

The Ethical and Policy Implications of Research on Income Inequality and Child Well-Being

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abstract

BACKGROUND AND OBJECTIVES: Child well-being is important for lifelong health and well-being. Although there is a robust evidence base linking social determinants of health (eg, relative poverty and income inequality) to child well-being, social and public health policy tends to focus on interventions to mitigate their effects, rather than remove the root causes. The goal of this study was to examine associations between child well-being and income inequality.

METHODS: We compared reported rates of childhood well-being in the 2007 and 2013 UNICEF reports on child well-being in wealthy countries. Twenty indicators of child well-being (excluding child poverty) were defined consistently in both the 2007 and 2013 reports. These variables were used to create an indicator of change in child well-being over the approximate decade 2000 to 2010. For our analyses of income inequality, we used the Organization for Economic Cooperation and Development Gini coefficient of income inequality for 2009 and change between 2000 and 2009, respectively.

RESULTS: The overall index of child well-being in 2013 was closely and negatively correlated with income inequality ($r = -0.60$, $P = .004$) but not with average income ($r = -0.3460$, $P = .12$). Adjustment for income inequality, children in relative poverty, and the child poverty gap did not change the lack of association between average income and child well-being in 2013 in wealthy countries. Between 2000 and 2010, child well-being scores improved most in Italy, Norway, Portugal, the United Kingdom, and Germany. The biggest declines were seen in Sweden, Canada, Japan, Switzerland, and France. Countries that experienced the largest increases in income inequality had significantly greater declines in child well-being ($r = -0.51$, $P = .02$).

CONCLUSIONS: Children born into socioeconomically disadvantaged families suffer worse child well-being and its lifelong implications, in all societies, worldwide. Our analyses show, however, that some wealthy societies are able to mitigate these inequalities; these societies have better child well-being, on average. This outcome has less to do with specific welfare policies or targeted interventions for poor children than to a societal commitment to greater equality. *Pediatrics* 2015;135:S39–S47

There is now a robust body of evidence confirming the significance of childhood experiences on lifelong health and well-being. Beginning with Barker's fetal origins hypothesis, which focused on undernutrition and low birth weight,¹ extending through Gillman's work on the developmental origins of health and disease,² we now know that maternal stress creates epigenetic effects in pregnancy and early childhood.³ We also know that interventions in early childhood can alter these influences of health throughout the life course. Early interventions such as those provided by the Nurse-Family Partnership in the United States,⁴ early childhood education such as that provided by Head Start in the United States⁵ and Sure Start in the United Kingdom,⁶ and parenting programs such as Triple P and Incredible Years can improve child outcomes.⁷

These programs have societal implications. They can lead to higher levels of human capital and social mobility. Returns on investment in early childhood (eg, to enhance attachment, improve parenting, support school readiness) are much greater than investment in education and well-being at later ages.⁸ This outcome has led policy makers to focus on programs to improve early childhood experiences. However, child well-being is also powerfully shaped by societal structures that are much more pervasive than access to books or preschool. These factors include child poverty, parental unemployment, and low family socioeconomic position.⁹

The present article examined the effects of societal levels of income inequality in relation to child well-being. We asked the question: if income inequality is related to child well-being, and this relationship is likely to be causal, what are the ethical implications for health professionals, policy makers, and politicians? Do we have an

ethical obligation to reduce levels of inequality?

The overall focus of this Special Supplement is on social hierarchies. Individual bullying is 1 form of social hierarchy in which a dominant individual picks on another individual who is further down the social hierarchy, less powerful, and therefore more vulnerable and defenseless. Everybody recognizes this form of bullying as problematic. We suggest that, as well as increasing this kind of bullying, extreme income inequality is in itself a means by which whole populations of children experience similar effects to individual children who are bullied by their peers; therefore, our moral response to the 2 sorts of problems should be similar.

We begin by reviewing measures of child well-being. We then summarize our own research relating income inequality to child well-being¹² and provide an update of that research in which we analyze whether changes in income inequality are associated with changes in child well-being. We conclude with ethical implications for policy and practice.

The measurement of child well-being, particularly in an international comparative context, is a relatively new endeavor. The International Society of Child Indicators was established in 2009 and its official journal, *Child Indicators Research*, was first published in 2008. Different measures are used in different countries. Canada uses the Early Development Index¹³; Australia uses a different (Australian) Early Development Index¹⁴; the United Kingdom has a local index of child well-being¹⁵; and in the United States, indices of child well-being are produced by the Annie E. Casey Foundation (Kids Count Index) and academics at Duke University (Child and Youth Well-being Index).¹⁶ As a result, international comparisons of child well-being are somewhat controversial.

The first international comparisons of child well-being in wealthy countries were published by UNICEF in 2007.¹⁷ An index of child well-being in Europe was published in 2009.¹⁸ There are numerous challenges in measurements and comparisons of child well-being across countries. The measures use different scales, and the circumstances of children in various countries are different. Nevertheless, there are reasons to trust scales of child well-being that include measures of health, education, risky behaviors, family and peer relationships, and household poverty.

In 2007, we analyzed income inequality and child well-being in wealthy countries by using the 2007 UNICEF index of child well-being.¹² This index had 40 components. It included objective and subjective measures of well-being. Objective measures included factors such as obesity and household income, and subjective measures were factors such as whether children found their peers to be kind and helpful. We concluded that a child's well-being was less highly correlated with average standards of living than it was with the prevalence of income inequality. Income mattered: well-being was lower where child relative poverty rates were higher. However, child poverty rates were highly correlated with the degree of income inequality. We concluded that improvements in child well-being might depend more on reductions in inequality than on further economic growth, as income inequality was strongly and significantly associated with child well-being, whereas average incomes were not.

In the 7 years since we published that initial report,¹² income inequality has increased in many wealthy countries. Our goal was to determine whether associations between income inequality and child well-being had changed and whether an increase in inequality was related to a decrease in well-being in these countries.

METHODS

Child Well-Being in 2007 and 2013

In 2013, UNICEF published a new overview of child well-being in wealthy countries, the first update since its original 2007 report.¹⁹ The new index of child well-being was somewhat different from the 2007 index,¹⁷ most notably in the exclusion of subjective well-being (measured and discussed in a companion working paper) and the addition of measures related to housing and environment (Table 1). As in the 2007 report, data sources included sample surveys, such as the Organization for Economic Cooperation and Development (OECD) Program for International Student Assessment and the World Health Organization Study of Health Behavior in School Children, as well as routinely collected data. Reporting dates vary for different components of the 2013 index but are typically 2007–2010. The UNICEF indices in both 2007 and 2013 were constructed in 3 tiers. Individual items were grouped into subdimensions, and these were then used to form main dimensions and then an overall index of child well-being. Components were combined as averages of their z scores (mean \pm SD: 0 \pm 1). Full descriptions of both the indices and the underlying methods have been published for both 2007 and 2013.^{17,19,20} The 2007 and the 2013 UNICEF indices contain measures both of child well-being and of factors conducive to well-being. With both reports, our goal was to see how well-being might be determined by using socioeconomic inequality. To avoid circularity, we removed the proportion of children living in relative poverty from both the 2007 and 2013 indices, as well as the child poverty gap from the 2013 index (because both are related to inequality by definition) and then recalculated the indices. Where appropriate, items were reverse-scored so that low scores consistently indicated worse outcomes.

Selection of Countries

In both 2007 and 2013, UNICEF reported an overall ranking for child well-being for 21 OECD countries. Incomplete data were also reported for some other countries excluded from the overall ranking because they were missing data on a number of items. These countries were incorporated into the overall indices, basing the index on those items which were available; this method allowed us to add Australia, Japan, and New Zealand. Countries with low gross domestic product, missing income inequality data, and small population size were excluded, giving a consistent sample over the 2 time periods of 21 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

Change in Child Well-Being

Twenty indicators of child well-being (excluding child poverty) were defined consistently in both the 2007 and 2013 reports (Table 1).²¹ These variables were used to create an indicator of change in child well-being over the approximate decade of 2000 to 2010.

Income Inequality and Average Incomes

In our previously published analysis of income inequality and child well-being for the 2007 report,¹² we used income inequality data from the United Nations Development Program Human Development Indicators, 2003–2006. These data were measured as the average of the ratio of the total annual household income received by the wealthiest 20% of the population to that received by the poorest 20%.^{22–25} For our analyses of income inequality and child well-being for the 2013 report and for change in income inequality

and child well-being between 2007 and 2013, we used the OECD Gini coefficient of income inequality for 2009 and change between 2000 and 2009, respectively.²⁶ Average income was measured as gross national income per capita at purchasing power parities in US dollars for the appropriate time periods.

US Comparisons

To provide an independent test of the international pattern of associations, we also examined the association between: (1) income inequality in the 50 US states; and (2) the states' ranking on the 2013 Kids Count Index of child well-being (published by the Annie E. Casey Foundation).²⁷ As a measure of income inequality for the United States, we used the Gini coefficient of the inequality of household incomes in 2009 provided by the US Census Bureau.²⁸ Average income, measured as per capita income in 2009, was obtained from the same source.

Statistical Methods

Pearson correlation coefficients were estimated to relate both the 2007 and 2013 indices of child well-being to income inequality and average income, and change in child well-being (~2000–2010) to change in income inequality (2000–2010). Because the index of child well-being is based on substantially fewer indicators for Australia, Japan, and New Zealand, the analyses were repeated excluding those countries.

RESULTS

We previously reported an association between higher levels of income inequality and lower levels of child well-being for the 2007 report ($r = -0.64$, $P < .001$).¹² The overall index of child well-being in 2013 was also closely and negatively correlated with income inequality ($r = -0.60$, $P = .004$) (Fig 1) but not with average income ($r = -0.3460$,

TABLE 1 Indicators in the UNICEF Index of Child Well-being, 2007 and 2013

Dimensions	Components	Indicators 2007	Indicators 2013
Material well-being	Child income poverty/monetary deprivation	Relative child poverty rate ^a	Relative child poverty rate ^a
	Deprivation/material deprivation	Low family affluence ^b Few educational possessions <10 books in the home	Relative child poverty gap ^a Low family affluence ^b Child deprivation rate
Health and safety	Work	No employed parent	
	Health at birth	Infant mortality rate ^b Low birth weight rate ^b	Infant mortality rate ^b Low birth weight rate ^b
	Preventive health services/immunizations	Measles % ^b DPT % ^b Polio % ^b	Average cover for measles, DTP, and polio ^b
Educational well-being	Child mortality	Deaths from accidents/injuries per 100 000 aged <19 y	All-cause deaths per 100 000, aged 1–19 y
	Achievement	Reading literacy ^b Mathematics literacy ^b Science literacy ^b	Average of reading, mathematics, and science literacy ^b Early childhood education
Peer and family relationships	Participation	Further education rate, 15–19 y ^b NEETs ^b	Further education, 15–19 y ^b NEETs ^b
	Aspirations	% aspiring to low skilled work	
	Family structure	% living in single-parent family % living in stepparent family	
Behaviors and risks	Family relations	Eat meal with parents at table several times a week Talk to parents	
	Peer relations	Find peers kind and helpful	
	Risk behavior	% smoking cigarettes ^b % drunk ≥2 times ^b % using cannabis ^b	% smoking cigarettes ^b % drunk ≥2 times ^b % using cannabis ^b
		Teenage birth rate ^b % having sex <15 y % using condom	Teenage birth rate ^b Teenage birth rate ^b
		Health behavior/eating and exercise	% overweight ^b % eating breakfast daily ^b % eating fruit daily ^b % exercising ^b
	Exposure to violence	Fighting ^b Being bullied ^b	Fighting ^b Being bullied ^b
Subjective well-being	Health	Low self-rated health	
	Personal well-being	Life satisfaction Social exclusion Feeling awkward Loneliness	
		School well-being	Liking school
Housing and environment	Housing		Rooms per person Housing problems
	Environment and safety		Homicide rate Air pollution

DTP, diphtheria-tetanus toxoids-pertussis (vaccine); NEET, not in education, employment, or training.

^a Indicators removed from the index of child well-being as analyzed in this study.

^b Indicators included in both 2007 and 2013 reports and used to estimate change in child well-being in this study.

$P = .12$) (Fig 2), again replicating our analyses of the 2007 report. Adjustment for income inequality, children in relative poverty, and the child poverty gap did not change the lack of association between average income and

child well-being in 2013 in wealthy countries.

Between 2000 and 2010, child well-being scores improved most in Italy, Norway, Portugal, the United Kingdom, and Germany. The biggest declines were

seen in Sweden, Canada, Japan, Switzerland, and France. Countries that experienced the largest increases in income inequality had significantly greater declines in child well-being ($r = -0.51$, $P = .02$) (Fig 3). Excluding Australia,

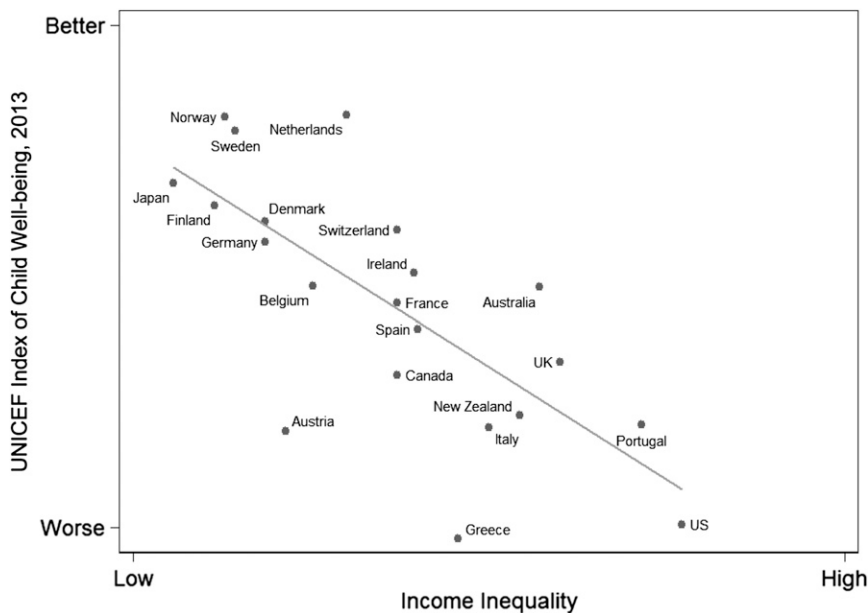


FIGURE 1 Higher levels of income inequality are associated with worse scores on the 2013 UNICEF Index of Child Well-being in 21 wealthy countries. UK, United Kingdom; US, United States.

Japan, and New Zealand from all analyses (because their scores were based on fewer indicators) did not change any of the results.

Among the US states, better ranking (lower number indicates higher rank)

on the Kids Count Index of child well-being for 2013 was significantly associated with lower levels of income inequality ($r = -0.36, P = .01$) (Fig 4). In contrast to the international comparisons (and consistent with our 2007

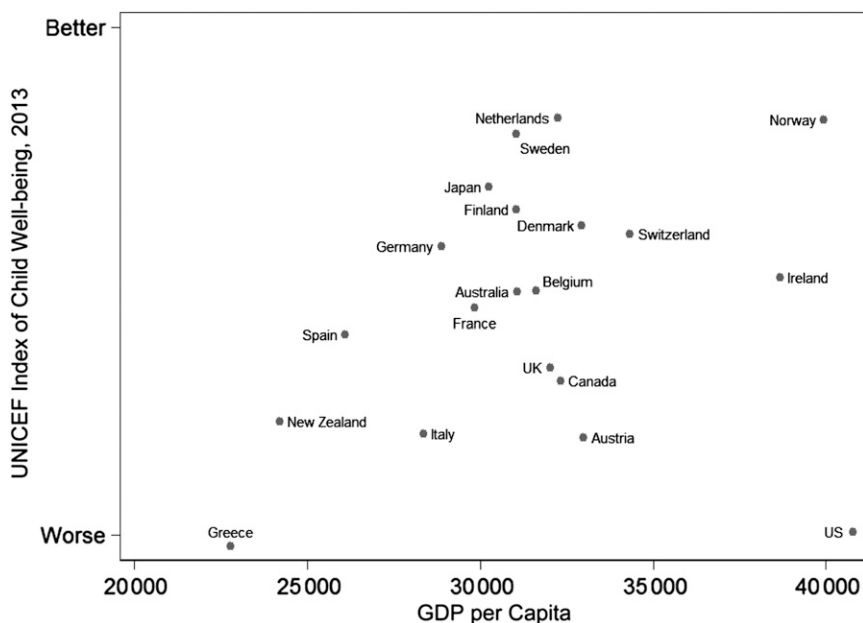


FIGURE 2 Average levels of income are not associated with the 2013 UNICEF Index of Child Well-being in 21 wealthy countries. GDP, gross domestic product; UK, United Kingdom; US, United States.

report¹²), higher average levels of income within states were also significantly associated with better child well-being ($r = -0.54, P < .001$). Income inequality and average incomes were independently associated with child well-being.

DISCUSSION

To our knowledge, this is the first study to show both a consistent and strong relationship between income inequality and child well-being over a decade, and to link increases in income inequality to declining child well-being. This relationship was seen in comparisons between countries and also in comparisons of states within the United States. The robustness of the relationship across studies suggests that differences in culture and policy between countries do not explain these associations. Instead, this evidence is consistent with a causal interpretation. Causal inference in epidemiologic studies, particularly in ecological studies, demands a consideration of causal pathways, coherence with other studies, and consideration of alternative explanations to be convincing.

Both income inequality and poverty have been consistently linked to factors that are known to be strongly associated with the quality of family life and other social relationships; these include levels of social cohesion in communities, women’s status, mental illness, debt, and long working hours.^{29–33} The fact that relative child poverty, rather than average income, is a strong predictor of the international variation in child well-being suggests that relative socioeconomic position is a more important determinant of child well-being than are absolute levels of wealth or poverty.³⁴ Simply put, children do better when they live in communities with less income inequality; income inequality is bad for children.

Is this biologically plausible? We are coming to understand the causal pathways

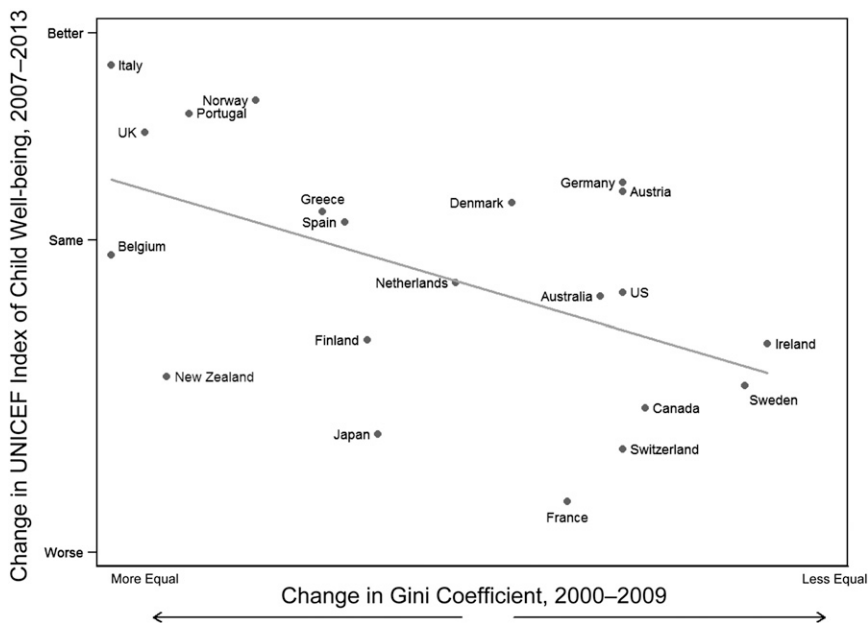


FIGURE 3 Rising levels of income inequality are associated with declining performance on the 2013 UNICEF Index of Child Well-being in 21 wealthy countries. UK, United Kingdom; US, United States.

that link inequality and relative poverty to child well-being.³⁵ The biology of chronic stress links social disadvantage

and steeper social hierarchies to health and well-being.^{36,37} A recent study found that telomere length (a biomarker of

chronic stress) at 9 years of age is shorter in African-American children exposed to low incomes, low maternal education, unstable family structure, and harsh parenting.³⁸ Because income inequality has been shown to be associated with relative poverty, low educational attainment,³⁹ divorce,⁴⁰ and child maltreatment,⁴¹ there is coherence in the literature for a psychosocial explanation of the links between inequality and poor child health and well-being. To be relatively poor is to be living in a world of chronic stress, stress that takes a toll on parental and child health and well-being. As noted earlier, the analogy to individual bullying is illustrative. To be a poor child is not as bad if income differences between children are small and everyone is in it together as it is if other children are wealthy.

The Wider Determinants of Child Health and Well-Being

Children born into socioeconomically disadvantaged families suffer worse child well-being and its lifelong implications, in all societies, worldwide. Our analyses found, however, that some wealthy societies are able to mitigate these inequalities and have better child well-being, on average. This outcome has less to do with specific welfare policies or targeted interventions for poor children than to a societal commitment to greater equality. Other countries have, instead, chosen to ignore the evidence or try to discredit it.

Politics and Child Well-being

When the 2007 UNICEF report on child well-being in wealthy countries was published, there was a great deal of publicity and political/policy reaction in the United Kingdom because it ranked bottom on the index. The official response of the then-Labour government was to criticize the report for using out-of-date statistics (a perennial and

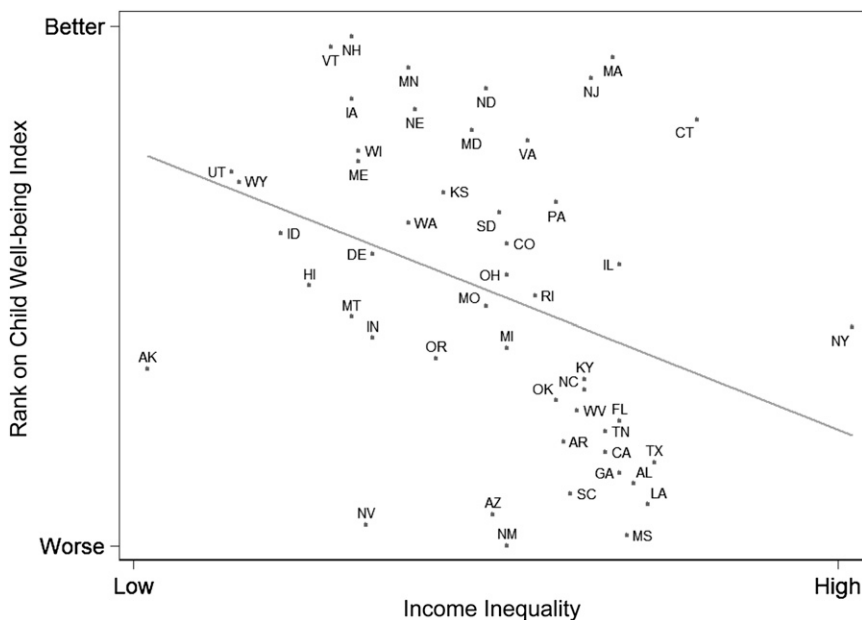


FIGURE 4 Ranking on the Kids Count Index of child well-being is higher in US states with lower levels of income inequality. AK, Alaska; AL, Alabama; AR, Arkansas; AZ, Arizona; CA, California; CO, Colorado; CT, Connecticut; DE, Delaware; FL, Florida; GA, Georgia; HI, Hawaii; IA, Iowa; ID, Idaho; IL, Illinois; IN, Indiana; KS, Kansas; KY, Kentucky; LA, Louisiana; MA, Massachusetts; MD, Maryland; ME, Maine; MI, Michigan; MN, Minnesota; MO, Missouri; MS, Mississippi; MT, Montana; NC, North Carolina; ND, North Dakota; NE, Nebraska; NH, New Hampshire; NJ, New Jersey; NV, Nevada; NY, New York; OH, Ohio; OK, Oklahoma; OR, Oregon; PA, Pennsylvania; RI, Rhode Island; SC, South Carolina; SD, South Dakota; TN, Tennessee; TX, Texas; UT, Utah; VA, Virginia; VT, Vermont; WA, Washington; WI, Wisconsin; WV, West Virginia; WY, Wyoming.

insolvable problem, but one which applied equally to all countries included in the index) and to claim that child well-being in the United Kingdom was improving.⁴² The Children's Commissioner for England at that time hoped that the "report [would] prompt us all to look beyond the statistics and to the underlying causes of our failure to nurture happy and healthy children."

Recognizing the need for more in-depth understanding of children's lived experiences, UNICEF UK commissioned a qualitative study of family life in 3 countries: Sweden, with low inequality and high well-being; Spain, with mid-range inequality and high well-being; and the United Kingdom, with high inequality and low well-being.⁴³ The study aimed to "dig beneath the statistics on child well-being to discover the lived experiences of children." The study used focus groups of children and in-depth ethnographic observations of family life. The study's summary findings included:

"British families [were] struggling, pushed to find the time their children want, something exacerbated by the uncertainty about the rules and roles operating within the family household. And we found less participation in outdoor and creative activities amongst older and more deprived children."

"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. Inequality also has its part to play in access to sporting and creative activities in the UK."

Reactions to this report were mixed. Many media commentators interpreted the findings as "blaming parents."⁴⁴ As

with the previous UNICEF report, there were methodologic criticisms. In this case, the criticisms were that the report was not based on statistics and population-based samples but simply on the lived experiences of a small number of families. As 1 journalist wrote:

Inevitably, the UNICEF report—like its predecessor in 2007, which ranked child well-being in the UK among the lowest in the OECD—will be spun by different interest groups to fit their own cause. It feeds into David Cameron's "broken Britain" thesis and the routine way in which ministers now use the adjective "feral." The report claims that parents in the UK seem to have less confidence about setting boundaries than their counterparts in Spain and Sweden. But a note of caution: the research was based on 24 families and 250 children across three countries; that's a small sample, and the insights it thus offers might be interesting, but they aren't definitive.⁴⁵

Unsurprisingly, commentators from marketing and advertising industry bodies, reacting to the report's call for a ban on advertising to children aged <12 years, called the evidence "weak" and drew attention to the small sample sizes.⁴⁶ Taken together, as of course they need to be, both the quantitative and the qualitative data show how low relative income and income inequality increase the strain on family life and relationships. The objective and subjective measures provide a wealthy and coherent picture. Parental experience of adversity is passed on to children through pathways that include parental mental distress, longer working hours, higher levels of debt, and domestic conflict.

The Ethical and Policy Implications of Research on Child Well-Being

In most countries, governments speak of the importance of early childhood and child well-being. Although most countries have programs to provide support to poor children and poor families, some countries are better than others at addressing the root causes of low child

well-being. Others ignore the data and focus instead on misguided programs or blaming single parents. Interestingly, in the United Kingdom from 1997 to 2010, the Labour Party was in power. During those years, the government was committed to reducing child poverty but was famously "extremely relaxed" about inequality. Although they made significant progress in reducing child poverty rates, income inequality was not tackled during their time in government. Since 2010, the Conservative–Liberal Democrat coalition government has emphasized austerity economics. In those years, both absolute and relative child poverty have increased, and income inequality remains high.

It is important to note that there are few data available thus far that tell us how the global financial crisis and subsequent austerity policies have affected children's well-being in the short- and long-term. A study comparing young people in Sweden with those in Greece, which has suffered particularly severe financial austerity, found higher levels of perceived stress and lower levels of long-term cortisol, indicative of down-regulation of the hypothalamic-pituitary-adrenal axis in response to long-term stress exposure.⁴⁷

Although there are divisions across the political spectrum regarding whether inequality is viewed as problematic or undesirable, there is no disagreement about the idea that children should have an equal start in life or that young people's human capital is important for society. Tackling the root causes of low well-being in children is also cost-effective; unless we do so, we will continue to need expensive, remedial interventions for every generation. As advocates for children, clinicians, policy makers, and public health professionals can use the research evidence to continually draw attention to the need to tackle the root causes of poor childhood outcomes. The data corroborate

the moral, ethical, social, and economic case for improving children's lives.

POLICY LESSONS

A recent article from an international group of experts, calling for economic and social change in Europe, suggested the following policy solutions to reduce inequality and pursue a more egalitarian social vision⁴⁸:

1. Progressive taxation of incomes, high taxation of inheritance, taxation of property and rents, a financial transaction tax, closing tax loopholes, ending tax havens.
2. Elimination of low pay and precarious labor conditions, strengthening of trade unions and collective bargaining, high minimum wages (to this we would add enhanced economic democracy⁴⁹).
3. Enhancement of food security, unemployment insurance, pensions and low-income supplements, guaranteed access to nutrition, health, and basic energy needs.
4. Regulation of employment and social rights, a gender equality agenda, action against tax evasion, avoidance and fraud, regulation of corporate governance.
5. Setting of inequality reduction goals, for example in the forthcoming Sustainable Development Goals. (In the United Kingdom, The Equality Trust is calling on all political parties to commit to an explicit goal that the net impact of their policies will be to reduce the gap between the richest and the rest⁵⁰).
6. Social investment in children brought back to precrisis levels, measurement of equal opportunity and social mobility regularly, early age and high quality child care coverage targeted at children at risk, improvement in employment and pay for women.

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