Explaining the Link between Socioeconomic Status and Health

Aleck Ostry, M.A., M.Sc.

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Centre for Health Services and Policy Research
429 - 2194 Health Sciences Mall
University of British Columbia
Vancouver, BC
V6T 1Z3
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**Introduction:**

The Black Report, published in Britain in 1980, confirmed the basic observation, made hundreds of years ago, that the socio-economic position of individuals is inversely associated with their health. Britain has historically lead the way in research on socio-economic conditions and health, in part because accurate data sets linking occupation and health status have been available for over one hundred years.

Since the Black Report’s publication, research on socio-economic inequalities and health has burgeoned in other countries as well as Britain partly due to the recognition that, in modern economies, some of the major remaining differences in health outcomes may be due to socio-economic factors. As well, sophisticated data systems have been developed that allow for accurate measures and analyses of the relationships between economy and health. Over the past two decades evidence linking socio-economic status and health has been obtained in many nations and at levels of sophistication not possible prior to the publication of the Black Report.

In its review of the evidence, the Black Report divided possible explanations for the persistence of health inequalities across social class into “4 categories: artefactual explanations; natural and social selection; materialist/structuralist explanations; and cultural/behavioural explanations” (McINtyre p.727.) Nearly 20 years after the Black Report, newer studies have produced evidence which has modified and reduced the importance of some of these categories of explanation and added a new category, the particularist explanation.

The purpose of this paper is to describe the various pathways which have been advanced to explain the links between SES and health and the way they have evolved since publication of the Black Report. This will be accomplished by reviewing the evidence most often used to justify these explanations. With this approach a picture of the pathways debate will be presented and, the feasibility of using emerging datasets to explicitly test pathway hypotheses will be explored.
This paper is divided into 5 sections. In the first section, the Black Report is briefly reviewed. Sections 2, and 3 review the evidence for, respectively, a “psychosocial” and a neo-materialist pathways. In section 4 the most recent studies of income inequality and social capital are reviewed in terms of their implications for the pathways debate. In the final section some thoughts are offered on future research directions.

1. Black Report:

At each stage in the investigative history of the effects of SES on health artefactual explanations emerge. In 1980, the Black Report postulated that problems in the way the Registrar General in Britain classified occupations over time (in particular shifts of occupations into different social class categories) may have produced a spurious relationship between class and health. The natural/social selection explanation in the report is one of illness driven social drift such that people with poor health drift towards lower SES (i.e. ill-health leads to low SES). The third explanation, the materialist/structuralist, has a “hard” and a “soft” interpretation according to McIntyre (1997).

The “hard” version states that “physical, material conditions of life which are determined by occupational class position, produce class gradients in health and death, and that relative deprivation in income and wealth produces relative deprivation in health and longevity” (McIntyre 1997, p.728). This assumes that different positions in the socio-economic hierarchy are associated with material life conditions which impact health. The “soft” version expands the scope of these life conditions to include things like working conditions, particularly the degree of job security, levels of job satisfaction, and physical and mental stressors encountered at work opening the possibility that psychosocial factors associated with a person’s place in the socio-economic hierarchy, as well as material factors might directly affect health status.

The cultural/behavioural pathway was also expressed in soft and hard versions. In the hard version health differences between classes are explained in terms of individual behaviours and
lifestyles. The soft version locates individual behaviour within a class context recognizing that they may be social constructed.

The Black Report’s artefactual explanation has been completely laid to rest because, since its publication, dozens of studies using measures other than the Registrar General’s occupational classification scheme have shown consistent inverse relationships between class and health. Thus, the relationship cannot be due to the particular measure of social class used. As well, re-analyses of data in the report using “adjusted” versions of the Registrar General’s classification did not alter the results.

The plausibility of the social selection hypothesis has been reduced due to the use of longitudinal study designs. And, many studies have shown that “bad” behaviour and lifestyle have an SES context so that evidence of upstream material antecedants of poor lifestyle increasingly undermines the “hard” natural/social selection explanation (REFS). It is increasingly difficult, therefore, to view the cultural/behavioural hypothesis is isolation from a materialist/structuralist framework.

The only entirely new explanation of the link between SES and health articulated since publication of the report is called the particularist hypothesis. Briefly, this explanation raises the possibility that associations between SES and health may not be a universal phenomenon but may depend on the particular situation in a country, state, or city. Complex historical and cultural factors may operate in different ways in different societies producing a set of relationships between SES and health which are dependant on the circumstances particular to a culture and a time (Lynch et al, unpublished). While this is an important view of how SES and health may be linked, because it is peripheral to the current competing explanations (neo-material and psychosocial) it is not considered further in this report.

The last two decades of research has seen the building of a strong empirical base linking psychosocial factors and health which has “tipped the balance” from a strictly materialist explanation (the “hard” version of the materialist/structuralist explanation in the Black Report)
towards a mixed explanation embodying both psychosocial and material components (the “soft” version of the materialist/structuralist explanation in the Black Report). In order to understand the present “pathways debate” the psychosocial and neo-material poles of this continuum will be described next.

Before proceeding it should be emphasized that, as far as I know, a specific and purely psychosocial or purely neo-material pathway have yet to be hypothesized and tested. In other words, those on the continuum who are closer to the neo-material pole do not exclude the possibility of psychosocial elements in the pathway between SES and health and those who are closer to the psychosocial pole similarly do not exclude material elements in the explanation. Instead researchers in the field articulate these pathways at a fairly broad level of generalization which leaves room for inter-twined explanations. This must be kept in mind when reading the next two sections in which these pathways are discussed in isolation from each other.

2. Psychosocial Pathway

There are five key bodies of evidence that point to a psychosocial link between socio-economic and health status. First, basic physiological research on humans and animals, pioneered by Seyles in the 1930s, demonstrates that the experience of stress produces measureable biochemical and hormonal responses (Seyles 193?). Seyles and others have shown that physiological damage can occur in animals and humans if the normal response to stressors, fight or flight, is blocked. Such a situation, leading to sustained low level exposure to stressors, activates the PAH axis promoting release of catabolic agents which have been shown to compromise immune functioning. This work demonstrates the existence of a physiological pathway between psychosocial conditions of life, measured in terms of a balance between specific stressors (such as psychological demand) and factors which moderate their impact (such as social support and control) and biochemical processes which may be health damaging.
Second, the linear gradient observed between individual level socio-economic position and mortality, across almost all diseases, indicates that “the association of SES occurs at every level of the SES hierarchy, not simply below the threshold of poverty” (Adler et al. 1994). The “challenge of the gradient” is to explain how SES affects health at levels well above the poverty line. This challenge, according to McIntyre “has tended to focus attention on psychosocial mechanisms mediating social position and health, and on possible neuroendocrine, immunological, and other pathways by which such psychosocial mechanisms might operate”. (McIntyre 1997, 737).

Third, numerous investigations over the past 40 years have demonstrated the links between stress and coronary heart disease (CHD). In particular, over 50 epidemiological studies have shown that stress at work, measured usually in terms of an imbalance between psychological demands and the resources to cope with these, is consistently associated with elevated CHD morbidity and mortality (Landsbergis 1994). This research has attempted to identify the specific psychosocial conditions associated with elevated CHD morbidity and mortality. Consistently, low social support obtained at work in combination with lack of control and high levels of psychological demand are associated with adverse health outcomes.

This CHD research has shown that lack of control at work is usually the single best predictor of adverse health outcomes. As well, a number studies in non-work arena’s of life also show that a high perception of control is positively related to health outcomes (Syme 1991; Thompson and Spacapan 1991) (From some people are healty p 165). This work, mainly with CHD outcomes, has moved the psychosocial pathway discussion away from a general emphasis on “psychosocial conditions” to one focused on the importance of control and to a lesser extent social support and psychological demand.

A fourth type of evidence in support of a psychosocial pathway comes from investigations of animal models. Work undertaken by Sapolsky using free-range baboons in Kenya shows that position in the baboon social hierarchy has direct and measurable physiological and biochemical stress responses (Sapolsky 19??). For example, dominant males can “turn off” the
physiological response to stress more rapidly after the stressful event passes than subordinate males. Top males exhibit better stress coping mechanisms than subordinate males. While social support appears to be important among the baboons, the amount of control, as evidenced by rank in the troop, is the single most important predictor of stress and physiological change. These models show that there is a relationship between social position and stress.

Seyles work demonstrated a plausible physiological pathway between stress and disease. The CHD and stress work has identified the components of stress exposure (specific psychosocial conditions) in people’s lives which effect health. Occupational epidemiology and Sapolsky’s work with baboons has identified control as the most important psychosocial variable. As well, many studies have shown that the levels of these psychosocial conditions, particularly control, vary according to position in an occupational or socio-economic hierarchy Marmot et al, 1991). Thus, specific psychosocial factors which are implicated in the production of stress at work, vary across the socio-economic hierarchy and have a powerful impact on health.

The fifth type of evidence which points to a psychosocial explanation comes from Wilkinson’s cross-national investigations using both absolute income and income distribution. In his earlier work using average national income he demonstrated a diminishing return in life-expectancy among developed nations as average national income increased. He found that for countries earning above 5,000 dollars GNP per capita there was little relationship between absolute material deprivation and life-expectancy. These results mean that although richer individuals within nations tend to have better health status than poorer people (and that this gradient will be continuous across the income hierarchy) richer countries will not necessarily have populations with better health status than poorer ones. This means that, for developed nations, “mortality is related more closely to relative income within countries than to differences in absolute incomes between them” And, “the contrast in the strength of the relation within and between societies would make sense if mortality in rich countries were influenced more by relative income than by absolute material standards” (Wilkinson 1997, 592).
Wilkinson further refined this work by investigating the relationship between income distribution within developed nations and life-expectancy. While health outcomes were not related to the absolute incomes of nations he showed that countries with a more “egalitarian” income distribution had better mortality and life-expectancy outcomes. This result, again reinforces the idea that relative income matters more than absolute income. Wilkinson concluded that “a shift in emphasis from absolute to relative standards indicates a fall in the importance of the direct physical effects of material circumstances relative to psychosocial influences. The social consequences of people’s differing circumstances in terms of stress, self-esteem, and social relations may now be one of the most important influences on health” (Wilkinson 1992).

Wilkinson’s work cross-nationally, and the existence of the smooth gradient within nations, provide evidence that material conditions in developed countries may be less important than originally conceived of in the Black Report’s “soft” materialist/structuralist explanation. At the same time Seyles work and the CHD/stress research underlined the importance of psychosocial factors by showing the linkages between them and socio-economic position as well as the biochemical pathways through which these factors might impact health.

This work as well as evidence from CHD and animal research has elevated the importance of a psychosocial explanation relative to a material one and specifically identified “perception of control” as the single most important psychosocial mediator of the relationship between social position and health. The evidence outlined leads to a generalized understanding of the psychosocial pathway as a coherent story based on an accretion of good evidence for major elements in the pathway.

However, the extent to which the psychosocial pathway is separate from any materialist pathway remains unclear. This may be partly because the psychosocial pathway is usually expressed as a highly plausible explanation at a fairly broad level of generalization. In other words, the psychosocial pathway appears not to be reducable to one or several specific
hypotheses. Before advancing this discussion further it is necessary to review the development of the neo-materialist pathway.

3. Neomaterialist:

Neo-materialists evolved from the “hard” version of the materialist/structuralist explanation in the Black Report. The neo-materialists viewpoint, unlike its progenitor, acknowledges that psychosocial factors may be important, but claims that these must be ultimately rooted in material circumstances. Material conditions are “upstream” from psychosocial conditions. The ways in which people perceive, cope with, and ultimately react to stressors is socially and materially determined so that focus on psychosocial conditions themselves runs the risk of missing the real cause and mis-directing remedial action. (The neo-materialist explanation is essentially Marxist and determinist with little opening for “agency”.)

The argument that psychosocial conditions may be embedded within material ones has empirical support as many studies have shown that jobs held by persons of lower socio-economic status tend to have worse psychosocial work conditions than those held by their social “betters”. In other words, there is usually a link between socio-economic position and psychosocial work conditions.

But, even if this link is present, how do neo-materialists explain why or how material conditions might effect psychosocial work conditions at the top and middle levels of the SES hierarchy? In other words, how do they deal with the challenge of the gradient and Wilkinson’s work on the primacy of relative versus absolute income? The strategy has been to call for better conceptualization and measures of SES which are “fine grained” enough to capture the material circumstances which presumably lie behind the SES/health relationship observed at the middle and upper levels of the SES hierarchy.

Even though basic material factors such as sewers, clean water, and basic nutrition are largely available to all people in developed countries, there may be additional neo-material factors
which could improve health but remained unmeasured (Davey Smith et al, 1990; Blane et al, 1997; McIntyre et al, 1998). Neo-materialist conditions may be such things as gradations in housing quality and type versus the traditional materialist conception of housing simply as adequate shelter. Or, instead of measuring diet roughly in terms of caloric intake, assessments of quality such as whether the diet is balanced and rich in fruit and vitamins may be a better indicator of relative deprivation (Lynch et al, unpublished). The underlying assumption is that absolute material deprivation is present but has not been studied in the right way with the right tools.

Several studies of areal deprivation, mainly in the UK, show that there may be neo-material features of neighbourhoods and communities which exert an effect on health, even after accounting for individual-level SES effects (Blane et al, 1997; Blaxter 1990; Davey Smith et al, 1990; McIntyre et al, 1993). Similar results have been found in the United States with the Alameda Country Study in California (Haan et al 1987). One of the best of these investigations, conducted in Glasgow by McIntyre (1993), identified neo-material factors such as quality and quantity of local transit, number of recreational facilities, density of shopping facilities, availability of “healthy” food at reasonable prices, and community crime rates which clearly differentiated neighbourhoods with the best compared to the worst mortality rates in the city.

These studies demonstrate the existence of neighbourhood-level contextual effects on health which may have a neo-material basis and have resulted in calls for investigations into the micro-ecology of every day life in order to better define these conditions. In order to develop such studies, “a starting point would be an effort devoted to understanding the ways in which socio-economic factors structure the everyday lives of people, and the resultant connections with health and quality of life. Such an approach would focus on the everyday texture of people’s lives and how that texture is involved in patterns of behavior, social contact, personality, and feelings. Such an understanding would clarify how socioeconomic factors get inside the body and, perhaps more importantly, might suggest new areas of intervention” (Kaplan 1995, 211).
Investigations of this type cry out for new types of data sets and methods. It may be difficult, with current data systems to gather data systematically at the micro-level as envisioned by neo-materialists. Newer types of health investigations using, income inequality, social capital, and neighborhood level inequality analyses may be useful in this regard. These are reviewed next.

4. Recent Studies of Income Inequality and Social Capital

As already mentioned, Wilkinson’s ground-breaking work on income inequality across nations showed that income distribution is related to health. This work has been extended by Kaplan and Lynch in the United States who have investigated patterns of income inequality across states and metropolitan areas in relation to overall mortality rates (Kaplan et al., 1996; Lynch et al. 1998). As, with Wilkinson’s cross-national work, strong correlations were found between income distribution at both the state and MSA levels and mortality after controlling for median state income. In these analyses correlations between median state income and mortality were −0.28 compared to correlations of −0.62 between state income inequality and mortality. As in Wilkinson’s cross-national work, a measure of relative income was stronger than absolute level income.

A study by Fiscella and Franks with similar methods was negative. They suggested that positive findings from ecological studies were due to confounding by individual income and that income inequality measures were capturing compositional effect of individual income on mortality (Fiscella and Franks, 1997). (This is the same criticism raised by Gravelle (1998)).

Partly in order to deal with this criticism two studies were conducted controlling for individual or household income (Kennedy et al, 1998; Daly et al, 1998). Both show that after controlling for both state median income and individual income, income inequality at the state level predicts self-rated health (Kennedy) and mortality (Daly). These studies indicate that contextual effects of income inequality, beyond the effect due to an individual’s position in the
SES hierarchy, are present. In other words, "something" about the social fabric of communities, over and above the effects which occur at the individual level, "matter" for health, a conclusion reached in most of the investigations of areal-deprivation reviewed in the previous section.

These contextual effects can be explained in neo-material or psychosocial terms. For the neo-materialist, inequitable income distributions are likely associated with a set of economic, political, institutional, and social conditions that reflect systematic under-investment in human, physical, health, and social infrastructure. Kaplan has produced evidence showing that income inequality at the state level is correlated with a number of population-level measures of social capital such as unemployment rate, proportion of the population with no health insurance, proportion of the population unable to work because of disability, per-capita expenditure on personal protection, and proportion of the state population with no high school education (Kaplan et al, 1996).

The psychosocial explanation arising from these income inequality studies is twofold. First, in communities with inequitable income distribution, levels of stress may be higher than those with egalitarian distributions. The exact mechanism of this process is unclear. It is possible that the perception of place in the social hierarchy will be different for the same groups in communities with different income distributions. This might mean, for example, that people within communities with an inequitable income distribution would have lower perceptions of control, and higher levels of stress and disease, than for people in similar groups in communities with equitable income distribution.

And, second, perceptions of relative rank and social distance between groups may be mediated by reduced social cohesion (social capital). Societies with greater income inequality also have lower social cohesion, as measured by levels of trust and social connectedness and that perceptions of unfairness, lack of personal connection within social networks, and reduced quality of personal relationships increase the sense of social distance between people leading to reduced perceptions of control, increased stress, and adverse health effects. Work
by Kawachi in the United States has shown that income inequality measured at the state level is associated with lower membership in community and social groups and lower levels of trust (Kawachi et al, 1997) This work shows that social cohesion, measured in terms of individual-level “trust” and “connectedness” does vary by income inequality. Other measures of social cohesion, particularly crime rates, have been shown to vary by income inequality too (Wilkinson et al, 1998).

The neo-materialists use the social cohesion (social capital) explanation in a different way. They accept that social capital may mediate between income inequality and health but argue that social capital, as currently conceptualized, is over-reliant on measures of individual psychological attributes such as trust and perception of fairness. The neo-materialists argue for development of social capital measures at the population level. Thus, high income inequality is a symptom of mal-distribution of social resources. Higher income inequality areas will likely provide “less support for public education, affordable housing, good roads; environmental protection; have a less unionised workforce leading to higher concentration of low paying jobs and poor working conditions; few infectious disease control programs; inferior choice and greater expense for food; fewer public health campaigns about smoking and exercise; higher concentrations of cigarette and alcohol advertising; fewer opportunities for recreation; and be more likely to tolerate racial, gender, sexuality and disability discrimination” (Lynch et al, unpublished).

This argument fits with the neo-materialist focus on the development of different and more finely graded SES measures. In the context of recent income inequality and social capital research, this focus explicitly argues for re-conceptualizing social capital in population rather than individual terms.

5. How to solve the pathways problem?

As stated earlier, the pathways debate is a continuum with neo-material and psychosocial poles. Most advocates of a psychosocial pathway understand that there may be a social
context within which this pathway operates and most neo-materialist know psychosocial pathways will be important in mediating material effects. The broad level at which both “pathways” are articulated means that specific hypotheses for one versus the other pathway are not made explicit. Within the context of the latest income inequality research, the pathways debate is usually reduced to an assessment of whether or not observed relationships between SES and health are due to relative or absolute differences in income.

Framed this way, evidence for absolute effects supports a neo-material view and evidence for relative effects supports a psychosocial view. (This is simplistic as some mix of absolute and relative effects can be interpreted, and often is, as support for both pathways). The methodological thrust in this research is to move to more sensitive health outcome measures (morbidity vs mortality; age and cause-specific mortality vs overall mortality) more sensitive income and social capital measures and smaller areas of geographic analysis. Such an approach makes sense as a way of gathering greater evidence for the relationship between inequality and health but it is unlikely to produce a “knock-out” blow for either pathway.

This is partly because of methodological problems. For example, as we move to smaller levels of geographic analysis communities become more homogeneous so that the strength of any income distribution effects will be diminished. Problems of the stability of outcome measures also arise in small area analyses, particularly if we move to age and cause specific morbidity measures. While these methodological problems will undoubtedly be overcome (after first answering the expected artefactual explanations which always seem to arise with methodological advances in SES/health research) we will be left, when the research is in, with some mix of absolute and relative effects of income inequality which may be very useful in terms of the ongoing project documenting the scope and level at which SES effects health but leave us no further head in terms of the pathways debate.

In order to move the pathways debate forward a conceptual advance is first needed. There are a number of conceptual weaknesses in the pathways debate that remain concealed as long as these are articulated at a general level. As soon as one attempts to develop specific hypotheses
difficulties arise. The choice is to leave these pathways alone at the broad level at which they are currently expressed or to develop a more specific series of hypotheses.

Neo-materialists should develop both a plausible theory and realistic measures and data sets to operationalize these. The notion that unmeasured fine gradations in material conditions (operating presumably at the individual and community level) lie upstream of psychosocial conditions cannot be maintained indefinitely particularly within the context of the recent and more profound progress in the psychosocial “camp”. The invisible neo-material hand must be made more visible in the pathways debate.

As long as neo-materialists remain in the conceptual closet, this is a problem. For example, one could argue that recent results from the Whitehall study, in which SES was controlled and an effect on health was observed for control, clinch victory for the psychosocial pathway (Bosma et al, 1997). But, neo-materialists can insist that fine-grained material factors, unmeasured in the Whitehall study, may still, lie upstream framing these psychosocial effects. To properly test these pathway proponents must be able to say what these conditions are and how they might frame psychosocial or (other, as yet unspecified) processes which impact health.

While there are shortcomings with the basic conceptual frame for neo-materialists this is also a problem for proponents of the psychosocial pathway. In terms of the recent income inequality/social capital debate, there are problems in the sole use of social capital measures that are based on individual psychological attributes. Use of such measures in isolation unhinges “civicness” and social cohesion from its social context. At the very least, particularly as income distribution is a proxy for the distribution of social goods within any society, population and individual-based measures of social capital should be used together in studies.

Recent preliminary results from Canadian income inequality studies underscore this last point. Income inequality is a proxy for the way in which resources are distributed in a society. In the United States where re-distributive mechanisms are relatively weak and the economy is
strong, income inequality may largely reflect the way in which the labour market distributes resources. However, in Canada, where re-distributive mechanisms are very strong, and in many cases regionally organized, it is particularly important to investigate other social capital measures at the population level in conjunction with income inequality.
References


Fiscella and Frank

Gravelle


