This report provides a review of psychological research into the causes and consequences of poverty.

It covers four main subject areas: social processes, mental health, genetic and environmental factors, and neurological and cognitive effects. The goal of the review is to evaluate not only the scientific methodology and theory developed by poverty researchers, but also to highlight the potential relevance of such research for those involved in social policy. Given that poverty is a relatively under-studied subject within experimental psychology, the report also hopes to draw attention to research questions that would benefit from further empirical investigation. The report includes:

- an overview of psychological methods and sub-disciplines, as well as the criteria used to evaluate the research under discussion;
- the social psychological effects of poverty;
- psychological explanations for the mental health risks associated with poverty;
- psychological research on the heritability of poverty, and its effect on human biology at a genetic level;
- the effects of childhood poverty on cognitive and neurological development, and evidence for the existence of a ‘scarcity mindset’ affecting anyone experiencing severe resource depletion; and
- advice for policy-makers seeking to make use of the findings from psychological research.
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EXECUTIVE SUMMARY

Psychological research has shown that the experience of poverty significantly influences the way we think, feel and act. Understanding the psychological (and neurophysiological) effects of poverty is a crucial step in ensuring the effectiveness of poverty-reduction initiatives.

This report reviews the contributions of psychological research to the understanding and prevention of poverty. The review is structured around four key content areas: social processes, mental health, genes and environment, and brain and cognition, with a concluding chapter on research and policy. These broad subject headings reflect general differences in methodological and theoretical approaches across the various sub-disciplines of psychology (although a number of key themes and principles will cut across these divisions). At every stage of the review, in addition to evaluating the methodological adequacy of the research, two specific criteria were considered for its use in policy-making: whether the outcomes are useful to policy-makers, and whether the analysis had been conducted at an appropriate conceptual level to inform policy decisions.

Social processes

Social psychological research on poverty can be broadly split into studies that consider thoughts, feelings and behaviours directed towards those in poverty, and those which consider the thoughts, feelings and behaviours of those in poverty themselves. When considering those in poverty as an outgroup, we report numerous accounts indicating that the stereotypic perception of those in poverty is characterised by extremely negative evaluations (they are viewed as low on a dimension of personal warmth and also on a competence dimension). This was found to correlate with contemptuous emotional responses, harmful outgroup-targeted behaviours, and attributions of personal responsibility for their state of poverty.

Policy change intended to benefit those in poverty is likely to meet significant resistance if policy-makers and taxpayers do not consider those in poverty ‘worthy’ of aid. Therefore, the report makes the case for a remedial
approach to general perceptions of poverty to form a key component of any comprehensive policy-making initiative. One of the most successful tools for improving group relations is intergroup contact. The report reviews evidence showing that contact has the potential to reduce negative stereotypes, intergroup anxiety and prejudice, and to promote positive intergroup emotions such as empathy. Contact theory therefore represents an excellent framework within which general perceptions of those in poverty might be improved.

When considering those in poverty as an ingroup (rather than an outgroup), a key concept to emerge from the social psychological literature is self-efficacy. The term self-efficacy describes belief in one’s own competence and ability to succeed. Levels of self-efficacy are consistently associated with several indicators of socioeconomic status (SES), and are found to act as a mediating factor between the experience of stressful life events and the onset of clinical depression. Furthermore, neighbourhood levels of self-efficacy predict unemployment and welfare usage over and above individual levels. We also present a selection of evidence for the self-stereotyping effect, whereby the existence of a particular stereotype (e.g. the perceived low competence of those in poverty) can significantly affect both self-perceptions and actual performance. This research demonstrates both the potential value of promoting self-efficacy amongst those in poverty, as well as the importance of disrupting negative stereotypes that exist from both the ingroup and outgroup perspectives.

**Mental health**

The experience of poverty significantly increases one’s risk of suffering from several severe psychological disorders. The report reviews material relating to three main disorders: schizophrenia, mood and anxiety disorders, and alcohol and substance abuse.

The prevalence of schizophrenia shows a clear social class effect, with those in social class V (‘unskilled’) significantly more likely to suffer from the condition than those in higher class categories. We discuss evidence for the ‘social drift’ hypothesis, which suggests that the onset of schizophrenia symptoms may impair the ability to function in educational or professional environments, and thus cause an individual to ‘drift’ down the socioeconomic ladder. Another factor in the schizophrenia class-gap may be the greater access to mental healthcare of those from medium- or high-SES backgrounds.

Although the class association with mood and anxiety disorders is less pronounced than in schizophrenia, it remains relatively consistent, and there is also evidence for a similar social drift effect. A key causal factor in the onset of depressive or anxious symptoms appears to be the experience of stressful life events, the prevalence of which is significantly elevated for those experiencing poverty. Social support is often cited as a crucial factor in disrupting the association between stressful events and depressive episodes. However, a number of researchers suggest that social support may in fact have a toxic effect for those in low-SES environments, due to the high levels of stress experienced by all those involved.

Alcohol and substance use and abuse is inconsistently reported as being elevated amongst low-SES individuals. There is some evidence to suggest that the time-course of poverty might determine its relationship with alcohol consumption. One study found that long-term unemployment increased alcohol consumption, whilst short-term unemployment did not. These
results (and indeed those of many of the studies discussed in this chapter) are purely correlational (i.e. they do not allow the authors to conclude that factor X causes effect Y, only that the two variables are associated in some way). Nonetheless, several themes that have emerged from the discussion of psychological disorders (in particular the role of maladaptive responses to stress) recur in other chapters of the review, suggesting a certain degree of consistency in the psychological profile of poverty.

**Genes and environment**

SES shows a relatively high degree of heritability. One potential explanation for this is that other heritable psychological traits, such as IQ, influence one’s eventual position in the socioeconomic hierarchy. However, we report evidence that the heritability of IQ actually varies depending upon one’s socioeconomic environment during childhood, potentially due to the limiting effect that a low-SES environment places on the intellectual development of a child, preventing them from fulfilling their ‘genetic potential’.

Low SES has also been associated with genetically based alterations in the regulation of ‘stress-response’ hormones. This may represent an adaptation in those whose development takes place in a deprived environment. Although this helps to deal with the stressful day-to-day experience of poverty, it exacts a toll on the body’s chemical balance in the long term, leading to many of the health issues associated with low SES (including heart disease and several forms of cancer). The impact of childhood SES on adult health outcomes is supported by studies showing its association with DNA-methylation and telomere attrition, by means of epigenetic processes (i.e. alterations in the expression of genes which do not result from changes in the genome itself) which produce a form of ‘accelerated ageing’. These findings demonstrate that although some of the most damaging (and potentially fatal) consequences of poverty do not emerge until adulthood, their origins lie in the developmental environment; therefore, the genetic literature serves to highlight the vital importance of early interventions in breaking the cycle of poverty.

**Brain and cognition**

There is significant evidence for the damaging effects of poverty on the cognitive development of young children, with concomitant alterations in patterns of brain activity. These cognitive deficits appear across many domains of cognitive evaluation, but the most severe impairments are found for executive function and language development. These results have been linked with the previously discussed literature on the stress of living in poverty. Specifically, stress has been shown to impair the physiological development of the same brain areas where activity is disrupted in low SES.

A recent development in the cognitive psychology literature, the so-called ‘scarcity hypothesis’, conceptualises scarcity as a specific psychological state that can manifest in anyone (not just those experiencing poverty). According to this hypothesis, scarcity of any resource leads to highly preferential focus on the immediate task at hand, to the exclusion of peripheral tasks or long-term goals. Experimental studies of this effect have shown that people experiencing scarcity can in some cases show greater aptitude at short-term resource management, but at the expense of their long-term performance. The ‘scarcity state’ hypothesis has the potential to
significantly impact the approach of policy-makers, as it provides a means of improving the ability of those experiencing poverty to manage their limited resources, without resorting to purely financial assistance, by reducing the pressure on other limited resources (e.g. via provision of free childcare or public transport).

**Research and policy**

Much of the research discussed in this report was conducted outside the UK, and in many cases only a handful of studies exist relating to a particular topic or hypothesis. For this reason, we recommend that any poverty intervention that seeks to apply aspects of psychological theory should incorporate an empirical research component. This will provide not only an expansion of the psychological literature on poverty, but also a means of ensuring the applicability of the theory in question to the particular context of poverty in the UK. Many of the studies discussed lend themselves naturally to an intervention framework, and we provide examples from each of the four subject areas of how their research might be applied in practice.

Finally, we discuss a major caveat to the incorporation of psychological principles within poverty-reduction policy. Poverty is a fundamentally economic issue, not a psychological one. Psychological approaches provide effective means of supporting economic interventions and policy change, but cannot alone be expected to solve the systemic issues at the heart of poverty in the UK.
1 INTRODUCTION

The purpose of this report is to provide an overview of the contributions of psychological research towards the understanding and reduction of poverty in the UK.

The intention is not to conduct an exhaustive and technically focused literature review. Instead, we outline the various ways in which the question of poverty has been approached by psychologists, provide illustrative examples of key studies, and discuss the potential practical applications (and limitations) of such research for policy-making and intervention design.

The review begins with a brief overview of psychology as a scientific discipline. It outlines some of the broad conceptual principles underlying various sub-fields, and discusses the evaluative criteria that policy-makers should consider when faced with potentially relevant psychological evidence. The body of the review is structured around four main theoretical areas: social processes, mental health, genes and environment, and brain and cognition. These headings correspond roughly with subdivisions within psychology, but there are a number of consistent themes (often specific to the study of poverty) that provide cross-over between sections and link numerous areas of research. The review concludes with a chapter on the subject of research and policy-making. The focus is on providing topic-specific recommendations regarding the application of the research discussed previously, as well as general advice for incorporating psychological principles into poverty-reduction policy.
2 AN OVERVIEW OF PSYCHOLOGICAL RESEARCH AND ITS EVALUATION

Psychology, as a scientific discipline, represents an extremely broad church. The vast complexity of human cognition and behaviour can be investigated using myriad different theoretical approaches and methodologies, and is reflected in the diversity of research that falls under the banner of psychology.

Transcending these numerous sub-disciplines are a number of broad conceptual perspectives that underpin much of the research in modern psychology. These perspectives often represent a mixture of theoretical foundations and methodological practices that are applied to a wide range of subjects and research questions. For example, the neuroimaging perspective has gained a great deal of attention in recent years. Its theoretical foundation derives from the philosophy of biological reductionism – that all behaviour may be explained through biological processes. This theoretical position is combined with a particular set of methodological approaches, involving the use of brain imaging techniques such as magnetic resonance imaging (MRI) or electroencephalography (EEG) as the primary analytic tool to investigate a wide range of behaviours and psychological phenomena (e.g. vision, memory, emotions, social cognition, etc.). The neuroimaging approach is most extensively employed in the fields of cognitive and behavioural neuroscience, which seek to link psychological states or behaviour with particular patterns of brain activity. However, the potential of neuroimaging techniques to indicate the biological basis of behaviour and cognition has led to their widespread adoption throughout many disciplines, including clinical, developmental and social psychology.

This pattern of psychological perspectives percolating beyond their primary disciplines is quite common. Another key example is the evolutionary perspective, in which psychological phenomena are treated as evolved...
adaptations to natural pressures in our species’ historical environment. This approach is found not only in the dedicated field of evolutionary psychology, but in many other areas as well, and it is not uncommon to find psychologists from almost every discipline proposing evolutionary explanations for their findings. Similar to this level of near-universal applicability is the genetic perspective. Advances in the resolution and availability of gene-sequencing techniques have allowed the investigation of genetic markers for a wide range of psychological traits, and this approach has seen particular success in the study of psychological disorders such as depression and schizophrenia.

Other perspectives are more restricted in their use outside of a few key areas, often due to the limitations of specialised methodologies. For example, the concept of using animal subjects to model human cognition is limited to those areas where the behaviour and physiology of the animal in question is similar enough to the human analogue. Nevertheless, the approach of inferring biological causality from the effects of selective brain lesions (e.g. investigating the role of a particular brain area in memory function by removing it from an experimental animal and observing the results) has considerable relevance to the field of neuropsychology, which is primarily concerned with investigating the capabilities of human patients with pre-existing brain damage. This avoids the issue of biological similarity inherent in animal research, but is typically limited by small sample sizes and a lack of control over the precise location and size of the lesions in question. Similarly, specialised approaches may be found in the focus of developmental psychology on the emergence of behavioural and cognitive processes throughout childhood, the emphasis of social psychology on the psychological processes within groups of two or more individuals, and the high degree of overlap between clinical psychology with medical science in its investigation of psychological disorders.

Although this is by no means an exhaustive list of psychological disciplines or perspectives, it does provide an indication of the breadth of psychological approaches. It also facilitates a discussion of one of the key themes of this review, that is, the notion of using an appropriate approach for the subject in question. Though certain psychological perspectives, such as the evolutionary or neuroimaging approach, are very broadly applicable (according to their principles, each and every psychological phenomenon has evolved under selective pressure, and almost all will have some sort of neurological basis), they are not always appropriate or useful when investigating certain research questions. For example, a clinical psychologist seeking to improve drug treatments for depression by investigating the role of a particular neurotransmitter is unlikely to benefit from attempting to apply the evolutionary perspective. Almost certainly, however, there are evolutionary explanations for depression, they contribute little or nothing to our understanding of the neurochemistry of emotion regulation, and there are certainly alternative approaches (e.g. neuroimaging, animal models) that will yield more useful and relevant data.

Another example, provided by Coltheart (2006), is of a cognitive psychologist studying how we predict the behaviour of those around us. The psychological phenomenon in question can be explained by two plausible but competing hypotheses: first, the ‘simulation’ hypothesis, in which we imagine how we ourselves would behave, and apply that to others; and second, the ‘theory’ hypothesis, in which we use our knowledge about the other person to construct a theory about their mental state, and extrapolate behaviour from there. If the psychologist wishes to determine which of these hypotheses holds true they will, for example, benefit little from the neuroimaging approach, since identifying the brain areas that are active...
Psychological perspectives on poverty during decision making will not provide any direct information about the cognitive processes at play. It may be possible to infer certain processes based on prior knowledge about the function of particular areas, but such evidence would be correlational at best, and the researcher would be better off devising some kind of behavioural task whose results would distinguish between the competing hypotheses.

These examples illustrate two key principles when selecting appropriate, suitable approaches, to a particular subject: appropriate outcomes and appropriate level of analysis. In the first example, the outcomes of a neuroimaging- or animal-based approach would be potentially useful to the researcher, whilst the outcomes of an evolutionary approach would not. In the second example, behavioural testing represents an appropriate level of analysis, because its results are directly relevant to the question being asked, unlike the neuroimaging approach. Furthermore, though these principles have been introduced in the context of psychological research practices, they are equally applicable to the use of scientific evidence in policy-making. When reviewing the research on a particular topic, in this case poverty, it is vital to consider whether the outcomes of each study are relevant and useful to the policy decisions at hand, and whether the level of analysis employed is appropriate for use in the sphere of social policy. To provide a hypothetical example, a study that identifies some genetic factor as being more prevalent in those suffering from financial hardship may be interesting to geneticists, but is not directly useful for policy-makers seeking to reduce national poverty. The results are unlikely to be practicable, and the level of analysis is so far removed from the realm of social policy that the chain of causal inference (from gene to proteins, to neurological structures, to cognitive processes, to individual behaviour, to group tendencies) becomes untenable. A central focus of this review is to assess the suitability of the research under discussion in terms of the utility of outcomes and the level of analysis.
Social psychology explores how human behaviour and cognition is affected by the presence of others. By nesting individuals within the context of social groups, social psychology distinguishes itself from most other sub-disciplines that tend to treat their human subjects as isolated units.

Social psychology is also distinct from the commonly associated field of sociology, which generally emphasises macro-level processes, such as the effects of societal structure, or the development of social institutions. The primary unit of analysis for sociologists is the group or society itself, whereas social psychologists focus on the individuals within the group. However, there is a great deal of collaboration and cross-pollination of ideas between sociologists and social psychologists, meaning that much of the research to emerge from sociology contains some element of psychological theory. Rather than attempting to cover all social research that contains psychological elements, this chapter focuses on the areas in which the psychological approach can provide unique insight into the perception and maintenance of poverty.

A key concept in social psychology is that of the social group. A social group is defined as two or more individuals who share a common social identity, and can encompass anything from a simple dyad such as a romantic partnership, to a group, comprising millions, that forms an entire race or religion. Once a particular setting has been conceptualised in terms of the groups involved, any number of social psychological principles can be applied to explain the behaviour of their members. In the case of poverty, group membership may be defined by a number of potentially useful metrics: income, receipt of welfare, homelessness, etc. Although there are numerous important methodological issues surrounding the question of poverty measurement (with a plethora of associated research literature), this review treats the various indices as roughly analogous, except where the choice of metric significantly impacts upon our interpretation of the results.
People in poverty as an outgroup

Social psychologists generally conceptualise group identity in terms of the ‘ingroup’ (i.e. the group to which the individual being studied belongs) and the ‘outgroup’ (any group to which the individual being studied does not belong). Many social psychological concepts – ingroup bias, outgroup stereotypes, intergroup contact, etc. – rely on an ingroup/outgroup dichotomy. With regard to poverty, this dichotomy provides two possible research perspectives. In the first, those experiencing poverty are designated as the outgroup, allowing researchers to investigate how they are viewed by the general population in terms of attitudes, emotions, stereotypes, etc. Although this approach may seem relatively ancillary to the goal of policy-based poverty reduction, one of the most important potential outcomes of such research is an understanding of how negative attitudes and stereotypes towards those in poverty may be reduced. If the process of making or instigating policy decisions is being impeded by the presence of negative outgroup attitudes amongst those involved (policy-makers or tax-payers, the majority of whom, at least in the former instance, are not personally experiencing poverty), social psychological research on the reduction of such attitudes may be highly relevant in providing a facilitatory environment for more economically focused policies that would require a certain amount of positive regard for those in receipt of welfare, for example. The following chapter reviews several areas of research that focus on the improvement of outgroup attitudes, and the reduction of negative stereotypes.

Before attempting any systematic improvement of attitudes towards people in poverty, the precise nature of those attitudes and stereotypes must first be established. The so-called ‘Stereotype Content Model’ (Fiske, et al. 2002) provides a well-established and systematic dimensional framework for categorising outgroup stereotypes, and also crucially incorporates predictions about the kinds of emotional responses and behaviour a particular stereotype will induce. The Stereotype Content Model (SCM) argues that there are two primary dimensions of stereotype content: competence and warmth. These dimensions are independent, such that a particular target group may be perceived as high in one dimension without necessarily also scoring highly on the other. For example, stereotypes regarding groups, such as Asians, feminists and the rich, commonly show low warmth but high competence, whilst those relating to homeless people or welfare recipients tend to demonstrate both low warmth and low competence. The placement of a particular outgroup on these dimensions is argued to depend on their relation to the ingroup. In particular, competence is predicted by group status, such that high status groups are seen as more competent. Similarly, warmth is predicted by perceived intergroup competition, with non-competitive outgroups regarded as warmer than those providing competitive threat to the ingroup. People in poverty are generally considered to be low status, but their consumption of economic resources (through welfare provision, etc.) places them in a position of competition with most ingroups, leading to stereotypes of low warmth.

Finally, the SCM also provides clear predictions as to the emotional and behavioural responses resulting from a particular stereotype category. High-warmth, high-competence target groups (e.g. ingroup members) produce feelings of admiration; high-warmth, low-competence groups (e.g. the elderly or the disabled) are responded to with pity; low-warmth, high-competence groups (e.g. the rich) produce envy; and low-warmth, low-competence groups, such as people in poverty, elicit contempt. In terms of motivation towards pro-social action, it is immediately apparent from this
These results indicate that the driving processes behind antipathy towards people in poverty are negative emotional reactions, and perceptions of personal responsibility.
seen extensive evidential support, with a 2006 meta-analysis of showing significant negative effects of contact on prejudice (Pettigrew and Tropp, 2006) in 94 per cent of its 515 studies, with an overall correlation of ~.21. The ameliorative effect of contact has been demonstrated in numerous different conflict settings, between groups of different ethnicities (e.g. Bornman and Mynhardt, 1991), religious groups (e.g. Tausch, et al., 2007), ages (Caspi, 1984), and sexual orientations (Herek and Capitanio, 1996), and using a range of research methodologies beyond the survey-based designs commonly employed by social psychologists (e.g. laboratory experiments, Cook, 1978; field studies, Ohm, 1988; neuroimaging, Walker and Hewstone, 2008; for a review, see Pettigrew, 1998). Crucially, contact has been shown to not only improve outgroup attitudes, but also to reduce negative stereotypes (e.g. Johnston and Hewstone, 1992), and negative intergroup emotions (see Mackie and Smith, 2002). Indeed, the improvement of affective responses to outgroup members is now generally considered to be one of the most important aspects of the contact process, particularly when it comes to the prediction of intergroup behaviour (Pettigrew, 1998; Tropp and Pettigrew, 2005). As a further point of interest, the stereotypic dimension of warmth proposed by the SCM closely mirrors one of the most commonly used measures of intergroup attitudes, the so-called ‘feeling thermometer’ (Converse, et al., 1980). The well-established effects of contact on this attitude measure (see Lolliot, et al., in press) suggests that it should provide an effective means of disrupting the link between the low-warmth, low-competence stereotypes associated with people in poverty, and their consequential active and passive harmful behaviour.

In his original formulation of the contact hypothesis, Allport suggested that one of the most important intergroup emotions for the contact process is empathy (Allport, 1954). Empathy, the emotional state, is closely associated with the cognitive process of perspective-taking (Batson, et al., 1997), and together these two factors have been found to be highly effective in reducing prejudice (e.g. Finlay and Stephan, 2000; Galinsky and Moskowitz, 2000; for a meta-analysis, see Pettigrew and Tropp, 2008). Furthermore, a study by Vescio, et al. (2003) experimentally manipulated perspective-taking amongst White participants viewing an interview with an African American student. Participants who were encouraged to take the interviewee’s perspective showed a significant improvement in outgroup attitudes, compared with those who were instructed to maintain an objective, detached standpoint. However, the authors went one step further by investigating the factors that mediated the relationship between perspective-taking and attitudes. A mediator is a statistical term for a ‘process’ variable, something that explains how the relationship between a predictor and an outcome variable (Baron and Kenny, 1986). For example, anxiety is a well-established mediator of the relationship between contact and intergroup attitudes, because contact reduces anxiety which, in turn, improves attitudes (Stephan and Stephan, 1985). In their study, Vescio and colleagues considered two possible mediators of the link between perspective-taking attitudes: empathy and situational attributions (i.e. viewing the interviewee’s experiences as resulting from situational factors, rather than internal, dispositional factors). Although both empathy and situation attributions were found to have significantly mediated the relationship between perspective-taking and attitudes, the mediation effect of situational attributions was found to be significantly larger than that of empathy. Therefore, this study suggests that, in addition to the efficacy of contact in improving attitudes via negative emotion and stereotype reduction, a crucial element of the contact process may be
the promotion of situational (rather than internal) attributions through increased perspective-taking. This is of particular importance to resolving prejudice towards people in poverty, since it has already been established that attributions of personal responsibility are a major factor in producing the extremely negative emotions and behaviours predicted by the SCM and BIAS models. Furthermore, as the focus of possible intervention strategies, causal attributions have established potential. Power, et al. (1996) report the results of two experiments in which exposure to stereotypic examples of outgroup members elicited dispositional/internal attributions, whilst counter-stereotypic targets produced more situational/external attributions. Although in this case people in poverty were not amongst the outgroups tested, this model could readily be applied to a counter-stereotypic contact with low-SES individuals. Given the evidence discussed above, intergroup contact should, at least in principle, provide an effective means of engendering a political environment conducive to poverty-reduction policies. Regrettably, there is a clear lack of contact research specifically targeting people in poverty as a target outgroup. The majority of research tends to treat SES as a secondary trait of other low-status outgroups, such as ethnic minority groups or immigrants. Although many of the findings from such studies apply to attitudes towards poverty itself, more directly applicable research should be a clear priority if contact-based interventions are to be attempted. A study from 2004 (Lee, et al.) considered multiple types of contact with homeless people, who experience similar dimensions of stereotyping according to the SCM. The study involved a survey of 1,507 telephone interviews carried out in the US in 1990, and found that all forms of (positive) exposure to the population of homeless people improved attitudes in the sample population. Although this study has several significant shortcomings, in particular the fact that it was carried out nearly 25 years ago in a different country, its results are at least consistent with our prediction that contact should provide an effective means of improving attitudes towards people in poverty.

People in poverty as an ingroup

At the beginning of this discussion, we pointed out that there are two ways of conceptualising those in poverty using an ingroup/outgroup schema. Thus far we have only considered research relating to people in poverty as an outgroup, but there also several significant findings from social psychology that consider how intergroup and interpersonal dynamics may affect the thoughts, feelings and behaviours of those who are themselves experiencing poverty. In particular, this chapter reviews research into the concept of ‘self-efficacy’, which may go some way to explaining the self-perpetuating nature of poverty.

Self-efficacy, as described in Bandura’s (1986) social cognitive theory, represents the beliefs held by an individual regarding the extent of their own capabilities, and their sense of control over their environment. Self-efficacy has been frequently associated with socio-economic indicators such as income (Gurin, et al., 1978), education (Adams, 1992), and vocational outcome expectations (Ali, et al., 2005), and although the size of the correlation between SES and self-efficacy is not particularly large, it is fairly consistent (Gurin, et al., 1978; Mirowsky and Ross, 1983; Wheaton, 1980; Gecas and Seff, 1989). A number of studies have also demonstrated the specific consequences of negative socio-economic conditions, with self-efficacy being severely reduced following job loss (Pearlin, et al., 1981; Gecas
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and Seff, 1989), uncertain employment status (Sennett and Cobb, 1972), and as a consequence of chronic economic hardship (Popkin, 1990).

As for the consequences of self-efficacy, although it is difficult to infer causality from data that is largely correlational, there appear to be significant associates with both physical and mental health. In terms of physical health, self-efficacy is important due to its effects on outcome expectancies (i.e. our expectations regarding the likelihood of success when we attempt a task). Self-efficacy has been identified as a crucial factor in a wide range of health-improvement behaviours, including dieting, exercise, sexual health and smoking (Bandura, 1997; Maddux, et al., 1995). However, self-efficacy has also been found to have a more direct effect on our physical state, affecting immune system responses and stress-response systems (O’Leary and Brown, 1995). As for mental health, low self-efficacy is strongly associated with depression (Bandura, 1997; Maddux and Meier, 1995). A study by Maciejewski, et al., (2000) found that for those with a history of depression, self-efficacy significantly mediates the relationship between negative life experiences and the emergence of depressive symptoms. Self-efficacy is also regarded as highly important in recovery from substance abuse or eating disorders (Bandura, 1997; DiClemente, et al., 1995). As will be discussed later, mental health is a particularly damaging and consistent corollary of poverty, and the identification of self-efficacy as a key process in that relationship may provide a potentially useful angle of approach for intervention or policy design.

Self-efficacy is generally considered to be individually determined, and particular focus is placed upon the developmental environment, with parental support and responsiveness identified as crucial factors in improving childhood self-efficacy (Gecas, 1971; Rollins and Thomas, 1979). Furthermore, parental self-efficacy has been found to significantly impact parenting quality, and it has been argued that inculcating a sense of competence and faith in one’s own abilities should be a central component of parenting interventions, alongside more traditional approaches focused on improving knowledge and skills (for a review, see Coleman and Karraker, 1997). Beyond the familial environment, however, there is evidence to suggest that one’s broader social context can significantly impact self-efficacy, over and above individual factors. Boardman and Robert (2000) report data from a national survey in the US, in which it was found that neighbourhood levels of unemployment and uptake of welfare provision negatively predicted residents’ levels of self-efficacy, even when controlling for the effects of personal SES. They provide two possible explanations for this effect. First, low SES neighbourhoods are likely to experience constraints upon the intake and output of resources (e.g. employment opportunities, social and leisure facilities, educational resources), limiting the range of efficacy-encouraging experiences (referred to by Boardman and Robert as ‘mastery experiences’). Second, the higher the neighbourhood SES, the more potential residents have to engage in vicarious mastery experiences (e.g. upon seeing the success of others in some domain, residents will be inclined to think that they can achieve similar success). Taken in conjunction, these explanations paint a pessimistic picture for those in poverty-stricken neighbourhoods; the limited resources mean that opportunities to experience success or ‘mastery’ are rare, and the continual exposure to others who are similarly lacking in mastery experiences produces a self-defeating cycle of ever-decreasing self-efficacy. Although the historical and cultural context of the survey must be taken into account when interpreting its results (and the nature of poverty and its consequences may differ between the US and the UK, given differences
in welfare provision, for example), in this case the study is intended as a demonstration of the potential influence of neighbourhood SES on individual-level psychological outcomes. The notion of treating poverty as a multi-level (i.e. both at an individual and a neighbourhood level) process has received little attention in the psychological literature, and this study at the very least suggests the potential value of replicating this kind of analysis in the UK. Assuming that the results discussed here are replicable across different social settings, poverty-reduction policies should take into account the effects of residential context, and that the disruption of the cycle of self-efficacy degradation may be a crucial step in the rejuvenation of poor neighbourhoods.

Finally, there is an interesting link between self-efficacy and stereotypes. We generally think of stereotypes as judgements conferred upon outgroup members. However, Allport (1954) argued that the presence of stereotypes in our social environment will inevitably also alter our self-perceptions, a process known in social psychology as self-stereotyping. The extent to which stereotypical views of the ingroup are incorporated into our self-image has been shown to depend largely upon the accessibility or salience of our group identity (Hogg and Turner, 1987; James, 1993; Levy, 1996). For example, one is more likely to define oneself according to stereotypically British traits in an environment where national identity is highly salient (e.g. during the Olympic Games). There is also evidence that our self-stereotyping is flexible, since each individual belongs to any number of social groups, each of which has the potential to experience different or even contradictory stereotypes. Sinclair, et al. (2006) found that altering the salient dimension of group categorisation could selectively activate self-stereotypes. For example, they found that Asian American women who were asked to provide their ethnicity on a questionnaire reported higher ratings of mathematical self-efficacy than those who were asked to provide their gender (consistent with stereotypes that Asians are good at maths, whilst women are not). This effect is also known as ‘stereotype threat’ – the threat of conforming to negative stereotypes attached to one’s own group.

Consistent with the evidence that self-efficacy predicts performance, this self-stereotyping effect has been replicated with actual performance as the dependent measure. A study by Shih, et al. (1999) gave Asian American women a mathematics test on which they were required to declare their gender or their ethnicity (or neither, in the control group). Participants whose ethnicity was made salient performed better than those for whom no group identity was requested who, in turn, performed better than those who were asked to state their gender. Extrapolating from these results, if the content of stereotypes regarding those in poverty emphasises their lack of efficacy (e.g. through lack of intelligence or laziness), it is entirely possible that self-stereotyping will further undermine their self-image, and actual ability to effectively improve their own situation.

Interestingly, intergroup contact may also have a role to play in alleviating the effects of stereotype threat. Abrams, et al. (2008) report a study in which it was found that positive contact with a young person eliminated the detrimental stereotype threat effect for elderly participants’ performance on a maths test. Crisp and Turner (2011) expand upon this idea in a review of the psychological benefits of diversity, in which they conclude that stereotype-challenging experiences have the potential to improve cognitive flexibility, creativity and self-confidence. The idea that contact with efficacious outgroup members, or counter-stereotypic ingroup members (Power, et al., 1996) might counter the damaging effects of self-stereotyping could provide a useful basis upon which to build an intervention...
strategy aimed at improving self-efficacy amongst low-SES individuals – presuming of course that the effects from the stereotype threat and contact literature are replicable with people in poverty as the target social group.

As a final note, with particular relevance to the public and political discourse surrounding poverty, there is some evidence that the specific language used when labelling those in poverty can have a significant impact on the stereotypes elicited, particularly with regard to responsibility attributions. Henry, et al. (2004) report that stereotypic judgements of personal responsibility are more prevalent when the target group are labelled as ‘welfare recipients’, as opposed to ‘people in poverty’. Furthermore, a study by Bullock (1999) compared stereotypic attributes and causal attributions for poverty between middle-class and welfare-receiving participants. Bullock found that although the participants on welfare were less likely to endorse internal, dispositional attributions for poverty, they were actually more likely to negatively stereotype other welfare recipients as dishonest and lazy. The labelling of the stereotype trait items only included reference to welfare (never using the label ‘poor’). Further research is required to determine whether altering the language involved could help disrupt self-stereotypes. It must be noted, also, that the negative stereotypes seen in the Bullock study may not be true self-stereotypes, but rather judgements of other welfare recipients.
4 MENTAL HEALTH

The link between poverty and mental health has been demonstrated in numerous empirical studies and across a wide range of social contexts, with empirical research dating back as far as the late 1950s (Hollingshead and Redlich, 1958) demonstrating that psychiatric disorders can manifest as both causes and consequences of poverty.

Such studies include those carried out in: South Africa (Barbarin and Khomo, 1997); Australia (Bor, et al., 1997); US (Langner and Michael, 1963); and UK (Weich and Lewis, 1998). In addition, data from the National Institute of Mental Health (Bourdon, et al., 1994) indicates that those in the lowest socioeconomic category are between two and five times more likely to be diagnosed with a psychiatric disorder than those in the highest category. Another survey from the Office of Population Censuses and Surveys revealed that unemployment significantly increased the risk of various psychiatric disorders, including phobias, functional psychosis, drug dependence, depressive episodes, generalised anxiety disorder and obsessive compulsive disorder (Meltzer, et al., 1995). Despite this overall prevalence effect, the complexity and variability of psychiatric illness is such that it is important to consider each disorder or sub-category of disorders individually, since the risk factors associated with poverty for schizophrenia, for example, are potentially very different from those for anxiety or depression. Therefore, this chapter considers in detail the risk factors and explanations for the three main areas in which the effects of poverty have been studied: schizophrenia, mood and anxiety disorders, and substance or alcohol addiction (Murali and Oyebode, 2004).

Schizophrenia

Schizophrenia is a mental disorder characterised by dysfunctional cognitive and emotional responses, with common symptoms, including delusions (e.g. of persecution or grandeur), hallucinations (e.g. auditory ‘voices’), social
withdrawal, poor judgement and a lack of emotion. The prevalence of schizophrenia is highly class-biased, with the lowest social class V (‘unskilled’) showing a 17 per cent incidence rate in one survey, compared with three to four per cent for all other class categories (Argyle, 1994). As with all other categories of psychiatric disorder, unemployment status significantly increased the risk of schizophrenia. However, as with most sociological explanations for the incidence of psychiatric disorders, the direction of causality for the link between SES and schizophrenia is difficult to determine. The association does not appear to be developmentally dependent, with no effect of social class at birth on the risk of schizophrenia (Molvany, et al., 2001), and no difference in social class distribution between the fathers of schizophrenics and the general population (Goldberg and Morrison, 1963). Alternative theories focus on the idea of social selection, specifically the ‘social drift’ hypothesis (Hurst, 1995), which argues that the early symptoms associated with the onset of schizophrenia impair sufferers ability to maintain or improve their SES through employment or education. In their 1963 survey Goldberg and Morrison noted that the schizophrenia-linked drop in status was usually directly preceded by the onset of acute (diagnostic) symptoms. However, this pattern may be further complicated by the fact that those who come from middle- or upper-class backgrounds tend to have better access to psychiatric services and information. A study by Brown, et al. (2000) found that the age of first contact with psychiatric services was significantly older amongst those with a lower background social class, and that the prevalence of acute diagnostic symptoms, such as delusions or hallucinations were significantly higher in this group, suggesting a more advanced progression of the illness. Though the causality of the relationship between schizophrenia and poverty remains unclear, the existing evidence does at least suggest that socioeconomically targeted mental health interventions could be beneficial, both in terms of actual healthcare services and information provision.

Mood and anxiety disorders

Mood disorders are a classification of psychiatric conditions, including depression and bipolar disorder, in which disruption of mood is the primary symptom. Anxiety disorders are a related group of conditions, including generalised anxiety disorder, post-traumatic stress disorder and phobia, which are characterised by excessive and dysfunctional feelings of anxiety. Anxiety and mood disorders share some symptoms and often co-occur, and several explanatory models apply to both diagnostic categories. Though the increased prevalence of mood and anxiety disorders in those with low SES is less drastic than in schizophrenia, for example, it remains consistent across numerous studies (Bruce, et al., 1991; Meltzer, et al., 1995; Murphy, et al., 1991; Patel, et al., 2002). There is also some evidence for a drift effect similar to that seen in schizophrenia, with Murphy, et al. (1991) reporting a trend effect for the onset of depression to be followed by a downward shift in SES, and Jarvis (1971) also notes this ‘downwards mobility’, particularly in bipolar and major depressive patients.

When considering potential explanations for these effects, a crucial factor appears to be stress. Stress is an established trigger for the onset of depressive symptoms (Makosky, 1982), and living in poverty has been shown to increase exposure to a number of extreme stressors, including crime and violence (Belle et al., 1981) or uncontrollable life events (Brown, et al., 1975), and in the case of poor women the imprisonment of husbands.
(Brown, et al., 1975) or the death of children (Children’s Defense Fund, 1979; for a review of poverty and depression in women, see Belle, 1990; Belle Doucet, 2003). Chronic, long-term stressors appear to be more damaging to mental health than acute, sudden events (Mathiesen, et al., 1999; Pearlin and Johnson, 1977). Many social interventions strategies for depression focus on improving target individuals’ resources for dealing with stressful events and circumstances. In particular, the so-called ‘buffering’ approach (Cohen and Wills, 1985) emphasises the importance of social support in protecting against the detrimental effects of stress on mental health. Numerous studies have demonstrated a positive correlation between mental health status and social support (e.g. Billings and Moos, 1982; Henderson, et al., 1981; Turner, 1981; Williams, et al., 1981). One argument for the efficacy of social support is that it reduces the feeling of being overwhelmed and threatened that results from stressful situations. Cohen and Wills (1985) point out that although isolated stressful situations are generally manageable by most people, the co-occurrence of multiple acute and chronic stressors can rapidly diminish one’s ability to effectively deal with any of them. It is argued that the presence of social support may reduce the initial stress appraisal of difficult situations, increase the perceived availability of coping resources, and/or aid in the inhibition of maladaptive responses (Cohen and Wills, 1985).

This data would suggest that a reasonable response to the issue of stress as a mediator of the poverty/depression relationship might be targeted interventions designed to improve the social support networks available within poor neighbourhoods. However, social support should not be viewed as a panacea, since there are several examples of scenarios where it can have a toxic influence on levels of depression in those experiencing poverty. Belle (1990) points out that the prevalence of stressful situations within poor neighbourhoods (crime, violence, etc.) means that most of the members of a given social network are likely to be highly stressed, potentially leading to stress ‘contagion’ (Wilkins, 1974). In support of this hypothesis, Caughy, et al. (2003) report results of a stress and mental health survey distributed to a socioeconomically diverse range of neighbourhoods in the US. The authors found that although social capital (i.e. availability of social support resources and connectedness with social networks) decreased incidents of depression and problem behaviour in children from wealthy neighbourhoods, this effect was reversed in those from impoverished areas. Children of parents who were highly socially connected within their poor neighbourhoods were more likely to display anxiety, depression and behaviour problems than those whose parents were relatively socially isolated. If social support is to be effectively employed as an intervention tool for the reduction of poverty-linked mood and anxiety disorders, it is therefore vital to ensure that the qualitative nature of that social support is such that it does not exacerbate the problem. Unfortunately, given the limitations of the current study, it is difficult to determine why the discrepancy in the benefits of social support might occur. The authors themselves note several limitations of their study, in particular the cross-sectional nature of the data and the lack of potentially explanatory process variables measured in the questionnaire. For example, Caughy and colleagues suggest that in higher-SES neighbourhoods, lack of social support may be related to maternal depression which, in turn, could predict child health problems. By contrast, in low-SES neighbourhoods, an absence of social support could indicate better developed coping skills on the part of the parents, thus providing a better developmental environment. However, as the authors point out, this is just one of any number of potential explanations that cannot be verified or falsified given their current
data. Once again, further targeted research is required to determine why social support may be less effective at combating depression in low-SES households.

Finally, much of the research on poverty and depression is based upon survey studies, largely due to the practical and ethical issues involved in implementing experimental manipulations of SES at a meaningful level. This inevitably leads to difficulties with inferring causality from purely correlational results (a problem that affects much of the research into the social factors involved in mental illness). However, examples of experimental work do exist, and they generally seem to support the models derived from the correlational data. In one example, researchers Leventhal and Brooks-Gunn (2003) measured psychiatric and SES in 550 New York families, 40 per cent of which had moved from high-poverty public housing to near-poor or non-poor private housing three years previously. Parents in the relocated families reported a significant decrease in depressive and distress/anxiety symptoms, compared with no change in the non-relocated control group. Children in the relocated families also showed a significant reduction in anxious/depressed symptoms, with the strongest effects amongst boys who also showed a significant decrease in dependent behaviour (e.g. needing to be near adults, frequent crying, etc.). Although this kind of approach is likely be impractical for any kind of widespread intervention or policy change, it does provide a crucial indication of the direction of causality, suggesting that removing the environmental context of poverty can significantly reduce the prevalence of anxiety and depression (even without altering the actual SES of those involved).

Alcohol and substance abuse

Poverty is strongly associated with increased incidence of problematic drug and alcohol use and mortality (Harrison and Gardiner, 1999; Makela, 1999). Though the correlational data in support of this relationship is well established (Khan, et al., 2002; Singer, et al., 1992), relatively little research has been conducted on the psychological processes that might underlie this relationship. In particular, we lack a clear framework in both research and public discourse for disentangling the notion of poverty as a cause, or as a consequence of addiction. Many of the psychological effects of poverty discussed thus far might very well contribute to the development of addiction (e.g. disruption of self-efficacy and self-esteem, prevalence of certain psychiatric disorders). Some lay theories emphasise the stress-reduction and escapist elements of alcohol and other drugs, which certainly seems consistent with models of poverty and psychiatric dysfunction that identify stress and its consequential maladaptive coping strategies as the key explanatory factors in several cases (see above). However, even the correlational data is by no means conclusive, with a number of studies suggesting that consumption of alcohol is actually lower amongst poorer populations (Clark and Midanik, 1982; Hilton, 1991), whilst others show no relationship between SES and alcohol consumption (Rehm and Gmel, 1999). This may be explained in part by individual differences in risk of alcohol addiction, which is highly dependent on expectations and individual experiences of alcohol as a stress-reduction agent (Carson and Butcher, 1992; Brown, et al., 1980).

In an attempt to unpack these somewhat contradictory results, Khan, et al. (2002) used structural equation modelling to investigate the network of relationships between various factors relating to poverty and alcohol
consumption, based on data from the 1989/91 Winnipeg Health and Drinking Survey. They found that increased levels of poverty were associated with increased general and problematic alcohol use, as was long-term unemployment. Short-term unemployment, however, was associated with lower alcohol consumption. This would seem consistent with the maladaptive stress-management hypothesis, since the category of short-term unemployment suggests that the stressful situation is successfully resolved, relatively quickly. It is only once the stressor becomes chronic, in the case of long-term unemployment or high levels of poverty, that maladaptive coping strategies such as alcohol consumption emerge. However, the authors themselves point out that this data provides little in the way of causal explanations, since it includes neither longitudinal monitoring of participants nor measures of potential mediating processes. As with all the psychiatric disorders discussed to date, further research is required to conclusively determine the causal processes linking alcohol and substance abuse to poverty.

Finally, the emphasis on causal processes encapsulated by the psychological approach may be of some use in the debate over the ‘importance’ of addiction in poverty. Although levels of addiction are consistently higher amongst those experiencing poverty (Murali and Oyebode, 2004), the actual numbers of addicts within the low-SES population are still relatively small. A recent review by the JRF (Harkness, et al., 2012) found that amongst those receiving benefits in the UK, approximately 7% were problem drug users, and 4% were alcohol dependent (compared with 1% and 3.8%, respectively, in the general population). It is likely that the prevalence of substance addiction will be at least somewhat related to the underlying psychological processes of poverty, which cause any number of other detrimental outcomes. For example, disruption of self-efficacy has already been shown to help perpetuate the cycle of poverty, but is also known to contribute to the onset and maintenance of addiction (Kadden and Litt, 2011). By focusing on process variables such as self-efficacy as a means of poverty reduction, the psychological approach provides a means of ‘treating’ the symptoms of poverty across the at-risk population, rather than emphasising (or indeed de-emphasising) the few for whom those symptoms manifest as drug addiction or alcohol dependence.
5 GENES AND ENVIRONMENT

In their response to the 1994 special issue on poverty in Child Development (Huston, et al., 1994), authors Rowe and Rodgers (1997) point out a number of theoretical and methodological flaws. In particular, they criticise the publication’s papers for underestimating the potential role of genetic factors in their causal models of poverty.

Rowe and Rodgers draw a distinction between the macro- (socioeconomic variables) and micro-level (personality and other individual difference variables) antecedents of poverty, and argue that if genetic factors can be shown to influence those micro-level predictors, they must necessarily be included in causal models of poverty since they are responsible for a certain portion of its variance. Rowe and Rodgers cite the example of IQ, which has a reasonably high level of heritability (Neisser et al., 1996), and has also been related to occupational status (McCall, 1977) and social mobility (Waller, 1971). It is therefore arguable that a full causal model of poverty should include the genetic precursors for IQ as predictors, with their effect on poverty being mediated by IQ. Further supporting their case, Rowe and Rogers point to a review by Plomin and Bergeman (1991) which collated the results of the small number of genetic studies to have measured socioeconomic indicators, concluding that the heritability of SES fell within the range of 40–50 per cent (i.e. 40–50 per cent of the variation in SES may be accounted for by inherited/genetic factors).

Rowe and Rodgers’ choice of example is somewhat undermined by the existence of a study by Turkheimer et al. (2003), in which it was found that childhood SES moderates the effect of genes on IQ. The authors carried out a twin-comparison study, a standard methodology within behaviour genetics whereby a particular psychological trait (or ‘phenotype’) is measured in populations of both monozygotic (identical) and dizygotic (non-identical) twins in order to assess the extent to which it is affected by shared genes as opposed to environmental factors. In so doing Turkheimer, et al. found that amongst high SES children, 72 per cent of the variance in IQ was accounted
The effect of an individual’s genes upon their IQ is greatly reduced when they are raised in an economically deprived environment.

It must be noted that the twin-study methodology employed by Turkheimer, et al. is at best an inferential technique because it does not directly measure the expression of genes themselves. The authors note that, although the most intuitive interpretation of their results involves the quality of developmental environment differing between low- and high-SES children, it is entirely possible that their phenotype measure of SES is actually itself partially genetically determined (indeed, this is precisely what Rowe and Rodgers would argue). This adds further complexity to the model, and although the potential statistical confounds involved are dealt with by Turkheimer, et al. in their discussion, it serves to further illustrate the point that when investigating the genetic origins of a complex psychological and sociological phenotype like poverty, the patterns of causation are almost never straightforward.

In recent years, advances in gene-sequencing techniques have allowed more direct measurement of the genetic and epigenetic (alterations in gene activity not caused by changes in the genotype itself) correlates of various traits and conditions. A small number of studies have utilised such techniques to investigate poverty – in particular, those focusing on epigenetic patterns associated with low SES. The majority of these studies focus on determining the epigenetic origin of the significant increased rates of cardiovascular disease, infection vulnerability, and susceptibility to certain cancers associated with childhood (but not adult) SES (Cohen, et al., 2004; Galobardes, et al., 2004; Galobardes, et al., 2006).

Miller, et al. (2009) investigated one possible explanation for this effect – the notion that material and social deprivation in early childhood might produce a stress-related pattern of outputs from the autonomic nervous system that would alter the expression of various genetic elements involved in immune system function. They performed a genome-wide transcription survey on 103 adults from either high- or low-SES backgrounds, and found significantly altered regulation of various genes (up-regulation of genes related to the transcription process by which adrenergic signals are passed to white blood cells, and down-regulation of genes involved with the secretion of cortisol as an anti-inflammatory agent in the immune system), as well as increased levels of day-to-day cortisol secretion and a number of other immunological compounds. These altered patterns of gene expression persisted when controlling for current SES, stress and lifestyle factors, lending support to the hypothesis that the quality of early childhood environment has a significant influence on fundamental biological function in later life.

Miller, et al. (2009) propose that the limited economic and social resources available to a child raised in poverty might influence gene expression in such a way as to produce what they call a ‘defensive phenotype’, adapted to produce heightened adrenocortical and immunological responses to the numerous threats they will experience in their relatively harsh developmental environment (a pattern already observed in animal studies – Gluckman, et al., 2008; Levine, 2005; Newport, 2008).
et al., 2002). They argue that although this exaggerated pattern of threat-adaption would provide short-term protection, its continued expression would eventually exact a severe toll on the body’s chemical balance, leading to the patterns of increased health risks and advanced ageing associated with low, childhood SES (McEwen, 1998; Miller, et al., 2008).

Other studies have found corroborating evidence for this early deprivation hypothesis in relation to other epigenetic mechanisms. Borghol, et al. (2012) investigated the process of DNA methylation, a biochemical process that has been associated with the silencing of gene activity (Razin, 1998). Methylation is a natural process, which occurs as part of the development of mammals, and may be used as an accurate biological measure of age (Horvath, 2013), but maladaptive (either excessive or insufficient) methylation has been identified as a key process in cancer (Jaenisch and Bird, 2003). There is also mounting evidence to suggest that methylation (or more specifically the epigenetic systems responsible for its regulation) is sensitive to early environmental stimuli, including maternal smoking during pregnancy (Terry, et al., 2008), parental famine (Heijmans, et al., 2008) or depression (Oberlander, et al., 2008), and childhood abuse (McGowan, et al., 2009).

Given the pattern of health defects associated with low SES, Borghol, et al. (2012) conducted genome-wide methylation analysis on 40 adults to investigate the potential role of DNA methylation as an epigenetic consequence of childhood SES. They found that a significant portion of the variance in adult methylation levels within their sample population could be attributed to childhood SES. These childhood SES-linked variations were largely distinct from a second, smaller group of gene loci whose variance was associated with adult SES. Borghol, et al. point out that their results cannot draw a direct link between SES-associated DNA-methylation and disease susceptibility, nor can they identify the exact stage in development at which the critical alterations occurred (prenatal, postnatal, etc.). However, their results are consistent with the data of Miller, et al. (2009) and have been replicated and extended in a subsequent study by McGuinness, et al. (2012). In this study significant differences were found in global DNA methylation between participants with high and low economic deprivation (17 per cent reduction for those in the high-deprivation group), a 24 per cent reduction for manual workers, compared with non-manual workers, and an increase of just under 2.5 per cent in methylation, associated with each additional year of education (n = 239). Crucially, they also identified significant associations between levels of DNA methylation and biomarkers for cardiovascular disease and proteins associated with inflammation. Taken together, these results support the broader hypothesis of the significant and lasting impact of early SES on epigenetic systems that contribute directly to adult health (Miller, et al., 2009).

Thus far, the ‘accelerated ageing’ effect of poverty has largely been represented in terms of increased susceptibility to various age-related diseases (cancers, cardiovascular disease, etc.). However, a study by Shiels, et al. (2011) attempted to measure the ageing effects of poverty more directly by investigating the process of telomere attrition. Telomeres are sections of repeating DNA sequences that ‘cap’ the ends of chromosomes to prevent their deterioration or binding with other chromosomes. Telomeres naturally become shorter over the course of our lifetime through the process of chromosome replication. As telomeres shorten, this inhibits the number of chromosome replications that can occur (thus limiting the potential for the malignant cell replication found in cancer), but this may also lead to reduced immune function (Eisenberg, 2011), and telomere attrition
has also been associated with increased risk of cardiovascular disease (Cawthon, et al., 2003; Brouilette, et al., 2007).

Shiels, et al. hypothesised that the differences in life-expectancy associated with variations in SES might be linked to telomere attrition, and investigated this using 382 blood samples from the ‘psychological, social, and biological determinants of ill health’ (pSoBid) cohort (Deans, et al., 2009), which included participants from both the high- and low-SES extremes of the Greater Glasgow Health Board area. They found no significant differences in telomere length between groups from affluent versus deprived areas, but there were significant associations between age-related telomere attrition and household income, housing tenure, and diet quality. Telomere length was found to decline more rapidly in those with an average household income of less than £25,000, tenants (as opposed to home-owners), and those in the lowest 50 per cent of diet quality scores. Although these results seem broadly consistent with the previous studies of gene regulation and DNA methylation, it must be noted that the evidence for the association between SES and telomere attrition is somewhat mixed. Some studies have failed to find a significant association (Harris, et al., 2006; Adams, et al., 2007), whilst others have found small effects for specific measures of SES (such as unemployment status; Batty, et al., 2009).

In reviewing the evidence for possible genetic associations with poverty, we necessarily return to the two key questions posed in the introduction: are the outcomes of this research useful, and is the level of analysis appropriate for policy-makers? Considering first the set of studies dealing with the notion of heritable genetic factors that might predispose one towards a life of poverty, the potential outcomes of such research are extremely limited in their contribution to intervention or policy design. Certainly data such as that of Turkheimer, et al. (2003) provides a clear and relevant demonstration of the principle of gene-environment interactions, whereby genetic variation in a given population will lead different people to respond differently to a particular environment (e.g. those with high IQ being more adversely affected by the limited resources afforded them in a low-SES environment). However, the knowledge that a certain amount of the variance in SES may be attributable to genetically determined biological, rather than societal or structural economic, factors is of little use to policy-makers, unless those biological factors provide some new insight into the psychological or social processes involved. For example, the recent work detailing the effect of childhood and prenatal SES on epigenetic processes and, by extension, adult health, provides a further addition to the already significant list of adverse consequences of poverty. In particular, the work of Miller and others highlights the fact that the toxic influence of poverty begins long before the individual in question acquires any semblance of personal agency. With this in mind, it is more important than ever that poverty-reduction policies focus on ameliorating the environmental deprivation associated with growing up in a low-SES household. Such an endeavour would benefit from further genetic research, following the model of the epigenetic studies detailed here, focused directly on identifying the critical stages of development where the effects of poverty first exact their toll on the body’s biological equilibrium.
It has become abundantly apparent throughout this discussion that poverty has a severely detrimental effect on the psychological function of those exposed to it.

This chapter reviews the evidence for the precise nature of such detriment in terms of individual cognitive (and neurobiological) function. This discussion is split into two sections: the first dealing with a number of studies linking thematically with the behaviour genetics research outlined in the previous chapter, by investigating the damaging effects of childhood poverty on cognitive development; the second details a recent development in the cognitive psychology of poverty, in which ‘resource scarcity’ has been conceptualised as a specific psychological state, with measurable and generalisable effects, even for those not categorised as experiencing poverty.

Poverty and neurocognitive development

There is a clear and persistent disparity between children from low-SES and medium- or higher-SES backgrounds on a wide range of cognitive function indices. A study by Hurt, et al. (1998), low-SES children at age six showed an average IQ of 81, well below the normal range of 90+, and these findings have been replicated (Gottfried, et al., 2003) and extended to show the significant negative impact of low SES on general academic achievement (Bradley and Corwyn, 2002) and literacy (Baydar, et al., 1993). In an attempt to unpack these effects, and provide a more functional picture of poverty-related developmental trajectories (IQ and school achievement being fairly nebulous concepts in psychological terms), Noble, et al. (2005) compared 30 low-SES and 30 middle-SES children from an American kindergarten on five specific neurocognitive systems. Each of these systems was identified as a known aspect of cognitive function associated with a particular brain region as follows: executive function (management of cognitive responses to allow flexibility in the face of changing information or context) associated with the
prefrontal cortex; language function (semantic, phonological and syntactic processing) located around the Sylvian fissure between the left temporal and frontal lobes; single-exposure memory function dependent upon the hippocampus and other medial temporal structures; spatial cognition (the ability to represent the spatial relationships between perceived objects) primarily associated with the posterior parietal cortex; and visual processing (pattern recognition, visual imagery, etc.) from the occipitotemporal cortex.

When Noble and colleagues compared their kindergarten participants on a battery of standardised measures designed to assess these five psychological functions, they found significant reductions in ability for the low-SES group in all five areas. However, by far the largest and most consistent effects were found in measures of left periSylvian language function and prefrontal executive function. The authors suggest that these differences are likely to have the highest ‘social significance’ due to their large effect sizes (compared with the other smaller, but still statistically significant, effects from other cognitive modalities). Noble, et al. also identify a possible causal pathway in their results. They report that executive function itself is also significantly associated with language ability, but that the effect of SES on executive function is abolished when controlling for language ability. This indicates that the effect of SES on executive function might be mediated by language ability, in that low childhood SES decreases language ability. In turn, this negatively impacts on the development of executive function. As a means of testing this hypothesis, the authors recommend an experimental study in which participants receive intervention programmes targeted at improving either executive function or language ability. They point out that not only would such a study help unravel the causal sequence involved in the effects of SES on psychological function, but it would also provide a directly applicable model for actual educational interventions by identifying the most effective targets for remedial attention. This point relates to our earlier comments regarding the utility of results, and appropriate level of analysis. It is immediately apparent that the results of this kind of cognitive psychological study are more directly useful, and fall within an appropriate level of analysis for those involved in educational intervention and policy.

The findings of Noble, et al. (2005) were extended in 2006 by Farah, et al., who extended the taxonomy of neurocognitive systems to include three subdivisions of executive function, along with the four other faculties assessed in the previous study. Executive function was subdivided into working memory (the ability to hold information in one’s mind for a short duration) in the lateral prefrontal cortex; cognitive control (response management and decision-making) in the anterior cingulate cortex; and reward processing in the ventromedial prefrontal cortex. Farah, et al. found SES-related reductions in working memory and cognitive control, but not reward processing. Once again, a large disparity was found between low- and high-SES children in periSylvian language function, replicating the findings of Noble, et al. (2005). The authors also point out that the periSylvian language network includes areas of the left prefrontal cortex, which might go some way to explaining the co-occurrence of disparities in language and aspects of executive function. They also note that the discrepant memory function in low-SES children is consistent with the notion of stress as a key environmental variable in the SES-cognition relationship. As mentioned previously in this review, low-SES families are exposed to high levels of stress (e.g. Dohrenwend, 1973). In animal models, stress has been shown to affect the function of the hippocampal memory system negatively, at both a physiological and a behavioural level (McEwen, 2000). Noble et al.
point to studies showing increased levels of the stress hormone cortisol in children from low-SES backgrounds (e.g. Lupien, et al., 2001) which, given the damaging effect of cortisol on hippocampal function, for example in Cushing’s disease (Starkman, et al., 1992) and Alzheimer’s disease (Davis, et al., 1986), could provide a biological explanation for the causal sequence linking poverty and impaired memory.

**Scarcity as a psychological state**

Several behaviours associated with poverty seem short-sighted or actively self-defeating to outside observers. Rates of lottery participation (Haisley, et al., 2008) and borrowing, particularly short-term, high-interest loans (Bair, 2005) are higher, whilst savings (Shurtleff, 2009), use of preventative health care (Katz, et al., 1995), and adherence to courses of medication (DiMatteo, et al., 2000) are lower in low-SES individuals. Based upon the evidence reviewed thus far, explanations for these behaviours tend to focus upon environmental pressures (e.g. stress, limited resources), individual factors (e.g. poor executive function, low IQ) or some interaction of the two. However, recent work by Shah and colleagues (Shah, et al., 2012; see also Mani, et al., 2013) has presented an alternative perspective, that resource scarcity itself engenders a specific psychological state that leads not only to the patterns of behaviour seen in people who are in chronic poverty, but also to generalisable tendencies in the population as a whole.

The scarcity hypothesis consists of two key assertions. First, when resources are limited, people tend to focus intensely upon resolving the immediate problem. Examples include the increased focus on food- and drink-related stimuli amongst those who are hungry or thirsty (Radel and Clément-Guillotin, 2012; Aarts, et al., 2001), and the fact that time pressure leads to greater focus on the immediate task at hand (Karau and Kelly, 1992). The lack of resources available to resolve problems (e.g. rent payments, work deadlines) means that more cognitive resources need to be allocated in order to overcome them (unlike when resources are plentiful, in which case less attention is required). In the case of poverty, this ‘scarcity state’ would predict increased focus on immediate poverty reduction, at the expense of other concerns. This neglect for peripheral considerations forms the second assertion of the scarcity hypothesis – the increased focus on immediate resource-replenishment leads to a ‘tunnel-vision’ effect, which may be responsible for several detrimental aspects of poverty-related behaviour (e.g. inability to follow medical prescriptions, poor time management, etc.).

Along with numerous real-world illustrations, Shah and colleagues present a number of experimental demonstrations of the effects of the scarcity state on behaviour. In one example (Shah, et al., 2012), 60 participants were given a series of word puzzles in which they were allocated a number of guesses to find the correct answer. After completing the word puzzle task, participants were then tested for cognitive fatigue using a standard cognitive control task. It was found that participants who were given a large number of guesses to complete the word puzzles (low-resource scarcity) showed significantly less cognitive fatigue than those whose number of guesses was severely limited (high scarcity), despite the fact that those in the low-scarcity condition took significantly longer to complete the task.

Shah, et al. also conducted more detailed experiments to consider the effects of scarcity on both task-engagement and borrowing behaviour. In two studies (the first using a computer game in which participants had a certain number of ‘shots’ with which to clear several targets on a screen,
and the second involving a timed trivia game), participants were allocated to either high- or low-scarcity conditions (based on number of available shots in study 1, and time limit in study 2), and were sometimes also permitted to ‘borrow’ resources in any given round to improve their chances of success (borrowing additional shots at 100 per cent interest in study 1, and seconds of time in study 2, with some participants allowed zero-interest loans, some offered 100 per cent interest, and some no loans at all). In study 1, resource-deprived participants spent more time aiming their shots, demonstrating greater engagement with the task than the ‘rich’ participants. This increased engagement was beneficial, with ‘poor’ participants making significantly more effective use of their resources (earning more points per shot). However, ‘poor’ participants also borrowed significantly more than the rich, and borrowing significantly reduced their performance (borrowing options had no effect on the performance of rich participants), and the level of their borrowing was also significantly associated with the time they spent aiming (i.e. greater engagement in the task predicted greater borrowing amongst people in poverty).

These results were replicated in the second study, in which rich participants once again performed equally well, regardless of the availability of loans, whilst participants in poverty borrowed more and performed worse when loans were available (with the worst performance given by participants in poverty with access to high-interest loans). These studies provide supportive evidence for the idea that resource scarcity produces a state of limited attentional focus which, although potentially beneficial to the immediate task at hand, has the potential to detrimentally affect overall performance through the neglect of peripheral or future requirements. Furthermore, the proximity of the experimental designs to actual real-world scenarios (in terms of loan availability and uptake) lends them particular relevance for policy-makers interested in reducing the cyclical nature of poverty. The evidence for the scarcity ‘mindset’ would suggest that limiting the access to short-term, high-interest loans, for example, and presenting those on low-income with less destructive alternatives to alleviate their short-term resource scarcity, might prove a crucial step in beginning to break the cycle of poverty.

It should be noted, also, that Mani and colleagues have found evidence for the scarcity hypothesis outside of the laboratory. A study by Mani, et al. (2013) conducted two experiments, the first taking place in an American shopping mall. Researchers approached shoppers to complete short questionnaires followed by two computer-based measures of cognitive function. The questionnaire included measures of SES, as well as a ‘financial thought-induction’ task whereby the participant was presented with a series of scenarios describing financial problems (e.g. describing a situation in which the participant’s car requires expensive maintenance) and asked how they would resolve them. These scenarios could either be costly or cheap, allowing the researchers to experimentally manipulate situational resource scarcity. Mani, et al. found that receiving the resource-intensive, financial thought-induction significantly reduced cognitive performance in low-SES participants, but not high-SES participants. The authors interpret these results as showing how induction of the scarcity-state is dependent upon the resources available to the individual in question. High-SES participants are better able to deal with expensive scenarios, and therefore do not experience attentional ‘tunnelling’ when presented with them. By contrast low-SES participants, despite the entirely hypothetical nature of the task, nevertheless show significant reductions in general cognitive capacity when presented with situations that would stretch their limited financial resources.
In their second study, Mani, *et al.* took their basic experimental design and implemented it in a non-Western cultural context. They examined patterns of cognitive function in Indian farmers over the course of the harvest cycle, during which the participants resource scarcity fluctuated dramatically. They found that cognitive performance was high directly after the harvest, when the farmers had just received the vast majority of their yearly income in a single lump payment, and were therefore resource-rich. This was compared with significantly lower cognitive performance directly before the harvest, at which point the participants had almost universally overspent during the preceding year and were therefore in a state of relative poverty.

The cross-cultural applicability and external validity of the scarcity hypothesis is critical, because it supports the idea that scarcity is a psychological state that can affect anyone, rather than a selective affliction of those with low socioeconomic status. Doubtless, environmental and individual difference factors play a role in the perpetuation of poverty (as the majority of evidence we have reviewed demonstrates). However, ‘state’ poverty (i.e. temporary resource scarcity occurring in one particular instance; distinct from ‘trait’ poverty – the more common idea of scarcity as a general and persistent condition of an individual’s day-to-day existence) should now be considered as an integral component of explanatory models. Furthermore, the inclusion of the scarcity state in our understanding of poverty is of particular use to policy-makers and intervention designers. For example, according to explanations of poverty which posit stress as a key causal factor, short-term loans could be seen as a potentially effective means of reducing acute stress to permit better decision-making. However, the scarcity approach shows that this kind of solution is unlikely to help in the long term, and suggests, for example, that interventions should instead focus on reducing resource scarcity in other non-financial aspects of the low-SES environment (e.g. day care or travel assistance) to reduce the cognitive load from these additional pressures. In the terminology of scarcity research, such endeavours would help to free up cognitive ‘bandwidth’, allowing for more effective decision-making in other areas.

Mani and colleagues have proposed a number of further areas in which an appreciation of the scarcity mindset could be highly relevant to policy-making (Mani, *et al.*, 2013). Given the relatively large effect sizes of scarcity manipulations (reported as comparable to losing a full night’s sleep), the authors argue that policy-makers should take care to avoid imposing ‘cognitive taxes’ on people in poverty, which may compound the cognitive load they already experience as a result of their financial status. Lengthy forms to fill out, stressful interviews to prepare for, or incentives with complicated requirements are all cited as examples of counter-productive policies that are likely to see limited uptake and effectiveness amongst those experiencing poverty. Consequently, Mani and colleagues cite examples of initiatives that could help reduce cognitive scarcity, without necessarily involving direct financial relief. Examples include smart defaults (Smith, *et al.*, 2009), assistance when filling out forms (Bettinger, *et al.*, 2009), and reminders or prompts to make use of assistance programs (Milkman, *et al.*, 2011). The authors also point out that a primary focus of anti-poverty initiatives should be providing financial stability, since it is this (rather than financial status per se) that provides the cognitive resources necessary to deal effectively with the difficulties associated with low SES.
When it comes to the use of empirical data, the demands of politicians and researchers differ at a fundamental level, and can even be seen as oppositional.

For example, whilst a large percentage of the scientific process is concerned with identifying and quantifying uncertainty, politicians generally benefit from maintaining unambiguous and unwavering positions. Similarly, policymakers are likely to be primarily concerned with the concrete outcomes of a given piece of research, whilst the researchers themselves may be more interested in its relation to other work in the field, and its ability to support or discount conflicting hypotheses. However, despite these differing goals, both sides have a responsibility to bridge the divide, particularly when the research in question has the potential to improve our ability to deal with a complex and entrenched social issue such as poverty. The purpose of this chapter is to provide recommendations for the use of research specifically relating to poverty (for a more general review detailing the challenges of, and recommendations for, evidence-based policy-making, see Bogenschneider and Corbett, 2010). We will begin with general recommendations for the use of the psychological research presented in this review, followed by specific examples of how some of studies we have discussed could be incorporated into policy or intervention design. Finally, we will highlight some of the limitations of psychological research in the resolution of poverty.

Within psychology as a whole, the study of poverty is a relatively small field, and relevant research is distributed across a wide range of disciplines. Consequently, for any given theory or hypothesis regarding the psychological processes of poverty, there are usually only a small number of studies upon which to base any kind of policy decision. For the purposes of this review in particular, there is also the issue that the vast majority of the studies under discussion were conducted outside the UK. Although psychological theory is generally intended to be culturally invariant (unless
it specifically deals with cultural differences), the Western (and more specifically North American) origins of the majority of psychological research mean that care must be taken when generalising the results to other cultural or economic contexts. With this in mind, we would therefore recommend that policy-makers intending to utilise some aspect of psychological theory should seriously consider including some element of empirical testing into their plans. This can be a relatively straightforward process. For example, if attempting to implement a plan to reduce the negative effects of poverty on specific aspects of neurocognitive development (see previous discussion of Noble, et al., 2005), researchers in the field have already proposed a framework for a randomised control trial approach to test the efficacy of targeted cognitive interventions. Including such a study as the first phase of a broader policy plan not only allows for confirmation of the established hypotheses in the specific social context, but also allows for fine-tuning of the intervention design to ensure its maximum effectiveness prior to its wider implementation.

In conducting this review, it has become apparent that there are numerous areas in which the results of psychological research could be utilised in policy-making. From the work on social processes, intergroup contact provides a highly effective means of reducing prejudice and negative stereotypes towards those in poverty, which may be impeding the progress of poverty-reduction schemes. Contact-based interventions have been used successfully in numerous intergroup contexts, and social initiatives, such as the recently launched Social Integration Commission (www.socialintegrationcommission.org.uk) are already exploring the role of contact between various social groups in the UK, including those of different socioeconomic backgrounds. The social psychological approach also demonstrates the importance of promoting self-efficacy amongst those in poverty, which ties in closely to both self-stereotyping theory, and several findings from the field of psychological disorders. The psychological disorders literature also emphasises the reduction of stress, and the maintenance of social support networks in limiting the deleterious effects of poverty on mental health. Taken together, the research on self-efficacy, stress and social support provides support for incorporating psychological well-being initiatives into other poverty-prevention/reduction schemes. Such an approach would also benefit from some implementation of the scarcity hypothesis, dealing as it does with the cognitive biases that result from poverty, and exacerbate its effects.

Finally, a consistent theme of the research we have discussed is the idea that poverty begins long before adulthood. Offsetting the early environmental deprivation associated with poverty is a critical step in disrupting the intergenerational cycle of poverty. A general focus on children from low-SES backgrounds as an ‘at-risk’ group should be a major consideration of poverty-prevention policy. The concept of early intervention can, and should, extend across all domains discussed in this review. The flexibility and adaptability of the developing brain means that young people are not only most ‘at-risk’ from the damaging effects of poverty, but also have the greatest potential to able to escape the generational cycle they produce. Whether promoting self-efficacy and counter-stereotypic contact, guarding against the risks of psychological illness, reducing the biological toll of poverty-induced stress, or intervening to improve cognitive development and educational attainment, the earlier action is taken, the greater the chance of success.

Poverty is not, and should not be considered to be, a primarily psychological issue. It is an economic issue, with psychological consequences.
In concluding this chapter, we would caution that psychological research will not provide a ‘cure’ for systemic poverty. Any intervention or policy decision targeted solely at the psychological aspects of poverty will be treating the symptoms, not the cause. However, the cyclical nature of the poverty trap means that once the cycle has begun, those psychological symptoms work to maintain and exacerbate the economic and social hardships associated with low SES. The pervasive and pernicious psychological consequences of poverty discussed in this review suggest that solely economic interventions (at least, the kind likely to be practical in the current financial and political climate) are unlikely to succeed without support from psychologically focused initiatives. Such initiatives would strengthen the effectiveness of economically focused interventions in a number of ways, through:

- improving the political environment to facilitate policy change
- identifying areas where the cognitive capabilities of those affected by poverty may be impaired or disrupted
- recognising particular at-risk groups and providing ways of counteract their disadvantage.

This report has shown that psychology would be a powerful and effective tool in helping to reduce poverty by counteracting many of its self-perpetuating processes. It should, therefore, form a key component of any serious poverty-reduction strategy.
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