reduce poverty that also reported an impact on stress, low level anxiety and depression.

Seven of the papers were reviews including four systematic reviews. All the interventions had a target population of people living in poverty, which was defined by both household income and also receipt of means-tested welfare benefits/social security payments. Populations included whole families (Borieux et al. 2014, Gillham et al. 2000, Small et al. 2015), adults only (Burnett-Zeigler et al. 2016, DeSilva et al. 2013, Falsafi and Leopard 2015; Gottlieb 2011; Rojas-Garcia et al. 2015, Van der Gucht et al. 2014, Van der Waerden et al. 2010) or children and young people only (Bramesfield et al. 2006, Costello and Lawler 2014, Field 2010; Kessler et al. 2014, Kindt et al. 2014).

The majority of intervention studies were carried out in the USA (Borieux et al. 2014, Falsafi and Leopard 2015, Kessler et al. 2014, Small et al. 2015) with others based in the Netherlands (Kindt et al. 2014, Van der Waerden et al. 2011), Ireland (Costello and Lawler

2014) and Brussels, Antwerp and Belgium (Van der Gucht et al. 2014). Most of the reviews utilised an international evidence base (Bramesfield et al. 2006, De Silva et al. 2013, Gottlieb 2011 and Rojas-Garcia et al. 2015) though some focussed on the USA (Burnett-Zeigler et al. 2016, Gilham et al. 2000). Only one focussed on the UK (Field, 2010).

The vast majority of the interventions aimed at improving participants' coping strategies to deal with living in poverty (n=10), or promoting positive parenting relationships or family functioning (n=8). The main approach to improving coping strategies was adopting mindfulness techniques and these were generally positively received by participants. Very few interventions (n=3) included any focus on underlying factors such as housing, unemployment, low income and community isolation.

There was an almost equal balance of interventions targeting people who reported to be suffering from mental health symptoms (n=8) and those taking a preventive approach (n=7) so targeting people without existing symptoms of depression or anxiety. However, this distinction was not always clearly reported in the literature.

Intervention outcomes included better coping strategies, perceptions of improved relationships and parenting skills, as well as outcomes relating to perceptions of stress, anxiety or depression. Therefore the interventions focused on health related outcomes rather than attempting to measure changes in poverty. Nearly all the interventions were deemed to be at least partially successful, however, follow-up for the interventions was generally only short-term. This would suggest that there is merit in targeting disadvantaged groups before they exhibit symptoms of stress, depression and anxiety rather than focussing solely on those who are already experiencing these symptoms.

Further, sometimes there was a discrepancy between the intervention aim and the measured outcomes. For example, the aim of the intervention described by Borieux et al. (2014) was to improve economic mobility (through employment, education or coming off housing benefit) through a weekly family resilience program. Much of the qualitative feedback, however, focused on reports of new-found relationships with fellow group members and perceptions of family and community resilience.

Studies rarely reported on how well an intervention works in relation to differences in SES. The differential success of interventions to improve symptoms or perceptions of stress and anxiety between different socioeconomic groups will need to be carefully considered given that research with people living in poverty appears to be limited and there was no wider testing among different SES groups. It might be expected, for example, that those living in poverty would respond less favourably to pharmacological or cognitive behavioural therapy in the long-term than their more affluent counterparts who are not facing the daily stresses of living in insecure, uncertain and stressful circumstances. In addition, interventions with a different focus (e.g. increasing physical activity or improving diet) may also have the potential to see wider impacts here.

Further interventions are currently underway which, if evaluated in terms of their impact on people living in poverty, could add much needed evidence on what interventions work for people in poverty. Current examples of where this approach would be helpful are the roll out of IAPT (Improving Access to Psychological Therapies: an NHS programme offering interventions for treating people with depression and anxiety disorders (IAPT 2016), and to provide support for families (including 'What works to enhance inter-parental relationships and improve outcomes for children') (Gov.uk 2016).

Summary of the evidence – building a logic model

The results of the systematic review were used these to build an evidence based logic model to demonstrate the links between poverty, stress, low level anxiety and depression. The final logic model which summarises all the data outlined here is shown in Figure 7.

Understanding the associations between factors

The first step was to understand the associations reported in the literature between poverty, stress, low level anxiety and depression by constructing a mind map of each individual association which had been identified. Figure 2 shows each of these associations and highlights the complexity of the relationships and the large number of moderating factors which have been identified as acting between these factors. Relationships which were shown to be positive/ supportive (e.g. maternal coping strategies reducing the impact of stress) or harmful/negative (e.g. poverty impacting on family functioning)were also identifed. This mapping of the associations clearly indicates the need to refine the model and to increase the clarity of representation of links, whilst potentially simplifying the presentation of what is inevitably a highly complex web of inter-related factors.

In order to further develop this process, causal links reported between the main factors under consideration were highlighted. Figure 3 shows where causal relationships were reported in more than one high quality study (systematic review or primary study), or in one study only. These reported causal links underpinned construction of the logic model.

The only relationship for which causality was reported in more than one high quality study was that between poverty and stress (both self-reported stress and the biological stress response). A second pathway from low SES via low self-esteem and poor coping to anxiety and depression is likely to represent the same pathway from poverty via stress to anxiety and depression, but it has been identified in studies where the concepts have been framed (or researched) differently. Low self-esteem often presenting as one of the symptoms of depression further blurs the line between separate 'boxes' within this pathway.

Further causal links were reported (by one study only) between:

- unemployment/worklessness and stress (Kondo 2012)
- poverty and low self-esteem or low coping (Ohuoha 1991)
- low self-esteem or low coping and anxiety/depression (Ohuoha 1991)

Figure 2.

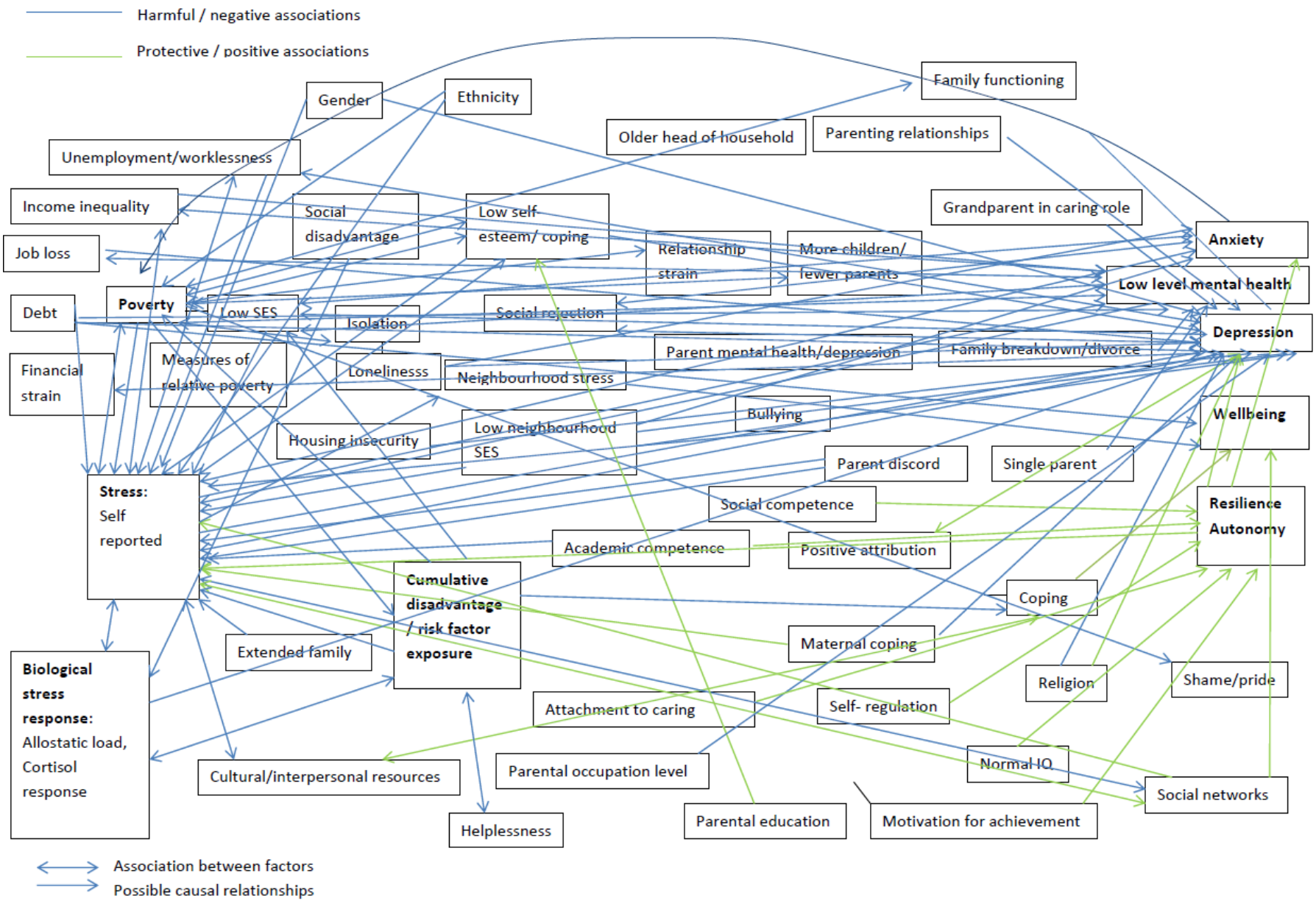
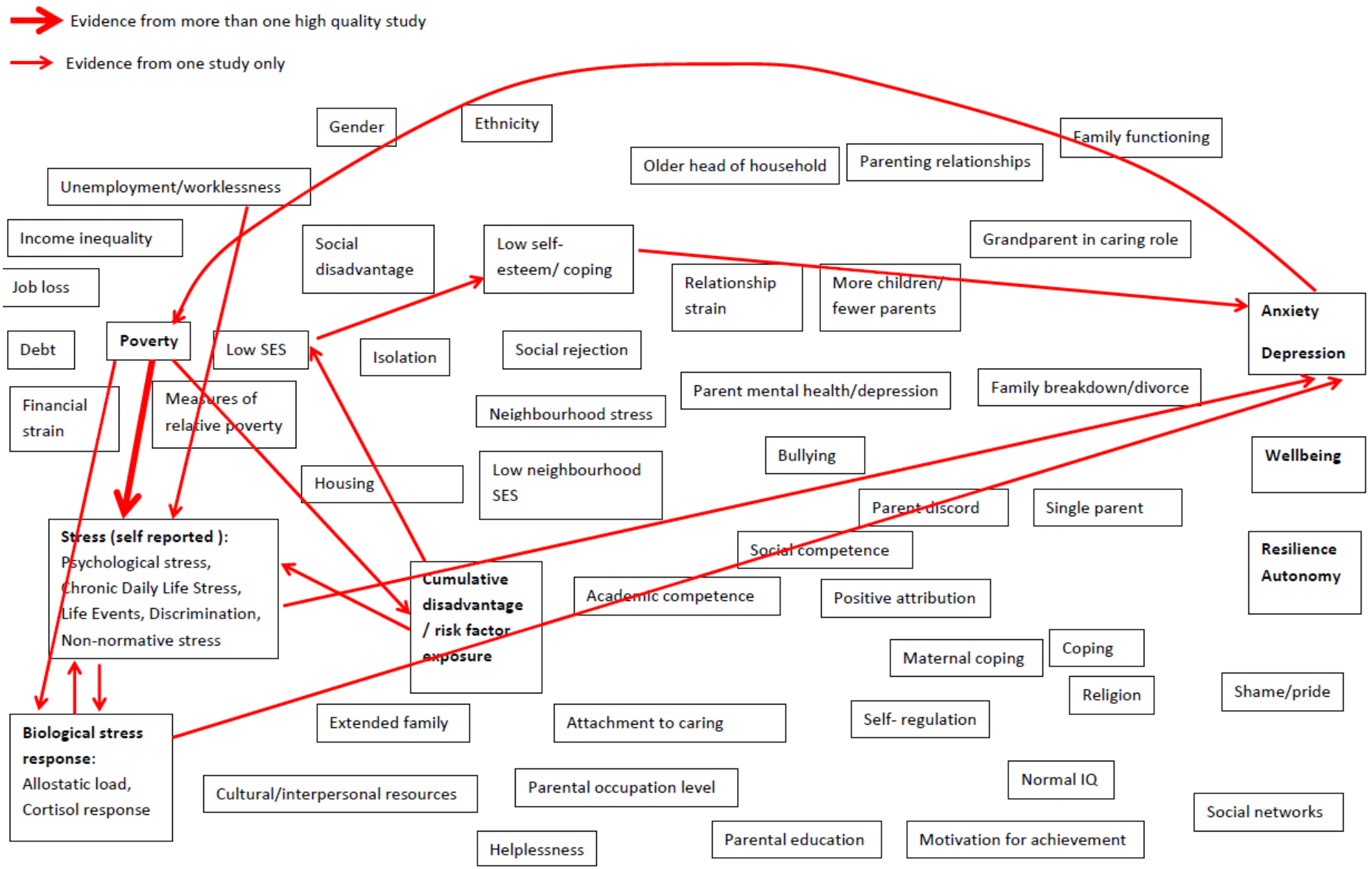

Harmful / negative associations
Protective / positive associations
Gender
Ethnicity
Family functioning
Older head of household
Parenting relationships
Unemployment/worklessness
Income inequality
Social disadvantage
Low self esteem/ coping
Grandparent in caring role
Job loss
Relationship strain
More children/ fewer parents
Anxiety
Debt
Poverty
Low SES
Isolation
Social rejection
Low level mental health
Depression
Financial strain
Measures of relative poverty
Lonelinesss
Neighbourhood stress
Parent mental health/depression
Family breakdown/divorce
Housing insecurity
Low neighbourhood SES
Bullying
Wellbeing
Parent discord
Single parent
Stress: Self reported
Social competence
Resilience Autonomy
Academic competence
Positive attribution
Cumulative disadvantage / risk factor exposure
Coping
Maternal coping
Extended family
Religion
Shame/pride
Biological stress response: Allostatic load, Cortisol response
Attachment to caring
Self- regulation
Normal IQ
Cultural/interpersonal resources
Parental occupation level
Social networks
Helplessness
Parental education
Motivation for achievement
Association between factors
Possible causal relationships

Figure 3.


Evidence from more than one high quality study
Evidence from one study only
Gender
Ethnicity
Family functioning
Older head of household
Parenting relationships
Unemployment/worklessness
Income inequality
Social disadvantage
Low self-esteem/ coping
Grandparent in caring role
Job loss
Relationship strain
More children/ fewer parents
Anxiety
Depression
Debt
Poverty
Low SES
Isolation
Social rejection
Financial strain
Measures of relative poverty
Parent mental health/depression
Family breakdown/divorce
Neighbourhood stress
Bullying
Wellbeing
Housing
Low neighbourhood SES
Parent discord
Single parent
Stress (self reported): Psychological stress, Chronic Daily Life Stress, Life Events, Discrimination, Non-normative stress
Social competence
Resilience
Autonomy
Cumulative disadvantage / risk factor exposure
Academic competence
Positive attribution
Maternal coping
Coping
Religion
Shame/pride
Biological stress response: Allostatic load, Cortisol response
Extended family
Attachment to caring
Self- regulation
Normal IQ
Cultural/interpersonal resources
Parental occupation level
Social networks
Helplessness
Parental education
Motivation for achievement

- stress and depression (Benzeval 2014)
- cumulative disadvantage (repeat risk factor exposure) and both stress and poverty (Seabrook 2012)
- anxiety/depression and poverty (Fell 2015)

Developing the logic model – identifying the main pathways

Taking the causative relationships outlined above, the logic model construction began. The strongest link (poverty causes stress) formed the first link in the model as the relationship between poverty and stress (both stress reported by the individual and objectively measured changes in the biological stress responses) is undisputed in the literature. It also makes sense on a pragmatic level that living in poverty is unquestionably "stressful" to some degree where individual resources are substantially below needs. Therefore in the logic model concept, poverty represents the primary factor under consideration, and stresses (both self-reported and biological) are mediating factors (factors that explain and underpin the relationship and are always present in the relationship pathway that leads from poverty to anxiety and depression (Figure 4). Given the discrepancies in the literature between the concepts of anxiety, depression and common mental health problems, anxiety and depression have been grouped together in one box rather than attempting to separate the two factors in the logic model.

The third column of a logic model represents moderating factors (factors which influence a relationship but are not always necessary for it to exist) and the final column represents the outcomes of the pathways. Drawing on the literature (Seabrook and Avison 2012), the logic model posits that the experience of poverty is more likely to result in anxiety or depression when an individual's personal and social context is characterised by repeated or multiple exposures over time to a number of moderating factors (risk factors) which leads to anxiety or depression as outcomes. Alternatively, an individual could be exposed to a number of moderating factors which are protective and which shield them from the effects of poverty and stress, and therefore follow a pathway resulting in outcomes relating to wellbeing (in this case the absence of anxiety/depression) rather than poor mental health despite their exposure to the poverty/stress causal link (Figure 5).

Developing the logic model – grouping and interpreting the moderating factors.

To further understand the moderating factors in the model, the typology of reported associations was used to group similar moderating factors to consider which factors increase the risk of experiencing anxiety and depression as outcomes and which factors protect against this. There was also consideration of which factors were measured at the individual level , which were factors measured at the level of family or other relationships and which factors were influenced by the community an individual lived in. Further, any

Figure 4. The pathway from poverty to anxiety and depression is mediated by stress

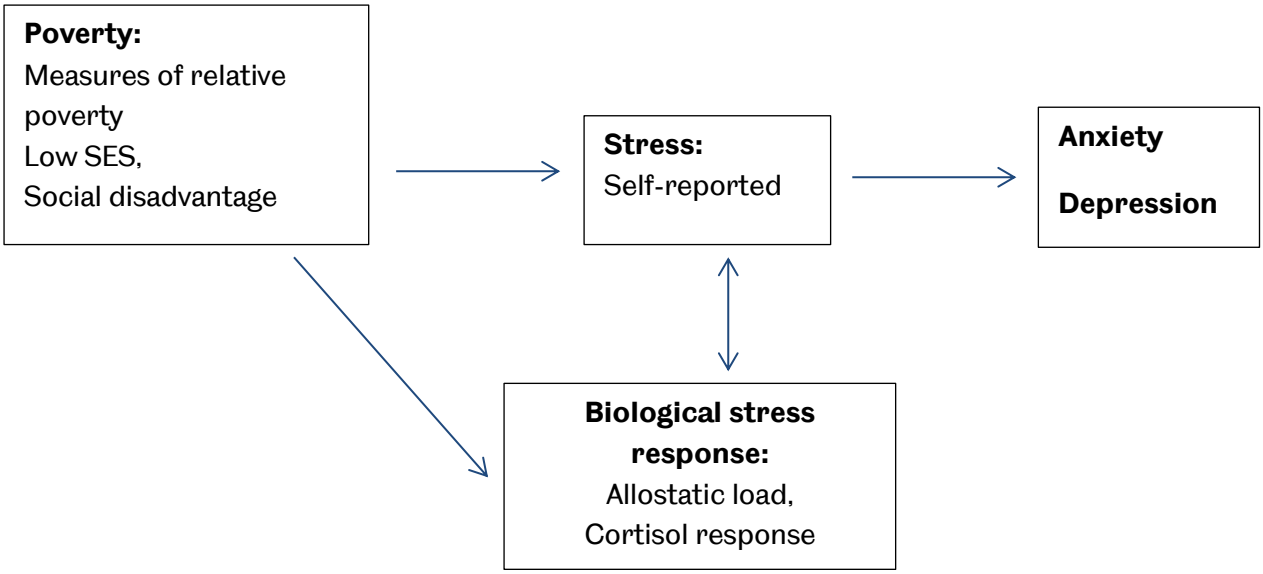
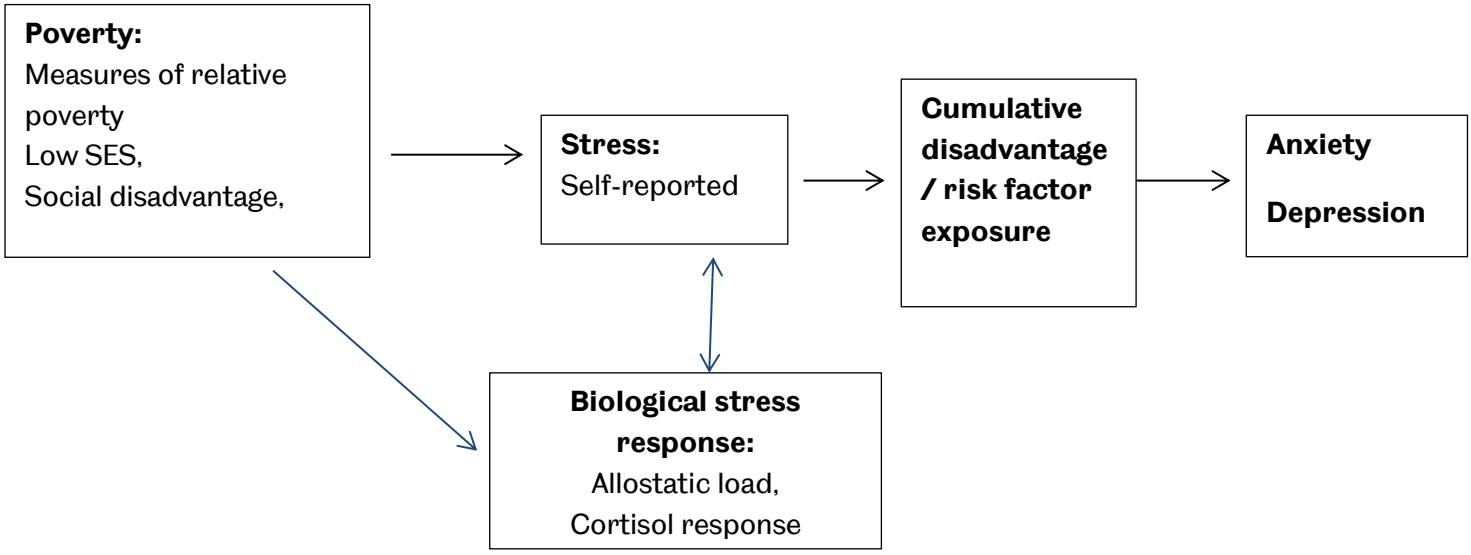


Figure 5. Cumulative exposure to moderating risk factors leads to anxiety and depression outcomes



factors which were reported for specific populations were examined. In this case only factors related to children/adolescents were reported separately.

Risk factors at the individual level included:

- Poor coping strategies (Myers 2009, Benzeval 2014)
- Low self-esteem (Ohuoha 1991, Hoeve 2014)
- Social exclusion (Davis 2001)
- Loneliness (Kearns 2015)
- Unemployment/worklessness (Paul 2009, Murali 2004, Barbaglia 2015, Gottlieb 2011)
- Income/job loss (Kuruvilla 2007, Murphy 1999, Mckenzie 2014, Montpetit 2015, Smith 2007)
- Income inequality(Kondo 2012, Hanandita 2014)
- Debt (Fitch 2009, Turunen 2014, Richardson 2013)
- Experiencing the impact of inequalities (being poor in an unequal society) (Goldie 2013, RCP Position Statement PS4 2010, Pickett 2015)
- Housing insecurity (Gottlieb 2011)
- Shame (Walker 2015, Kuruvilla 2007)
- Ethnic minority status (Turunen 2014)
- Being female (Thoits 2010, Piccinnelli 2000, van der Waerden 2010, Williams 2002)

Risk factors at the relationship level included:

- Relationship strain between family members (Perry 2015, Murali 2004, Belle 2003)
- Increased ratio of children to adults in the household (more likely to experience poverty and therefore stress) (Smith 2007, Turunen 2014)
- Disrupted family functioning (including communication, behaviour, and family roles) (Banovcinova 2014)
- Family breakdown/divorce (Goldie2013, Seabrook)
- Mothers with young children (more likely to experience poverty and therefore stress) (Belle 2003)
- Parenting relationship (difficulties experienced) (Lovejoy 2000).
- Older head of the household (Turunen 2014)
- Grandparent in primary caring role (Broussard 2010)

Risk factors at the community level included:

- Social rejection (Lau 2002)
- Low neighbourhood SES (Barrington 2014, Blair et al. 2014, Richardson 2015, Julien 2012, Gottlieb 2011, Marshall 2014, Fone 2014, Albor 2014, Kelley Moore 2016) * no association (Airaksinen et al. 2015)

- Neighbourhoods with poor race interactions (Alegria 2014)
- Neighbourhood stress (perceptions of the safety and physical condition in neighborhoods) (Montpetit 2015)

Child risk factors included:

- Parental mental ill health (Kuruvilla 2007)
- Parental depression (Lau 2002, Beardslee 2012, Bramesfeld 2006, Bulter 2014)
- Family history of mental ill health (Reiss 2013)
- Family breakdown (Goldie 2013)
- Single parenting (Johner 2007)
- Poor parenting (Reiss 2013)
- Divorce (Seabrook 2012)
- Bullying, (Sparrow 2007)
- Parental discord (Sparrow 2007)
- Child academic failure (Sparrow 2007)

Protective factors at the individual level included:

- Coping strategies (Williams 2002, Culpin 2015, Evans 2013)
- Maternal coping strategies (Brody 2014)
- High autonomy and having a positive attitude (Fischer 2011, Perry 2015, Ohuoha 1991, Murali 2004, Haushofer 2014, Turunen 2014, Salami 2014, Grant 2006)
- Social competence (Grant 2006)
- Self-belief and optimism (Grant 2006)
- Social connectedness and self-esteem (Richards 2016)

Protective factors at the relationship level included:

- Extended family members (Samaan 2000)

Protective factors at the community level included:

- High cultural, interpersonal and intrapersonal resources (Myers 2009)
- Strong social support (Abrahams 2007)
- Strong social networks (Belle 2003, Attree 2002, Murali 2004)

Child protective factors included:

- Normal IQ (Beardslee 2012)

- Attachment to caring adult(s) (Beardslee 2012)
- Positive family systems (Beardslee 2012)
- Self-regulatory systems (Beardslee 2012).
- Motivation for achievement (Beardslee 2012)
- Positive outlook (Beardslee 2012)
- Parental education (Mossakowski 2015
- Parent occupation level (Beardslee 2012)
- Academic competence (Grant 2006)

Figure 6 summarises the risk and protective factors and forms the third column on the logic model. A number of factors were reported as both protective and risk factors, either by different authors or within the same paper:

- Factors related to coping were reported as risk and protective factors by several authors depending on how the concept was approached and measured.
- Pride was shown to be associated with increased resilience or increased likelihood of anxiety or depression depending on the individual (Perry 2015).
- Religiosity was reported to lead to lower psychological distress in two papers (Samaan 2000, Brody et al. 2014), but a third paper reported that religion may increase or decrease the incidence of depression (Ohuoha 1991).

These have therefore been reported as variable factors and highlighted in the model. These inconsistencies suggest a need for greater conceptual clarity, improved measurement and greater understanding of these contextual factors.

Consultation factors

In addition to the moderating factors reported in the literature the logic model also includes a number of additional factors which, although not supported by the evidence base identified in the literature, were reported as being important factors during our consultation phase of developing the model. These factors relate primarily to individual risk factors including an individual's age (being older), addictive behaviours (gambling, alcohol, and drugs), diet, exercise, physical health, and individuals in a carer role.

In addition, further to the reported effect of risk factor accumulation, it was noted that sudden change in respect to some risk factors (e.g. unexpected job loss) may result more directly in an outcome of anxiety or depression. This represents the difference between long term exposure to poverty and a sudden acute exposure, which may result in a different and more accelerated response. This further reflects the hypothesis that individuals who are persistently poor may develop strategies for managing on few resources, whereas those who experience "income shock" and a decline in their social standing may have a more acute response to poverty. A "ghost pathway" has been added to the model to represent this concept (Figure 7).

Figure 6. Risk and protective factors moderating the relationships

Risk factors:

Individual (adult): Poor coping* strategies, low self-esteem, social exclusion, loneliness/isolation, unemployment/worklessness, income/job loss, income inequality, debt, social inequality, housing insecurity, shame, pride*, minority ethnic, female, religiousness*, *addictive behaviours (gambling, alcohol, drugs), diet, exercise, physical health, carer*

Family/relationships: Relationship strain, increased ratio children/adults, family functioning (communication, behaviour, and family roles), family breakdown/divorce, mothers with young children, parenting relationships, older head of household, grandparent in primary caring role

Community: Social rejection, low neighbourhood SES, poor neighbourhood race relations, neighbourhood stress

Children: Parental mental health, Parental depression, Family history of mental health, Family breakdown, Single parenting, Poor parenting, Divorce, Bullying, Parental discord, Academic failure

Protective factors:

Individual (adult): Coping strategies*, maternal coping strategies, high autonomy, positive attribution style, positive attitude, self-belief, optimism, social competence, social connectedness, pride*, religiousness *

Family/relationships: Frequent contact with extended family

Community: Cultural /interpersonal resources, strong social support, strong social networks

Children: Normal IQ, Attachment to caring adults, Self-regulatory systems, Motivation for achievement, Parental education, Parent occupation level , Positive outlook, Positive family systems

*Variable factors (reported as risk and protective)
Italic = factors from consultation

Understanding the effect of interventions

For the fifteen intervention papers identified by our searches attempts were made to understand which aspects of the logic model related to the reported aims of the interventions. Figure 7 indicates where the identified interventions map on to the logic model in terms of their aims, or what they intend to change/improve. It is interesting to note that all the identified interventions were attempting to act on moderating factors, despite the fact that some of the interventions stated that their aim was to prevent poverty related stress. It may be that they conceptualised the relationships differently. This highlights the fact that in terms of the scope of this study, the underlying problems may be just too all-encompassing for any single intervention to deal with, and therefore tackling the elements which can be managed (such as improving coping strategies, parenting skills and poor or insecure housing) is a pragmatic approach to begin to tackling the huge problems faced by people living in poverty. This may be a function of where the causes of poverty and its resultant individual or family issues are assumed to lie. It may also be true that these are the types of interventions that fit with broader political agendas. What is less clear, is how effective these interventions were over long timescales.

Alternative models and presentations

As well as developing the main logic model alternative ways of displaying the data were also considered. This approach was undertaken with the specific aims of attempting to add clarity of understanding to the interactions between the moderating factors and the main factors under consideration, and also considering the impact of the model for specific population subgroups.

Figure 8 shows the model with an expanded central section to add a level of detail which considers how the moderating factors are reported in the literature. Most factors were reported to be associated with stress (or poverty) and with anxiety and/or depression, suggesting that they sit on the pathway between these two factors.

The only distinct population sub-group for which enough literature was identified to consider developing a separate model was studies on children and adolescents. In this case, quite a lot of the data in the model suggests causal links, but the model is based on very few studies and is only intended to give an impression of the links which may exist. As such it was only possible to develop an outline mind map for this set of data (Figure 9). There were no direct links reported in this (limited) literature between child stress and child anxiety or depression (or common mental health problems). It may be that this link is assumed rather than actively researched.

Figure 7.

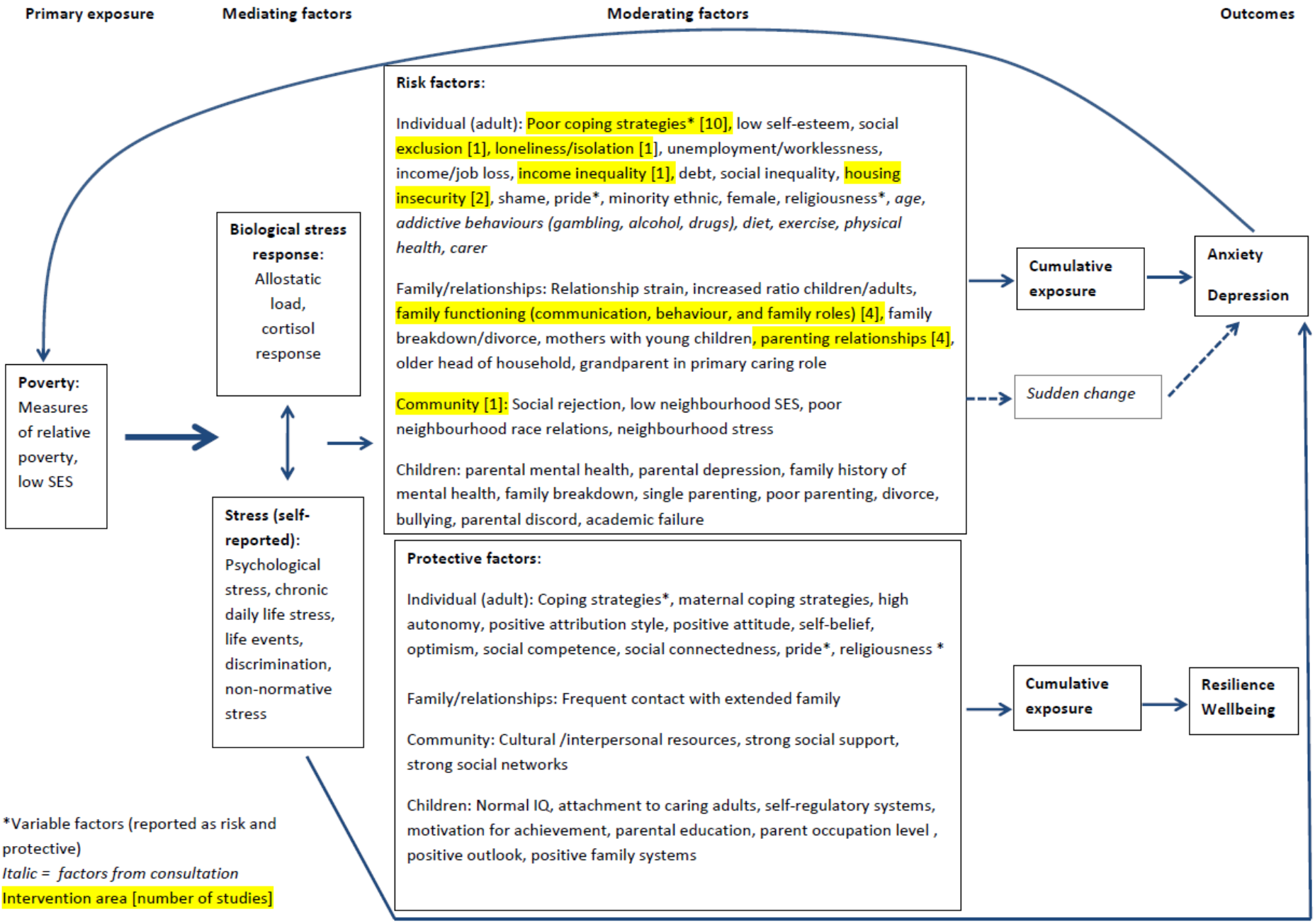

Primary exposure
Mediating factors
Moderating factors
Outcomes
Poverty: Measures of relative poverty, low SES
Biological stress response: Allostatic load, cortisol response
Stress (self-reported): Psychological stress, chronic daily life stress, life events, discrimination, non-normative stress
Risk factors:
Individual (adult): Poor coping strategies* [10], low self-esteem, social exclusion [1], loneliness/isolation [1], unemployment/worklessness, income/job loss, income inequality [1], debt, social inequality, housing insecurity [2], shame, pride*, minority ethnic, female, religiousness*, age, addictive behaviours (gambling, alcohol, drugs), diet, exercise, physical health, carer
Family/relationships: Relationship strain, increased ratio children/adults, family functioning (communication, behaviour, and family roles) [4], family breakdown/divorce, mothers with young children, parenting relationships [4], older head of household, grandparent in primary caring role
Community [1]: Social rejection, low neighbourhood SES, poor neighbourhood race relations, neighbourhood stress
Children: parental mental health, parental depression, family history of mental health, family breakdown, single parenting, poor parenting, divorce, bullying, parental discord, academic failure
Protective factors:
Individual (adult): Coping strategies*, maternal coping strategies, high autonomy, positive attribution style, positive attitude, self-belief, optimism, social competence, social connectedness, pride*, religiousness *
Family/relationships: Frequent contact with extended family
Community: Cultural /interpersonal resources, strong social support, strong social networks
Children: Normal IQ, attachment to caring adults, self-regulatory systems, motivation for achievement, parental education, parent occupation level , positive outlook, positive family systems
Cumulative exposure
Anxiety
Depression
Sudden change
Cumulative exposure
Resilience
Wellbeing
*Variable factors (reported as risk and protective)
Italic = factors from consultation
Intervention area [number of studies]

Figure 8.

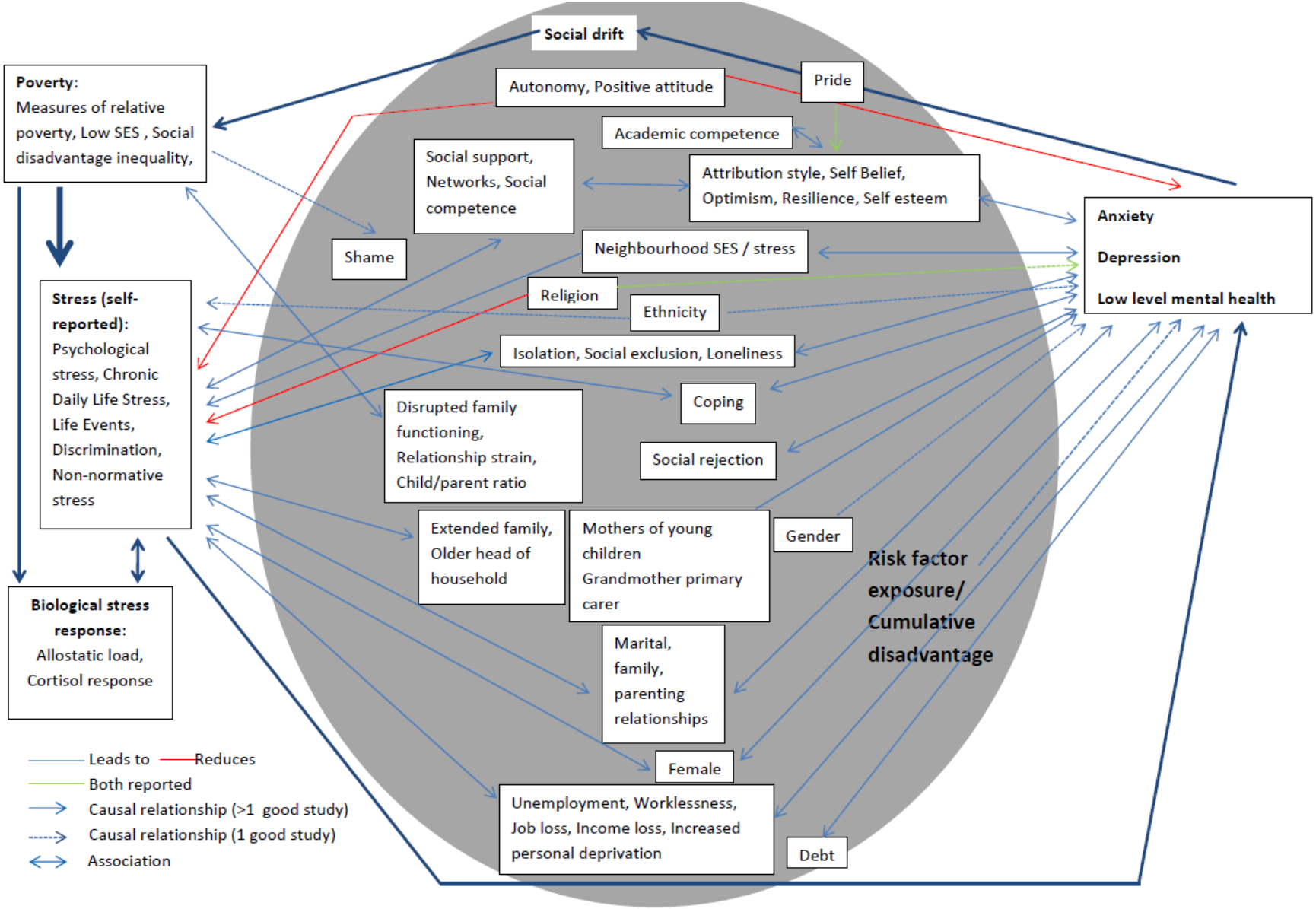
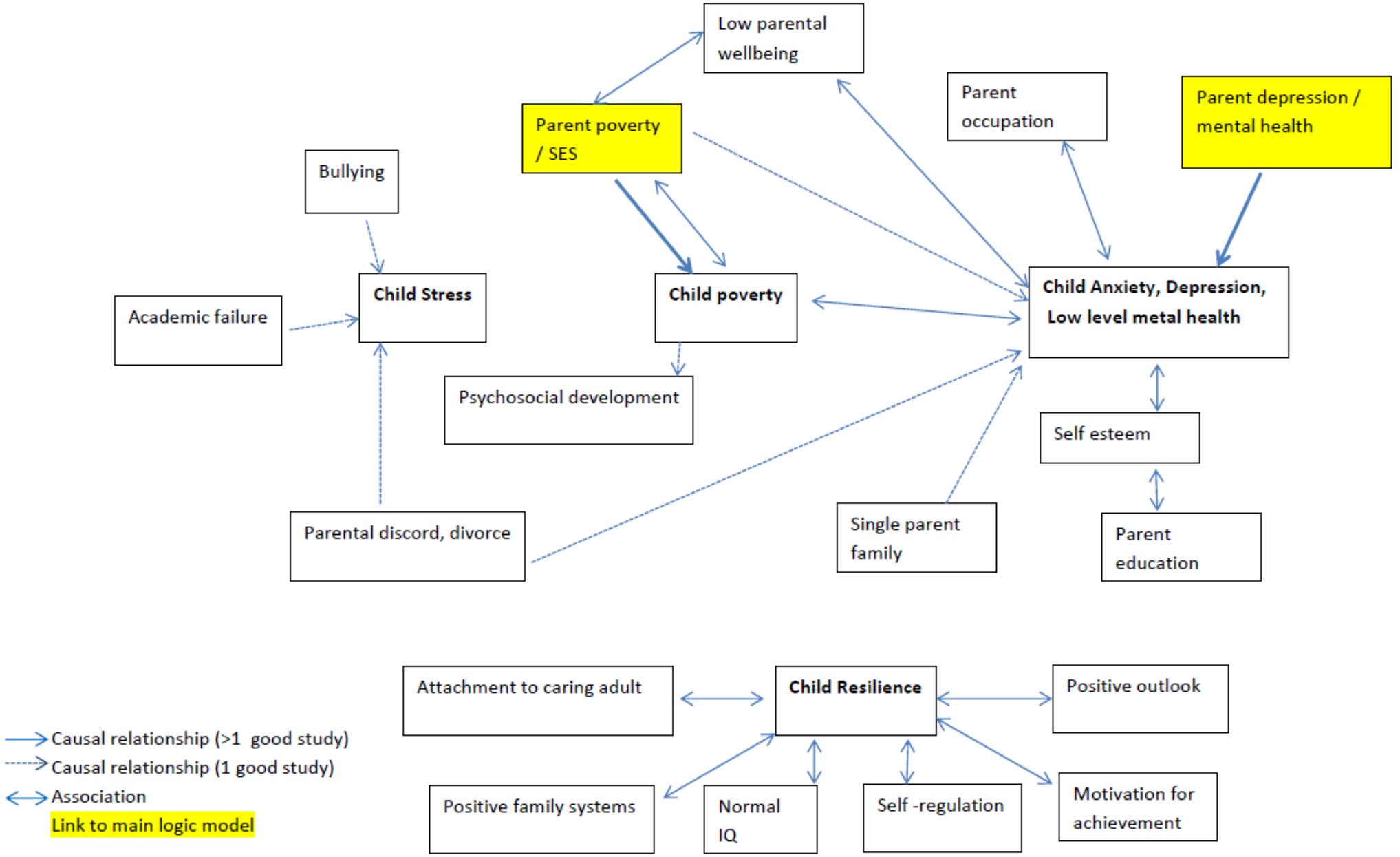

Social drift
Poverty:
Measures of relative poverty, Low SES , Social disadvantage inequality,
Autonomy, Positive attitude
Pride
Academic competence
Social support, Networks, Social competence
Attribution style, Self Belief, Optimism, Resilience, Self esteem
Anxiety
Depression
Low level mental health
Shame
Neighbourhood SES / stress
Religion
Ethnicity
Stress (self-reported):
Psychological stress, Chronic Daily Life Stress, Life Events, Discrimination, Non-normative stress
Isolation, Social exclusion, Loneliness
Coping
Disrupted family functioning, Relationship strain, Child/parent ratio
Social rejection
Extended family, Older head of household
Mothers of young children Grandmother primary carer
Gender
Risk factor exposure/ Cumulative disadvantage
Biological stress response:
Allostatic load, Cortisol response
Marital, family, parenting relationships
Female
Unemployment, Worklessness, Job loss, Income loss, Increased personal deprivation
Debt
Leads to
Reduces
Both reported
Causal relationship (>1 good study)
Causal relationship (1 good study)
Association

Figure 9.


Low parental wellbeing
Parent poverty / SES
Parent occupation
Parent depression / mental health
Bullying
Child Stress
Child poverty
Child Anxiety, Depression, Low level metal health
Academic failure
Psychosocial development
Self esteem
Parental discord, divorce
Single parent family
Parent education
Attachment to caring adult
Child Resilience
Positive outlook
Positive family systems
Normal IQ
Self -regulation
Motivation for achievement
Causal relationship (>1 good study)
Causal relationship (1 good study)
Association
Link to main logic model

Discussion

Given the scope of our review, it is only possible to discuss implications and recommendations relating to the relationships between poverty, stress and low level anxiety and depression; that is to say the factors which mitigate the impact of these. It is not possible to say anything specifically about poverty, stress, or anxiety/depression in the wider sense, or to consider any of these factors individually.

The evidence is extensive and based on a large number of review level studies as well as additional primary level data from the last three years. The vast majority of the evidence base discusses associations between poverty, stress, anxiety and depression (and the factors which moderate these relationships) rather than considering direct causal pathways between them. A slightly stronger evidence base was identified for the causal pathway from poverty to stress, along with causal links to common mental health problems including anxiety and depression (but not to anxiety or depression specifically). The review level data often lacked information about the strength and size of an effect (other than to say that an association was reported, or to imply a stronger causal relationship). Greater clarity would be found by going back to each primary study included in the review papers but this was beyond the scope and resources of this work.

So the literature appears to suggest that the overriding direction of causation is from poverty to stress. Therefore the experience of poverty increases an individual's chance of experiencing stress. In addition, adults in the poorest income quintile are much more likely to develop any mental illness compared to those on an average income (Poverty.org 2016). However, poverty is of course not the only cause of stress, and the moderating factors identified here can be sources of stress, anxiety and/or depression even in the absence of poverty.

The research was often unclear as to whether if focused mostly on the effects on individuals living in conditions of chronic or persistent poverty or those experiencing short term or episodic poverty. This is not unsurprising given the difficulties in defining these two concepts and the cross-sectional or short term longitudinal nature of many of the studies identified and reviewed.

Implications for policy and practice

Our work identified a number of implications which it will be important to consider for future policy and practice:

- Poverty is linked to stress, and this is likely to have significant negative health effects.
- The relationships between poverty, stress, low level anxiety and depression are highly complex and reliant upon a vast array of moderating factors. The impact of

specific moderating factors is dependent upon an individual and the circumstances in which they are living.

- When considering the links between poverty, stress, and low level anxiety and depression, we cannot just focus on one factor. Instead it is important to examine the bigger picture, and to consider all the factors which can impact on how a person experiences living in poverty.
- It will also be important for future policy to acknowledge and consider individuals living in conditions of chronic or persistent poverty, and those who experience one or more periods of acute or episodic poverty; how their needs may differ, and what could be done to assist them. Consideration of the impact on specific population groups (e.g. children, older people) would also be beneficial.
- The policies and interventions out search identified were mostly targeted at the individual level and aimed to improve ability to cope with living in poverty, or at the family level to promote positive parenting relationships and family functioning. Further understand is need as to whether people in poverty access interventions available to them, and if not, what it is that limits that access.
- Given that stress is a key mediating variable in the relationships between poverty and anxiety/depression, further consideration of interventions which aim to reduce the impacts of this stress on individuals may be beneficial.
- Therefore, when evaluating new interventions, or moderating existing interventions, it will be important to understand whether they are suitable and effective for people living in poverty, and also to include reduced self-reported stress, anxiety and depression as additional outcome measures in evaluating interventions aimed at reducing poverty. Current examples of where this approach would be helpful are the roll out of IAPT (Improving Access to Psychological Therapies: an NHS programme offering interventions for treating people with depression and anxiety disorders (IAPT 2016), and to provide support for families (including 'What works to enhance inter-parental relationships and improve outcomes for children') (Gov.uk 2016).

Implications for research

Our work also identified a number of potential areas for future research:

- The main evidence gap relates to the lack of evidence on causal links between the factors. Although papers were identified (particularly for the causal relationship leading from poverty to stress), the majority of the evidence was reported at the associational level.
- Demonstrating a conclusive temporal relationship between any of these factors would require long term studies, and poses considerable challenges to research. For example, it would not be possible to randomise individuals to live in poverty or experience a particular life event). It is challenging to anticipate how this gap could

be filled given that the relationships are so complex. However, existing long term cohort studies may be able to provide data.

- Research into the relationships between poverty, stress, anxiety and depression for specific sub-groups within the population is lacking, for example, on how the pathways may change or adapt for differing phases of adulthood.
- Further data on the impact of gender and ethnicity on the relationship between poverty and mental health would also be helpful.
- Further research is also needed in to the links between stress and anxiety/depression for children living in poverty.
- The evidence is also unclear about the distinction between the impacts of experiencing long term poverty and exposure to acute or short term episodes.
- Given that stress is a key mediating variable in the relationships between poverty and anxiety/depression, further research into this relationship (and interventions to reduce the impact) may be beneficial.
- Improving consistency of definitions and operational measures, particularly related to stress, would be beneficial to future research.
- It is important to conduct research to further understand if people in poverty access interventions available to them, and if not, what it is that limits that access.
- It would also be beneficial to understand what percentage of people living in poverty consider themselves to be stressed, as well as the specific costs of stress, anxiety and depression associated with living in poverty.

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Appendix 1. Research questions

What are the links between poverty and stress, low level anxiety and depression across the life course? Including:

- To what extent is there evidence that poverty causes or increases the amount and the nature of stress, low level anxiety and depression?
- To what extent is there evidence that stress, low level anxiety and depression cause or increase poverty?
- Is there any evidence that poverty makes a difference to how people are affected by stress, low level anxiety and depression?
- To what extent is there evidence about how stress, low level anxiety and depression differ in their relationship with poverty?
- How large are these effects and how strong is the evidence?
- What evidence is there about the role or not of equality and diversity dimensions such as ethnicity, disability, gender, age and sexuality?
- What evidence is there about the risk and protective factors that relate to poverty and stress, low level anxiety and depression?
- To what extent do relationships play a role?
- What does the evidence say about effective policies and interventions to address the links between poverty and stress, low level anxiety and depression across the life-course including a. Policies and interventions to prevent stress, low level anxiety and depression; b. policies and interventions to reduce the impact of stress, low level anxiety and depression; c. policies and interventions to prevent or reduce poverty that have an impact on stress, low level anxiety and depression.

What are the main evidence gaps about the links between poverty and stress, low level anxiety and depression across the life-course and how could they be filled?

What should an anti-poverty strategy across the life course say about stress, low level anxiety and depression?

Appendix 2. Typology

Appendix 2a. Direct relationships between poverty, stress, low level anxiety and depression:

Underlined = Quality Appraisal lower risk of bias.
No underlined = Quality appraisal higher risk of bias.

Link	Included studies
Poverty and Stress	
Poverty (low SES) → Stress	Benzeval 2014, The Good Child Report 2014, Richards 2016, Myers 2009, Lau 2002, Myers 2009
Poverty (low SES) → Biological stress responses	Fell 2015, Szanton 2015, Evans 2013
Poverty → Cumulative risk factors → Chronic stress	Evans 2013
Poverty (Low income) → Stress → Depression	Benzeval 2014
Poverty (low SES) ↔ Stress	Moore 2011, Skodova 2008, Johner 2007, Donkin 2014, Desantis 2015, Businelle 2014, Brody 2014, Evans 2013
Poverty and depression/anxiety	
Poverty → Low level MH	Seabrook 2012, Businelle 2014, Stock 2014, Lansley 2015, Kuruvilla 2007, Cooper 2015, Evans 2014 Hanandita 2014, Reiss 2013, Quon 2014, Broussard 2010
Poverty → Low self esteem → Depression	Ohuoha 1991
Feelings of lower statu → Distress → Biological changes in stress response	Benzeval 2014
Low self esteem ↔ Poverty	Hoeve 2014
SES ↔ Mental health/wellbeing	Haught 2015

Financial strain ⟷ Depression	Dijkstra-Kersten 2015
Poverty (low SES) ⟷ Depression	Davis 2001, Payne 2012, Lorant 2002, Murali 2004, Link 1995, van der Waerden 2010, Lima 2013, Letourneau 2013 (Childhood), Lemstra 2008 (Youth), Broussard 2010, Beardslee 2012 (Family), Belle 2003, Johner 2007, Gottlieb 2011, Salami 2014, Culpin 2015, Bulter 2014
Poverty (low SES) ⟷ Anxiety	Davis 2001, Payne 2012, Skodova 2008, Murali 2004, Lemstra 2008 (Youth), Beardslee 2012 (Family), Salami 2014
Social disadvantage ⟷ Mental health	Hanandita 2014 Goldie 2013, Link 1995
Poor mental health (wellbeing) ⟷ Poverty	Lansley 2015, The Good Child Report 2014 Yoshikawa 2012, van der Waerden 2010
SES ⟷ Health	Phelan 2010
Depression ⟶ Low SES (social drift)	Fell 2015, Kuruvilla 2007,Murali 2004, Miech 1999
Stress and depression/anxiety	
Stress ⟶ Depression	Williams 2002
Stress ⟶ MH (reduced wellbeing).	Evans 2013, Diez Roux 2011, Fell 2015, Thoits 2010, Cervantes 1985, Businelle 2014
Stress ⟶ Anxiety/depression	Fell 2015
Stress ⟷ Depression	Van der Waerden 2010, Abrahams 2007. Gottlieb 2011
Stress ⟷ Anxiety/depression	Lau 2002
Genetics ⟶ Depression	Ohuoha 1991
SES ⟷ Stress ⟷ Neurocognitive performance	da Rosa Piccolo 2014

Appendix 2b. Moderating factors:

Underlined = Quality Appraisal low risk of bias.

No underlined = Quality appraisal high risk of bias

Link	Refs
Differential risk factor exposure → Cumulative disadvantage	Seabrook 2012,
Coping with poverty and stress	
Coping strategies ↔ Stress	Williams 2002, Culpin 2015 (Locus of control), Evans 2013
Low SES → Poor coping → Poor health	Myers 2009, Benzeval 2014
Autonomy/ positive attitude → reduced stress/anxiety/depression	Fischer 2011, Perry 2015, Ohuoha 1991, Murali 2004, Haushofer 2014, Turunen 2014, Salami 2014
Attribution style/self-belief/optimism ↔ Depression	Grant 2006
Cultural, interpersonal and intrapersonal resources ↔ Stress/coping	Myers 2009
Social competence ↔ Resilience	Grant 2006
Poverty → Shame	Walker 2015, Kuruvilla 2007
Pride can increase resilience OR increase difficulties	Perry 2015
Social and family networks	
Social exclusion ↔ Anxiety/depression	Davis 2001
Social rejection → Depression	Lau 2002
Social networks ↔ Stress	Belle 2003
Strong Networks ↔ Reduced stress	Attree 2002
Isolation ↔ Poverty	Murali 2004

Loneliness ⟷ Anxiety/Depression	Kearns 2015
Money ⟷ connectedness/self esteem ⟷ Happiness	Richards 2016
Social support → Maternal, child, family wellbeing	Abrahams 2007
Social support , extended families, maternal coping strategies → Lower psychological distress	Samaan 2000, Brody 2014
Relationship strain ⟷ Poverty	Perry 2015, Murali 2004
More children, fewer parents ⟷ Poverty	Smith 2007, Turunen 2014
Family breakdown → financial, emotional and practical consequences	Goldie 2013
Marital/parental relationships ⟷ Stress	Belle 2003
Poverty ⟷ Disrupted family functioning (communication, behaviour, family role).	Banovcinova 2014
Poor parenting/single parenthood ⟷ Child MH	Reiss 2013
Single parent ⟷ Poorchild MH	Johner 2007
Divorce → MH Children of single mothers → MH (adult)	Seabrook 2012
Mothers with young children (low SES) ⟷ Depression	Belle 2003
Family variables ⟷ Child MH	Garmezy 1991
Family SES ⟷ Parent emotional wellbeing/parenting practices ⟷ Child mental health	Boe 2014
Depression → Parenting – relationship moderated by SES.	Lovejoy 2000
Grandmothers in primary caring role →	Broussard 2010

Depression Older head of household → Stress	Turunen 2014
Neighbourhood effects Neighbourhood SES ↔ Depression	Richardson 2015, Julien 2012, Gottlieb 2011, Marshall 2014, Fone 2014, Albor 2014,Blair 2014 (Airaksinen 2015 no relationship)
Neighbourhood SES → Stress	Barrington 2014, Blair 2014
Neighbourhood income ↔ Depression	Kelley Moore 2016
Neighbourhood/race interaction ↔ Anxiety/depression	Alegria 2014
Employment and finances Unemployment ↔ Anxiety depression	Murali 2004, Barbaglia 2015, Gottlieb 2011
Unemployment → Stress Work(lessness) ↔ Stress Income inequality → Stress	Paul 2009 Bambra 2010 Kondo 2012
Inequalities ↔ Mental health	Goldie 2013, RCP Position Statement PS4 2010, Pickett 2015
Income distribution ↔ Mental health	Hanandita 2014
Income loss → Mental disorders	Kuruvilla 2007
Job loss → Depression	Murphy 1999
Job loss ↔ Mental health	Mckenzie 2014
Increased personal deprivation ↔ Mental health	Mckenzie 2014
Financial stress ↔ Neighbourhood stress ↔ Social integration ↔ Wellbeing	Montpetit 2015
Debt → Mental health/family wellbeing	Fitch 2009
Debt → Depression	Turunen 2014, Richardson 2013

Housing insecurity ⟷ Depression	Gottlieb 2011
Child factors	
Parental mental health → Child mental health	Kuruvilla 2007
Parental depression → Child depression	Lau 2002, Beardslee 2012, Bramesfeld 2006, Bulter 2014
Childhood poverty ⟷ Mental illness	Murali 2004
Family history of MH ⟷ Child MH	Reiss 2013
Poverty → Psychosocial development inequalities	Treanor 2012
Parental poverty → Anxiety/depression	Samaan 2000
Parental education ⟷ Self esteem ⟷ Depression in adolescents	Mossakowski 2015
Lifetime risk of depression ⟷ Parental occupational level	Beardslee 2012
Parents of low SES → Lifetime rate of depression	Beardslee 2012
Bullying, parental discord, academic failure → Stress	Sparrow 2007
Academic competence ⟷ Resilience	Grant 2006
Resilience ⟷ [Connection / attachment to caring adults, positive family systems, Normal IQ, self-regulatory systems, positive outlook, motivation for achievement]	Beardslee 2012
Demographics	
Ethnic minorities → stress Minority ethnic ⟷ Poverty Race ethnicity ⟷ SES	Thoits 2010 Smith 2007 Myers 2009
Religion → Depression (less or more)	Ohuoha 1991

Religiosity → Lower psychological distress	Samaan 2000, Brody 2014
Female → Stress	Thoits 2010
Female → Depression	Piccinnelli 2000, van der Waerden 2010, Williams 2012

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