

## **The Social Sources of the Health Gradient:**

### **A Cross-National Analysis**

Lucy Barnes

Program on Inequality and Social Policy, Harvard University

Peter A. Hall

Minda de Gunzburg Center for European Studies, Harvard University

Rosemary CR Taylor

Community Health Program and Department of Sociology

Tufts University

July 20, 2010

#### **Abstract**

The relationship between health and social class is firmly established but theoretical understanding of its determinants is not well advanced. Existing approaches have limitations and their propositions are rarely tested against each other. We outline a new approach to the problem that links class-based inequalities in health to imbalances between life challenges and people's capabilities for coping with them and locates the sources of those capabilities in multiple dimensions of the social and economic relations constitutive of class. We assess the support for this approach and the relative impact of material, social and cultural factors in a statistical analysis of individual-level data from nineteen developed democracies.

One of the most durable findings in social science reveals a close association between socioeconomic position and health. People in higher social classes tend to have better health – reflected in measures of mortality as well as many types of morbidity – in a wide range of countries (Adler *et al.* 1994; Kawachi 2000; Lynch and Kaplan 2000; Mackenbach *et al.* 2005, 2008; Wilkinson 2005; Quevedo *et al.* 2005; Ross *et al.* 2006; Hertzman and Siddiqi 2009; Beckfield and Olafsdottir 2009). This relationship is so well-established that some scholars have described socioeconomic inequality as a ‘fundamental cause’ of disease (Link and Phelan 1995). Figure One illustrates the health gradient for some of the developed democracies. However, theoretical efforts to explain *why* there is a close association between social class and health are less advanced. We take up that issue with a view to grounding some of the most prominent contentions from disparate literatures in a sociologically-informed conception of how social and economic structures impinge on individual lives. We then examine the relative impact of the pathways from class to health that are identified by this model, using cross-national data in order to generalize beyond the social structure of any one country.

### **Social Class and Health**

Less than twenty years ago, the connection between health and social class could still be described as “mysterious” (Angel 1993: 126; Adler and Newman 2002: 65). Since then, three types of accounts have emerged to explain this relationship.<sup>1</sup> The most influential emphasize the *material* effects of class position, seen largely as the ways in which lower levels of income or wealth expose people to risk factors, such as poor sanitation and housing, or deprive them of protections that can be purchased against such factors (Lynch *et al.* 2000; Lynch and Kaplan 2000; Kawachi 2000; Mackenbach *et al.* 2005; Ross *et al.* 2006; cf. McIntyre 1997).

A second set of arguments focuses on the *psychosocial* effects of class (Marmot and Wilkinson 2001; Adler and Snibbe 2003; Dunn *et al.* 2006). Although there is wide agreement that such effects matter, there is no consensus on how they operate. The most prominent formulations suggest that disparities in social status linked to income or occupation give rise to feelings of relative deprivation that become more intense at lower levels of the social hierarchy, generating deficiencies in self-esteem or negative emotions that trigger physiological processes associated with poor health (Marmot 2004; Wilkinson 2005, Veenstra 2005b). In parallel terms, employees in occupational positions with relatively-limited control over the pace or direction of their work are said to experience elevated levels of stress that impair their health (Karasek and Theorell 1990; Marmot *et al.* 1997). Conversely, the logistical and emotional support provided by social networks may be conducive to better health (Berkman and Glass 2000; Collins *et al.* 2005).

A third set of formulations associate class positions with distinctive sets of practical dispositions that embody views about what it is appropriate for people ‘like me’ to do (Bourdieu 1984, 1990, 1998, Giddens 1984, 1991). From this *collective lifestyles* perspective, people in lower class positions are unhealthy because they live in social contexts that encourage risky behaviors, such as smoking, or discourage social practices that might protect their health (Cockerham 2005, 2007; Veenstra 2005b; Williams 2003; Frohlich *et al.* 2001, 2002).

All of these approaches advance our understanding, but, taken as a whole, the literature suffers from some limitations. Most studies focus on one or two dimensions of inequality, such as income or status. As a result, the literature lacks studies that link health to the overarching structures of social class in more comprehensive terms, and it is often difficult to know how much impact the one or two dimensions emphasized in any given study have on health relative to other dimensions of class inequality left out of the analysis.<sup>2</sup> The concept of the ‘psychosocial’ so prominent in the literature of social epidemiology can also be distracting. Although insightful, it

tends to emphasize features of behavior, such as the desire for social status, that are seen as universal features of human beings – and sometimes primates (Sapolsky 1994, 1997; Shively *et al.* 1997; Marmot 2004). Because class structures take on specific shapes in particular times and places, however, we need formulations that capture, not only the universal aspects of class relationships, but the modalities through which national or regionally-specific variations in class structure might lead to variations in health outcomes.

The most theoretically sophisticated studies are those that see class as a complex of social practices giving rise to collective lifestyles. Their approach has a nicely interpretive orientation that understands social class – from the ‘inside looking out’ rather than from the ‘outside looking in’ – as an inter-subjective construct created by habits of the heart and mind rather than by purely material or organizational modalities (Bellah *et al.* 1985). As a result, these studies can identify dimensions of class structures consequential for health that other perspectives miss. But the emphasis of most lifestyle analysts on the health effects of risky behaviors is limiting. Many other facets of the structure of social relations, less dependent on personal practices, carry disadvantages for a person’s health, and we need ways of capturing the full range of such structural effects.

In sum, although most studies in social epidemiology acknowledge that there are multiple pathways between social class and health, we lack synthetic models that integrate these pathways into overarching conceptions of how the economic and social structures of class impinge on health.<sup>3</sup> If we are to explain cross-national variations in the distribution of health, there is a particular need for models that can recognize the national specificities of class structure. These matters deserve scrutiny from multiple angles, but we make an initial contribution here by proposing and testing one synthetic model, based on a capabilities approach to population health.<sup>4</sup>

## **A Capabilities Approach to Health**

The starting point for our theoretical analysis is the seminal work of Link and Phelan (1995, 2000), which sees the unequal distribution of resources as a fundamental cause of inequalities in health. One way to interpret our model is as an effort to extend their analysis by showing just how the socioeconomic structures of class distribute resources consequential for health.<sup>5</sup> We understand social class as a relational concept that specifies how a person is located within broad social and economic structures organized by the institutional practices and cultural frameworks of a society. We argue that people have access to certain kinds of economic or social resources by virtue of their positions within these relations, and that access is distributed unequally because some class positions are endowed with more resources than others. One corollary is that national variations in the shape of socioeconomic relations generate differences in the level of resources available at analogous class positions across countries.

Our focus is on population health in the developed democracies, where the principal sources of mortality are chronic illnesses such as heart disease, stroke and cancer. Although many aspects of the analysis also apply to the developing world, we do not consider it here because the prevalence of infectious diseases, especially wide material disparities, and large variations in the reliability of public infrastructure bring to bear on health inequalities there a further range of factors that are beyond the scope of this analysis. In some respects, class-based disparities in health within the developed democracies are even more puzzling, because the lower classes there enjoy a minimum standard of living that is relatively high by virtue of modern welfare states and extensive social infrastructure in these countries. Yet class-based inequalities in health are evident even there. Why do they persist?

The character of social class itself, as a relatively encompassing phenomenon built on an enduring set of social relationships, suggests that the answer should turn on the ways in which a

person's class position conditions her health on a continuous basis over long periods of time. In other words, it directs our attention to class-based variation in the experiences of everyday life (Sacker *et al.* 2001). Although the negative health effects of any one such experience may be limited, to the extent that class position imparts a systematic bias to the likelihood one will have such experiences, it can generate cumulative effects with the potential to do significant damage to a person's health over the long term that is no less insidious because it occurs in incremental steps. In short, any perspective that sees class as a structural phenomenon implies that some of the most important health effects of class position are likely to be the result of cumulative exposure over time to a common set of pressures rooted in the experiences of daily life.

Highly relevant to this problem, then, is a growing literature on the health effects of what is often termed the 'wear and tear of everyday life'. In recent years, many studies have found systematic connections between the experiences of stress that occur in daily life along with the negative emotions accompanying them such as anger, anxiety, resentment and frustration and a series of physiological developments injurious to health. Many of the latter are closely associated with the chronic illnesses endemic to developed societies (Brunner 1997, 2000; Miller *et al.* 2007; Gallo and Matthews 1999; see also Pearlin 1989; Pearlin *et al.* 1981; Turner *et al.* 1995).

The pathways through which experiences of stress and the emotional states associated with it 'get under the skin' are now well documented (Chrousos *et al.* 1992; Garofalo 1999; Taylor *et al.* 1999; O'Dea and Daniel 2001; Epel *et al.* 2004; for overviews see: Hertzman and Frank 2006; Keating 2009). Some operate through the impact of experiences of stress on levels of cortisol and elements of the hypothalamic-pituitary-adrenocortical (HPA) system, while others operate through the sympathetic-adrenal-medullary (SAM) and immune systems. More controversially, some investigators maintain that repeated experiences of stress can shift a person's 'allostatic load', thereby increasing the physiological costs of subsequent emotional challenges (McEwen 1998, 2005; Seaman *et al.* 2004; Hawkley *et al.* 2005).

If we are to understand how social class affects health, there is real value, then, in focusing on how class position might affect the ‘wear and tear’ people experience in daily life, and this is at the heart of our model.<sup>6</sup> We begin by positing in basic terms that the amount of ‘wear and tear’ a person experiences will turn on the relative balance between the magnitude of the *life challenges* that person faces and the effectiveness of her *capabilities* for coping with them. All people face a basic set of major life challenges, such as those associated with finding work, attracting a companion, securing housing, caring for children, and the like. To cope with such challenges, every person draws on a certain set of capabilities for dealing with them.<sup>7</sup> Those who confront more difficult life challenges or bring fewer capabilities to them will experience higher levels of stress, anxiety, anger and frustration. Although the effects of any one instance may be evanescent, a durable imbalance between life challenges and capabilities is likely to generate a consistent set of experiences serious enough to cumulate over the long term into adverse health effects.

The analytical problem is then one of understanding how the structure of class relations affects this balance between life challenges and capabilities. One way to do so is to establish how life challenges vary across social classes. They may do so in more and less tangible ways, not least because people in lower class positions typically face more uncertainty on labor markets. There would be real value in further investigation of variation in life challenges. In the affluent societies of concern here, however, we think there is likely to be more class-based variation in capabilities than in basic life challenges. Therefore, we focus on that side of the problem, namely on class-based variation in the capabilities people bring to a common set of life challenges. The question then becomes: how are these capabilities constituted?

Some capabilities are formed early in life, as attributes of personality conditioned by genetic make-up or childhood experience. These attributes include qualities of emotional resilience, reflective consciousness and self-esteem that underpin a person’s ability to avoid risky

behaviors and complete many tasks successfully (Kohn *et al.* 1990; Poulton and Caspi 2003; Pulkki *et al.* 2003; Schnittker and McLeod 2005; Steinberg *et al.* 2006; Pearlin *et al.* 2007). There is a class basis even to these basic dimensions of capabilities. A growing body of evidence suggests that children born into lower-class households are less likely to develop such attributes fully than are children raised in middle-class contexts (Keating and Hertzman 1999; Hertzman and Power 2006; Li *et al.* 2007).

However, the economic and social structures in which adults are embedded are also constitutive of their capabilities. The structure of the economy matters in two general ways. On the one hand, every economy generates a particular distribution of income and wealth, and money is a multi-purpose instrument, useful for addressing many kinds of challenges ranging from finding a decent residence to caring for children. Thus, people with lower incomes will have more difficulty than the affluent in coping with life challenges. From the perspective of our analysis, this is how inequalities of income contribute to the health gradient

On the other hand, every economy also has an institutional structure that distributes power and security. Its organizational hierarchies generate particular distributions of power in the workplace and its labor market regimes determine the levels of employment and unemployment protection enjoyed by workers at different positions within the occupational structure (Williamson 1985; Estevez-Abe, Iversen and Soskice 2001). These factors are salient to health because, *ceteris paribus*, people with the capability to control the pace or direction of their work are less likely to experience high levels of stress and the adverse emotional reactions associated with it (Marmot *et al.* 1997; Siegrist and Theorell 1996). People with more employment security or ample unemployment benefits have greater capabilities for withstanding labor market fluctuations and, like regulatory provisions for sick pay or parental leave, employment security can enhance peoples' capabilities for coping with life challenges outside the workplace, such as those associated with caring for children (Benavides *et al.* 2000; Bartley 2005; Hobson 2008).

In short, a person's position within a distinctive structure of economic relations provides her with a certain set of *economic resources*, composed of material resources, degrees of workplace autonomy and economic security, intrinsic to the capabilities individuals bring to life challenges. In much the same way, a person's position within the structure of social relations provides certain *social resources* for coping with life challenges (Pearlin and Schooler 1978; Wheaton 1985; Taylor and Seeman 1999; Kristenson 2006). From our perspective, three dimensions of social structure are constitutive of the social resources salient to a person's capabilities.

The first is the set of social networks in which the person is embedded, a horizontal dimension of social connectedness that encompasses relationships to family and friends. There are several well-established ways in which social networks enhance people's capabilities for coping with life challenges, thereby reducing experiences of stress and its emotional or physiological effects. Social networks provide information and logistical help for coping with challenges, as well as emotional support that enhances the feelings of self-worth that feed into generalized capabilities (Berkman *et al.* 2000; Haslam *et al.* 2005). Like income, networks are especially important to capabilities because many are multi-purpose instruments, although some types of networks are more useful for certain kinds of tasks than others. Large networks based on weak ties can be particularly useful for finding housing or employment, for instance, while smaller networks built on stronger ties may be more helpful for coping with the challenges of childcare or illness (Granovetter 1973; Case *et al.* 1992; Lett *et al.* 2007).

The vertical dimensions of social relations also play a vital role in this perspective. In addition to the organizational hierarchies of the workplace, all societies have social hierarchies that distribute status or social prestige, an important dimension of class relations (Weber 1958). In the literature of social epidemiology, the health effects of status are usually said to follow from the feelings of relative deprivation and low self-esteem engendered by low social status (Marmot

2004; Wilkinson 2005; cf. Singh-Manoux *et al.* 2005). Low self-esteem has a generalized negative effect on capabilities (Bandura 1997). From our perspective, however, status also bears on capabilities because the cooperation of others is required to meet many life challenges, and people of higher status are more likely to secure that cooperation than those of lower status. The problem might be as simple as getting an official to approve a housing application or persuading a school to accept one's child. In such instances, cooperation is more likely to be forthcoming when sought by people of higher status (Eckel and Wilson 2007; Levy *et al.* 2004; Ball *et al.* 2001; Weiss and Fershtman 1998; Webster and Foschi 1988). Thus, a person's position within the status hierarchy of a society conditions his capabilities for coping with life challenges in several ways.

To invoke issues of status, however, is to observe that social relations are not merely matters of social organization. They are constituted by cultural frameworks, as well as institutions, and these cultural frameworks may be as consequential for health as the organizational dimensions of the social order (Kleinman 1981; Lamont 2000; Taylor 2004; Mansyur *et al.* 2009). The social connectedness of a society turns, not only on the density of its social networks, but on the messages those networks convey about social belonging, about what one owes others, and about what can be expected in return (Emirbayer and Goodwin 1994; Sayer 2005).<sup>8</sup> These understandings constitute the 'moral economy' of a community – a set of customary attitudes with normative force specifying what is considered appropriate and just (Thompson 1971).

At the national level, cultural representations of this sort form what might be termed the 'collective imaginary' of a society.<sup>9</sup> These imaginaries are constructed by successive public narratives that link the nation's past to its future, specify its distinctive accomplishments, and paint a vision of what it means to belong to the community as a whole. Collective imaginaries are important to this analysis because of how they condition people's capabilities. In many cases,

these imaginaries supply social resources available to all. By specifying standards of behavior to which individuals can hold others, they affect the ease with which people turn to others for help and the likelihood it will be supplied.<sup>10</sup> In the common purposes a collective imaginary ascribes to the community, people can find a sense of purpose for themselves; and, in its imagery about the virtues of community members, they can find templates for more or less effective courses of action (Cornell and Kalt 1992; Swidler 1986). At the most general level, as Durkheim (2002) observed, from collective representations of the community, people can derive a sense of belonging to offset feelings of social isolation and bolster their emotional resilience in the face of life challenges (Hobfoll *et al.* 2002).

Of course, collective imaginaries can also limit the social resources available to some people. Where they promote negative stereotypes or define some groups as marginal to the community, those imaginaries may reduce the cooperation members of such groups secure from others or diminish the feelings of self-efficacy important for coping with life challenges (Steele and Aronson 1998; Steele 1999; Haslam *et al.* 2009). The core point is that capabilities are conditioned, not only by people's positions within certain forms of social organization, but by the cultural frameworks those social organizations enunciate.<sup>11</sup>

To summarize the theoretical perspective, in response to the question 'why do people in lower social classes usually have worse health than those in higher social classes?' we propose an answer that emphasizes how the economic and social structures constitutive of class positions condition the levels of wear and tear experienced by people in daily life. We associate that wear and tear with the balance between a person's life challenges and capabilities; and, while acknowledging that people in lower class positions may face more onerous challenges, we emphasize the ways in which a person's position within the structure of social and economic relations affects his capabilities. Several features of this perspective merit emphasis.

First, this approach brings together under one framework a number of contentions normally treated separately in the literature. On the one hand, it acknowledges the impact of economic structures on health and the multifaceted nature of that impact in terms that explain why people with lower levels of income, workplace autonomy and employment security are more likely to suffer from poor health. On the other hand, it provides a unified rationale for according importance to the social resources that people derive from their positions within the social structure. In contrast to purely material explanations, this perspective explains why economic and social resources are both crucial to a person's health.

Second, by recognizing that cultural frameworks of the sort embodied in the collective imaginary or status order are constitutive elements of the structure of social relations, this approach improves on perspectives that conceptualize social relations in purely organizational terms – for instance, as sets of exchange relations promoted by social networks (cf. Putnam 2000). And, by indicating how cultural frameworks can feed into capabilities, this model enlarges understandings of the pathways that run from culture to health. These insights can be mobilized by those who focus on the health effects of social practices specific to social classes. As Frohlich *et al.* (2001) note, the practical dispositions of the *habitus* may condition people's health, not only by influencing their attitudes to risky behaviors, but by providing them with distinctive 'strategies for action' or 'possible selves' that condition a person's capabilities for coping with life challenges (Swidler 1986, 2009; Markus and Nurius 1986, Oyserman *et al.* 2006).<sup>12</sup>

Third, although not our central objective, this framework provides insights for understanding why the shape of the health gradient varies across countries (Beckfield and Olafsdottir 2009). By disaggregating the socioeconomic structures of society into distinct sets of dimensions, each of which conditions the distribution of capabilities across the population, this approach allows for more fine-grained comparison of the impact of national social and economic

structures on health. This has important implications. Even the most sophisticated analysts sometimes write as if the only dimension of cross-national variation relevant to health were the distribution of income. It is conventional to assume, for instance, that status is tightly coupled to income. But that may not always be true. Figure Two suggests that shape of the status hierarchy does not always correspond closely to the shape of the income distribution. Our analysis accommodates the possibility that the status hierarchy may vary independently from income and may be multidimensional, such that those who cannot secure status through their income do so via their standing in other realms of life – whether as good mothers and fathers, as superior sportsmen or as neighborhood leaders (Lamont 2000).

The structure of the economy is treated here, too, as a multidimensional phenomenon with features of consequence for health inequalities that extend well beyond the distribution of income. Some of these may be linked to distinctive ‘varieties of capitalism’ (Hall and Soskice 2001; Amable 2003). Where a country’s production regimes feature flatter managerial hierarchies, more job security and higher levels of workplace autonomy, for instance, lower-level employees may derive health benefits from their workplace position that their counterparts in other economies lack (cf. McLeod 2009). In short, this perspective opens up new ways of seeing how variations in the structure of the economy might explain variations in the shape of the health gradient across nations.

We are not claiming to have enumerated all the factors affecting population health. Our objective is simply to erect some causal scaffolding that might explain why the structures of social class impinge so deeply on health. Although alternative approaches to this problem may also be viable, we think there is value in such efforts to move beyond a focus on individual variables to consider social class as a broader socioeconomic phenomenon (see also Carpiano *et al.* 2008)..

### **Cross-National Empirical Analysis**

This analytical framework suggests that the health gradient is grounded in systematic disparities in the social and economic resources available to people at different locations within the structure of social and economic relations. That raises a series of empirical issues. Does a person's position on these dimensions of socioeconomic structure actually condition his health? What is the relative importance of each dimension? Do economic and social relations have equivalent effects on health or does one overwhelm the impact of the other? Do cultural as well as organizational frameworks have a discernible impact on health?

Although the rich empirical literature of population health includes important investigations into the effects of some of these factors, it stops short of answering these questions. The most relevant studies focus on the effects of only a few dimensions of socioeconomic structure. As a result, they do not yield an overall assessment of the relative importance of social resources vis-à-vis economic resources, and we know of no statistical studies that examine the effects of cultural frameworks. Moreover, the literature is dominated by studies that explore the impact of such factors in only one or two countries.<sup>13</sup> Where the goal is to assess the impact of physiological factors on health, single-country designs are appropriate, because the causal mechanisms governing human physiology may not vary much across nations. Where the problem is one of examining the impact on health of social or economic structures, however, it is more difficult to generalize from studies of one or two countries, because of the possibility that socioeconomic features idiosyncratic to those countries may be conditioning the relationships that are found.

Accordingly, we look into these issues using data based on representative samples of the adult population in nineteen developed democracies countries at two points in time. The objective is to assess whether the dimensions of social and economic relations that figure in our

perspective have systematic effects on health and the relative magnitudes of their impacts. Our samples are drawn from the 1990 and 2005 waves of the World Values Survey, an international dataset offering the widest possible coverage for research into these types of variables. For reasons we have noted, we restrict the sample to developed democracies but include all the OECD countries for which the relevant variables were available.<sup>14</sup> For most estimations, we combine the 1990 and 2005 waves. When missing values are excluded from the estimations, the combined sample contains about 16,000 respondents.

Since our objective is to explore the pathways that connect the health and social class of a person, we conduct an individual-level analysis in which the dependent variable is self-assessed health, based on responses of ‘very poor’, ‘poor’ or ‘fair’ and responses of ‘good’ or ‘very good’ to the question: ‘All in all, how would you describe your state of health these days?’.<sup>15</sup> As is conventional, the indicator is dichotomized to reduce measurement error and simplify interpretation of the predicted outcomes (Manor *et al.* 2000; Quiesnel-Vallée *et al.* 2005). Studies have shown self-assessed health to be a good predictor of actual health, and we use a fixed effects specification to control for nationally-specific differences in levels of self-assessed health (Benyamini *et al.* 1999; Burström and Fredlund 2001; Van Doorslaer and Gerdtham 2003; Goldman *et al.* 2004; Subramanian and Ertel 2009). The explanatory variables are as follows.

*Income.* Because we are interested in assessing the impact on health of income construed as a source of multipurpose material resources, we seek an indicator that reflects the actual level of material resources available to a person in terms comparable across countries. Accordingly, we look for the effects of household income standardized into US dollars on a purchasing power parity basis.<sup>16</sup> An alternative specification would use income deciles, but doing so involves some sacrifice in cross-national comparability and gives a strong ordinal character to the indicator that tends to conflate status and income effects. Since most accounts suggest the relationship between income and health is curvilinear, we use the natural log of this variable.

*Workplace autonomy.* In order to capture the impact of the firm-based hierarchies that are a prominent feature of the structure of economic relations, we include an indicator for the degree of autonomy the respondent reports having at work. In the 1990 sample, this reflects how much freedom the respondent has to make decisions in his job, and, in the 2005 sample, it reflects how much independence the respondent had in performing tasks at work (see Appendix A for question wordings).

*Social Connectedness.* We assess the quality of the ties an individual has to others with an index indicating how important the respondent reports ‘family’ and ‘friends’ are to him. As Pearlin *et al.* (1981) point out, the level of social support a person derives from his social connections is not identical to the extensiveness of those connections because it is also dependent on the quality of interactions within those networks (Haslam *et al.* 2005). An assessment of how ‘important’ family and friends are to the respondent captures some of this content better than would a simple measure for the extensiveness of networks. In addition, we evaluate the effect of membership in secondary associations with a standard indicator for the number of types of voluntary organizations to which the respondent belongs.

*Social Status.* As we have noted, there are strong grounds for distinguishing between the health effects that flow from a person’s social status and those that derive from his level of income rather than assuming the former follow directly from the latter. It is difficult to measure social status, but the 2005 WVS offers one way of doing so. Respondents were asked whether they would describe themselves as belonging to the upper, upper-middle, lower-middle, working or lower class. Because the respondent can choose from a relatively large number of gradations in an obvious rank order in terms that are normally indicative of status, we think that variation in this response serves as an indicator for a person’s subjective sense of status, particularly when income is controlled.<sup>17</sup>

*National Belonging.* As we have noted, social connectedness depends not only on the direct contacts a person has with others through social networks but on the feelings of belonging promoted by the collective imaginary of a nation. To assess the extent to which such feelings of national belonging affect health, we use two variables, one indicating whether or not the respondent says he is proud to be of the nationality of the country in which he resides, the other indicating how strongly he agrees with the statement ‘I see myself as part of the xx nation’.

As standard controls, the estimations include gender, age, years of education and an indicator for whether the respondent is unemployed. We have suggested that a person’s capabilities turn, not only on access to economic and social resources, but also on attributes of personality developed early in life (Taylor and Seeman 1999). Therefore, to complete the specification, we include a measure of the respondent’s self-mastery, one of the attributes of personality closely associated with a wide range of competencies (Pudrovska *et al.* 2005; Daniel *et al.* 2006; Bandura 1997; Elliott *et al.* 1986; Pearlin *et al.* 1981).

We use fixed-effects estimations to capture country-specific factors that may be influencing the health status reported by respondents in each country and baseline differences between the two time periods. We estimate a model of the following form:

$$(1) \text{ logit}(y_i) = c_j + \Sigma(\beta x_i) + \Sigma(\beta v_i) + \varepsilon_i$$

where  $y_i$  is the likelihood the respondent reports poor health,  $c_j$  is the intercept specific to country  $j$ ,  $x_i$  is the vector of explanatory variables of interest,  $v_i$  is a vector of control variables, and  $\varepsilon_i$  is an error term. Because the dependent variable is dichotomous, a logit analysis was employed for the regressions which were estimated using the Zelig package in R, as were the quantities of interest (Tomz *et al.* 2003; King *et al.* 2000; Ai *et al.* 2008).

### **The Impact of Economic and Social Resources**

These estimations allow us to assess whether the dimensions of social and economic relations that figure in our model are indeed consequential for a person's health. Model 1 in Table One reflects a baseline specification designed to test these propositions on the combined 1990 and 2005 samples. Broadly speaking, the logistic estimations provide support for this approach. On the dependent variable, a value of 1 corresponds to a report of poor health. For virtually all of the variables reflecting the economic or social resources we were able to measure, the coefficients are correctly signed and statistically significant at or beyond the .001 level.<sup>18</sup>

Model 2 in this table reports results from the 2005 survey that include our measure of social status. The coefficient on it is statistically significant (at the .01) level and correctly signed, and it remains significant when controls for the respondent's observed social class, derived from his reported occupation, are included in the estimations to ensure that this coefficient is not simply picking up residual factors associated with social class (Model 3).<sup>19</sup> It is notable that a person's sense of social status seems to have an effect on his health that is independent of the effects of income, education and observed social class.

For contemporary debates between proponents of 'materialist' and 'psychosocial' approaches to population health, it is useful to have results based on representative samples drawn from many nations that include an especially wide range of social and economic variables. There is support here for both approaches. Access to material resources, measured in terms of the absolute value of the income available to the household, clearly improves a person's chances of remaining in good health. But it does not supplant or overwhelm the salutary effects of being connected to others through social networks or secondary associations. Both kinds of factors seem to have important and independent effects on health.

We find some, but somewhat less, support here for the collective lifestyles approach that attributes importance to the behavioral dispositions associated with social position. To test this proposition fully would require better data on dispositions than these datasets provide, but our estimations provide one suggestive assessment. The behavioral dispositions emphasized in collective lifestyles accounts often flow from informal features of the social setting, but level of education is also generally associated with variation in the types of attitudes stressed by proponents of this approach. People with higher education are less likely to engage in risky behaviors, such as smoking, and more likely to pursue healthy lifestyles (Mirowsky and Ross 2003; Phelan *et al.* 1995; Osler *et al.* 2000). Therefore, education can be taken as a proxy for these attitudes and, if collective lifestyles are a crucial pathway linking class to health, higher levels of education should be associated with better health in our sample.

In these results, however, the impact of education on health is relatively small. In our baseline model (model 1 in Table One), the coefficient on education is correctly signed and significant at the 0.06 level. However, the effects it indicates are not large. Across our sample, the impact on health of education pales in comparison to the impact of social connectedness or income.<sup>20</sup> Of course, this is a far-from-perfect test of the collective lifestyles approach and other aspects of our results support the general contention that cultural frameworks matter. Therefore, while our inclination is to read these results as an indication that collective lifestyles are not central to the pathways connecting health to social class, on this point, the jury is still out.

Table Two reports first differences derived from these estimations that allow for more direct comparison of the magnitude of the effects associated with a person's position along each of the relevant dimensions of social or economic relations. The table shows the impact on a person's likelihood of reporting poor health of shifts from one social or economic position to another when the other variables are held at a baseline reflecting the position of the median individual in the sample.<sup>21</sup> For purposes of comparability, wherever possible, the table reports

the impact of movement along each dimension from the position of a person at the 25<sup>th</sup> percentile in the distribution of that dimension within the overall sample to the position of a person at the 75<sup>th</sup> percentile on that dimension; for binary variables, it reports a move from one category to the other. The column for mean effect indicates, for instance, that movement from employment to unemployment adds 8 percentage points to the percentage likelihood that someone who is employed will be in poor health.

For ease of interpretation, this Table also reports the risk ratios associated with each of these movements. Taking unemployment as an example:  $\text{Pr}(\text{poor health}) \mid \text{employed (and other characteristics held at their means)} = 0.244$ . First difference = 0.076.  $\text{Pr}(\text{poor health}) \mid \text{unemployed (and other characteristics held at their means)} = 0.31$ . Thus the risk ratio (in the table) =  $0.31/0.244 = 1.3$ . Unemployment increases the chances a person will be in poor health by about 31 percent.<sup>22</sup>

On the key point, these results indicate that health is affected by a person's position within the structure of social relations at least as much as it is by her position within the structure of economic relations. Across the developed democracies, people for whom ties to family or friends are important are 3 percentage points less likely to be in poor health than those for whom they are not.<sup>23</sup> With respect to social status, those who view themselves as 'upper middle class' are 7 percentage points less likely to be in poor health than those who view themselves as 'working class'. By comparison, movement from the 25<sup>th</sup> to the 75<sup>th</sup> percentile of the income distribution decreases the likelihood of poor health by 6 percentage points. However, other dimensions of economic relations also matter. Shifting from a low to high level of workplace autonomy reduces the likelihood of poor health by 3 percentage points.

In general, the variables used as controls here behave as expected. Self-mastery is consistently associated with better health; unemployment increases the likelihood one will be in poor health; women are more likely than men to report poor health, and health declines with age.

These findings are robust to a variety of tests. As a check on the potential influence of any particular country in our findings, we re-estimated the regressions dropping each country in turn: all the coefficients from Models 1 and 4 are robust to the exclusion of each national sample. Excluding countries from Models 2 and 3 does result in some fluctuation in the coefficients, which is unsurprising since the smaller number of countries in the sample gives each of them more leverage. The substantive conclusions remain unchanged, however. The impact of each of our explanatory variables is robust to specifications with much simpler sets of control variables. The coefficients on each of the variables in bivariate specifications, as well as models including only the most basic controls (gender, age, and education in addition to the country fixed effects) yield the same substantive conclusions as our fully specified model, albeit with larger effect sizes as would be expected. Similarly, the results are robust to the inclusion of a control for whether the respondent is of a minority race in their country and robust to using probit instead of logit specifications, as well as to using the full ordered health response as a dependent variable, instead of the dichotomized version.

Based on the values for pseudo- $R^2$ , the models explain about 14 percent of the variation in health outcomes across individuals. Given the amount of variation in people's health caused by factors, such as genetic make-up, that are consigned to the error term in this model, this is a substantial amount. We interpret these results as supportive of the core contention of the capabilities perspective that both the economic and social resources distributed by multiple dimensions of the class structure are important for sustaining a person's health.

### **The Impact of the Collective Imaginary**

There are important contentions about culture in our argument. We have argued that the dimensions of social relations relevant to capabilities extend beyond the organizational frameworks of society to include the systems of meaning that animate them. In particular, we

suggest that the collective imaginary can enhance or erode the capabilities people bring to life challenges. By offering people an ‘imagined community’, it acts as a social resource that can undercut social isolation, allowing even people who are not members of extensive social networks to feel a sense of belonging that can fortify individuals against adversity, enhancing their sense of purpose, self-esteem and generalized capabilities (Lyons *et al.* 1998).

Needless to say, it is impossible to assess the overall impact of the collective imaginary through statistical analysis, and we make no pretense of doing so. However, precisely because cultural variables are rarely included in the multivariate estimations often taken as the most stringent way to assess the determinants of population health, we have made a special effort to consider them here. Our objective is to assess whether cultural frameworks of the sort embodied in the collective imaginary make a contribution to health.

If our argument is correct, people for whom the nation’s collective imaginary inspires a sense of belonging should enjoy better health. We test this proposition by including in the estimations a measure of the respondent’s feeling of national belonging. In the results reported in Table One, the coefficient on this variable is statistically significant, in the expected direction, and robust to a variety of specifications. Table Two indicates that, *ceteris paribus*, a strong sense of national belonging increases the likelihood of good health by about 3 percentage points – a shift in magnitude equivalent to that secured by moving from a job that offers little autonomy to one that offers a great deal. To ensure these results are not an artifact of question wording, we constructed an alternative measure of national belonging based on a question about whether the respondent sees himself as part of the [given] nation and, on this measure as well, stronger feelings of national belonging are closely associated with better health (model 4 in Table One).

We take these results as confirmation that the collective imaginary can supply resources, analogous to public goods, available to large numbers of people and supportive of their health. Other dimensions of the collective imaginary that we cannot assess here could affect health in

more pernicious ways, for instance, by defining some groups as marginal to the community. However, we think these results are sufficient to establish our core point – that the collective imaginary is salient to peoples’ capabilities and to their health.

### **The Distribution of Social and Economic Resources**

The results of these estimations are consistent with our argument that people’s health is conditioned by their access to certain sets of economic and social resources. However, those resources are central to the causal mechanisms behind the gradient linking health to social class only if their distribution is systematically unequal across social classes. Fundamental to our perspective is the contention that the structure of economic and social relations in the capitalist democracies distributes these resources unequally, such that people in lower class positions have access to fewer economic and social resources than those in higher class positions. Table Three speaks to this issue, reporting the distribution of these resources across social classes for the entire pool of respondents in nineteen countries.<sup>24</sup> The class categories are based on the widely-used NRS system of social grades which defines class in terms of the characteristics of a person’s occupation (Wilmshurst and MacKay 1999). Although more sophisticated definitions are available, the limitations of this data-set make this the most feasible approach, and it should suffice.<sup>25</sup>

Not surprisingly, income is distributed unequally across classes, but Table Three shows that social resources, of the sort offered by social networks and associational membership, are also distributed unequally across social classes. This conforms with the findings of previous studies that members of the middle class tend to belong to more voluntary associations and larger social networks, to have more contact within those networks, and to derive more social support from them than do members of the working class (Fischer 1982; Campbell *et al.* 1986; Allan 1990; Oakley and Rajan 1991; Turner and Marino 1994).

People in successively higher social classes enjoy on average more social and economic resources of virtually every type than those in the class below. We have argued that this is why unskilled manual workers are twice as likely as those in the professional-managerial class to suffer from poor health. The one exception is the sense of national belonging offered by the collective imaginary. It is indeed a public good, available to large numbers of people in many sorts of social positions, and the lower classes draw just as heavily on it as the upper classes. In this respect, the collective imaginary operates as a countervailing force to the unequal distribution of other types of economic and social resources.

Table Four extends this analysis to individual countries on the basis of odds ratios derived from Model 1 in Table One. For each kind of resource, in each country, these ratios report the relative advantage enjoyed by those in the highest social class relative to those in the lowest class. The cell for ‘workplace autonomy’ in Belgium, for instance, indicates that, holding other things equal, a person with the average level of job autonomy enjoyed by someone from the lowest social class (DE) in Belgium is 10 percent more likely to suffer from poor health than someone whose job autonomy is equivalent to the average found among the top class (AB) in Belgium. Since these odds ratios are based on an estimation on the pooled sample, their magnitude reflects how unequal the distribution of that resource is across social classes in each country. With the exception of national belonging, these odds ratios generally exceed unity, indicating that, in all of these countries, people in the upper social classes have consistently more social and economic resources than those in lower class positions.

Up to this point, we have treated both economic and social resources as constitutive elements of capabilities, equally valuable to the rich as to the poor. However, it is possible that people with substantial economic resources do not really need social resources. High levels of income might provide a person with so many capabilities that membership in social networks does not really enhance her capabilities of health further. Conversely, if the poor can use social

networks as substitutes for economic resources, additional increments of income might matter less to them. If these conjectures are correct, the distribution of capabilities across the population might be more equal than our figures for the distribution of resources would suggest. In short, we should ask: are the capabilities, and thus the health, of rich and poor alike enhanced by both economic and social resources?

To answer this question, we performed a set of estimations that included an interaction term for income and each of our measures for social connectedness.<sup>26</sup> The results indicate that the social resources associated with social connectedness to other people – close ties to family or friends, membership in associations, and feelings of national belonging – seem to have roughly the same impact on the health of the rich as the poor. At both the 25<sup>th</sup> and 75<sup>th</sup> income percentiles, for instance, those with close ties to family and friends are about 3 percentage points less likely to report poor health than those without such connections. Income does not seem to be a complete enough substitute for social connectedness that the rich can do without such connections; and the poor do not appear to derive any more capabilities from their social connections than do the wealthy. Similarly, income has roughly the same effect on health among those with and without extensive social connections. In sum, the social and economic resources identified here seem to have consistent value for people in all class positions.

## **Conclusion**

Our objective has been to develop a general account of the sources of the health gradient, namely, to explain how the structures constitutive of class relations give rise to systematic inequalities in health across the developed democracies. Our theoretical approach emphasizes the toll taken on health by the wear and tear of daily life and how it is generated by imbalances between the life challenges facing people and their capabilities for coping with them. We argue that those capabilities are conditioned by the economic and social resources made available by virtue of a

person's position within overarching structures of economic and social relations. This capabilities approach identifies a set of causal pathways that can explain a substantial portion of the health gradient. A comparison of the coefficients from a simple regression of health on social class and from a regression of health on social class along with the variables from model 1 that represent social and economic resources indicates that these pathways account for about half the variance in the relationship between health and class. A key implication is that the distribution of health depends, not only on the distribution of income, but on wider dimensions of economic and social structures. People's capabilities for meeting life challenges appear to turn on the social, as well as economic, dimensions of class relations.

Because our interest is in identifying the general sources of the health gradient, we have concentrated on similarities across the developed democracies that persist over time. Of course, the relationship between health and social class can be mediated by a range of further factors specific to particular places and times. In some periods, it may be intensified by economic or political developments, if those pose more severe challenges to some social classes than to others, as the collapse of communism arguably did (Hertzman and Kelly 1996; Rose and Bobak 2010). Across countries, the relationship may be intensified or mitigated by the presence of particular policy regimes, including ones that supply social protection, health care or employment (Lahelma and Arber 1994; Dunn *et al.* 2005; Chung and Muntaner 2006; Zambon *et al.* 2006; Eikemo *et al.* 2007; Schoeni *et al.* 2008; Hall and Taylor 2009).

Although we have concentrated on explaining why the health gradient is generally upward sloping, as we have noted, the precise shape of the gradient also varies across countries. Disparities in health between the upper and lower classes are larger in some countries than in others, and we need better explanations for such differences (Beckfield and Olafsdottir 2006). While that problem is not the central focus of this study, our approach offers one insight into it. The capabilities perspective suggests that cross-national variation in the shape of the health

gradient may have roots, not only in national differences in the distribution of income or in policy regimes, but in national variations in the wider structures of social and economic relations (cf. Wilkinson 2005). Class-based disparities in health may be greater in some countries than others, for instance, because cross-class variation in the density of social ties is greater in some countries than others. Similarly, autonomy in the workplace is distributed differently across varieties of capitalism. On this point, the figures in Table Four are suggestive. The health gradient may be steeper in France than in Austria, for instance, partly because social connectedness and workplace autonomy are distributed less equally in France than in Austria. Cross-national variation in the shape of the social structure may be one factor behind cross-national variation in the shape of the health gradient, and our findings point to the value of further research into such issues.

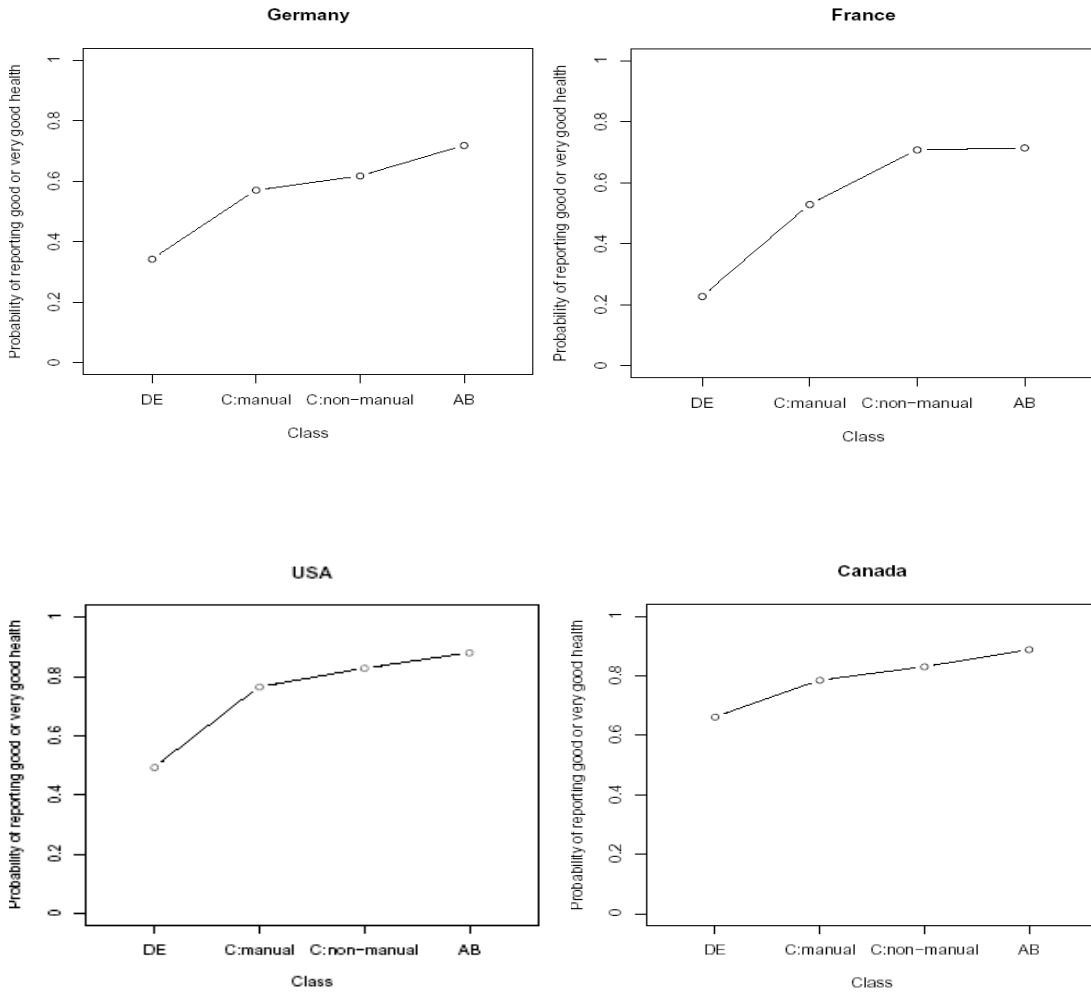
The formulations we present draw on a wealth of previous research into population health. Our objective has been to build the insights of that literature into a more general account of how the structures defining class give rise to health inequalities and to subject that account to empirical scrutiny against a large cross-national dataset. We do not claim to have identified every respect in which class relations impinge on health.<sup>27</sup> In particular, class-specific social practices may affect health in ways not captured by the indicators we could assemble (Frohlich *et al.* 2002; Williams 2003; Lutfey and Freese 2005). However, we have tried to incorporate some cultural factors into our aggregate analysis, with encouraging results, and there is a case here for developing richer datasets that can be used to explore such factors further. Although the field may have to depend primarily on micro-level studies to advance understanding of social practices, there would be real value in efforts to bridge the divide between those who use statistics to examine some determinants of health and those who study the effect of others using case-studies.<sup>28</sup>

In much the same way, this study suggests there may be value in devoting more attention to systematic comparison of social structures. Such research reached its apogee several decades

ago, when scholars were more inclined to think in terms of social systems (Parsons 1964, Merton 1968). One need not take on the intellectual baggage of that perspective, however, to see the value in more systematic thinking about how social relations vary across countries. Research on 'social capital' has moved the field in this direction, but it provides only one relatively-thin way of conceptualizing cross-national differences in the structure of social relations (Putnam 2000; cf. Erikson and Goldthorpe 1992; Whelan and Maître 2008). More systematic cross-national research on social hierarchies and social connectedness could advance our understanding of population health and the sources of social well-being more generally.

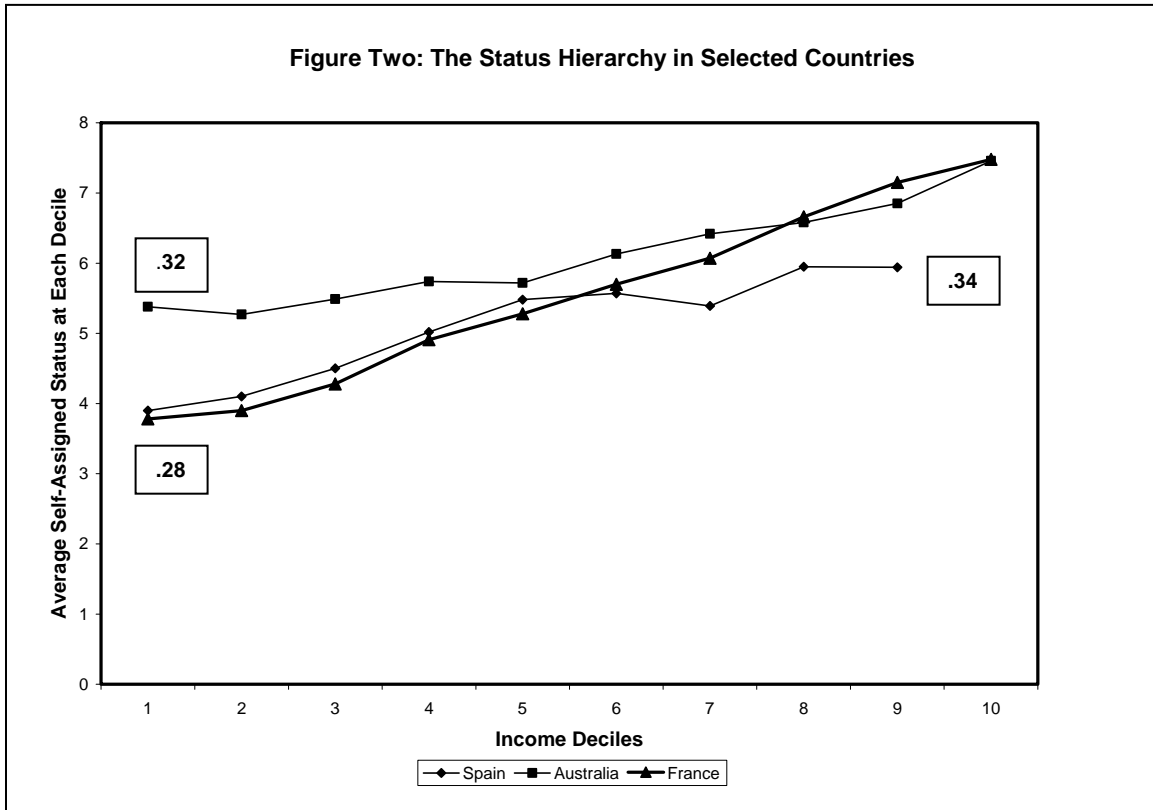
In sum, rather than closing the relevant issues, this paper makes a case for further thinking about how the overarching structures of society feed into the distribution of health and well-being and it indicates the potential value in capabilities-oriented approaches to that problem. To pursue such issues, one need not abandon the view that the distribution of well-being is deeply affected by material resources, but, by construing capabilities in broader terms, we can move beyond the all-too-common view that only material factors matter.

**Figure One: The Shape of the Health Gradient in Various OECD Countries**



**Source: World Values Survey 1990.**

Figure Two: The Status Hierarchy in Selected Countries



Note: To represent the distribution of social status in each country, this chart shows the average score (between 1 and 10) that respondents in each income decile assigned themselves when asked: "In our society there are groups that tend to be towards the top and groups which tend to be toward the bottom. Below is a scale that runs from top to bottom. Where would you place yourself on this scale?" Source: ISSP 1999. The numbers in the boxes are the Gini coefficients for household income inequality in 2000 in the country represented by the line adjacent to the box. Source: Luxembourg Income Study.

**Table One: The Impact of Social and Economic Resources on the Likelihood of Reporting Poor Health (Logistic Regressions)**

	Model 1	Model 2	Model 3	Model 4
Female	0.20 (0.04)	-0.04 (0.10)	-0.02 (0.11)	0.24 (0.05)
Age	0.04 (0.00)	0.02 (0.00)	0.03 (0.00)	0.04 (0.00)
Unemployment	0.39 (0.13)	0.36 (0.31)	0.35 (0.34)	0.26 (0.16)
Education	-0.04 (0.02)	-0.01 (0.04)	0.03 (0.04)	-0.02 (0.02)
Ties to friends and family	-0.15 (0.02)	-0.2 (0.07)	-0.16 (0.07)	-0.17 (0.03)
Associational membership	-0.05 (0.02)	-0.1 (0.05)	-0.15 (0.06)	-0.05 (0.02)
Workplace autonomy	-0.04 (0.01)	0.02 (0.02)	0.03 (0.02)	-0.03 (0.01)
Log income	-0.3 (0.03)	-0.39 (0.08)	-0.39 (0.09)	-0.29 (0.04)
National belonging	-0.17 (0.05)	-0.21 (0.13)	-0.29 (0.14)	
Self-mastery	-0.13 (0.01)	-0.14 (0.03)	-0.14 (0.03)	-0.16 (0.01)
Social status		-0.18 (0.07)	-0.17 (0.07)	
(Skilled) manual workers			0.01 (0.19)	
Non-manual/office workers			-0.18 (0.17)	
Managers and professionals			-0.44 (0.18)	
National belonging (alternate measure)				-0.22 (0.06)
Country dummies	Yes	Yes	Yes	Yes
Wave indicator	Yes	Yes	Yes	Yes
N	16488	2336	2119	9609
Area Under ROC Curve	0.72	0.71	0.73	0.73
Hosmer-Lemeshow P-value	0.34	0.16	0.07	0.19

**Table Two: The Effect of Changes in Social or Economic Position on the Likelihood of Reporting Poor Health (First Differences in Expected Values and Risk Ratios)**

	<b>Mean Effect</b>	<i>2.50%</i>	<i>97.50%</i>	<b>Risk Ratio</b>	<i>2.50%</i>	<i>97.50%</i>
<b>Gender (from male to female)</b>	<b>0.04</b>	<i>0.02</i>	<i>0.05</i>	<b>1.16</b>	<i>1.10</i>	<i>1.23</i>
<b>Age: (from age 31 to 59)</b>	<b>0.18</b>	<i>0.16</i>	<i>0.20</i>	<b>2.12</b>	<i>2.0</i>	<i>2.27</i>
<b>Unemployment (to unemployed)</b>	<b>0.08</b>	<i>0.03</i>	<i>0.14</i>	<b>1.31</b>	<i>1.11</i>	<i>1.53</i>
<b>Education: (left school at 18 vs 21)</b>	<b>-0.01</b>	<i>-0.02</i>	<i>0.00</i>	<b>0.97</b>	<i>0.97</i>	<i>1.00</i>
<b>Ties to Friends and Family (p25 to p75)</b>	<b>-0.03</b>	<i>-0.03</i>	<i>-0.02</i>	<b>0.89</b>	<i>0.86</i>	<i>0.92</i>
<b>Associational Membership (1 to 3)</b>	<b>-0.02</b>	<i>-0.03</i>	<i>-0.01</i>	<b>0.93</b>	<i>0.89</i>	<i>0.98</i>
<b>Workplace Autonomy (p25 to p75)</b>	<b>-0.03</b>	<i>-0.04</i>	<i>-0.02</i>	<b>0.90</b>	<i>0.85</i>	<i>0.94</i>
<b>Income: (\$11,614 to \$34,892)</b>	<b>-0.06</b>	<i>-0.08</i>	<i>-0.05</i>	<b>0.78</b>	<i>0.73</i>	<i>0.82</i>
<b>National Belonging: (yes to no)</b>	<b>0.03</b>	<i>0.01</i>	<i>0.05</i>	<b>1.14</b>	<i>1.06</i>	<i>1.23</i>
<b>Social Status (working to upper-middle class)</b>	<b>-0.07</b>	<i>-0.12</i>	<i>-0.02</i>	<b>0.77</b>	<i>0.54</i>	<i>0.90</i>
<b>Self-Mastery: (p25 to p75)</b>	<b>-0.05</b>	<i>-0.05</i>	<i>-0.04</i>	<b>0.83</b>	<i>0.80</i>	<i>0.85</i>
<b>All variables*</b>	<b>-0.53</b>	<i>-0.59</i>	<i>-0.45</i>	<b>0.17</b>	<i>0.14</i>	<i>0.20</i>

*Note:* Estimated from Model 1 except for status which is estimated from Model 2 using 2005 data. The baseline holds other variables at their means. All continuous variables show the mean effect of a move from the 25<sup>th</sup> to the 75<sup>th</sup> percentile, translated where possible into ‘natural’ units. Confidence intervals in italics.

**Table Three: The Distribution of Economic and Social Resources across Social Class  
in the Full Sample (1990 and 2005)**

	<b>Poor Health</b>	<b>Years of Education</b>	<b>Self- Mastery</b>	<b>Income</b>	<b>Ties to Friends/ Family</b>	<b>Mbrshp in Associations</b>	<b>Work Autonomy</b>	<b>Social Status</b>	<b>National Belonging</b>
<i>Social Class</i>	<i>%</i>	<i>Age left</i>	<i>Score</i>	<i>PPP \$</i>	<i>Score</i>	<i>Number</i>	<i>Score</i>	<i>Score</i>	<i>% Yes</i>
<b>Professional Managerial</b>	21	21.0	7.37	59000	5.33	2.2	7.68	3.27	86
<b>White Collar Office Workers (C1)</b>	28	18.9	7.03	29000	5.25	2.09	6.89	2.78	84
<b>Skilled Manual Worker (C2)</b>	34	16.5	6.96	23000	5.16	1.8	6.49	2.58	86
<b>Unskilled Semi- Skilled Manual (DE)</b>	46	15.6	6.69	19000	5.09	1.61	6.44	2.35	86

*Note:* The figures for social status are drawn from the 2005 wave for the countries for which this measure was available.

**Table Four: Odds Ratios for the Likelihood of Reporting Poor Health from Lower Class Positions Relative to Higher Class Positions, by Country**

	AU	AT	BE	CA	DK	F	FR	DE	IE	IT	JP	NE	NO	PT	ES	SE	CH	UK	US	All
Education	1.04	1.02	1.02	1.02	1.01	1.03	1.02	1.04	1.03	1.06	1.02	1.04	1.04	1.08	1.05	1.03		1.03	1.03	1.04
Income	1.36	1.42	1.13	1.38	1.00	1.32	1.45	1.44	1.33	1.56	1.17	1.27	1.12	1.50	1.38	1.12	1.07	1.51	1.45	1.54
Work	1.05	1.02	1.10	1.04	1.03	1.07	1.09	1.07	1.03	1.1	0.97	1.08	1.05	1.02	1.07	1.06	1.01	1.07	1.06	1.05
Autonomy																				
Friends and Family Ties	1.02	1.01	1.00	1.00	1.03	1.00	1.18	1.06	1.02	1.04	1.02	1.01	1.02	1.04	1.02	1.02	1.04	1.04	1.03	1.04
Association	1.02	1.03	1.02	1.05	1.01	1.00	1.03	0.99	1.06	1.02	1.00	1.08	1.02	1.02	1.02	1.03		1.06	1.09	1.03
Membership																				
Social Status	1.23					1.21				1.25	1.10					1.23			1.20	1.19
Self-Mastery	1.08	0.95	1.07	1.07	1.04	1.08	1.09	1.07	1.05	1.22	1.08	1.09	1.07	1.07	1.04	1.05	0.97	1.03	1.07	1.09
National	1.00	0.99	0.99	1.00	1.00	1.00	0.98	0.98	1.00	0.99	1.01	0.98	1.00	1.00	0.99	1.01	1.03	1.00	1.00	1.00
Belonging																				

*Note:* The cells report the odds of someone with the value on each of the variables in the left hand column typical in social class DE (manual workers) reporting poor health relative to someone with the value of the variable typical in social class AB (managerial-professional) doing so. All entries are significant at  $p = 0.05$  or better except for education which is significant at the 0.065 level.

## **Appendix I: Questions from the 1990 and 2005 World Values Surveys Employed as Indicators**

### *Ties to Family and Friends:*

Q: Please say, for each of the following, how important it is in your life: Family, Friends.

A: Very important, quite important, not very important, not at all important. (Scored 3 to 0 and summed).

### *Associational Membership:*

Q: Please look carefully at the following list of voluntary organizations and activities and say which, if any, you belong to.

A: Respondent given a list of fifteen kinds of associations as well as the categories 'other groups' and 'none'.

### *Workplace Autonomy:*

Q: How free are you to make decisions in your job? Please use this card to indicate how much decision-making freedom you have (1990). A: None at all 1 2 3 4 5 6 7 8 9 10 A great deal. Q: How much independence do you have in performing your tasks at work? (2005) A: No independence at all 1 2 3 4 5 6 7 8 9 10 Complete Independence.

### *National Belonging:*

Q: How proud are you to be British (or nationality of country)?

A: Very proud, quite proud, not very proud, not at all proud. DK (dichotomized)

Q: People have different views about themselves and how they relate to the world. Using this card, would you please tell me how strongly you agree or disagree with each of the following statements about how you see yourself?... I see myself as part of the [French] nation.

A: 0 for disagreement, 1 for agreement and 2 for strong agreement

### *Self-Mastery:*

Q: Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale to indicate how much freedom of choice and control you feel you have over the way your life turns out.

A: None at all 1 2 3 4 5 6 7 8 9 10 A great deal. DK

### *Education:*

Q: At what age did you or will you complete your full time education, either at school or at an institution of higher education? Please exclude apprenticeships.

A: Age coded beginning with age 13 and ending with age 21 or over.

### *Income:*

Q: Here is a scale of incomes and we would like to know in what group your household is, counting all wages, salaries, pensions and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions.

A: Respondent was given a card showing ten categories defined by the relevant deciles for household income for that country. (Transformed into USD at purchasing parity).

### *Social Status:*

Q: People sometimes describe themselves as belonging to the working class, the middle class, or the upper or lower class. Would you describe yourself as belonging to the: Upper class, Upper middle class, Lower middle class, working class, lower class? A: coded in descending order from 1 through 5. (2005)

### *Social Class:*

Interviewers were asked to code the socioeconomic status of respondent in the following categories: AB Upper, upper-middle class; C1 Middle, non-manual workers; C2 Manual workers – skilled, semi-skilled; DE Manual workers – unskilled, unemployed

## Appendix II: Means and Standard Deviations for Variables in the Full Sample

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<i>Continuous Variables</i>	Mean	SD
PPP \$ Income	30500	36500
Years of education	18.48	5.94
Associational Memberships	1.85	1.55
Friends and Family Index	5.25	0.84
Job Control	6.91	2.52
Self-mastery	7.05	1.96
Social Status	2.96	0.9

<i>Binary Variables</i>	% Reporting
Good Health	70
Feel National Belonging	86
National Belonging (alt.meas)	49

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## Endnotes

Many of the formulations in this paper have been shaped by discussions in the Successful Societies Program of the Canadian Institute for Advanced Research. We are grateful to CIFAR for supporting this program and to Michèle Lamont and the other program members for their contributions to these formulations. For research assistance, we thank Michael Levin-Gesundheit.

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<sup>1</sup> For recent reviews see: Carpiano *et al.* 2008; Mackenbach 2006; Ross *et al.* 2006; Siegrist and Marmot 2006; Berkman and Kawachi 2000. Although the literature often refers to ‘socioeconomic status’, referencing social differences associated with levels of income, education and status, we employ the broader concept of ‘social class’ to capture its relational qualities as well as those associated with power.

<sup>2</sup> For some exceptions, see Carpiano *et al.* 2008 and Lutfey and Freese 2005.

<sup>3</sup> These pathways are often presented in figurative form. Cf. Adler and Ostrove 1999; Berkman *et al.* 2000 ; Krieger 2008. For encompassing recent analyses see Carpiano *et al.* 2008 and Leigh *et al.* 2009.

<sup>4</sup> The core of this model is outlined in Hall and Lamont 2009 (chs. 1 and 3) and we are indebted to members of the Successful Societies Program for their contributions to these formulations.

<sup>5</sup> Other seminal efforts to link health to social structure that influence our work include: Evans *et al.* 1994; Keating and Hertzman 1999; and Marmot and Wilkinson 2005.

<sup>6</sup> The importance to health of the wear and tear of working life is further indicated by the findings that variations in morbidity across socioeconomic groups are greater in the working age population than among the elderly, and that the largest variations in national rates of mortality after the collapse of communism in Eastern Europe occurred in the working age population. See Dalstra *et al.* 2005; UNICEF 1994.

<sup>7</sup> Although resonant with it, our concept of capabilities is more delimited than the one of Sen (1999).

<sup>8</sup> One of the principal limitations of efforts to describe social connectedness in terms of conventional conceptions of ‘social capital’ is that they tend to ignore these cultural dimensions. Cf. Putnam 2000.

<sup>9</sup> The concept is influenced by Castoriades’ (1987) view of the ‘social imaginary’ but refers to a more restricted range of representations. See Bouchard 2003 and Hall and Lamont 2009.

<sup>10</sup> Sampson *et al.* (1997, 2002) find, for instance, that levels of violence are lower in Chicago neighborhoods where people feel entitled to correct the conduct of their neighbors’ children. Their research suggests that elements of the collective imaginary may be more potent than the relations of mutual reciprocity and generalized social trust often associated with ‘social capital’. See also Swidler 2009.

<sup>11</sup> As collective lifestyles analysts note, this point applies not only to the collective imaginary but to local forms of social identity and moral solidarity (cf. Cockerham 2005, Williams 2003).

<sup>12</sup> Note the implication that class-based differences in social practices may not always disadvantage the lower classes. In some instances, the lower classes may have capabilities for coping with challenges that people in the middle class lack (cf. Scott 1985).

<sup>13</sup> For exceptions, many of which take advantage of a growing body of cross-national European data, see: Van Doorslaer *et al.* 2004; Mackenbach *et al.* 2005; Mackenbach 2006.

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<sup>14</sup> The countries included from the 1990 WVS are: Australia\*, Austria, Belgium, Britain\*, Canada, Denmark, Finland\*, France\*, Germany\*, Ireland, Italy\*, Japan\*, the Netherlands\*, Norway, Portugal, Spain\*, Sweden\*, Switzerland\* and the United States\*. For those starred, data from the 2005 wave is also included.

<sup>15</sup> The category 'very poor' was offered only in 1990.

<sup>16</sup> The initial measure was taken in national currency as the mid-point of the income bracket chosen by the respondent to indicate his household income. For 1990 and any countries in 2005 for which such brackets were missing, household income data for the relevant decile was taken from the Luxembourg Income Study.

<sup>17</sup> As defined here, subjective social status is likely correlated with the status others accord that person, although the correspondence may not be perfect (see Operario *et al.* 2003; Singh-Manoux 2005).

<sup>18</sup> The exceptions are associational membership which is significant at the .003 level, unemployment at .002 and education at the .064 level.

<sup>19</sup> The measure for observed social class divides respondents into four social classes that correspond to the NRS social grades widely used to assess social class in such surveys, based on whether their occupation involves (i) unskilled or semi-skilled manual work, (ii) skilled manual work, (iii) junior or mid-level non-manual work, and (iv) managerial or professional work. The coefficient on workplace autonomy loses significance in these two models, but this is not surprising given the extent to which subjective social class is likely to be collinear with workplace autonomy.

<sup>20</sup> Similar results are obtained when an alternative indicator based on level of education attained is used. These results differ from many that find education a significant predictor of health, but most of those studies use education as a proxy for SES or social class. Our interpretation of this discrepancy is that, when variables for many of the pathways from class to health are included in the model, the education variable is no longer a proxy for class and picks up only the effects of higher levels of education (cf. Schnittker 2004).

<sup>21</sup> The first differences are derived from model 1 in Table One. The baseline values reflect a male respondent 40 years old who left school at 18 with median income, job autonomy, self-mastery, associational memberships and connections to family and friends, who has a feeling of national belonging.

<sup>22</sup> Note we cannot rule out the possibility of some reciprocal causation for this variable: poor health might induce unemployment rather than vice versa. However, reciprocal causation is likely to be less important for most other variables in the analysis, and most studies find that the effects from health to socioeconomic variables are small relative those running in the other direction (Mulatu and Schooler 2002; De Lange *et al.* 2004). Because of potential reciprocal causation, however, these results must be treated with caution.

<sup>23</sup> On an alternate indicator for social connectedness available in the 1990 wave, based on whether the respondent reports feeling lonely or remote from other people over the past few weeks, parallel estimations provide even stronger results. Those who felt lonely were 11 percentage points (0.08, 0.14) more likely to report poor health than those who did not.

<sup>24</sup> The figures for social status cover only those countries in the 2005 wave for which this variable is available, namely: Australia, Finland, Italy, Japan, Sweden and the U.S.

<sup>25</sup> For the categories see note 19 and for reviews of relevant measurement issues see Liberatos *et al.* 1988; Wright 1997; Galobardes *et al.* 2007; and Oesch 2006. Respondents in the 2005 wave and those from

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Finland, Norway and Denmark in the 1990 wave were coded by the authors. The others were interviewer-coded.

<sup>26</sup> These estimations are available on request from the authors.

<sup>27</sup> For recent synoptic overviews, see Leigh *et al.* 2009; Carpiano *et al.* 2008; Siegrist and Marmot 2006; Heymann *et al.* 2006; Berkman and Kawachi 2000.

<sup>28</sup> For some efforts to do so that approach culture differently, see Mansyur *et al.* 2009; Steffen 2006; Veenstra 2005a.