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# Recalibrating the spirit level: An analysis of the interaction of income inequality and poverty and its effect on health



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#### ABSTRACT

The publication of The Spirit Level (Wilkinson and Pickett, 2009) marked a paramount moment in the analysis of health and inequality, quickly attracting a remarkable degree of attention, both positive and negative, both in academic and in public discourse. Following at least 20 years of research, the book proposes a simple and powerful argument: inequality per se, more specifically income inequality, is harmful to every aspect of social life. In order to confirm this idea, the authors present a series of bivariate, cross-sectional associations showing comparisons across countries and within the United States. Despite the methodological limitations of this approach, the authors advance causal claims concerning the detrimental effects of income inequality. They also rule out poverty as a plausible alternative explanation, without directly measuring it. Meanwhile, over the last decade stratification scholars have demonstrated the nonlinear effect of economic factors, especially income, on health. The results suggest that a relative approach is best for analyzing dynamics at the top of the income distribution, whereas an absolute approach seems most appropriate for studying the bottom of the distribution. Consistent with this perspective, here I reanalyze data from The Spirit Level, adding a measure of poverty, in order to control the effect of inequality and explore its interaction with poverty. The findings show that inequality and poverty—which I contend are two interdependent but nonetheless distinct phenomena—interact across countries, such that the detrimental effects of inequality are present or stronger in countries with high poverty, and absent or weaker in countries with low poverty; poverty replaces inequality as the favored explanation of health and social ills across states. The new evidence suggests that income distributions are characterized by a complex interplay between inequality and poverty, whose interaction deserves further analysis.

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#### 1. Introduction

The publication of the book *The Spirit Level* by social epidemiologists Wilkinson and Pickett (2009) marked a pivotal moment in the literature on health disparities. The book, whose main idea is that income inequality has a detrimental effect on many societal and health outcomes, and thus more equal societies are better for everyone, attracted an exceptional degree of attention in both academic and media discourse. Translated into 23 languages, it became a sensation that sold more than 150,000 copies and won high praise from politicians representing the entire political spectrum, including current Prime Minister of the United Kingdom, David Cameron (Booth, 2010; Devich, 2010).

The authors, resting on a Popperian definition of theory testing

(Pickett and Wilkinson, 2015), claim a causal role for inequality and propose that chronic stress is the key mechanism. The vast majority of the evidence provided in The Spirit Level is in the form of crosssectional, bivariate associations. Wilkinson and Pickett assess the same bivariate relationships in different contexts (comparisons across countries and among US states), and claim that this constitutes a form of control for spuriousness. The reception of the book was not entirely positive. Notable theoretical (Goldthorpe, 2010) and methodological (Beckfield, 2004; Leigh et al., 2009) criticisms have been raised, stressing the limits of correlational evidence, and suggesting that the relationships could be spurious in multiple contexts. Another problematic point is the dismissal of poverty as alternative explanation. This conclusion is ill advised by the fact that the scholars rule out poverty without having a measure of it, but rather by using a measure of average wealth, the national income per capita (Wilkinson and Pickett, 2009, p. 20).

While it is important to explore the adverse effects of income

inequality, additional research is needed to establish previous claims and to advance the literature. In particular, it is important to consider (1) possible spurious effects of inequality, (2) the direct role of poverty, and (3) the interaction between inequality and poverty. Building on previous work, this paper examines the direct and synergistic effects of income inequality and poverty.

#### 2. Income, inequality, and health: evidence and debate

In his classic 1975 piece, Preston acknowledges that the effect of economic factors on health has been identified "at least since biblical times" (1975, p. 231). The first study to test the hypothesis that life expectancy is a function of average income and income distribution might date back to the late 1970s (Rodgers, 1979), but the issue became well-established in the 1990s, with the publication of several studies that assessed the effects on health of income distribution controlling for gross national product across countries (Wilkinson, 1992), within the US states adjusted by state median income (Kaplan et al., 1996), in the US after adjustment for absolute poverty (Kennedy et al., 1996), and in the US through a multilevel approach controlling for household income (Kennedy et al., 1998). The psychological explanation was immediately advanced, despite scholars quickly recognizing the association between underinvestment and inequality (Davey Smith, 1996).

The productivity of this line of research has not seemed to have ceased. In the 20 years preceding the publication of *The Spirit Level* (Wilkinson and Pickett, 2009), more than 100 articles explored the association between health and economic inequality (Mullahy et al., 2008; Leigh et al., 2009). After 2009, the debate crossed the boundaries of social epidemiology and the academic world: the general public and the media joined the discussion.

An overview of research on stratification contributions to health shows that analysts mainly investigated mainly the impact of economic conditions (income or income inequality) on health, and devoted less attention to the opposite direction of the relationship. Broadly, three approaches emerged: (1) the absolute income hypothesis, (2) the relative income hypothesis, and (3) the income inequality hypothesis (Mullahy et al., 2008; Leigh et al., 2009). The first approach concentrates on the diminishing returns of individual income: earning an extra dollar is more beneficial at the lower end of the income distribution. The second approach connects social ranking to mortality/morbidity through the gradient effect (Adler et al., 1994; Marmot et al., 1991): social status is symbolic, and individuals compare themselves to others, with unfavorable relative comparisons being harmful. The third perspective suggests an adverse effect of aggregated levels of income inequality, even after controlling for individual income.

The relative income hypothesis implies a critical point: not only material economic conditions (e.g., poverty), but also social psychological processes (e.g., stress) can impact health. Thus, one can assume that "Health effects at the upper part of the distribution may more strongly reflect relative status, while at the lower part they may be more linked to absolute deprivation" (Adler and Newman, 2002, p. 62). Hence, it is crucial to understand that income inequality and poverty can operate in a simultaneous but different manner: they are undoubtedly interconnected but nevertheless distinct phenomena, which may affect different strata of population in discernibly different ways.

The work of Wilkinson and Pickett can be referred to as the income inequality approach, but their mechanism is consistent with the implication of the relative income hypothesis just described: in fact, the proposed causal relationship between income inequality and health/societal outcomes is mediated by chronic stress.

The three theoretical perspectives seen above produce different

results through the application of a variety of levels of analysis, methods, and data. One important result is the robust nonlinear association between income and health (Mullahy et al., 2008; Leigh et al., 2009). The stratification scholar is familiar with the principal mediating factors of the relationship, such as race and neighborhood context. Another key finding is the relationship between income inequality and health, which is, however, less robust and more controversial (Beckfield, 2004; Kawachi et al., 2002; Kondo et al., 2009; Leigh et al., 2009; Lynch et al., 2004; Mullahy et al., 2008). In the most comprehensive review to my knowledge, Kondo et al. (2009) carry out a meta-analysis of 9 cohort studies (59,509,857 subjects) and 19 cross-sectional studies (1,280,211 subjects), suggesting a "modest excess risk of premature mortality and poor self-rated health" (2009, p. 8) associated with income inequality, and the existence of a threshold effect upon which the negative consequences of inequality are remarkably strong (Gini  $\geq$  0.3). Beckfield (2004) analyzed the relationship across countries and over time, finding limited empirical evidence for the adverse role of income inequality. Analyses based on panel data are also mixed: some support the income inequality hypothesis with regard to mental distress (Wood et al., 2012) and happiness (Layard et al., 2010); others find no effect of inequality on mortality (Gerdtham and Johannesson, 2004), or self-reported health (Lorgelly and Lindley, 2008). These results overall suggest caution in assessing the robustness of the effect of income inequality on mortality/morbidity.

Additional disagreement may arise concerning the mechanisms linking inequality and health. Again, three perspectives arise: (1) the psychological pathway proposed by Wilkinson and Pickett; (2) the social capital hypothesis (Kawachi and Berkman, 2000; Kawachi et al., 1997) that mediates between the psychological and the structural levels; (3) a neo-material explanation that focuses on the material and social environment of the places characterized by high inequality and on the mediating role of public investment. Scholars who take this perspective (Mellor and Milyo, 2002; Soobader and LeClere, 1999) hypothesize that the adverse effect of inequality may be true only for the poor. Consistent with this latter perspective, analyses of contextual income inequality in Norway using administrative data (Dahl et al., 2006; Elstad et al., 2006) observe adverse effects of relative income only (or particularly) on the most disadvantaged social groups. Explicit tests of the mechanisms favored the role of status anxiety and trust over spending (Elgar, 2010; Elgar and Aitken, 2011; Layte, 2012), although the mechanisms are not mutually exclusive and expenditure is a crude measure of social welfare (Kenworthy, 2011; Kenworthy and Pontusson, 2005).

In recent years most studies have examined the effects of income inequality, but there are some notable exceptions, rooted in the classic body of literature that emphasizes the difficulty of escaping poverty in a segregated neighborhood (Massey and Denton, 1993; Wilson, 1987). Taking advantage of the randomized housing mobility experiment Moving to Opportunity, Ludwig et al. (2011, 2012) show that moving from a high-poverty to a lowpoverty neighborhood has long-term beneficial effects on measures of physical health, such as diabetes and obesity (Ludwig et al., 2011), and on subjective well-being (Ludwig et al., 2012), despite not improving adult economic self-sufficiency. One might think that residential segregation is in turn affected by inequality, but this is not necessarily the case. In fact, evidence suggests that income inequality may even reduce spatial segregation of low-income households and that rising income inequality cannot explain the increase of poverty segregation in the United States (Reardon and Bischoff, 2011). At a different level of analysis, Fritzell et al. (2013) look at the role of relative poverty over time across 26 countries (affluent countries and some post-socialist Eastern European

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