

The Enemy between Us: The Psychological and Social Costs Of Inequality

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Abstract

There is now substantial evidence that larger income differences in a society increase the prevalence of most of the health and social problems which tend to occur more frequently lower down the social ladder. The pathways through which human beings are sensitive to inequality are however less clear. This paper outlines the explanatory theory which we think best fits the growing but incomplete body of evidence available. Inequality appears to have its most fundamental effects on the quality of social relations – with implications affecting the prevalence of a number of psychopathologies. We suggest that human beings have two contrasting evolved social strategies: one which is adaptive to living in a dominance hierarchy, and the other appropriate to more egalitarian societies based on reciprocity and cooperation. Although both strategies are used in all societies, we hypothesise that the balance between them changes with the extent of material inequality.

Introduction

There are dangers in writing from one academic discipline to another. Things which may seem true from one perspective often seem dubious from another. As social epidemiologists with only a partial familiarity with neighbouring areas of psychology, we hope that readers will forgive us if from time to time we seem to ride roughshod over some psychological toes.

Income inequality has been described by world leaders as the ‘defining challenge of our time’ (Obama, 2014) and the ‘root of social ills.’ (Pope Francis, 2013) Despite growing agreement that it is harmful, there is little understanding of the processes which make it so. In this paper we outline a theoretical framework which we think explains why more unequal societies perform worse on a wide range of outcomes. We describe what we see as the core causal processes while recognising that some parts of the evidence are stronger than others.

In our book, *The Spirit Level*, (R. Wilkinson & K. Pickett, 2009) and a series of research papers, (K. E. Pickett & Wilkinson, 2007, 2010, 2015a, 2015b; Wilkinson & Pickett, 2006, 2007; R. G.

Wilkinson & K. E. Pickett, 2009) we have discussed the work of many scholars showing that a long list of health and social problems with social gradients, i.e., problems that are more common further down the social ladder, are much more prevalent in societies with larger income differences between rich and poor (Figure 1).

Health outcomes related to income inequality include longer life expectancy and higher mortality rates, including infant mortality. (Babones, 2008; De Vogli, Mistry, Gnesotto, & Cornia, 2005; Hales, Howden-Chapman, Salmond, Woodward, & Mackenbach, 1999; Kondo et al., 2009; Ram, 2006; Subramanian & Kawachi, 2004; Wilkinson & Pickett, 2006, 2007) Rates of mental illness and obesity are two to four times higher in more unequal societies. (Offer, Pechey, & Ulijaszek, 2012; K. E. Pickett, Kelly, Brunner, Lobstein, & Wilkinson, 2005; K. E. Pickett & Wilkinson, 2010) In both developing and developed countries HIV infection prevalence rises with inequality. (Drain, Smith, Hughes, Halperin, & Holmes, 2004; Over, 1998) The research literature on income inequality and health is extensive; in 2015, we reviewed this literature within a causal framework of Popperian theory testing (Popper, 2014) and epidemiological causal criteria, and found it strongly supportive of a causal explanation. (K. E. Pickett & Wilkinson, 2015c)

Indicators of social cohesion, including generalised trust and social capital are also better in more equal countries. (Elgar, 2010; Elgar & Aitken, 2011; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Rothstein & Uslaner, 2005; E. Uslaner, 2002) Indicators of women's status and equality are generally better, (Kawachi, Kennedy, Gupta, & Prothrow-Stith, 1999; R. Wilkinson & K. Pickett, 2009) and a large literature shows that rates of both property crime and homicides increase as income differences widen. (Daly, Wilson, & Vasdev, 2001; Elgar & Aitken, 2011; F. J. Elgar et al., 2013; Fajnzylber, Lederman, & Loayza, 2002; Hsieh & Pugh, 1993; Krahn, Hartnagel, & Gartrell, 1986; Ruffalos, Power, Pickett, & Wilkinson, 2013)

Children's life chances and trajectories are also affected by income inequality. The UNICEF Index of Child Wellbeing in rich countries has been shown repeatedly to be significantly higher in more equal societies. (K. E. Pickett & Wilkinson, 2007, 2015a; Unicef, 2016) Educational attainment is higher, fewer young people drop out of education, and fewer teenage girls become mothers in more equal societies. (K. Pickett & Vanderbloemen, 2015; Siddiqi, Kawachi,

Berkman, Subramanian, & Hertzman, 2007; Wilkinson & Pickett, 2007) Equality of opportunity is damaged by inequality of outcomes – social mobility is restricted in very unequal societies. (Blanden, 2009; Wilkinson & Pickett, 2007)

Although the effects of inequality tend to be greatest among the poorest in each society, outcomes tend to be less good even among the better off. Indeed, it is because a large majority of the population – not just the poor – are affected by inequality that the differences in the performance of more and less equal societies are so large. The scale of the differences varies from one health or social problem to another, but they are all between twice and ten times as common in more unequal societies compared to more equal ones.

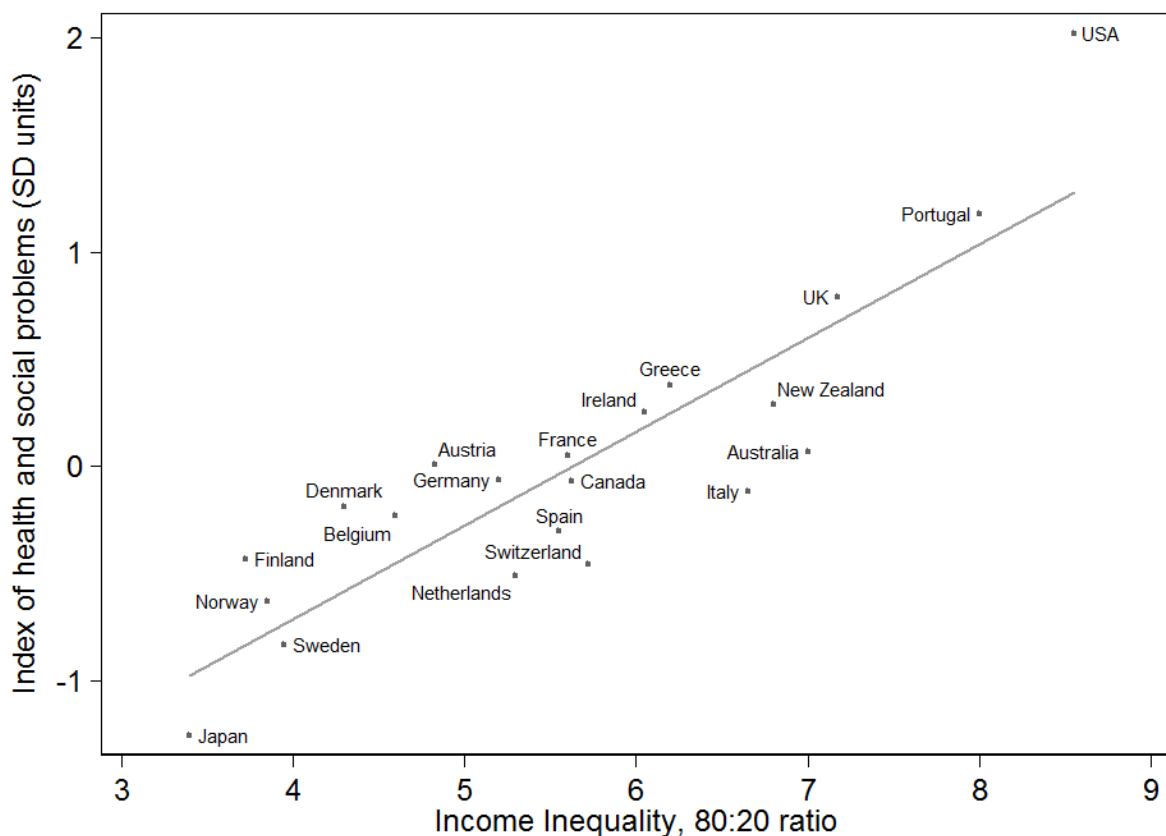


Figure 1: Health and social problems are closely related to inequality among rich countries. (R. Wilkinson & K. Pickett, 2009)

The evolved psychology of social relations

Our own work on the social effects of income inequality came out of research on health inequalities. From that initial biological background it came to focus particularly on causal

processes centred on the sources and effects of chronic stress. The explanatory picture we shall outline is made up like a jigsaw puzzle from pieces contributed by research workers in a variety of different fields. At its centre is an evolved psychology of social relations which leads people to use different social strategies in more and less hierarchical contexts.

Robin Dunbar's work on the close correlation between the proportion of the brain made up of the neocortex and the typical group size in primate species is a powerful indication that the complexities of social relations have been crucial to human brain development. Since Dunbar first formulated this 'social brain hypothesis', further research has confirmed that non-human primate species with larger group sizes do indeed perform better on tests of social intelligence. (Dunbar & Shultz, 2007)

Given that other people can be anything from our most feared rivals to our best source of cooperation and assistance, the quality of social relations and the handling of hierarchical relationships will always have been crucial to survival, wellbeing and reproductive success. The nature of social relationships varies not simply at the individual level but also according to social structure. There seems to be some agreement that there have been three main periods of social organisation in human development: pre-human dominance hierarchies such as those seen in chimpanzees and other apes, the egalitarian hunting and gathering societies of human prehistory, and the social hierarchies of more recent agricultural and industrial societies. Dominance hierarchies are widely assumed to have been the typical form of social organisation among prehuman hominids and several different theories have been proposed to explain the transition to the egalitarianism typical of pre-historic human hunter-gatherers. (Christopher Boehm, 2012; Gavrilets, 2012; Megarry, 1995; Runciman, 2005) Similarly there is agreement that the rise of inequality is associated with the development of agriculture over the last 10-12,000 years, but less agreement on the causes of the transition. (C. Boehm, 1999; Cohen, 1998; Woodburn, 1982) Fully stratified class systems are still more recent. They began to appear around 5,500 years ago associated with settled agriculture and higher population densities. (Diamond, 2012) Nevertheless, for around 90 or 95 percent of the time humans have been 'anatomically modern' with brains their present size, humans lived predominantly as highly egalitarian hunter-gatherers.

We need not go into the different explanations for the transitions to and from egalitarianism except to say that none suggest that they were *precipitated* by genetic changes in a desire for dominance. Instead the evidence points to cultural drivers such as the effects of big game hunting, the development of so-called 'counter dominance strategies', or changes in pair bonding. Our point here is only that whatever their causes, these different social structures provided different selective environments for human social characteristics. They changed the characteristics which led to success and began to provide the psychological foundations for new social strategies – some appropriate to life in dominance hierarchies, others based on friendship, reciprocity, cooperation and sharing, which suited life in more egalitarian societies such as the pre-historic hunter-gatherers.

Members of species which have strong ranking systems need social strategies for maximising and maintaining rank while avoiding the risk of attacks by dominants. Though there are many variations in the way ranking systems work in different species, what we might call the 'pure' logic of ranking systems is that position in the dominance hierarchy determines who has precedence over whom in access to scarce resources; orderings are based on strength and power, and disputes are resolved by trials of strength; you show respect and deference to superiors and treat inferiors with impunity and disdain.

This contrasts sharply with the strategies required in more egalitarian societies where people value generosity and cooperation, and where trust and reciprocity are essential. People who seem to be more trustworthy, generous and kind will be preferred as mates and as partners in cooperative activities. But as well as selection for pro-social characteristics, Boehm shows that there was also deselection for anti-social characteristics: selfishness and anti-social behaviour in hunting and gathering societies would result in people being ridiculed, ostracised, or even killed. (Christopher Boehm, 2012)

Because the contrast between the behaviour appropriate in each of these two systems is so great, it is important to match one's behaviour to one's setting. Generosity and selflessness is valued and rewarded among friends and in egalitarian settings but would simply be taken advantage of and exploited in a dominance hierarchy. Similarly, the naked pursuit of self-interest and self-aggrandisement appropriate to a rank ordered society would have led to

ostracism in a typical hunting and gathering society. It is therefore crucial for behaviour to be sensitive to how hierarchical or egalitarian a society is.

This leads us to expect the pattern of differences in behaviour that we see between more and less egalitarian societies as measured by the scale of income differences between rich and poor. As we shall see, in more unequal societies status becomes more important, status anxiety increases, self-serving individualism and self-aggrandisement increase. Community life, rooted in trust, reciprocity and public spiritedness, declines; bullying and violence increase. Of course, rather than using one social strategy or another, everyone uses a mix of dominance and affiliative strategies in different areas of life. Our hypothesis is simply that the balance between these strategies shifts depending on the level of inequality.

In the rest of this paper we shall show how this picture has been confirmed – particularly during the last few years – by research across a range of scientific and social science disciplines, including psychology, epidemiology, sociology, neurobiology and behavioural economics. In reviewing the empirical research findings we hope to provide a coherent picture of how social and economic inequality affects people at a personal and psychological level.

Status becomes more important

From violence to ill health and worse educational performance, the health and social problems which tend to be more common in more unequal societies are almost entirely problems with social gradients increasing prevalence rates lower down the social ladder. Using death rates from causes with and without social gradients, we tested the hypothesis that the steeper the social gradient, the stronger the relationship with inequality. (Wilkinson & Pickett, 2008) Our results demonstrated the tendency for problems with social gradients to be worse in societies where income differences are greater. This is an important indication that bigger income differences increase the importance of status.

That same point is confirmed by other kinds of evidence. First, income related intergenerational income mobility is lower in more unequal societies. Social movement

becomes more strongly restricted by social origins, suggesting that status differentiation becomes more powerful. (Corak, 2013)

Second, research findings show that increased inequality is associated with higher levels of status anxiety. In 2014, Layte and Whelan analysed data for 35,634 adults in 31 countries that participated in the 2007 European Quality of Life Survey. (R Layte & Whelan, 2014) Respondents were asked to what extent they agreed or disagreed with the statement: “Some people look down on me because of my job situation or income.” There was quite wide variation across countries, but in all countries status anxiety increased as people’s income rank decreased – those at the top of the income hierarchy were, not unexpectedly, consistently less worried about their status than those at the bottom. But most importantly, status anxiety was higher at all income levels in more unequal countries (Figure 2).

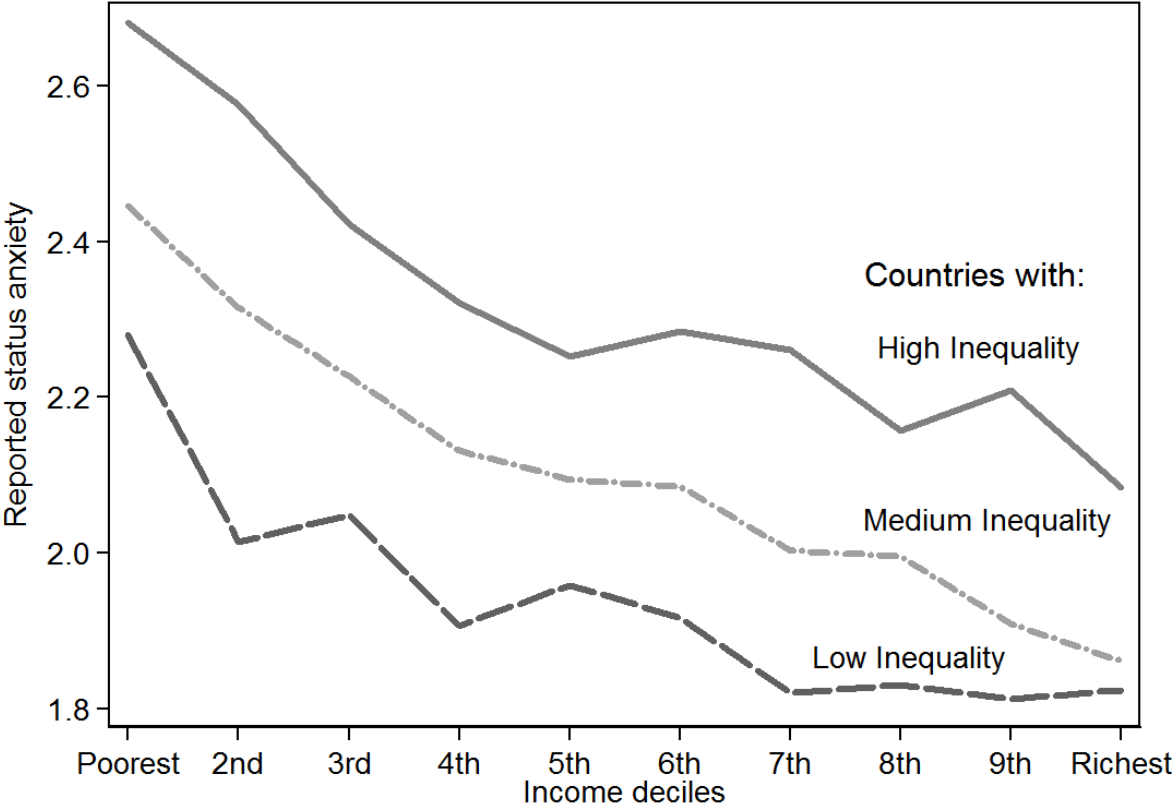


Figure 2: Status anxiety is higher at all levels of income in more unequal countries. Redrawn from Layte and Whelan (R Layte & Whelan, 2014), data kindly provided by Richard Layte

Third, and making the same point that larger income differences make status more important, is evidence that there is a stronger tendency towards conspicuous consumption in more unequal societies. As Veblen recognised, conspicuous consumption is a form of self-advertisement which speaks of status competition. (Veblen, 2007) Research using *Google Correlate* and *Google Trends* has shown, both internationally and among the 50 states of the USA, that where there is more inequality, people are more likely to search for high status goods. (Walasek & Brown, 2015a, 2015b) Income for income, people are more likely to buy high status cars in more unequal US counties. (Bricker, Ramcharan, & Krimmel, 2014) Nor is the effect of inequality on status consumption confined to the richer countries. (Jaikumar & Sarin, 2015) As well as increases in conspicuous consumption, there is also evidence that inequality increases debt and bankruptcies. (Iacoviello, 2008; Levine, Frank, & Dijk, 2010)

Taken together, the evidence outlined in this section suggests that bigger income differences increase the salience of status differentiation in societies.

Sensitivity to social status

If greater inequality does make status differentials more salient, then people in a more unequal society may face an increased social evaluative threat. Indeed, this is very much what the higher levels of status anxiety and conspicuous consumption seem to be telling us. A paper by Dickerson and Kemeny showed that social evaluative threats are particularly powerful sources of stress. (Dickerson & Kemeny, 2004) This was the finding of a meta-analysis of some 208 reports of laboratory studies in which volunteers had been given stressful tasks to perform while having their cortisol levels monitored. Different studies employed a wide variety of tasks as stressors and the purpose of the meta-analysis was to see what kinds of tasks produced the biggest cortisol response. Dickerson and Kemeny concluded that tasks that included uncontrollable social evaluative threat, “threats to self-esteem or social status”, in which task performance could be negatively judged by others, produced both the largest cortisol and adrenocorticotropin hormone increases and had the longest times to recovery.

If we are particularly sensitive to social evaluative threat, what is the effect of living in a society in which levels of threat are raised? We hypothesise that there are two contrasting

responses. One is to be overcome with feelings of inadequacy, self-doubt, low self-esteem and depression. The other is almost the opposite and involves forms of narcissism and self-enhancement.

When discussing the psychological effects of increasing inequality we have been influenced particularly by Sheri Johnson's work on the Dominance Behavioural System (DBS) and Paul Gilbert's on the evolutionary origins of depression as a response to involuntary defeat. Johnson described the DBS as "a biologically-based system which guides dominance motivation, dominant and subordinate behavior, and responsivity to perceptions of power and subordination." (Johnson, Leedom, & Muhtadie, 2012) She and colleagues have drawn attention to a growing body of research suggesting that problems involving issues of dominance and subordination processed by the DBS, contribute to a broad range of psychopathologies. (Johnson et al., 2012; Tang-Smith, Johnson, & Chen, 2015). In summary:

"Extensive research suggests that externalizing disorders, mania proneness, and narcissistic traits are related to heightened dominance motivation and behaviors. Mania and narcissistic traits also appear related to inflated self-perceptions of power. Anxiety and depression are related to subordination and submissiveness, as well as a desire to avoid subordination." (Johnson et al., 2012)

"Animal, biological and behavioural research provide support for the idea that problems with this system are robustly associated with psychopathy, antisocial personality disorder, alcohol-related problems, depression, anxiety disorders, and bipolar disorder." (Tang-Smith et al., 2015)

When Johnson and colleagues were first writing about problems associated with the DBS they assumed that social hierarchies were broadly similar in most societies with similar effects of social differentiation among populations. It is therefore particularly interesting that some of the psychopathies which they suggested were related to the DBS are, as we shall see below, now shown to be more common in more unequal societies. This provides some confirmation of the Johnson thesis of the involvement of the DBS in various psychopathologies and also of the view that increased income inequality increases status anxiety and the social evaluative

threat. The evidence also corroborates our earlier findings of a higher burden of mental illnesses in more unequal rich societies. (K. E. Pickett & Wilkinson, 2010) We shall summarise some of this evidence before moving on to discuss how these specific psychopathologies might be related to inequality.

Researchers from the Inter-American Development Bank have shown that depression is more common in more unequal societies. They used data from more than 80,000 people from 93 countries who responded to a 2007 Gallup Opinion Poll.(Melgar & Rossi, 2010) Almost 15% of people reported feeling depressed the previous day and there was very wide variation from one country to another. While average incomes were not related to feeling depressed, income inequality was, and this effect was particularly strong for people living in cities, rather than in rural areas. In addition, Messias and colleagues using data for 45 US states have also shown that income inequality is significantly related to higher rates of depression (Figure 3).(Messias, Eaton, & Grooms, 2011)

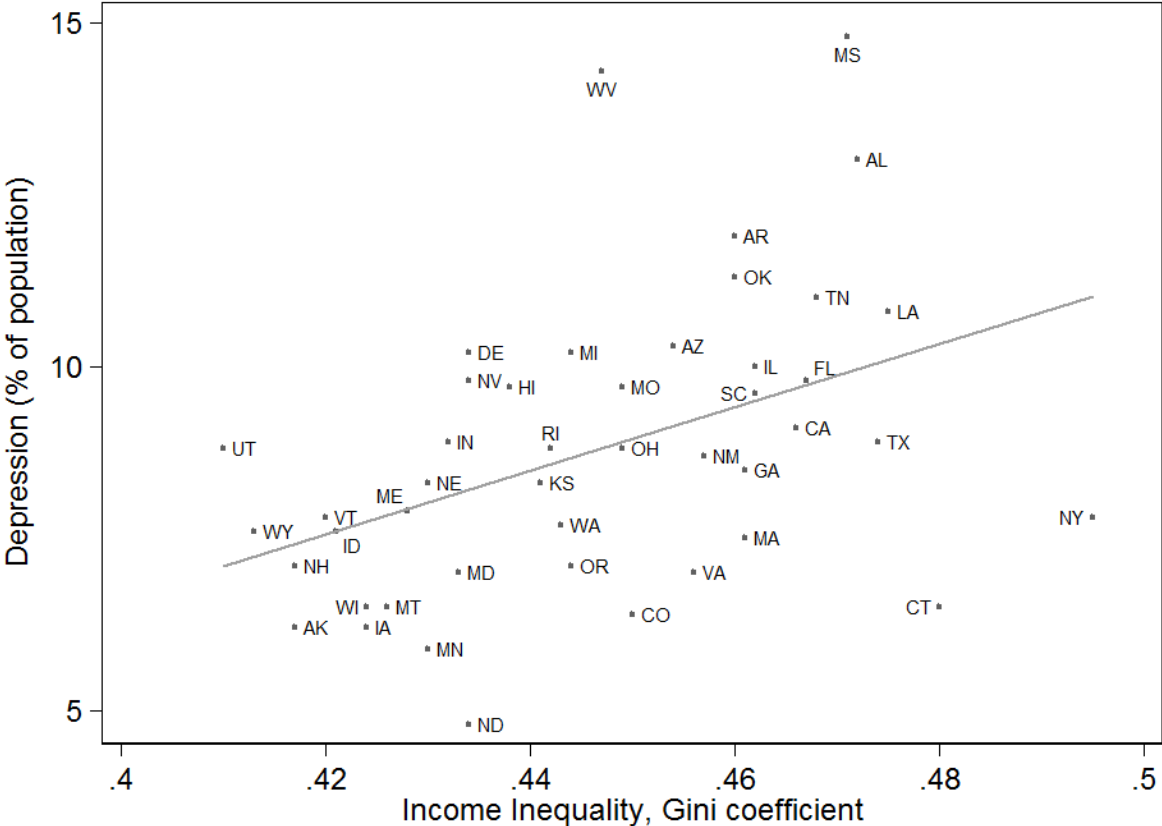


Figure 3: Income inequality and prevalence of depression across 45 US states. Redrawn from data used in Messias et al(Messias et al., 2011)

In contrast to succumbing to depression, there is also evidence that some people respond to a heightened social evaluative threat consequent on greater inequality with forms of self-enhancement and narcissism. In a study of 15 different countries, Loughnan and colleagues showed that self-enhancement is strongly related to income inequality and that measures of individualism/collectivism did not explain the relationship.(Loughnan et al., 2011) Self-enhancement was measured using a standard questionnaire in which participants were asked to rate themselves on 20 desirable personality traits compared to what they thought was the average in their country. Figure 4 shows a strong association between increased income inequality and self-enhancement.

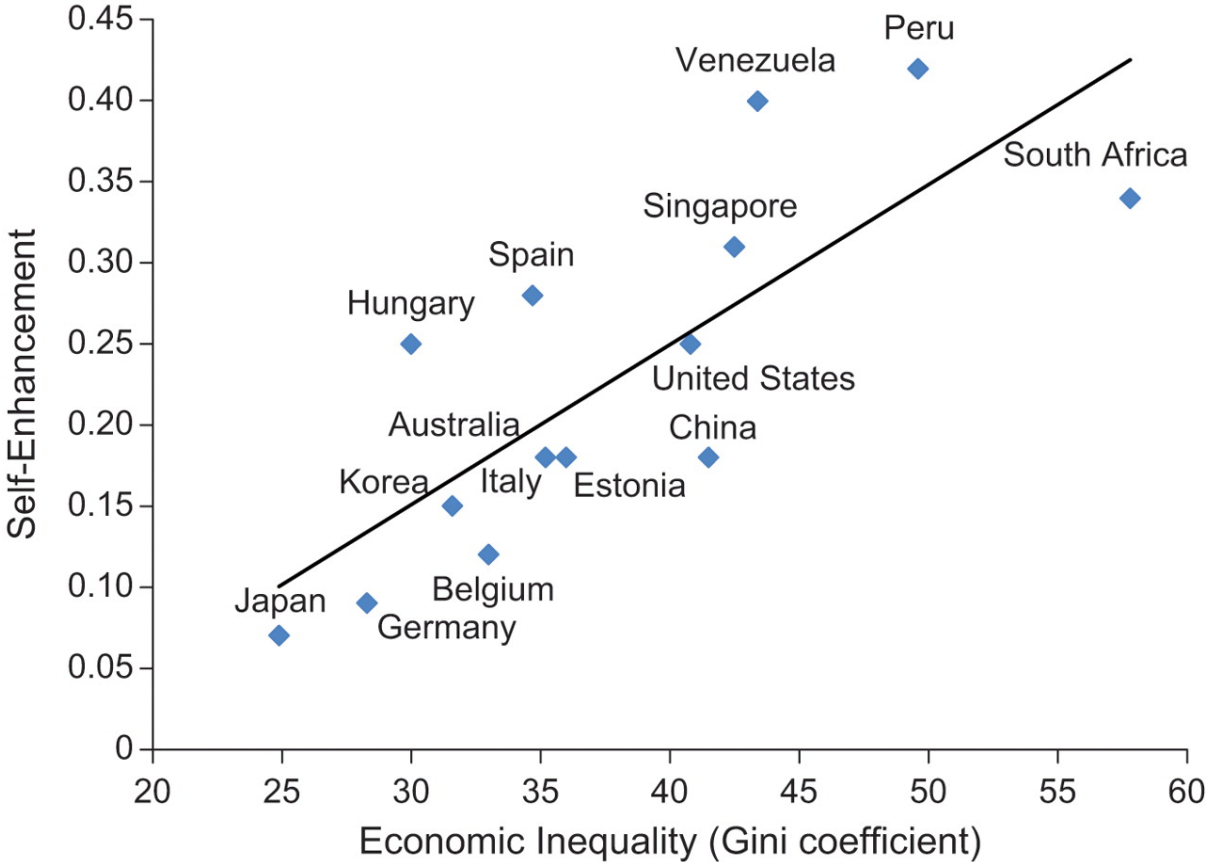


Figure 4: Income inequality is related to higher levels of self-enhancement bias. (Loughnan et al., 2011)

Other studies have found an increased incidence of schizophrenia and a higher prevalence of psychotic symptoms in countries with high levels of income inequality. Burns and colleagues collected 107 schizophrenia incidence rates from 26 countries and found the positive relationship with inequality shown in Figure 5. (Burns, Tomita, & Kapadia, 2013) More recently, Johnson et al analysed data from 249,217 people in 50 countries and found a significantly higher prevalence of psychotic symptoms in more unequal societies. (Johnson, Wibbels, & Wilkinson, 2015)

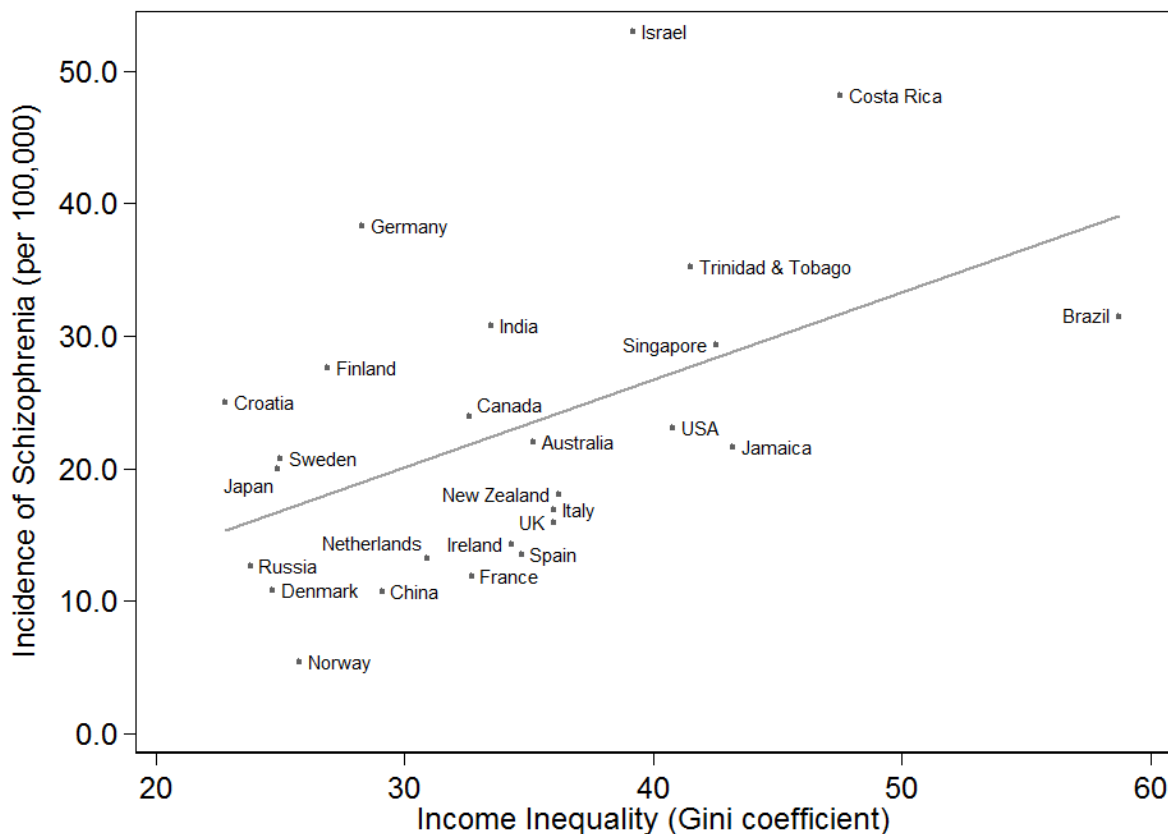


Figure 5: Income inequality and incidence of schizophrenia, 1975-2001. Redrawn from data in Burns et al(Burns et al., 2013)

A review of 85 studies which measured scores on the Narcissistic Personality Inventory (NPI) in samples of the American population between 1982 and 2006 found a steep rise in narcissism – 30 percent more people showed narcissistic tendencies in 2006 than in 1982.(Twenge, Konrath, Foster, Campbell, & Bushman, 2008) In Figure 6 we plot rising NPI scores together with US income inequality data from the World Top Incomes Database.

(Piketty & Saez, 2007) The rise in narcissism is at least consistent with a possible effect of rising inequality over the same time period.

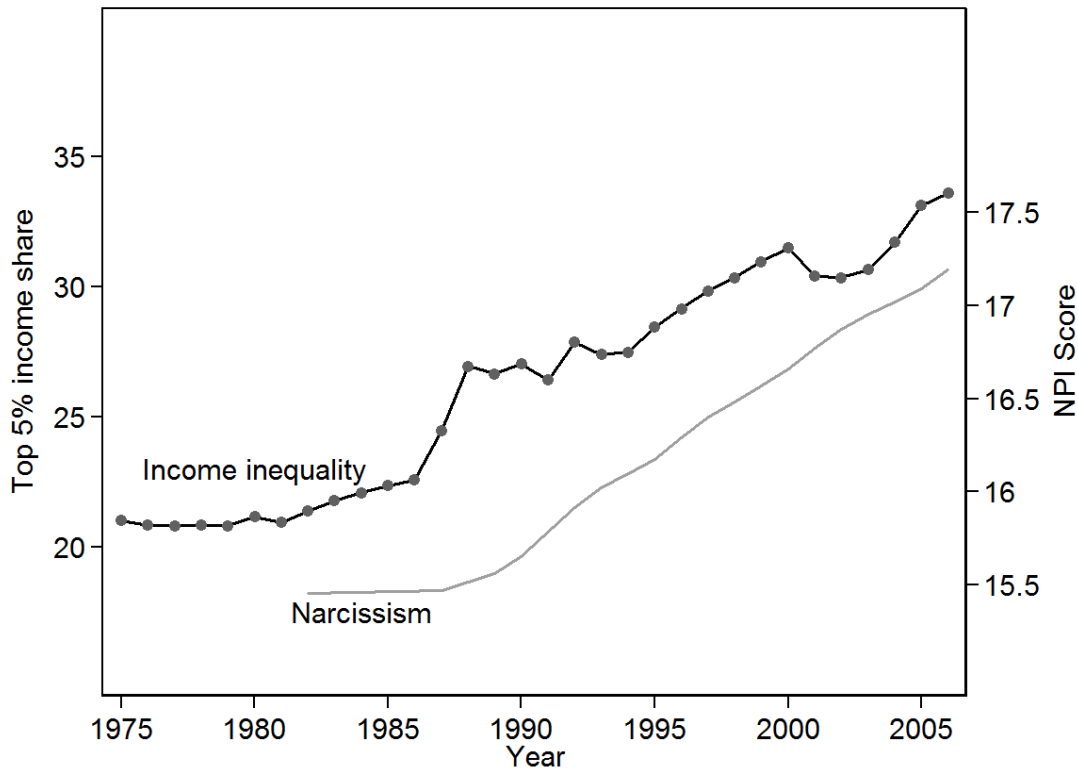


Figure 6: Narcissistic Personality Inventory scores among US college students in relation to income inequality

Are the links with inequality plausible?

Depression

Research on depression suggests why it might be more common in more unequal societies: the links are likely to involve the pathway through involuntary defeat and subordination which have been set out by a number of research workers. (Gilbert & Allan, 1998; Sloman & Gilbert, 2000) The review by Johnson et al referred to above shows that in more than 20 studies people with depression were more likely to report feeling inferior, or experiencing shame. In 23 studies, low testosterone was related to depression and depressive symptoms, and in an experiment in which men were given testosterone lowering drugs, 10% developed depressive

symptoms, compared to none in the group receiving a placebo. In another study, people without depression who were given antidepressant medication became less submissive with their family members and more dominant with strangers.

A study designed to look at explanations of the link between income inequality and mental health in 30 European countries, found that it appeared to be mediated by lower social capital and more status anxiety. It found no support for the idea that the association reflects higher levels of investment in public services. (Richard Layte, 2012) Mental health seems to be affected by the impact of inequality on the quality of our social relationships, rather than by whether countries spend more or less on health systems.

Wood and colleagues posited that if social rank is important for mental wellbeing, then income should be related to mental health only by acting as a proxy or marker for rank – the amount of income you have shouldn't matter but where that income places you in the social hierarchy should. (Wood, Boyce, Moore, & Brown, 2011) In a sample of over 30,000 people in the UK, comparing the effect of absolute level of income to income rank, rank trumped absolute income in predicting mental distress, even when accounting for age, gender, education, marital status, housing ownership and other factors. Over time, a person's rank income at a given time was related to changes in mental distress over the next year – whatever a person's mental state to begin with. A similar study of psychosomatic symptoms in more than 48,000 adolescents in 8 countries, showed that relative deprivation (deprivation in relation to others within the region where the adolescent lived and in their school), as well as rank affluence in region, were related more closely to symptoms than absolute affluence – even after differences in absolute affluence were held constant. (Frank J. Elgar et al., 2013)

Narcissism, self-enhancement and psychopathy

As greater inequality makes social position more important, narcissism and self-enhancement are likely to rise for much the same reasons as conspicuous consumption rises. Where some people appear to be worth so much more than others, we judge each other more by status. Narcissism is part of the struggle for social survival against self-doubt and the sense of inferiority. Another sign of the connection between rising inequality and people's desire for status comes from survey data showing the rise in the incomes levels which people aspire to.

In the decade from the mid-1980s to the mid-1990s the incomes Americans thought they would need to fulfil their dreams doubled from \$50,000 to \$102,000, as income inequality rose. (Schor, 1999) Using US samples, Twenge and colleagues have compared different generations at the same age, including Baby Boomers (born 1946–1961), Generation X'ers (born 1962–1981) and Millennials (born after 1982). Those born later thought that money, image and fame were more important, and self-acceptance, affiliation and community were less important. Over time, and in years with higher income inequality, wanting to make money was a more important motivation for going to college than wanting to gain an appreciation of ideas. (Twenge, Campbell, & Freeman, 2012; Twenge & Donnelly, 2016)

Inequality and the accompanying increase in status competition, seem to have created a culture where 'greed is good', risk-taking admired, and domination mistaken for leadership. In such a climate, it is perhaps no wonder that individuals with a personality disorder characterised by lying, manipulation, deceit, egocentricity and callousness can often be found working their way up to the top of modern corporate structures instead of being shunned. Board and Fritzon compared the personality traits of 39 senior business managers (all men) to a sample of 768 patients from Broadmoor High Security Hospital. All patients in this hospital have received a legal classification of either mental illness or psychopathic disorder and have either been convicted of serious crime or found unfit to plead when tried for such crimes. (Board & Fritzon, 2005) The business men scored higher than the diagnosed patients on several negative traits, including histrionic (superficial charm, insincerity, egocentricity, manipulateness), narcissistic (grandiosity, lack of empathy, exploitativeness, independence), and compulsive (perfectionism, excessive devotion to work, rigidity, stubbornness, and dictatorial tendencies). Philosopher Simon Blackburn, in an extended essay on self-love, *Mirror, Mirror*, discussing rising inequality and the vast salaries and bonuses of the top 1%, asks "How can they look themselves in the mirror, walk down the street? Have they no sense of decency, let alone fellow feeling with the rest, whom they have robbed and continue to rob?" (Blackburn, 2014) He believes that such people have come to believe that they are "worth it because of their exceptional abilities, judgement and intelligence. Anything less than, say, 300 times the average income of workers in their companies would be unjust, a simple failure to reward their astonishing gifts adequately." Never mind, points out

Blackburn, that it requires no extraordinary genius to pay bank customers 1% interest, lend to borrowers at 16.5% interest, and pocket as much of the difference as they can get away with.

Beyond narcissism and psychopathy, there may be other costs to society of people feeling that their superior position makes them more deserving than others. In a series of observational and experimental studies, Piff and colleagues have found people with lower social class to be significantly more likely to behave in prosocial and ethical ways than those with higher social class, who are significantly more likely exhibit a sense of entitlement and narcissistic characteristics. (P. K. Piff, 2013; P. K. Piff, Kraus, Cote, Cheng, & Keltner, 2010; Paul K. Piff, Stancato, Côté, Mendoza-Denton, & Keltner, 2012) When subjects were primed to consider the value of greed or egalitarianism then differences between lower and upper class subjects were attenuated, leading the researchers to conclude that they did not differ in their capacities but in their general, default tendencies. A recent study across all 50 states of the USA shows that how the rich behave towards others is also affected by the extent of inequality: it was only in the more unequal states that richer people were less generous. (Côté, House, & Willer, 2015)

A key link between narcissism, psychopathy, and a sense of entitlement is lack of empathy. Fiske describes how psychological experiments that induce people to feel powerful also cause deficits in their ability to understand others' emotions and thoughts, because powerful or dominant people can ignore others with impunity. (Fiske, 2011) As Fiske says, '...we are divided by envy and scorn, brought on by the status concerns that pervade our society. Income inequality, now at historically high levels, aggravates these status divides.' Durante and colleagues examined stereotype ambivalence in 37 countries. (Durante, Fiske, Kervyn, & Cuddy, 2013) They suggest that being able to view 'other' groups in society in ambivalent ways – having both good and bad characteristics – might be a way in which people are able to rationalise inequality. They hypothesised that holding ambiguous stereotypes about others (for example holding the paternalistic view that women are warm but incompetent, or that the rich are competent but cold and calculating), would be more common in more unequal countries; they found that people did indeed view others more ambivalently in more unequal societies.

Social cohesion

Another important consequence of greater inequality is that it weakens social cohesion - confirming the intuition that inequality is divisive. Figure 7, from Lancee & Werfhorst (2012), uses data from 24 European countries and shows that civic participation (belonging to groups, clubs or organizations, including recreational political, charitable, religious or professional groups) is significantly lower in more unequal countries. (Lancee & Van de Werfhorst, 2012) Individual income (probably serving as an indicator of status) also matters, but it matters more in more unequal countries. The researchers suggest that their findings support the idea that inequality increases the social distances between people. Putnam’s measures of social capital among the regions of Italy as well as among the states of the USA, are also closely related to inequality. (Putnam, 1993, 2000)

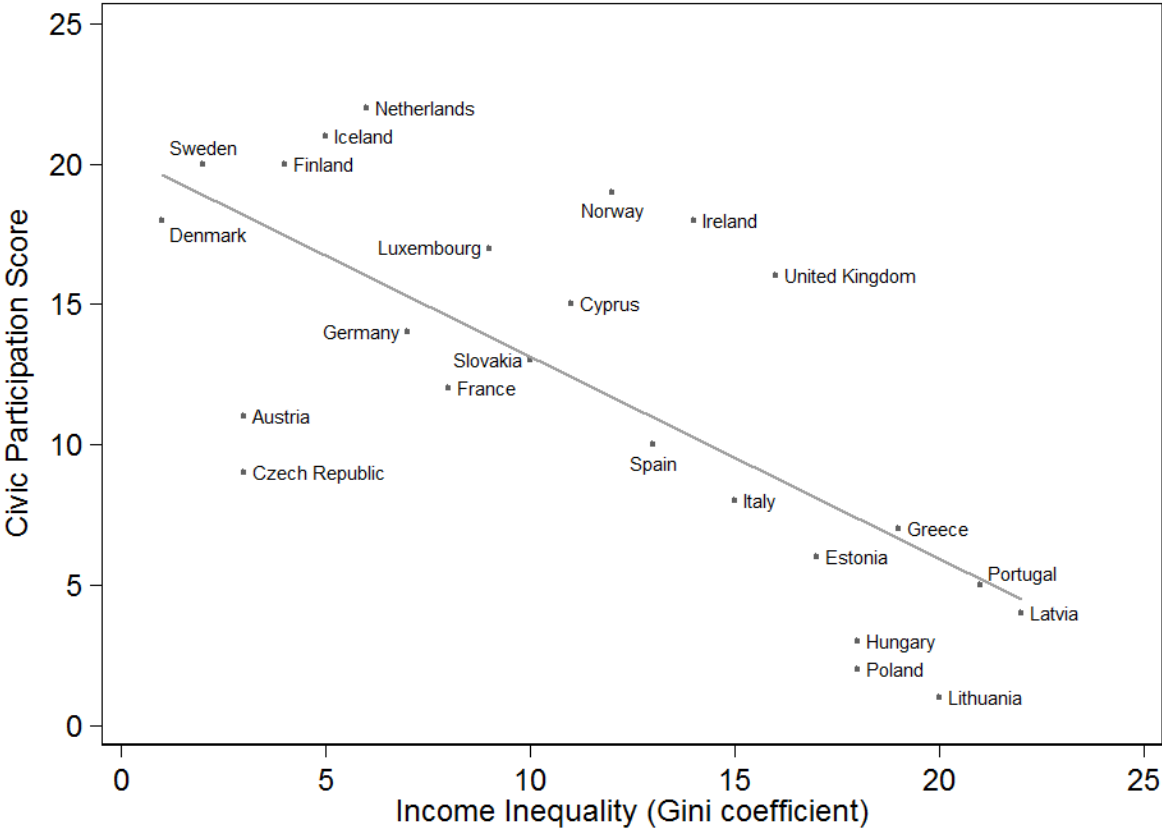


Figure 7: Civic participation decreases in more unequal European countries (income inequality measured by the Gini coefficient). Re-drawn from data in Lancee & Werfhorst 2012 (Lancee & Van de Werfhorst, 2012)

There are also a number of studies showing that people are much more likely to feel they can trust others in more equal societies. (Kawachi et al., 1997; E. M. Uslaner & Brown, 2005) If we are right to think that the scale of inequality shifts us between social strategies characterised, at one end, by sharing and reciprocity, and at the other, by the individualistic self-interest associated with dominance hierarchies, then the association between inequality and lower levels of trust is to be expected. Indeed, the link is obvious in relation to some of the survey questions used to measure trust: one used in the US Federal Government's General Social Survey and elsewhere, asks whether you think "most people would take advantage of you if they got the chance". Research suggests that trust mediates the relationship between inequality and other variables including violence and health. (Elgar, 2010; Elgar & Aitken, 2011)

If inequality does increase the social evaluative threat, participation in community life may atrophy partly because social contact becomes more stressful. If people are worried about how others might judge them, social contact will become more of an ordeal as they become more anxious about self-presentation. However, it is also possible that the shift in social strategies includes a reduction in people's desire for social affiliation.

de Vries and colleagues tested the hypothesis that inequality creates a more competitive, less cohesive social milieu, using a large sample of volunteers taking part in an internet survey of personality. (de Vries, Gosling, & Potter, 2011) They measured how people scored on a scale of Agreeableness – a measure of people's attitudes and behaviours towards others, including empathy, trust, altruism, friendliness and cooperation. In more unequal US states, average scores of Agreeableness were lower even after controlling for age, sex, education, urbanisation, average income, and the percentage of people belonging to an ethnic minority.

In 26 European countries, both richer and poorer people showed less solidarity in more unequal societies – less 'willingness to contribute to the welfare of other people'. (Paskov & Dewilde, 2012) Specifically, people were less willing to help neighbours, older people, immigrants, and the sick and disabled.

Violence is close to the opposite of agreeableness, solidarity and trust, and the evidence that it rises with inequality is very well established. [Daly, Killing the Competition 2016.]

Explanations of the link centre on increased competition for status.

False remedies: drugs, alcohol, comfort eating, gambling, compulsive shopping, consumerism

Whether people feel defeated by a heightened social evaluative threat and their confidence collapses, or whether they brazen it out in an attempt to convince the world that they are managing successfully and doing OK, the threat to self-esteem and the effort of trying to maintain face is highly stressful. We think this is likely to lead to an increased desire for anything which alleviates social anxieties and makes people feel better – whether alcohol, drugs, eating for comfort, ‘retail therapy’ etc.

We have known for some time that use of illicit drugs is higher in more unequal countries. (R. G. Wilkinson & K. E. Pickett, 2009) Among US states, the most unequal have higher rates of drug addiction and deaths from drug overdoses. (R. G. Wilkinson & K. E. Pickett, 2009) Studies of New York City neighbourhoods found that those with the most income inequality had higher rates of smoking marijuana (Sandro Galea, Ahern, Tracy, & Vlahov, 2007) and deaths from drug overdose. (S. Galea et al., 2003) In the UK and the USA, drinking any alcohol at all is more common higher up the social ladder, but problematic drinking is more common further down. Income inequality has been linked to more frequent drinking in New York City neighbourhoods, (Sandro Galea et al., 2007) to heavier drinking and drunkenness among adolescents in rich countries, (Elgar, Roberts, Parry-Langdon, & Boyce, 2005) to per capita alcohol consumption in 13 European countries, (Cutright & Fernquist, 2011) and (in a complex pattern) to deaths attributable to alcohol in local government areas of Australia. (Dietze et al., 2009) However, not all studies have straightforward results – the study of 13 European countries shows no association between inequality and deaths from alcoholic liver disease despite the link to heavier alcohol consumption. The Australian study showed that alcohol-related hospitalisations initially decline when areas become more unequal, but then this is followed by a rapid increase. Among US states, one study found that the ratio of white to black and Hispanic poverty was more closely related to higher levels of alcohol problems than an overall measure of inequality. (Karriker-Jaffe, CM Roberts, & Bond, 2013)

Obesity and calorie consumption are higher in more unequal societies, and may be an indicator of ‘eating for comfort’ and compulsive over-eating. (K. E. Pickett et al., 2005) We also found a strong and significant relationship between income inequality and the population prevalence of problem gambling (Figure 8) (Williams, Volberg, & Stevens, 2012) – an addictive behaviour related perhaps to financial strain, stress and anxiety.

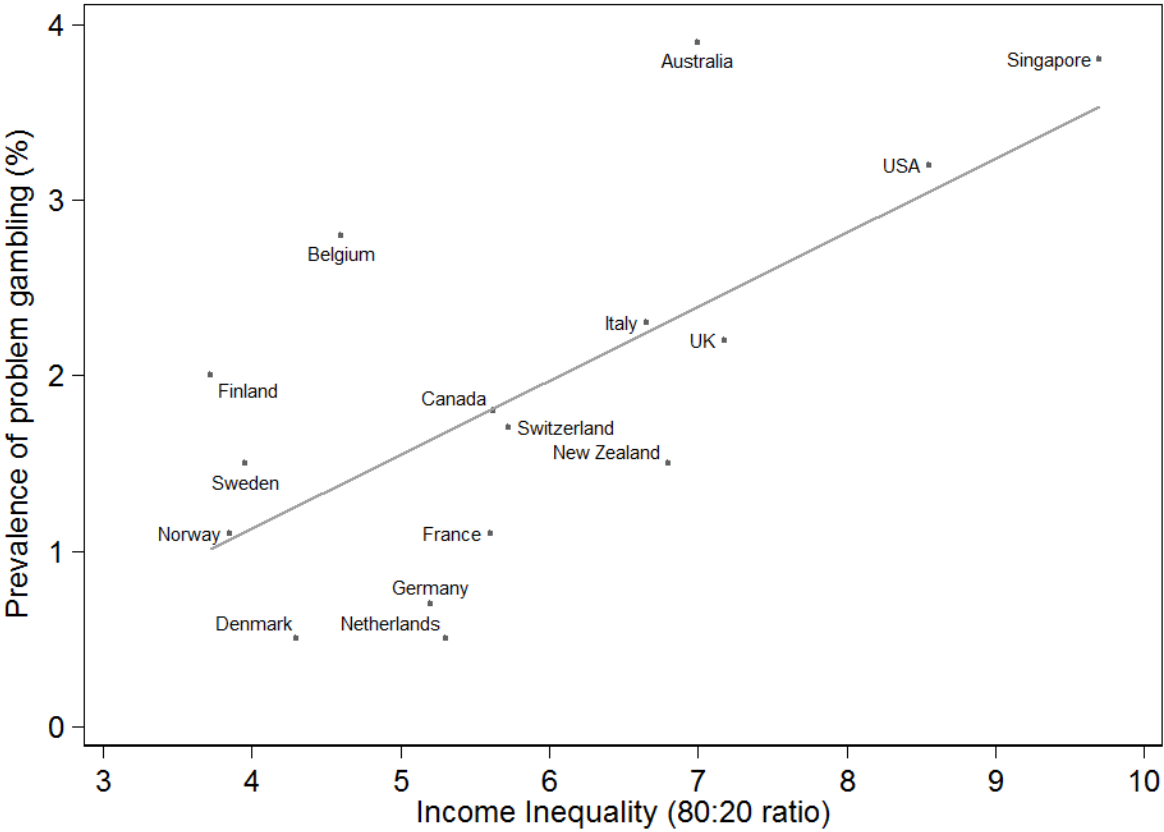


Figure 8: Income inequality is related to higher levels of problem gambling in rich countries

Denmark is a relatively egalitarian country and in *Affluenza*, his book on overconsumption and ‘retail therapy’, psychologist Oliver James quotes a Danish newspaper editor who says ‘Multinationals have learnt that there is no market for luxury goods here. When a new type of product comes out, for a few years it doesn’t penetrate at all because it’s too expensive and we don’t like to be ostentatious, so only freaky playboys have one. But when the price comes down, so that middle-class Danes can afford it, then within eighteen months it reaches 70 per cent of the population.’ (James, 2007) James comments that consumption of luxury goods is

not a source of status for Danes, their greater equality of income, as well as greater equality between men and women, means that they are less susceptible to advertising and to pining after flashy cars and other prestige goods. We have found spending on advertising as a proportion of Gross Domestic Product to increase significantly with greater inequality (Figure 9).

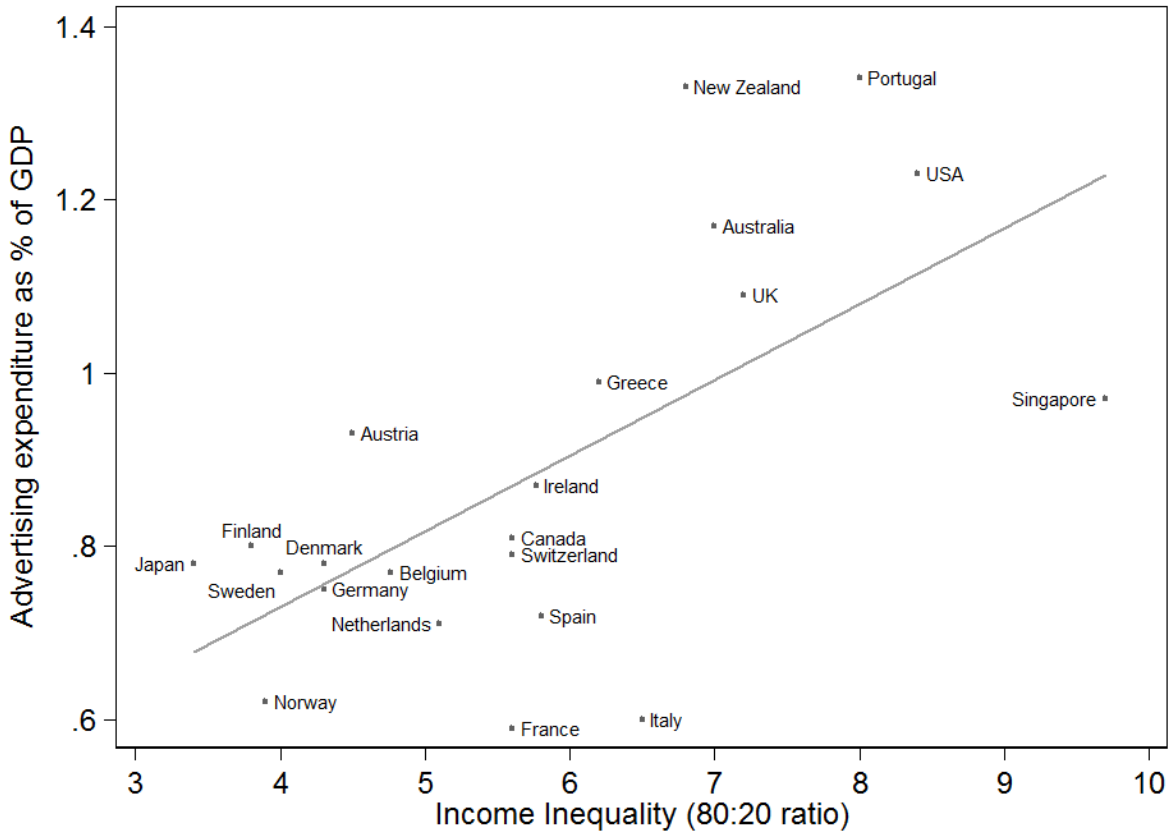


Figure 9: Spending on advertising, as a percentage of GDP, increases with greater income inequality

Age and Lag Times

It is usually assumed that inequality is experienced primarily in adult life. Most studies have looked at cross-sectional associations between inequality and contemporaneous outcomes. However, the best methodological study of lag times in relation to mortality suggests that the effects on death rates of a rise in inequality start to appear after about three years and continue to accumulate until some 12 years later. (Zheng, 2012) Another study suggests that inequality in childhood can affect health in later life. (Lillard, Burkhauser, Hahn, & Wilkins,

2015) This possibility is made more plausible by the large body of evidence showing that birthweight and childhood circumstances affect health in later life. (Almond & Currie, 2011)

There is also increasing evidence that materialism and status consumption affect the wellbeing of children in unequal societies. Using two sets of cross-sectional data and changes between them over time, we found that changes in the UNICEF Index of child wellbeing were closely related to changes in inequality in rich countries. (K. E. Pickett & Wilkinson, 2015a) A UNICEF UK-commissioned study of family life in three countries (Sweden, low inequality and high child wellbeing; Spain, mid-range inequality and high wellbeing; UK high inequality and low wellbeing) used focus groups of friendship groups in schools and in-depth observations of family life. (Ipsos-Mori & Nairn, 2011) The struggles of British families contrasted starkly with the experience of Spanish and Swedish families. In Sweden, parents talked about children saving their money for special purchases and making and mending toys. In Spain, there were children cherishing books and educational toys and storing them in special boxes. In the UK, the parents appeared universally exhausted and their homes were filled with boxes and piles of discarded toys. As the report stated:

“Many UK children do not refer to material goods when talking about what makes them happy, and also understand the principles of moderation in consumption, but many have parents who feel compelled to purchase, often against their better judgement.”

“Children [have a] growing awareness of inequality as they approach secondary school and the role of consumer goods in identifying and creating status groups within peer groups...Whilst many UK parents are complicit in purchasing status goods to hide social insecurities, this behaviour is almost totally absent in Spain and Sweden.”

We have found that many of the components of the UNICEF index of child wellbeing are related to inequality, including child conflict.(K. E. Pickett & Wilkinson, 2007) The relationship with bullying, replicated by Elgar on a larger data set, suggests that inequality affects not just children’s circumstances or family life, but also how they

behave.(Elgar, Craig, Boyce, Morgan, & Vella-Zarb, 2009) Given that animal dominance hierarchies are essentially bullying hierarchies, ordered from the strongest at the top to the weakest at the bottom, the 10-fold differences found in the prevalence of bullying between more and less equal societies may be particularly indicative. It has been shown that children as young as five years are aware of social status differences and it would be surprising if they remained oblivious to them. (Simmons & Rosenberg, 1971) There is however also the possibility that early experience may lead to biological (epigenetic) changes which prepare children for a more or less equal world.

Biological embedded effects of inequality

A review of epigenetic research concluded that the evidence is 'consistent with the idea that social adversity, particularly that involving parent–offspring interactions, alters the epigenetic state and expression of a wide range of genes, the products of which regulate hypothalamic-pituitary-adrenal function' (i.e. the system which regulates stress responses). (Anacker, O'Donnell, & Meaney, 2014) Slavich and Cole stated that 'external social conditions, especially our subjective perceptions...can substantially alter the expression of literally hundreds of genes...' (Slavich & Cole, 2013) Although the important effects of early childhood experience on the course of a person's later psychological development have long been recognised, research has only recently shown that the processes involved are partly underpinned by epigenetic changes. Children who experience a lot of stress are likely to become more reactive to it, more anxious, and more vulnerable to depression later on. (Provençal & Binder, 2015)

Epigenetic change increases the ability of an organism to adapt flexibly to the demands of different circumstances. Because, in the course of evolution, humans have experienced societies based on everything from 'might is right' dominance hierarchies at one extreme, to caring, sharing, reciprocity on the other, a key issue is that development should be sensitive to indicators of the kind of society in which a child is growing up. There may have been important advantages in being prepared appropriately, either for a world in which individuals are rivals for scarce resources, have to avoid challenging dominants and learn not to trust others, or for a society in which people depend on cooperation and reciprocity, where

empathy and trust are important. Each kind of society requires a different social orientation, a different emotional and cognitive development.

As well as the radical differences in the general quality of relationships from one society to another, there are also processes of adaptation to the challenges of living nearer the top or the bottom of the social ladder. In more unequal societies, the quality of social relations and the experience of adversity will differ according to where you are on the social ladder. Life is tougher at the bottom and there is evidence of epigenetic differences between people living in richer and poorer areas. Researchers found that there were a large number of epigenetic differences between people living in rich and poor areas of Glasgow. (McGuinness et al., 2012)

Competition for status means being very aware of status rankings and is likely to be the source of the downward prejudice seen in human societies towards those lower on the social ladder. Human beings still show a remarkable ability to judge dominance characteristics in each other. One study observed interactions among small groups of students meeting each other in experimental conditions for the first time. It found that even 'at first glance' – actually within one minute of meeting and before they had spoken to each other – they had made subliminal assessments of each other's tendency to dominant behaviour as expressed in body language. These assessments were then borne out in observations of subsequent interaction. (Kalma, 1991) It seems plausible that one of the epigenetic changes caused by exposure to greater inequality may be increased vigilance about social comparisons with those around us.

Another indication that some responses to more unequal societies may be partly biologically programmed comes from a study which found that women in more unequal societies prefer more stereotypically masculinized men's face than women in more equal societies. (Brooks et al., 2011; DeBruine, Jones, Crawford, Welling, & Little, 2010) The research paper points out that this is despite "compelling evidence that women ascribe anti-social traits and behaviours to more masculine looking men. Women perceive more masculine men as dishonest, uncooperative, more interested in short-term than long-term relationships". (DeBruine et al., 2010) It looks as if women in more unequal societies may be biased towards men with the

rugged masculine faces and characteristics which might get them nearer the top in a dominance hierarchy. Women in a tougher society may prefer tougher-looking men.

There is at the same time a substantial body of research, including from experiments using games designed to explore human motivations, showing that, alongside (and despite) our concern for status, human beings show 'inequality aversion'.(Dawes, Fowler, Johnson, McElreath, & Smirnov, 2007; Fehr & Gächter, 2002) A human aversion to inequality is likely to have been a crucial strategy for maintaining harmonious relations between people.(Sahlins, 2003) The practice of prosocial values depends on our desire for the good will of others and to be regarded as cooperative and an asset to the wellbeing of the group.

Lastly, an indication that we have evolved biological responses to the quality of social relations come from research on fibrinogen. Among both male and female civil servants there is a strong social gradient with higher levels lower down the office hierarchy. (Brunner et al., 1996) Among hierarchical non-human primates it would clearly be a survival advantage if the blood of subordinates, at risk of injury from dominants, clotted faster. In contrast, another paper has shown that friendship lowers fibrinogen. (Kim, Benjamin, Fowler, & Christakis, In press)

Conclusions

This paper has offered an explanation of why larger income differences in a society increase the prevalence of many of the health and social problems which tend to occur more frequently lower down the social ladder. It has proposed that the scale of material inequality in a society has a fundamental effect on the quality of social relations. More egalitarian societies enjoy higher levels of interpersonal trust, stronger community life, and lower levels of violence. We have suggested that the processes which underlie these differences include contrasting but partly biologically embedded social strategies. Strategies adaptive to dominance relations involve heightened attention to status and self-advancement. Those appropriate to more egalitarian settings put greater emphasis on cooperation, mutual support and reciprocity. Although both social strategies are used in different contexts in all societies, how much each is used is affected by the extent of income inequality in a society.

The evidence strongly suggests that greater inequality increases the importance of status differences and of the social evaluative threat. Responses to an increased social evaluative threat are likely to involve the Dominance Behavioural System and include forms of psychopathology related, on the one hand, to self-enhancement and, on the other, to a sense of defeat and depression. There is some evidence to suggest that both kinds of psychopathology may be more common in more unequal societies.

Increases in levels of social evaluative threat and the greater preponderance of more antagonistic forms of social relations in more unequal societies would be expected to raise levels of anxiety. We suggest that this may be why more unequal societies show higher levels of dysfunction related to the use of alcohol, drugs, and consumerism. Finally, the effects of inequality are not confined to adult behaviour. We suggest that inequality may affect children through pathways which include changes in gene expression consequent on early social experience.

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