

# Americans Overestimate the Intergenerational Persistence in Income Ranks: Evidence from a New Rank-Rank Based Survey Instrument

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Recent research suggests that intergenerational income mobility has remained low and stable in America, but popular discourse routinely assumes that Americans are optimistic about mobility prospects in society. Examining these two seemingly contradictory observations requires a careful measurement of the public's perceptions of mobility. Unlike most previous work that measures perceptions about mobility outcomes for the overall population or certain subgroups, we propose a novel survey instrument that emphasizes the variation in perceived mobility prospects for hypothetical children across parent income ranks. Based on this survey instrument, we derive the perceived relationship between the income ranks of parents and children, which can then be compared against the actual rank-rank relationship reported by empirical work based on tax data. We fielded this instrument in a general population survey experiment (N=3,077). Our results suggest that Americans overestimate the intergenerational persistence in income ranks. They overestimate economic prospects for children from rich families and underestimate economic prospects for those from poor families.

Intergenerational mobility | Equality of opportunity | Public perception  
| Mobility optimism | Rank-rank relationship

Two contradictory observations can be made about economic mobility in America: on one hand, a sizable body of literature suggests that intergenerational mobility — that is, the odds that children will move up or down relative to the socioeconomic status of their parents — has remained low and remarkably stable in the United States from the 1950s cohort to the early 1990s cohort (1–3). America also ranks low in intergenerational mobility compared to other countries (4, 5). On the other hand, Americans seem quite optimistic about mobility, believing that the opportunities for individuals to move up the social ladder are widespread and relatively independent of their family background. Such optimism is emphasized in empirical work (6, 7), shared among the general public (6, 8–12), and tied to Americans' beliefs in individualism, social liberalism, and egalitarianism (11, 13, 14). Americans also tend to think that their country has higher mobility than Europe, although the empirical data reveal the opposite (5, 9).

The apparent contradiction between intergenerational mobility in *reality* and its *public perceptions* creates an intriguing puzzle: how shall we reconcile (a) Americans' optimism about mobility and (b) their day-to-day experience of remarkably unequal distribution of opportunities? There are several tentative answers. First, lay people may be simply oblivious to the social reality. Second, the public's perceptions track the social changes with a time lag and are out of date. Third, as recent work suggests, the finding of mobility optimism may not always hold up (15–19).

While these answers all seem plausible, they all tend to simplify mobility as an undifferentiated measure. We approach

this puzzle with a different route. We argue that people may think about mobility prospects *differentially* across the parent income distribution. Hence, when measuring their perceptions, it is important to consider the *variation in perceived mobility outcomes for hypothetical children from different parent income ranks*. This enables us to measure the equality of opportunity across parental socioeconomic background, a central focus of empirical research on intergenerational mobility (1–3).

Motivated by the above argument, and building on the empirical estimates of the relationship between the parent and child income ranks reported by an emerging line of work using administrative tax data (1), we propose a new survey instrument to differentiate among perceptions about mobility outcomes for hypothetical children from different parent income ranks. Specifically, this survey instrument asks the respondents to predict the adult income ranks of children whose parent income ranks at different percentiles of the distribution. Data collected from this survey instrument allow us to estimate the *perceived* rank-rank relationship “in people's mind.” Then, by contrasting the perceived rank-rank relationship with its empirical estimates, we present an analytic framework for assessing the public's (mis)perceptions about the inequality in mobility chances between children from rich and poor families.

We fielded this instrument on a nationally representative sample of 3,077 adults in the United States. Our data suggest that Americans hold pessimistic perceptions about the *equality* of economic outcomes between children from rich and poor families. They overestimate the economic prospect for children from rich families and underestimate the economic prospect for those from poor families. This results in an overestimation

## Significance Statement

Intergenerational mobility indicates the openness within a society. The question of how Americans think about socioeconomic mobility prospects is drawing growing attention from scholars and policymakers. Our study proposes a novel survey instrument that connects the empirical literature on patterns of mobility with the literature on the public perceptions of mobility. With large-scale, population representative data, we show that Americans overestimate the intergenerational persistence in income ranks. That is, they tend to see greater inequality of economic prospects between children from rich and poor families. These results highlight the need for policy and political solutions that seriously engage with Americans' concerns about the equality of opportunity in the society.

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of the intergenerational persistence in income ranks.

## Prior Research on Perceptions of Economic Mobility

Intergenerational mobility indicates the openness, fluidity, and fairness in a society. Promoting the equality of opportunity has become a pressing policy concern, particularly in the recent era of rising inequality. The empirical literature on economic mobility is accompanied by a related literature on perceptions about mobility. The public perceptions about mobility are construed as an ideological condition under which attitudes of and preference toward inequality and redistributive policies are formed. How people view the status of mobility affects their openness or resistance to policy solutions that potentially reduce inequality and promote mobility (9, 10, 13, 20–23).

One strand of research suggests that the general public hold optimistic views on economic mobility in America (9, 11, 12). For example, Americans overestimate the probability that children starting from the bottom can make it to the top of the income distribution and underestimate the probability of a bottom-quintile child remaining at the bottom in America, while their European counterparts hold more pessimistic perceptions about mobility in their countries (9). Another line of work, however, suggests that Americans are actually concerned about economic mobility (15–18), and that Americans have more enduring structural perceptions about mobility than widely assumed (18, 19). Furthermore, Americans' concerns about the lack of opportunity have played a role in shaping their concerns about economic inequality (13, 24). Growth in economic inequality increases skepticism regarding the opportunity structure in society that, in turn, may motivate support for equity-enhancing policies (18). A detailed literature summary is presented in SI Appendix 1.

While previous work has taken important steps to understand the public perceptions of mobility, most of their measures tend to focus on the perceived transition probabilities for children from specific subgroups, such as the likelihood to move from bottom to top or from top to bottom (9, 12). However, these findings are sensitive to whether the socioeconomic spectrum is divided into five (25) or three (15) strata, whether phrases like “stayed in the bottom” or “moved up” were used (26), and the empirical benchmark against which people's perceptions are compared (17). Another drawback is that these measures typically involve the calculation of probability, which is prone to cognitive errors by lay people, especially when compared to average or expectation-based measures (16, 27, 28). Most importantly, these previous measures tend to focus on mobility chances for one or a few specific income groups, such as the top or bottom quintile. They have not examined the *differences* in perceived mobility prospects across the full spectrum of parent income ranks.

## A New Rank-rank Based Survey Instrument

This study contributes to current scholarship by proposing a new survey instrument for measuring the variation in mobility perceptions, which is based on the relationship between parent and child income ranks. We present each respondent with three questions of the same format. The question first describes a hypothetical person whose parents' income ranks at the  $p^{th}$  percentile of the income distribution. A picture is also presented to illustrate the income ranking (SI Appendix 2).

We then ask the respondent to drag a slider on a marked bar to indicate where she thinks this child's own family income will rank at age 40. Each respondent will answer three such questions, in which the hypothetical person's parent income ranks (i.e.  $p$ ) are drawn randomly without replacement from a total of nine deciles, i.e.  $p = 10, 20, \dots, 80, 90$ . SI Appendix 2 presents the details about the survey instrument.

This survey instrument has several advantages. First, the question presents a reasonably tractable task to the respondents, as it avoids asking lay people to evaluate complicated transition probabilities. Second, as each respondent is asked to consider mobility outcomes for only three hypothetical individuals, each from a different parent income rank, the survey imposes a relatively light cognitive burden. These two advantages were confirmed in our pilot study, where we recruited 50 respondents via Amazon Mechanical Turk and asked them to describe their logic of reasoning in answering these questions (See SI Appendix 3 for details and additional checks).

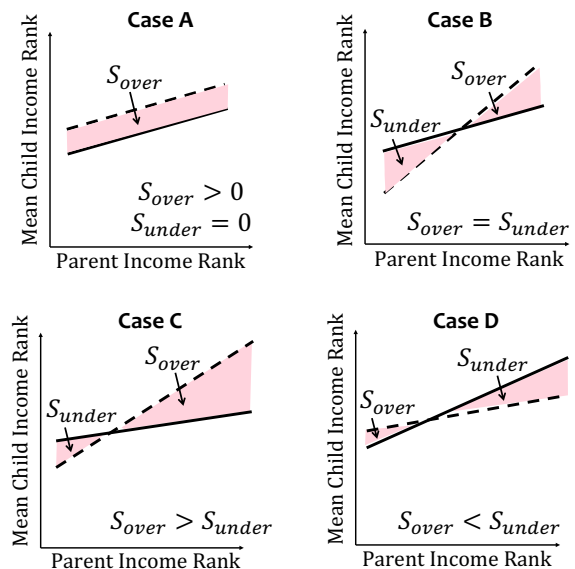


Fig. 1. Illustration of Rank-rank Lines in Perception (dashed) and in Reality (solid).

Most importantly, data collected from this instrument can be used to estimate the *perceived rank-rank relationship*, which can then be compared against the actual rank-rank relationship to describe the *direction* and *degree* of mobility misperception. To do this, for a sample of size  $N$ , we pool the answers across individuals to form a total of  $3N$  (3 deciles per person  $\times$   $N$  persons) data points. Then, we plot the perceived and actual rank-rank lines against each other on the same plot for comparison. For both lines, a steeper rank-rank slope indicates greater intergenerational persistence in income ranks (i.e. lower mobility).

Fig. 1 illustrates four example cases for this comparison. Solid (dashed) lines represent the actual (perceived) rank-rank relationship. The area  $S_{\text{Over}}$  denotes the amount of overestimated mobility prospect, and  $S_{\text{Under}}$  denotes underestimated mobility prospect. A steeper perceived slope ( $\beta^P$ ) relative to the slope in reality ( $\beta^R$ ) indicates pessimism about the equality of mobility prospects between children in rich and poor families, and vice versa.

Case A presents an example in which the perceived rank-rank line is parallel to the actual line ( $\beta^P = \beta^R$ ) but is placed at a higher vertical position at every level of parent income ( $S_{\text{over}} > 0$  and  $S_{\text{under}} = 0$ ). This indicates that the public overestimate economic outcomes for children from all family backgrounds, and that there are no misperceptions about the disparities in mobility outcomes. Case B presents an example in which the slope in the perceived line is steeper than the slope in reality ( $\beta^P > \beta^R$ ), indicating pessimism about the equality of opportunity. In this case, people overestimate economic prospects for children from the upper half of the parent income distribution to the *same* extent as they underestimate economic outcomes for children from the lower half of the parent income distribution ( $S_{\text{over}} = S_{\text{under}}$ ). Hence, across the entire parent income distribution, the positive and negative misperceptions of economic prospects cancel each other out and generate a zero average ( $S_{\text{over}} - S_{\text{under}} = 0$ ).

The next two cases illustrate scenarios in which the public hold misperceptions about the equality of opportunity ( $\beta^P \neq \beta^R$ ) and meanwhile over- or under-estimate economic prospects on average (i.e.  $S_{\text{over}} \neq S_{\text{under}}$ ). Case C illustrates a scenario of pessimism about equality of opportunity ( $\beta^P > \beta^R$ ). Meanwhile, the public overestimate economic outcomes for those at the middle and higher income ranks to a *greater* extent than they underestimate the economic outcomes for those at lower income ranks ( $S_{\text{over}} > S_{\text{under}}$ ), leading to an overestimation about children's economic prospects on average. By the same logic, Case D illustrates an overestimation of the *equality* of opportunity ( $\beta^P < \beta^R$ ) but an underestimation of average economic outcomes ( $S_{\text{over}} < S_{\text{under}}$ ).

Two important features of this survey instrument are worth noting. First, in principle,  $S_{\text{over}}$  and  $S_{\text{under}}$  should be equal because on average, the amount of increase in income rank should be offset by the same amount of decrease. However, in the survey instrument, we do not give zero-sum instructions because that would impose too much cognitive burden. Hence, it is possible that the respondents will overestimate (Case A and C) or underestimate (Case B) the population-average income ranks, resulting in biases toward upward mobility. An important advantage of our proposed measure is that, the comparison between  $\beta^P$  and  $\beta^R$  is not prone to such bias, because the perceived rank-rank slope depends on the *inequality* in perceived mobility prospects rather than the average level. Second, because the parent income rank needs to be given in the question, there may be an anchoring problem: respondents' answers may gravitate toward the parent income rank shown to them in the survey question, resulting in a bias toward the diagonal line in the perceived rank-rank line. In a robustness check, we removed the data points around the diagonal line. Results suggest that the anchoring effect is unlikely to affect our main conclusions (see [SI Appendix 6](#)). We recommend that this robustness check be included in future applications of this survey instrument.

The key takeaway from the four example cases illustrated in [Fig.1](#) is that, the problem of measuring the public's (mis)perceptions of mobility prospects across the parent income distribution can be reduced to a simpler problem of obtaining four parameters:  $S_{\text{over}}$ ,  $S_{\text{under}}$ ,  $\beta^P$ , and  $\beta^R$ . Here, the first three can be estimated from the rank-rank based survey instrument we propose; the last parameter,  $\beta^R$ , is obtained from estimates reported in large-sample empirical studies.

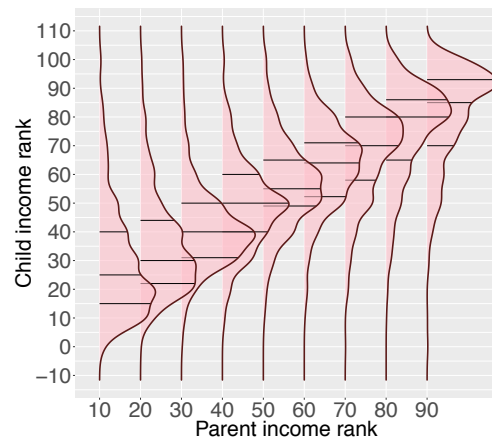
## Data Collection

We collected data from a probability-based, representative sample of 3,077 adults in the United States. Participants were recruited during February 2018, via NORC's AmeriSpeak panel maintained by the Time-sharing Experiments in the Social Sciences (TESS). We randomly assigned the respondents to three groups that vary in the attributes of the hypothetical person: (1) a *baseline group* in which there is no specific description ( $N=1,858$ ); (2) a *“college-graduate” treatment group* in which we describe the person as having a college degree ( $N=606$ ); and (3) a *“hard-working” treatment group* in which we describe the person as working very hard in life ( $N=613$ ). These descriptions were added right after the information on the person's parent income rank is given. Our analyses are weighted by AmeriSpeak panel weights. Weighted and unweighted sample statistics are presented in [SI Appendix 4](#).

For the benchmark of actual mobility, we rely on the rank-rank relationship reported by recent work using tax records (1). These estimates do not suffer from measurement errors that are prevalent in survey data (29). Moreover, unlike other mobility measures, such as the intergenerational elasticity, which tend to be nonlinear, the rank-rank relationship in the United States can be well approximated by a linear line, whose slope provides a succinct way for quantifying income mobility.

## Empirical Results

**Baseline group.** As no additional information of the hypothetical person is given, results from the baseline group reflect the perceptions of overall mobility. [Fig.2](#) presents the conditional densities of child's perceived income rank by parent income rank. The three horizontal lines at each parent income rank represent the 75<sup>th</sup>, 50<sup>th</sup>, and 25<sup>th</sup> percentiles of the child's perceived income rank, respectively. While the child's perceived income rank varies at each parent income rank, the median and the upper and lower quartiles of the perceived income rank distribution all increase steadily with parent income rank, showing intergenerational persistence in income ranks.



**Fig. 2.** Conditional Density Distributions of Child's Perceived Income Rank.

How well does the perceived rank-rank relationship match the reality? [Fig.3](#) contrasts the perceived rank-rank relationship in our data and the actual rank-rank line. For illustration, we have also plotted two auxiliary lines (light blue dashed),

indicating *perfect income persistence* (the diagonal 45-degree line) and *perfect income mobility* (the horizontal line where child's mean rank = 50). A steeper rank-rank slope indicates greater closeness to perfect persistence, and a flatter slope indicates greater closeness to perfect mobility.

The pattern shown in Fig.3 is akin to Case C of Fig.1. The two lines cross at around the 34<sup>th</sup> percentile of parent income rank. To the right of this crossing point — that is, for children from families in the middle or upper parts of the income distribution — the public overestimate children's income ranks. To the left of this crossing point, perceived economic ranks are lower than reality, indicating an underestimation of the economic prospects for children from the lower end of the income spectrum. Observe that  $S_{\text{over}} > S_{\text{under}}$ , which implies that the public overestimate children's economic prospect across their parent income ranks. Meanwhile, the slope of the perceived rank-rank line is steeper than the actual rank-rank line (0.65 versus 0.34), indicating that the public perceive greater *inequality* in income ranks between children from rich and poor families than there actually is in reality.

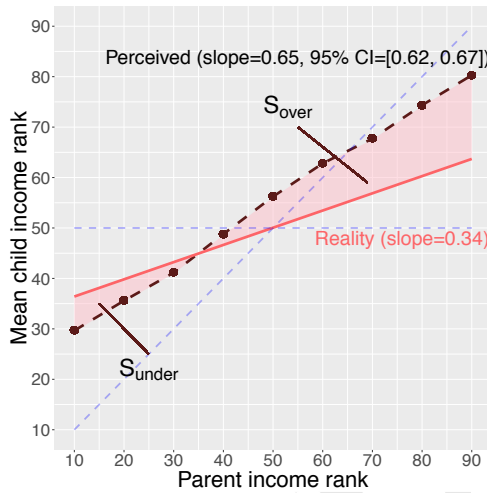


Fig. 3. Rank-rank Relationship in Perception and in Reality.

Table 1 quantifies these results.  $S_{\text{over}} - S_{\text{under}}$  captures the *net* difference between the child's perceived and actual income ranks across the parent income distribution. The degree of pessimism about the equality of mobility prospects can be calculated as the difference between perceived and actual rank-rank slopes, which equals 0.31 ( $=0.65-0.34$ ). That is, for a one-unit increase in the parent income rank, the child's expected income rank rises by 0.34 unit in reality, but an average American expects it to rise by 0.65 unit. That is, Americans overestimate the intergenerational persistence in income ranks. SI Appendix 6 presents additional results on perceived immobility, upward mobility, and downward mobility by parent income.

**Between-group variations.** We next examine whether the public's perceptions of mobility vary by *respondents'* characteristics. To examine the between-group variations, we estimate a multilevel model predicting the child's perceived income rank for respondent  $i$  and item  $k$  ( $=1,2$ , and  $3$ ). Level 1 model is:

$$Y_{ik}^{\text{child}} = \beta_{0i}^P + \beta_{1i}^P \cdot Y_{ik}^{\text{parent}} + \epsilon_{ik}, \quad [1]$$

Table 1. Estimated Model Parameters and Derived Quantities

Parameters/Quantities	Value
<b>Estimated model parameters</b>	
Intercept in reality ( $\beta_0^R$ )	33.00
Slope in reality ( $\beta_1^R$ )	0.34
Intercept in perception ( $\beta_0^P$ )	22.69
Slope in perception ( $\beta_1^P$ )	0.65
<b>Derived quantities</b>	
Area of overestimated mobility ( $S_{\text{over}}$ )	664.27
Area of underestimated mobility ( $S_{\text{under}}$ )	174.79
Net average overestimated mobility ( $S_{\text{over}} - S_{\text{under}}$ )	489.48
Difference in slopes ( $\beta_1^P - \beta_1^R$ )	0.31

The random intercept ( $\beta_{0i}^P$ ) and slope ( $\beta_{1i}^P$ ) then depend on respondent's attributes  $\mathbf{X}$  in the level-2 model:

$$\begin{aligned} \beta_{0i}^P &= \mathbf{X}\gamma_0 + \nu_{0i} \\ \beta_{1i}^P &= \mathbf{X}\gamma_1 + \nu_{1i} \end{aligned} \quad [2]$$

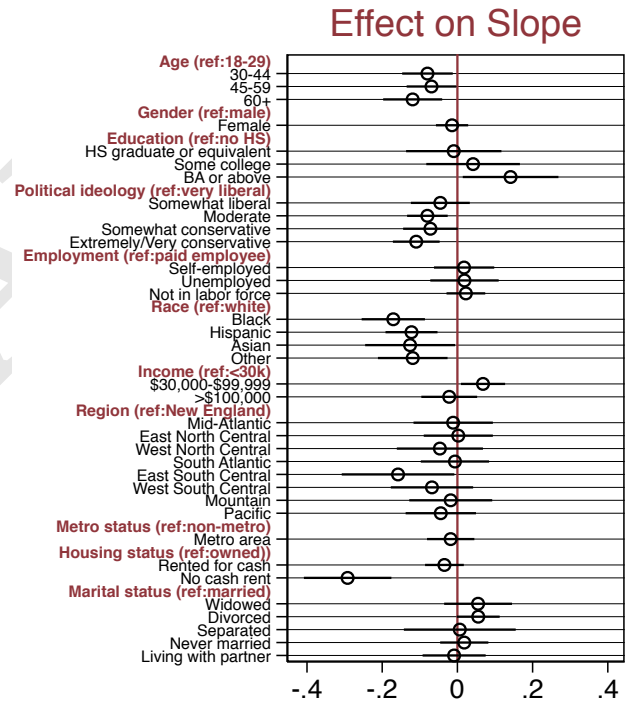


Fig. 4. Effects of Respondent's Characteristics on Perceived Rank-rank Slope (Point Estimates with 90% Confidence Intervals).

We present the coefficients predicting the slope in Fig.4 and the full coefficient estimates in SI Appendix 7. Here, the effects of covariates on slope are of particular interest. A positive (negative) coefficient indicates greater (lesser) perceived inequality in mobility chances compared to the reference group. Respondents who are age 18-29, white, living in a household with \$30,000-\$99,999 annual income, owning a house or paying some rent, leaning liberal, and with a Bachelor's degree are more pessimistic about the equality of mobility prospects across parent income ranks.

Fig.5 demonstrates the perceived rank-rank relationship by respondents' education, household income, and political ideology. Higher education and income are associated with



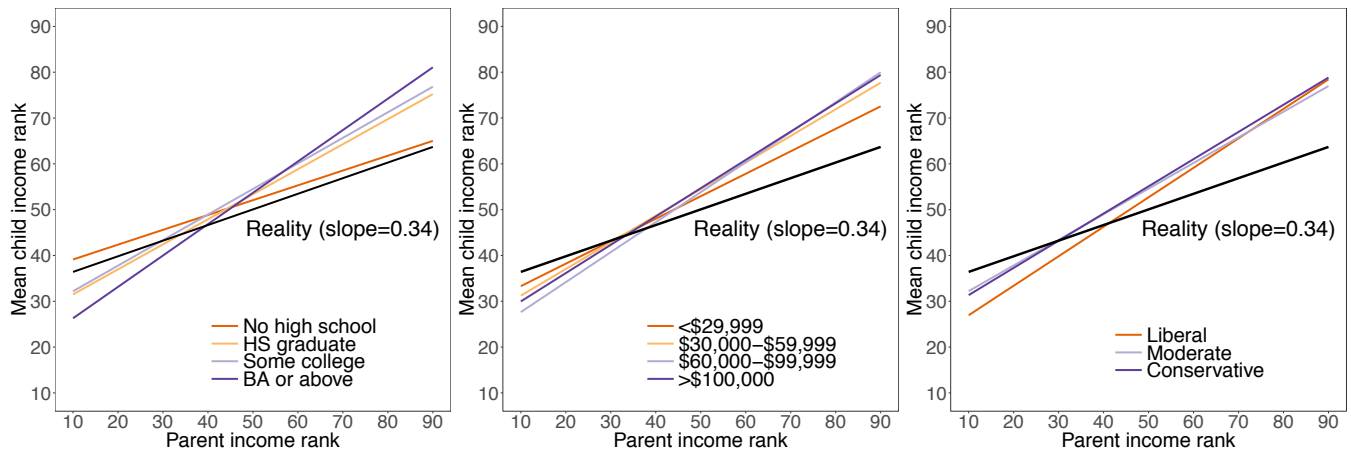


Fig. 5. Perceived Rank-rank Relationship by Respondent's Education, Household Income, and Political Ideology.

greater pessimism about mobility, a finding also noted by previous studies (9, 12, 25). Among those without a high school degree, the perceived rank-rank line is only slightly steeper than the reality; respondents with a Bachelor's degree are most pessimistic about the equality of mobility outcomes, particularly for children from the lowest 30% of income distribution. Respondents in all income groups are pessimistic about the equality of mobility prospects, and the perceived rank-rank slope is flattest among those with less than \$30,000 annual household income.

Liberals are more pessimistic about the equality of mobility prospects, a finding consistent with prior findings (9, 15, 25). As discussed earlier, our rank-rank measure has the strength of allowing us to differentiate between perceptions of mobility prospects across parent income ranks. For example, here, the results suggest that respondents with different political orientation do not differ much in the perceived mobility for children with high parent income, but their perceptions differ substantially for children from the lower part of the income distribution.

Our analysis and interpretation above have focused on whether between-group differences exist rather than why they exist. The complex mechanisms behind these between-group differences are beyond the scope of this paper, and future research is needed to better understand the patterns of these differences. On the other hand, these results also suggest that Americans' pessimism about the equality of mobility prospects across parent income ranks is quite robust across subgroups of the population.

#### College-graduate treatment and hard-working treatment.

Comparing the perceived rank-rank lines in the two treatment groups to the baseline group will tell us the extent to which the public perceive a college degree or hard work as a factor for promoting intergenerational mobility. Fig. 6 demonstrates the results. The college degree treatment raises the intercept ( $p=0.000$ ) and flattens the slope ( $p=0.057$ ) for the rank-rank line. When the hypothetical person has a college degree, respondents now perceive slightly higher income ranks for children across the parent income spectrum, especially for those in the middle and lower parts. Consistent with the findings from empirical work (30, 31), the perceived rank-rank slope decreases when the hypothetical person has a college

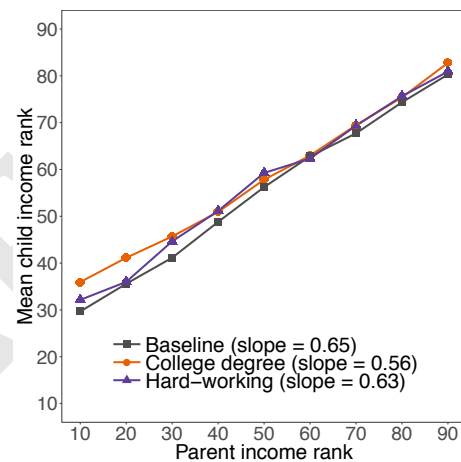


Fig. 6. Perceived Rank-rank Relationship in Baseline and Treatment Groups.

degree, but the perceived slope change (0.65 to 0.56) is much smaller than the change in reality (0.34 to 0.15) reported by recent empirical work (30). Hence, the public underestimate not only the amount of mobility but also the contribution of a college degree to mobility. The perceived rank-rank line for the hard-working treatment has a slightly higher intercept ( $p=0.086$ ) than the baseline, and there is no significant difference in their slopes ( $p=0.955$ ).

Some non-linearity of the rank-rank lines can be observed here: the three rank-rank lines are very close to each other at the upper 40% of the distribution but diverge for the lower 60%. Hence, we estimated the perceived slopes restricting to the lower 60% of parent income ranks. The changes in slopes are slightly higher but still very small. The pattern holds when we break down the sample by education and income (SI Appendix 8). These results suggest that the public remain pessimistic about the equality of opportunity even when the hypothetical person is assigned attributes that should promote economic mobility. The small treatment effects could also be due to the weakness of the intervention. The explanations behind the public's pessimism about the role of college in promoting education warrant future research.

**Robustness Checks** Our results are robust to several

alternative specifications, including using the median instead of mean of child's income rank (SI Appendix 9), using a non-linear smooth function to model the rank-rank curve (SI Appendix 10), and separating the data by the order in which the items appeared in the survey (SI Appendix 11). To test whether the findings are driven by potential misperceptions about income inequality, we provided a subgroup (N=586) with some factual information on the household income distribution before they answered the original survey questions; this did not change the findings (see SI Appendix 12 for a detailed discussion).

## Discussion and Conclusion

The question of how Americans think about intergenerational mobility draws growing attention from scholars and policy-makers who seek to understand its consequences for public opinion, political action, and policy support. In examining mobility perceptions, previous work has mainly focused on the perceived transition probabilities for children from specific positions in the parent income distribution. This study proposes a novel rank-rank based survey instrument for measuring public perceptions of the inequality in mobility prospects. The key strengths of this measure are three-fold. First, this measure differentiates perceived economic outcomes for children across parent income ranks, which enables us to measure the perceptions about the *inequality* in mobility prospects. Second, the survey item presents the respondents with a relatively simple, tractable task and requires little cognitive burden. Third, the perceived rank-rank line derived from the data can be directly compared to up-to-date empirical benchmark based on administrative tax data.

In accounting for the differential perceptions of economic outcomes for hypothetical children from different parent income ranks, we have now come to form a more comprehensive picture of mobility perceptions. We conclude that Americans are pessimistic about the *equality* of economic prospects among children born to rich and poor parents. This finding challenges the prior belief that Americans hold an optimistic view about the openness of the society, and is instead consistent with the idea that the everyday experiences of highly unequal opportunity between children from poorer and wealthier families may have shaped how the general public think about the opportunity structure of the American society. The results also indicate that, the pessimism about the equality of mobility prospects results from their overestimation of income ranks for children from families in the middle and higher end of the income distribution and their underestimation of income ranks for children from low-income families.

Reading our findings along with recent work on the public beliefs about inequality and mobility (13, 18), we suggest that the once-prevailing belief that Americans tolerate inequality because they see great promise in economic mobility may be misleading. With large-scale, population representative data, we show that Americans are aware of, if not quite pessimistic about, the remarkably unequal distribution of economic outcomes by family background. These findings call for an extended scope of inquiries that bridge the empirical research on economic mobility with research on the social, political, and psychological processes that shape how the public think about it. We also highlight the need for policy and political solutions to seriously engage with Americans' concerns about

the equality of opportunity in the society.

**Methods.** This research was reviewed and approved by the Institutional Review Board at New York University. Informed consent was obtained from all participants.

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# Supplementary Information for

## Americans Overestimate the Intergenerational Persistence in Income Ranks

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## 1. Previous Studies on Perceptions of Intergenerational Mobility

**Table S1. Summary of Previous Studies on Perceptions of Intergenerational Mobility: Overestimation vs. Underestimation**

Author(s)	Year, Title and Journal	Type of Mobility	Instrument(s)	Data and Findings
<b>Overestimation of Mobility</b>				
Kraus and Tan	2015, "Americans overestimate social class mobility", <i>Journal of Experimental Social Psychology</i>	Upward and Downward Mobility	Respondents were asked to assess how many out of 100 people would (1) move from the bottom 20% of income by working 1000 extra hours; (2) move from the bottom 20% of income to the top 20%; (3) move from the top 1% of income to the bottom 80%; (4) how many of a group of 100 people would move from the bottom 20% of income with some kind of college degree; (5) how many of 100 top college and university students would be from the top 20% of income families; and (6) how many of these 100 students would be from the bottom 20% of income families.	Mechanical Turk Sample ( $n = 751$ ); Participants overestimate the extent that people actually move up in wealth, and the extent that colleges and universities are open to people from lower income families.
Kraus	2015, "Americans still overestimate social class mobility: A pre-registered self-replication", <i>Frontiers in Psychology</i>	Upward and Downward Mobility	Same as above	Mechanical Turk Sample ( $n = 763$ ); Consistent with the original study, Americans substantially overestimate social mobility, they provide greater overestimates when made while thinking of similar others, and the perceived high social status is related to greater overestimates.
Davidai and Gilovich	2015, "Building a more mobile America—One income quintile at a time", <i>Perspectives on Psychological Science</i>	Upward and Downward Mobility	Respondents were asked to assess the likelihood of a randomly selected American born to a family in the poorest or riches quintile ending up as an adult in each of the five quintiles.	A nationwide cross-sectional sample of 3,034; (1) People believe there is more upward mobility than downward mobility; (2) People overestimate the amount of upward mobility and underestimate the amount of downward mobility; (3) Poorer individuals believe there is more mobility than richer individuals; (4) Conservatives believe that the economic system is more dynamic.
Davidai and Gilovich	2018, "How should we think about Americans' beliefs about economic mobility?", <i>Judgment and Decision Making</i>	Society-level Economic Mobility	Respondents were asked to rank 15 countries in terms of how mobile you believe each one is, from the country with the highest social mobility to the country with the lowest social mobility.	Mechanical Turk Sample ( $n = 101$ ); Although the United States is actually 8 <sup>th</sup> among the 15 listed countries, respondents assigned it a mean rank of 2.81. 91% of respondents overestimate.
Alesina, Stantcheva and Teso	2018, "Intergenerational mobility and preferences for redistribution", <i>American Economic Review</i>	Upward Mobility	Respondents have to fill out the empty fields to indicate their views on how many out of 100 children from the bottom quintile can make it to each quintile when they grow up.	Non-random samples collected by email in US ( $n = 4,705$ ), Sweden ( $n = 1,494$ ), Italy ( $n = 2,143$ ), France ( $n = 2,148$ ) and UK ( $n = 2,148$ ); Europeans are not only more pessimistic than Americans, but they are also too pessimistic relative to reality, while Americans are too optimistic. Americans believe almost 12 kids will make it from the bottom to the top while the actual number is a bit below 8.
(To Be Continued)				



**Table S1. Summary of Previous Studies on Perceptions of Intergenerational Mobility: Overestimation vs. Underestimation**

Author(s)	Year, Title and Journal	Type of Mobility	Instrument(s)	Data and Findings
(Continued)				
<b>Underestimation of Mobility</b>				
Chambers, Swan and Heesacker	2015, "Perceptions of U.S. social mobility are divided (and distorted) along ideological lines", <i>Psychological Science</i>	Upward and Downward Mobility & Immobility	Respondents were asked to estimate the percentage of children from the bottom/middle/top thirds of the income distribution who ended up in the bottom/middle/top thirds of the income distribution in their mid-20s.	Mechanical Turk Sample ( $n = 410$ ); Respondents underestimate the percentage of upward mobility and downward mobility and overestimate immobility.
Swan, Chambers, Heesacker and Nero	2017, "How should we measure American's perceptions of socio-economic mobility?", <i>Judgment and Decision Making</i>	Upward Mobility	Replicate the upward-mobility-estimate procedures by both Chambers, Swan and Heesacker (2015) and Davidai and Gilovich (2015); A new measure is also proposed—respondents were asked to view three separate images of hypothetical mobility ladders and they choose one that represents their best estimate of upward mobility in the US.	Mechanical Turk Sample ( $n = 2,250$ ); Respondents respond differently to quintiles and to tertiles. While using quintiles leads to overestimation, using tertiles leads to underestimation. When adopting the new measure proposed in this study, most participants select the underestimation option.
Nero, Swan, Chambers and Heesacker	2018, "Still no compelling evidence that Americans overestimate upward socio-economic mobility rates: Reply to Davidai & Gilovich (2018)", <i>Judgment and Decision Making</i>	Upward Mobility	This is a review paper. The authors question Davidai and Gilovich's findings (2015; 2018) about mobility optimism. They point out the importance of using an accurate comparator—a point-estimate of the true rate of upward mobility.	NA (review paper)

NOTE: In previous studies, there are three commonly-used methods to measure perception of intergenerational mobility. First, respondents assess the transition probabilities for children born in certain income groups (e.g. the likelihood to move from the bottom to the top income quintile). Second, respondents rank a couple of countries based on their society-level economic mobility. Third, respondents choose an image (out of several candidates) that best represent their estimate of intergenerational mobility in society. In our study, we propose the rank-rank-based survey instrument, which is, to our knowledge, the first approach for quantifying public perceptions of the *variation* in perceived mobility prospects across parent income ranks.

## 2. Survey Implementation and Instrument

Here, we present details on the survey implementation and survey instrument. Our survey was administered through the National Opinion Research Center's AmeriSpeak panel maintained by the Time-sharing Experiments in the Social Sciences (TESS). The survey was fielded from February 5, 2018 to March 5, 2018, during which a nationally representative sample of 3,077 respondents was surveyed. We know of no major political event happening during this period that may have possibly affected the survey responses systematically.

A screen shot of an example survey question for the baseline group is presented in Figure S1 below. Note that in the survey, the slider always started at 0 (so as to not influence responses) and would not record any value until the respondent clicked on the slider bar. There is no missingness in these survey items.

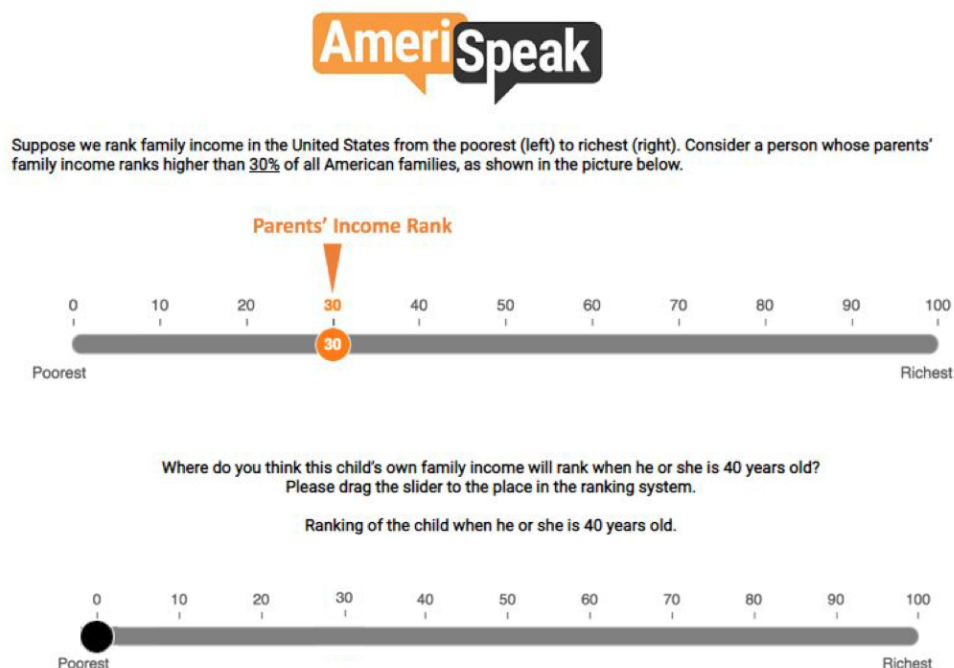


Fig. S1. Example Question in the Rank-rank-Based Survey Instrument

Each respondent will answer three such questions, in which the hypothetical person's parent income ranks (i.e.  $p\%$ ,  $p\% = 30\%$  in this example question above) are drawn randomly from a total of nine deciles of the income spectrum, i.e.  $p = 10, 20, \dots, 80, 90$ . For example, a respondent may be asked to evaluate the future income ranks of three children whose parent income ranks at the 30%, 90%, and 50% of the distribution respectively.

In the two experimental groups, we used the same question format as in the baseline group shown above, but added information to the vignette description. In the "college-graduate" treatment group, we added "This person has a college degree." In the "hard-working" treatment group, we added "This person works very hard in life." These descriptions were added right after the information on the person's parent income rank is given.

### 3. Making Sure that the Respondents Understand the Survey Question: Summary of Findings from Supplementary Studies

**A. Respondents' Logic of Reasoning.** Before implementing our proposed survey instrument on the large TESS sample, we conducted a pilot survey on a small sample of 50 respondents recruited from Amazon's Mechanical Turk (MTurk). We asked them to answer the three survey items as described in our main analysis. After each survey item, we asked them to fill out an open-ended question to describe the reasoning behind their answers.

This pilot study is intended to make sure that the respondents understand the meaning of the survey questions and can relate these questions to what social scientists meant by economic mobility. We note that results from this pilot study are used for purely descriptive purposes and are not intended to be used as evidence for our main analysis. Yet, we believe that they provide a useful context for our study.

Below, we summarize seven themes that emerge from the answers to our open-ended questions: immobility (lack of mobility), upward mobility, downward mobility, structural advantage/disadvantage, family or parental advantage/disadvantage, role of education, and role of individual efforts. Under each theme, we present some example answers from the respondents. As these answers illustrate, our survey respondents are clearly able to relate our survey items to issues of intergenerational economic mobility. For example, they have mentioned the persistence of income positions across generations as their reasoning for predicting the expected income ranks of the hypothetical children. There are also mentions of upward and downward mobility in these answers. Some respondents have also brought up structural constraints (e.g. student loans and opportunities for financial investment), family resources (e.g. family wealth and parental influence), education (e.g. college degree), and individual efforts (e.g. working hard) as explanations behind their answers to our survey questions. Overall, the respondents' answers to these open-ended questions confirm that the respondents should be able to understand the questions and relate them to issues of intergenerational mobility.

#### 1. Immobility (lack-of-mobility) theme

Example answers:

- *Usually people stay in their own economic situation all their life.*
- *The ranking system shouldn't change much.*
- *If you are poor you are going to stay poor.*
- *I don't think people are likely to move out of the range their family is, so based on averages, and statistics, this is what I would expect to happen. They could move realistically anywhere, but I would rely more on history and averages.*
- *Based on their previous income.*
- *Children from middle-class families are likely to be middle-class as adults.*
- *I don't think the middle class would change much and I feel once you are making enough to be middle class you stay middle class. In order to receive healthcare and benefits.*
- *People born into money usually stay where they are economically because they do not have to work for it.*
- *For the same reasons as before; those with lower income have lesser opportunities to be successful.*
- *It'll be hard for this individual to get out of poverty. They have almost nothing to begin with.*
- *I felt with less, one wouldn't be able to get ahead as much.*
- *Usually the rich can stay rich by investing in things. I'm sure she will be in the same percentile.*
- *Those who start successful very rarely fall below their parent's rank. There are obviously exceptions to the rule, but the same applies for those who are poor. People with more income have more chances and opportunities available to them.*
- *Again, I would venture to believe they would remain where they are, as most Americans do. The averages and statistics would probably back me up that there wouldn't be much movement, if anything it would go down a little bit.*

#### 2. Upward mobility theme

Example answers:

- *These people usually have the ability to rise above their parent's rank, but it's still very rare for them to get too high.*
- *The rich get richer.*
- *I don't think the child would do worse off than the parents due to the educational opportunities.*
- *I think growing up in a lower middle class family will give you some opportunities to advance when the child gets older.*

### 3. Downward mobility theme

Example answers:

- *Most likely the child's income won't exceed their parents, it may be more likely to be less than that of their parents.*
- *Again, it is claimed that the middle class is shrinking. It is likely that the child will be working for less pay because of the reduction of middle class jobs.*

### 4. Structural advantage/disadvantage theme

Example answers:

- *With student loans and a lot of debt pushing on the lower class/students it will be harder for the child to stay financially well off..*
- *Usually the rich can stay rich by investing in things. I'm sure she will be in the same percentile.*
- *I came to this conclusion because I don't think the child would do worse off than the parents due to the educational opportunities.*
- *With student loans and a lot of debt pushing on the lower class/students it will be harder for the child to stay financially well off.*
- *There is no certainty in a child having the same type income their parents do. However, if the child grows up in a low income family they may not have as many opportunities.*

### 5. Family/parental advantage/disadvantage theme

Example answers:

- *Kids who grow up in poor families have a harder time/ opportunities when they get older.*
- *Most upper-class net worth is usually kept in the family for generations. Additionally, upper-class income continues to increase while the rest of the population continues to decrease. Finally, upper-class children usually have the best resource.*
- *The same principal guides this as the wealthy families I believe, those who were not as well off in life or grew up in poverty/middle income families would probably live this sort of lifestyle as well. It all depends on how one is raised.*
- *This is a higher income bracket where the parents probably push their children to be the best at everything and if there are siblings involved, they try to out do one another.*
- *I think many parents teach their children to try to do better than what they see. So a child will grow up thinking that they want to do better than what they saw and grew up with.*
- *I came to this answer because the child probably gets some money from the parents as well to help with her life.*
- *This means that the family owns some sort of business. This will be passed down to the child most likely.*
- *I'm assuming the parents in this case are still "wealthy" which means their child will likely be well-to-do. They'll either have a good education, money willed to them or just be set up earlier than someone of a poorer class.*

### 6. Role of education theme

Example answers:

- *This is close to mid range and this child I think would have a chance to go to college and do better than their parents did.*
- *I'm assuming the parents in this case are still "wealthy" which means their child will likely be well-to-do. They'll either have a good education, money willed to them or just be set up earlier than someone of a poorer class.*
- *I think children of the rich will likely be insulated from the strifes of poorer people—either they'll already have a high paying job set up, an inheritance, or have a very good education meaning income won't be too much of an issue for them.*

### 7. Role of individual efforts theme

Example answers:

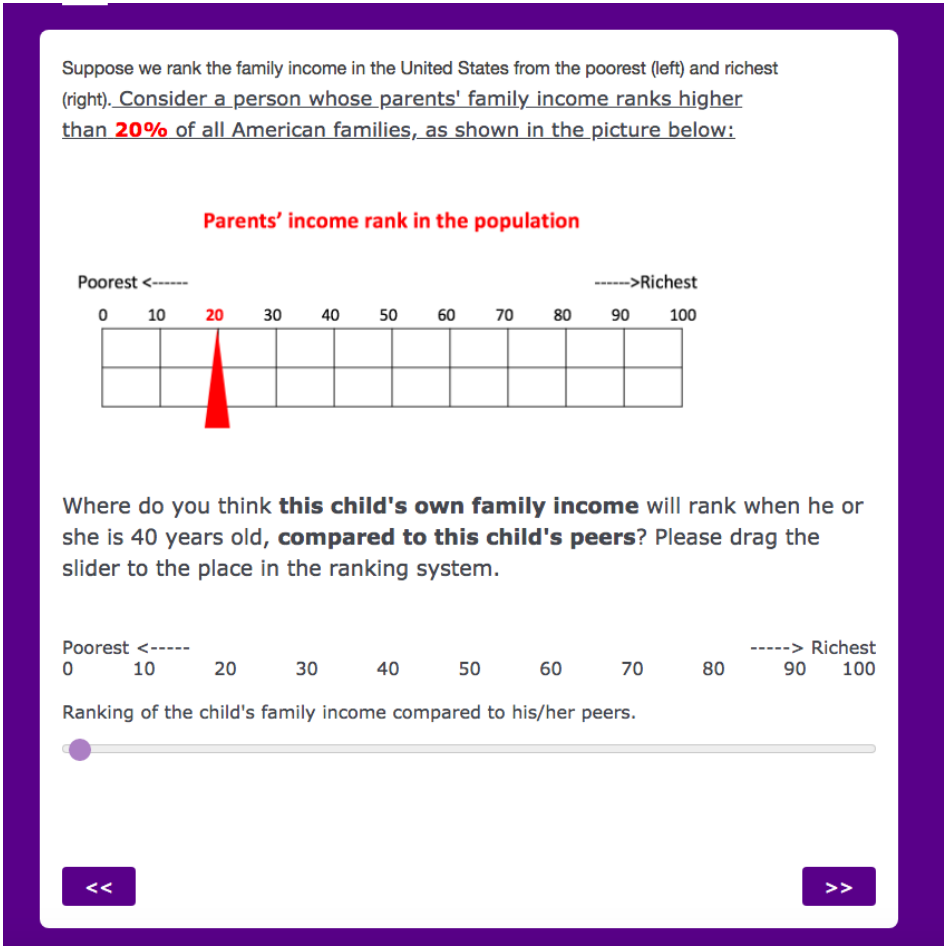
- *This person would see that they can gain a better life by working hard and gaining more money so they would be more inclined to grow more.*
- *Unfortunately, people at this stage are really hurting for money. I'd like to believe this person would try to make his next generation a little easier to live by.*
- *To me this is getting closer to middle class where people generally have a better work ethic. I feel people in this range typically will work harder to get ahead.*



**B. Perceived Rank-rank Relationship with Alternative Wording in the Questionnaire Text.** To make sure that the respondents clearly understand the questions, we supplement our main study with two additional robustness checks using samples from the Amazon Mechanical Turk (MTurk). We describe them below.

The first element that is worth further robustness check is whether the respondents are clear about who the adult child’s income is being compared against. In the main survey instrument, we instructed the respondents to consider the ranking of the child when he or she is 40 years old. Here, we want to make sure that the child’s income is being ranked against the child’s own peers, *not* against the income distribution of their parents, or the income distribution of the combined distribution of their parents and themselves. To make sure that the respondents are clear about who the child’s income should be ranked against, we conducted a robustness check.

In the robustness check, we recruited a total of 600 respondents from MTurk for the supplementary study. we randomly assigned the MTurk respondents to one of two groups. In Group 1 (the “original wording” group,  $n = 300$ ), we used the same wording as we used in the original study, that is, we asked respondents to evaluate the ranking of the child’s own family income when he or she is 40 years old. In Group 2 (the “ranking-against-peers” group,  $n = 300$ ), we used the same survey instrument but emphasized explicitly that the child’s rank should be *compared against this child’s peers*. This emphasis is placed not only in the question text, but also as a text instruction above the slider which the respondents use to indicate their answer. Figure S2 below presents a screen shot of the survey question used in the “ranking-against-peers” group.



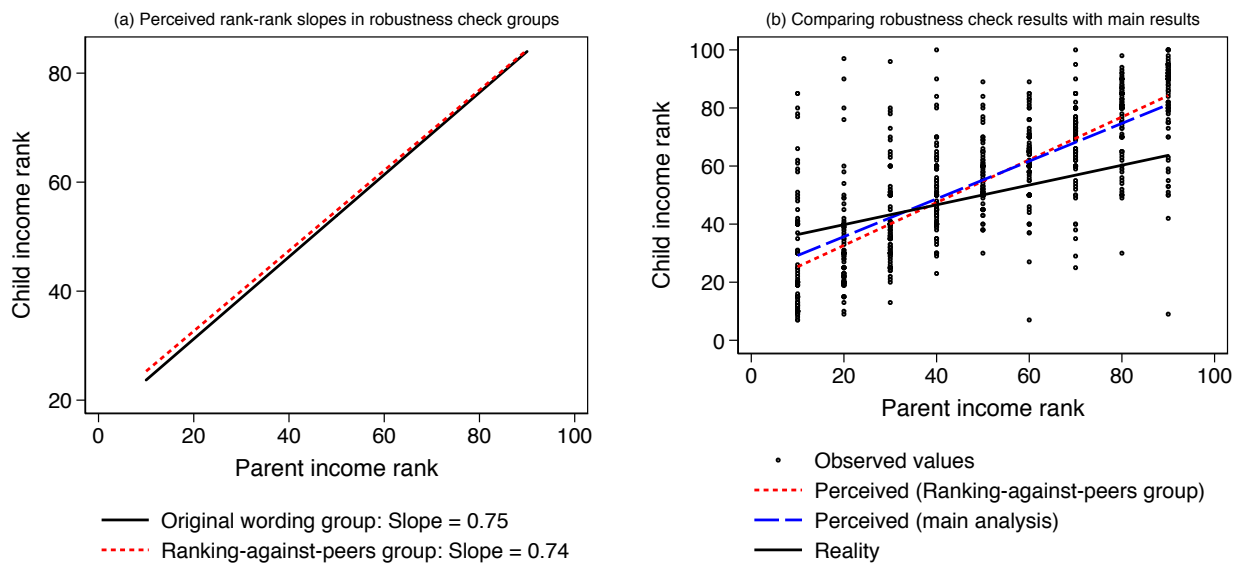
**Fig. S2.** Screen Shot of Survey Question in the “Ranking-against-Peers” Group used in the Robustness Check.

Note that we have decided to create two comparison groups (i.e. original versus the alternative wording) in the MTurk sample for the robustness check, instead of directly comparing the “ranking-against-peers” group to our main results based on the national representative sample (TESS sample) in the main text. This is because the Mturk sample may have a different composition than the TESS sample and thus the “original wording” group in the MTurk sample serves as a better benchmark to rule out that compositional difference.

With the collected data, we test if the perceived rank-rank relationship is the same in the two groups in the MTurk sample. If so, then this should be seen as evidence that our findings are unlikely to be affected by the possibility of misinterpretation of the survey question. In addition, we will also examine whether the results from this supplementary analysis are consistent with those reported in the main text.

Figure S3 below presents the results from our supplementary study. Panel (a) presents the estimated rank-rank relationship in the “original wording group” and “ranking-against-peers” group. The slopes are estimated at 0.75 and 0.74 respectively. The 95% confidence intervals for the slopes are (0.69, 0.78) in the original wording group and (0.71, 0.80) in the “ranking-against-peers” group. Two-sided statistical test indicates no significant difference between the two slopes.

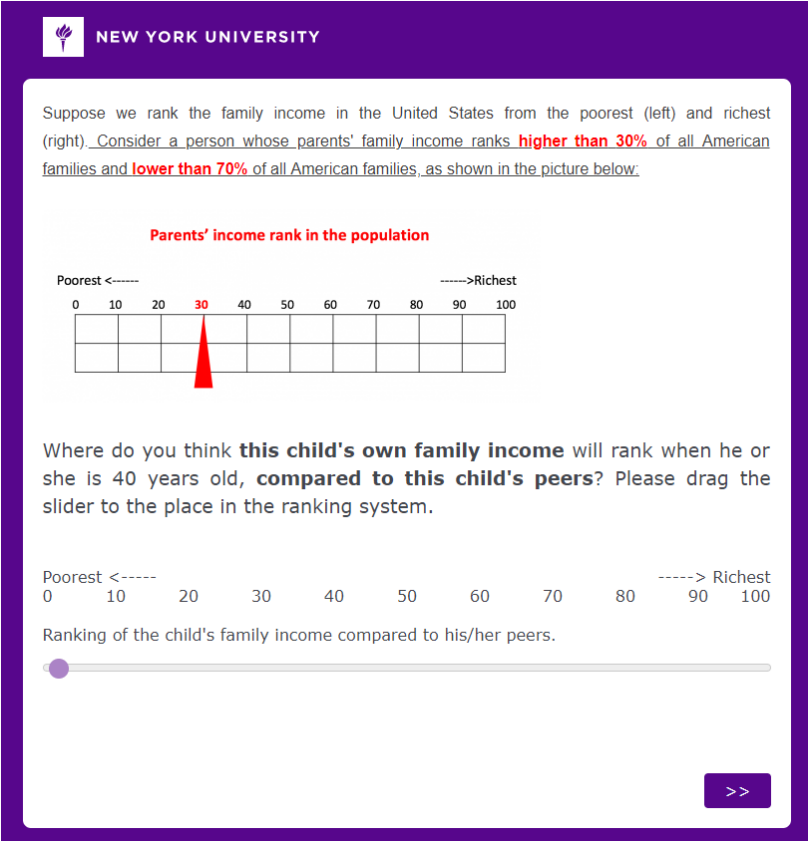
Panel (b) of Figure 2 compares the robustness check results with those reported in our main analysis. The black circles are scatter plots for observed values for child income rank reported by the respondents in the “ranking-against-peers” group based on the MTurk sample in our supplementary study. The red dotted line presents the estimated perceived rank-rank relationship in our ranking-against-peers group. The blue long-dashed line presents the estimated perceived rank-rank relationship based on the TESS sample in our main analysis, and the black solid line is the objective rank-rank relationship in reality as reported by Chetty and colleagues (see Figure 3 in the main text). The perceived slope (0.74) in the ranking-against-peers group is steeper than the slope (0.65) reported in the main study, which can be explained by the fact that the MTurk sample is more educated than the national average and that education is associated with greater pessimism about relative mobility (see our regression results reported in the main text, also consistent with a few other studies cited in our paper). The results are almost identical to Figure 3 of the main text: both slopes are considerably steeper than the slope in reality (0.34), supporting our key finding that the American public holds pessimistic views of the equality of mobility prospect.



**Fig. S3.** Perceived Rank-rank Slopes in Robustness Check with Alternative Wording on the Child Income Rank and Main Results

NOTE: Sample size of supplementary study:  $n = 600$ . Respondents were recruited from Amazon Mechanical Turk (MTurk) and randomly assigned to one group with the “original wording” ( $n = 300$ ) and the “ranking-against-peers” group in which we more explicitly emphasized that the child should be ranked among his or her own peers ( $n = 300$ ). In Panel (a), the perceived rank-rank slope is based on a regression model predicting child’s rank using parent income rank, with the residuals clustered on the individual level. In Panel (b), the perceived rank-rank slope is 0.74 for the red dotted line (based on our “ranking-against-peers” group results as shown in Panel (a)), 0.65 in the blue dashed line (from main analysis reported in our main text), and 0.34 in the black line (empirical estimates based on administrative tax data).

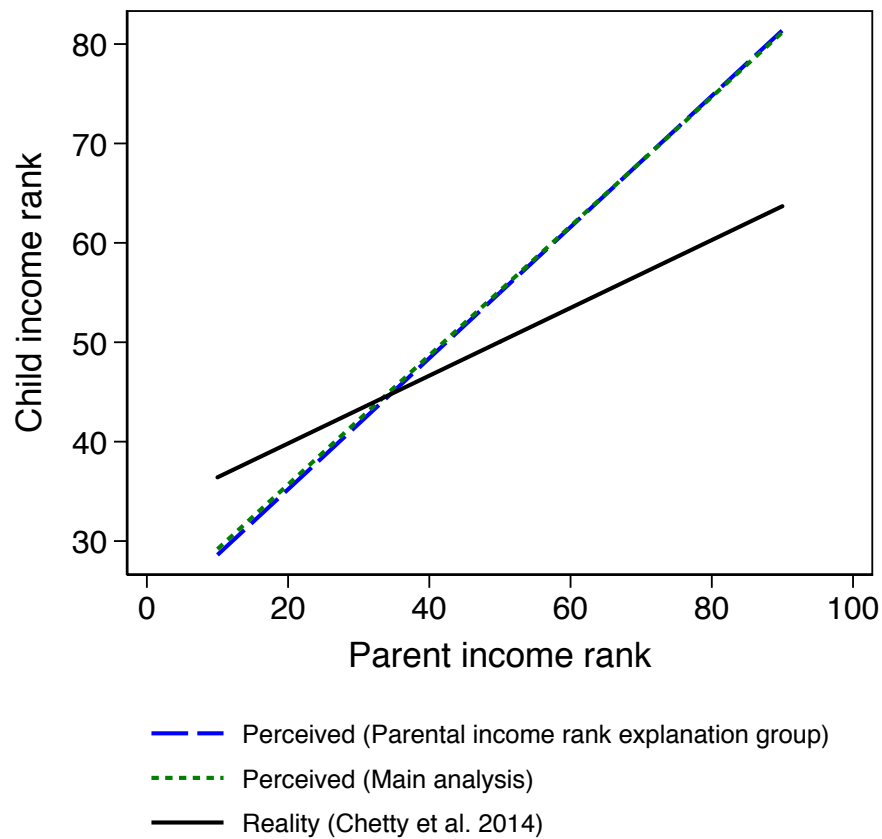
The second robustness check examines whether the respondents correctly understand the income rank of the parents presented to them in the question. We think that this is unlikely to be a problem, because we have not only presented the respondents with a text description of the parent income rank, but also showed them a picture illustrating the ranking of parents in the income spectrum. To make sure that there is no misunderstanding about the statement on parent income rank, we supplement the main analysis with an additional analysis, in which we further explained the parent income rank as: “Consider a person whose parents’ family income ranks higher than p% of all American families and lower than (1-p%) of all American families.” See Figure S4 for a screen shot of the questionnaire, using 30% as the example parent income rank.



**Fig. S4.** Screen Shot of Survey Question in the “parent income rank explanation” Group used in the Robustness Check.

The results from this robustness check based on an MTurk sample is presented in Figure S5 on the next page ( $n = 300$ ). As the figure shows, the rank-rank slope for the “parent income rank explanation group” is estimated to be 0.66, with 95% confidence intervals bounded by 0.60 and 0.72. It is very close to, and not statistically significantly different from, the rank-rank slope (0.65) we obtained from the main results. The results consistently suggest that Americans tend to underestimate the equality of opportunities between children from rich and poor families.

In sum, base on the findings from these two supplementary studies, as well as the pilot study presented in Part A of this SI section, we conclude that the TESS respondents were able to understand the meaning of these questions with regard to both the income rank of children and the income rank of parents, and that the findings reported in our main text are robust to alternative wordings of the survey questions.



**Fig. S5.** Perceived Rank-rank Slopes in Robustness Check with More Detailed Explanations for Parent Income Rank and Main Results

NOTE: Sample size of supplementary study:  $n = 300$ . Respondents were recruited from Amazon Mechanical Turk (MTurk) and assigned to the “parent income rank explanation group” in which we more explicitly explain the income rank of the parent of the hypothetical child. The rank-rank slope for the “parent income rank explanation group” is estimated to be 0.66, with 95% confidence intervals bounded by 0.60 and 0.72. It is not statistically significantly different from the rank-rank slope (0.65) we obtained from the main results.



#### 4. TESS Sample Descriptive Statistics (Unweighted and Weighted)

**Table S2. Unweighted Sample Descriptive Statistics**  
(Sample from National Opinion Research Center's AmeriSpeak panel of TESS)

	Baseline		Experimental Group				Total	
	<i>n</i> = 1,858		College-graduate		Hard-working		<i>n</i> = 3,077	
	No.	%	No.	%	No.	%	No.	%
<b>Gender</b>								
Male	904	48.7	315	52.0	283	46.2	1502	48.8
Female	954	51.3	291	48.0	330	53.8	1575	51.2
<b>Age</b>								
18-29	346	18.6	106	17.5	95	15.5	547	17.8
30-44	532	28.6	190	31.4	191	31.2	913	29.7
45-59	471	25.3	143	23.6	155	25.3	769	25.0
60+	509	27.4	167	27.6	172	28.1	848	27.6
<b>Education</b>								
No HS diploma	76	4.1	22	3.6	31	5.1	129	4.2
HS graduate or equivalent	374	20.1	101	16.7	94	15.3	569	18.5
Some college	859	46.2	285	47.0	303	49.4	1447	47.0
BA or above	549	29.5	198	32.7	185	30.2	932	30.3
<b>Employment Status</b>								
Paid employee	1001	53.9	307	50.7	322	52.5	1630	53.0
Self-employed	174	9.4	55	9.1	69	11.3	298	9.7
Unemployed	140	7.5	51	8.4	40	6.5	231	7.5
Not in labor force	543	29.2	193	31.8	182	29.7	918	29.8
<b>Race</b>								
White	1227	66.0	394	65.0	387	63.1	2008	65.3
Black	223	12.0	62	10.2	81	13.2	366	11.9
Hispanic	271	14.6	94	15.5	97	15.8	462	15.0
Asian	55	3.0	23	3.8	12	2.0	90	2.9
Other	82	4.4	33	5.4	36	5.9	151	4.9
<b>Employment Status</b>								
<b>Political Ideology</b>								
Extremely/Very liberal	396	24.3	129	23.9	128	24.2	653	24.2
Somewhat liberal	162	10.0	62	11.5	61	11.5	285	10.6
Moderate	499	30.7	168	31.2	154	29.1	821	30.4
Somewhat conservative	182	11.2	58	10.8	70	13.2	310	11.5
Extremely/Very conservative	389	23.9	122	22.6	117	22.1	628	23.3
<b>Household Income</b>								
<\$29,999	487	26.2	169	27.9	163	26.6	819	26.6
\$30,000-\$59,999	566	30.5	170	28.1	170	27.7	906	29.4
\$60,000-\$99,999	446	24.0	139	22.9	145	23.7	730	23.7
>\$100,000	359	19.3	128	21.1	135	22.0	622	20.2
<b>Marital Status</b>								
Married	912	49.1	303	50.0	293	47.8	1508	49.0
Widowed	83	4.5	30	5.0	20	3.3	133	4.3
Divorced	226	12.2	62	10.2	92	15.0	380	12.3
Separated	35	1.9	12	2.0	15	2.4	62	2.0
Never married	460	24.8	149	24.6	141	23.0	750	24.4
Living with partner	142	7.6	50	8.3	52	8.5	244	7.9
<b>Housing Status</b>								
Owned	1151	61.9	377	62.2	368	60.0	1896	61.6
Rented for cash	655	35.3	211	34.8	230	37.5	1096	35.6
Occupied without cash rent	52	2.8	18	3.0	15	2.4	85	2.8
<b>Metro/non-metro Area</b>								
Non-Metro Area	211	11.4	75	12.4	69	11.3	355	11.5
Metro Area	1647	88.6	531	87.6	544	88.7	2722	88.5
<b>Total (unweighted counts)</b>	<b>1858</b>	<b>100.0</b>	<b>606</b>	<b>100.0</b>	<b>613</b>	<b>100.0</b>	<b>3077</b>	<b>100.0</b>

**Table S3. Weighted Sample Descriptive Statistics**  
(Sample from National Opinion Research Center's AmeriSpeak panel of TESS)

	Experimental Group							
	Baseline		College-graduate		Hard-working		Total	
	<i>n</i> = 1,892		<i>n</i> = 592		<i>n</i> = 593		<i>n</i> = 3,077	
	No.	%	No.	%	No.	%	No.	%
<b>Gender</b>								
Male	925	48.9	302	51.0	262	44.2	1489	48.4
Female	968	51.1	290	49.0	331	55.8	1588	51.6
<b>Age</b>								
18-29	431	22.8	116	19.7	104	17.6	651	21.2
30-44	468	24.7	159	26.8	149	25.1	775	25.2
45-59	480	25.4	144	24.3	168	28.3	791	25.7
60+	514	27.1	173	29.3	172	29.0	859	27.9
<b>Education</b>								
No HS diploma	208	11.0	59	10.0	72	12.2	340	11.0
HS graduate or equivalent	601	31.7	153	25.8	136	22.9	889	28.9
Some college	517	27.3	171	29.0	192	32.4	881	28.6
BA or above	566	29.9	208	35.2	193	32.5	968	31.4
<b>Race</b>								
White	1233	65.2	380	64.2	357	60.3	1970	64.0
Black	218	11.5	66	11.2	79	13.3	363	11.8
Hispanic	299	15.8	93	15.7	97	16.4	489	15.9
Asian	59	3.1	20	3.4	17	2.9	96	3.1
Other	84	4.4	32	5.4	43	7.2	159	5.2
<b>Employment Status</b>								
Paid employee	943	49.8	272	45.9	282	47.5	1496	48.6
Self-employed	187	9.9	50	8.4	72	12.1	309	10.1
Unemployed	198	10.5	49	8.3	41	6.9	288	9.3
Not in labor force	564	29.8	221	37.4	199	33.5	984	32.0
<b>Political Ideology</b>								
Extremely/Very liberal	379	22.9	118	21.9	122	24.1	619	22.9
Somewhat liberal	146	8.8	58	10.8	57	11.3	261	9.7
Moderate	511	30.9	168	31.3	139	27.5	819	30.4
Somewhat conservative	206	12.5	67	12.4	66	13.0	338	12.5
Extremely/Very conservative	410	24.8	128	23.7	122	24.1	660	24.5
<b>Household Income</b>								
<\$29,999	512	27.0	165	28.0	186	31.4	864	28.1
\$30,000-\$59,999	536	28.3	153	25.8	133	22.4	822	26.7
\$60,000-\$99,999	443	23.4	138	23.3	140	23.6	721	23.4
>\$100,000	402	21.2	136	22.9	133	22.5	671	21.8
<b>Marital Status</b>								
Married	936	49.5	302	51.0	294	49.6	1532	49.8
Widowed	75	4.0	37	6.2	23	3.9	135	4.4
Divorced	213	11.3	49	8.4	76	12.9	339	11.0
Separated	32	1.7	9	1.5	14	2.4	56	1.8
Never married	477	25.2	144	24.4	134	22.6	755	24.5
Living with partner	158	8.4	51	8.5	51	8.7	260	8.5
<b>Housing Status</b>								
Owned	1292	68.3	398	67.3	395	66.7	2086	67.8
Rented for cash	555	29.3	176	29.8	183	30.9	915	29.7
Occupied without cash rent	45	2.4	17	2.9	14	2.4	76	2.5
<b>Metro/non-metro Area</b>								
Non-Metro Area	223	11.8	80	13.6	66	11.1	368	12.0
Metro Area	1670	88.2	511	86.4	527	88.9	2709	88.0
<b>Total (weighted counts)</b>	1892	100.0	592	100.0	593	100.0	3077	100.0

5. Distribution of Person-level Rank-rank Slopes

In the main analysis, because the parent income ranks of the hypothetical children in the survey items are randomized in the experimental design, we have used the parent-child income rank pairs with the sample *pooled across individuals*. An additional method for examining our data is to obtain the person-level rank-rank slope based on the estimated person-specific random effects from the regression model. This means that, for  $n$  individuals in our sample, we will have  $n$  person-specific slopes.

As a result of this analysis, we present the histogram of the person-specific rank-rank slopes in the TESS sample, which we term “person-level rank-rank slopes,” in Figure S6. As the figure shows, among the 1,858 respondents in the control group, about 90% perceived a rank-rank slope greater than the slope in reality (dashed vertical line), with the mean (0.65) concentrated to the right of the slope in reality. These results suggest that, the person-level rank-rank slopes also exhibit strong tendency to underestimate the equality of opportunities between children from richer and poorer families.

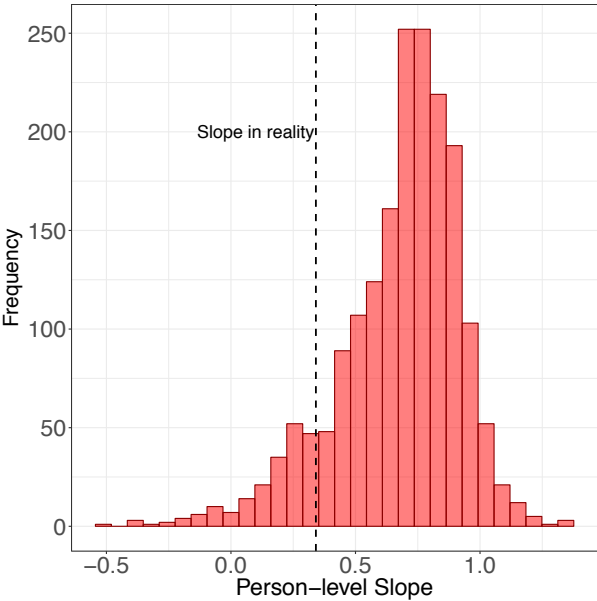


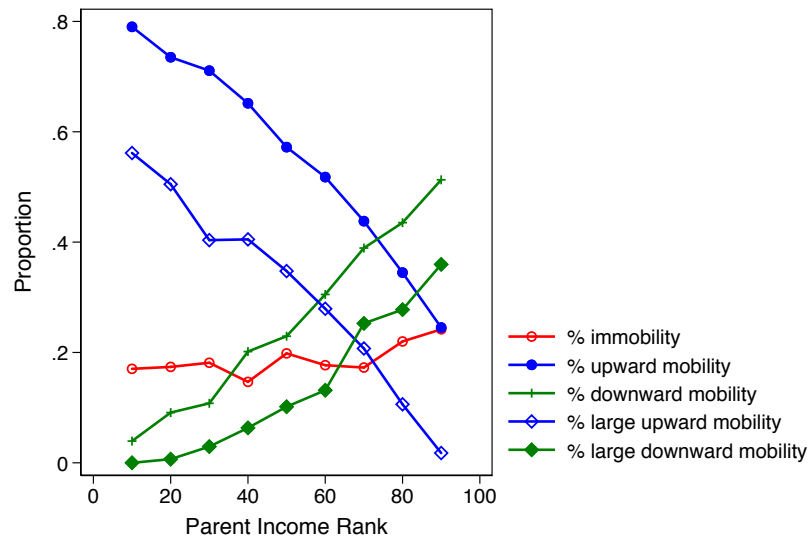
Fig. S6. Distribution of Person-level Rank-rank Slopes.

NOTE: The estimated person-level rank-rank slopes are greater than the empirical slope (suggesting mobility pessimism) for 89.7% of respondents in the sample.

## 6. Distribution of Immobility, Upward Mobility, and Downward Mobility

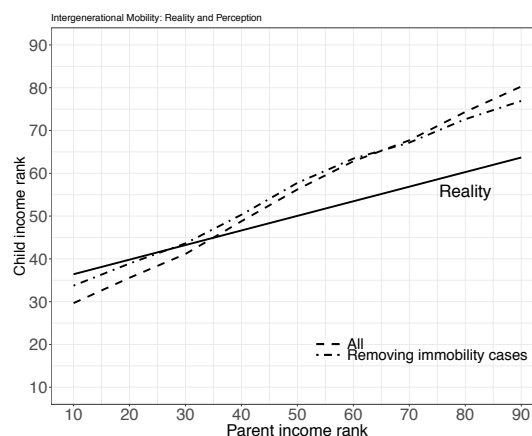
Our main analysis has focused on the rank-rank relationship, as it speaks directly to the empirical benchmark estimated by recent work. In this supplementary analysis, we calculate some additional measures for the perceived mobility chances – namely, immobility, upward mobility, and downward mobility – and discuss the findings.

Our first measure here is the share of respondents whose rating of child income rank reflects *immobility* – that is, the child income rank is within the interval of plus and minus 3 percentage points of parent income rank. As the Figure S7 shows, for hypothetical children born to parents below the 70<sup>th</sup> percentile of the income distribution, about 20% of them were expected to stay in the same income rank as their parents. The proportion of immobility increases with parent income rank for those coming from families above the 70<sup>th</sup> percentile of the income distribution, suggesting even greater perceived immobility for children from the richest 30% of families.



**Fig. S7.** Proportion of Mobility Outcomes Rated as Immobility, Upward Mobility, and Downward Mobility by Parent Income Rank

NOTE: Immobility is defined as cases in which the child income rank is within plus/minus 3 percentage points of the parent income rank. Upward mobility is defined as cases in which the child income rank is higher than the parent income rank by more than 3 percentage points. Downward mobility is defined as cases in which the child income rank is lower than the parent income rank by more than 3 percentage points. Large upward and downward mobility are defined by requiring the difference between the parent and child income ranks to be at least 10 percentage points.



**Fig. S8.** Comparison of Perceived Rank-rank Relationship with and without the Immobility Cases

Given the results on perceived immobility above, one may wonder whether the main findings of pessimism about relative mobility is driven entirely by the perception of high “immobility.” This motivates us to conduct a robustness check, in which we drop the data points where the child income rank was rated within the interval no more than 3 percentage points from



the parent income rank and re-estimate the perceived rank-rank line in the TESS data. In other words, we remove the data points that cluster around the diagonal (45-degree) line in the rank-rank graph. The results are presented in Figure S8. After removing the perceived immobile data points, the perceived income rank for children from poor families becomes slightly higher and closer to reality. However, consistent with our main results, the slope of the perceived rank-rank line without the data points of immobility remains substantially steeper than the rank-rank line in reality.

We next move on to the perceived proportion of individuals who are *upwardly mobile* (child income rank higher than parent income rank by more than three percentage points) or *downwardly mobile* (child income rank lower than parent income rank by more than three percentage points) in Figure S7. Finally, we also plot the proportion of the hypothetical individuals who are expected to have experienced large upward and downward income mobility (difference between the parent and child income ranks being at least ten percentage points). The perceived proportion of upward mobility decreases with parent income rank, and on the contrary, the perceived proportion of downward mobility increases with parent income rank. These results suggest that, despite strong tendency towards expecting immobility across the parent income distribution, Americans also perceive possibility for children from poor families to move up and for children from rich families to move down, a view that’s consistent with the “regression towards the mean” phenomenon.

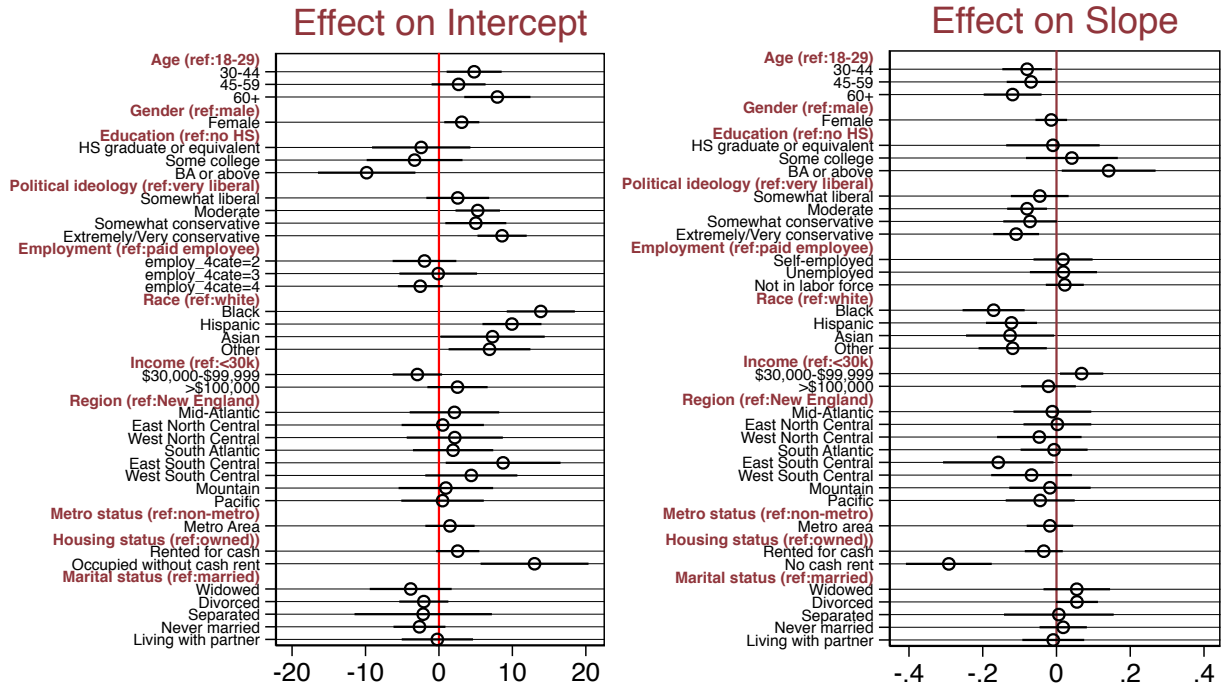
Finally, we calculate the number of respondents who have rated the income ranks of the hypothetical children 0, 1, 2, or 3 times as being immobile, (large) upwardly mobile, and (large) downwardly mobile. Table S4 presents the results. About 60% of the respondents did not rate any of the three hypothetical children in the survey as immobile, and about 28% of the respondents have rated one of the hypothetical children as immobile. More respondents have rated at least one of the hypothetical children as upwardly mobile than those who have rated at least one of the hypothetical children as downwardly mobile. About 30% of the respondents expected all hypothetical children to be upwardly mobile, compared to only about 7% who rated all hypothetical children to be downwardly mobile. This suggests that, overall, the public perceives more upward mobility than downward mobility in the American society.

**Table S4. Number and Proportion of Respondents Who Rated 0, 1, 2, or 3 of the Mobility Outcomes as Immobility, Upward Mobility, and Downward Mobility**

	Number of Mobility Outcomes			
	0	1	2	3
<b>Immobility</b>				
Frequency	1,125	512	132	89
Percentage	60.55	27.56	7.1	4.79
<b>Upward mobility</b>				
Frequency	372	428	511	547
Percentage	20.02	23.04	27.5	29.44
<b>Downward mobility</b>				
Frequency	986	440	296	136
Percentage	53.07	23.68	15.93	7.32
<b>Large upward mobility</b>				
Frequency	836	480	360	182
Percentage	44.99	25.83	19.38	9.8
<b>Large downward mobility</b>				
Frequency	1,330	335	149	44
Percentage	71.58	18.03	8.02	2.37

NOTE: The number of mobility outcomes rated as immobile, upward mobility, and downward mobility are calculated for each respondent and then counted across the sample. Immobility is defined as cases in which the child income rank is within plus/minus 3 percentage points of parent income rank. Upward mobility is defined as cases in which the child income rank is higher than the parent income rank by more than 3 percentage points. Downward mobility is defined as cases in which the child income rank is lower than the parent income rank by more than 3 percentage points. Large upward and downward mobility are defined by requiring the difference between the parent and child income ranks to be at least 10 percentage points.

## 7. Full List of Regression Coefficients Predicting the Child's Perceived Income Rank



**Fig. S9.** Effect of Respondent Characteristics on Perceived Rank-rank Intercept and Slope (with 90% Confidence Intervals).

NOTE: The coefficients are estimated in a multilevel model predicting the child's perceived income rank for respondent  $i$  and item  $k$  ( $=1, 2$ , and  $3$ ). Level 1 model is:  $Y_{ik}^{child} = \beta_{0i}^P + \beta_{1i}^P \cdot Y_{parent} + \epsilon_{ik}$ , where the random coefficients for intercept ( $\beta_{0i}^P$ ) and slope ( $\beta_{1i}^P$ ) then depend on respondents' characteristics  $\mathbf{X}$  specified in the level-2 model:  $\beta_{0i}^P = \mathbf{X}\gamma_0 + \nu_{0i}$  and  $\beta_{1i}^P = \mathbf{X}\gamma_1 + \nu_{1i}$ . The left panel of this figure reports the effects of covariates on the random intercept (i.e.  $\gamma_0$ ), and the right panel reports the effects of covariates on the random slope (i.e.  $\gamma_1$ ).

8. Additional Results on Perceived Rank-rank Relationship in Control and Treatment Conditions

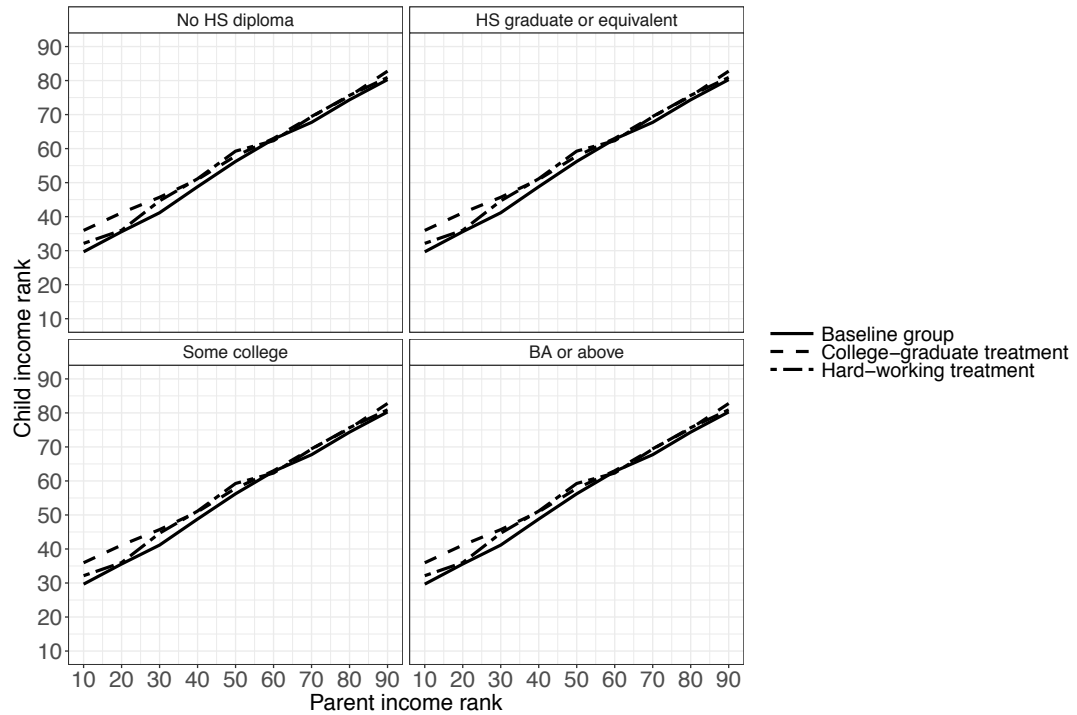
One observation from Fig.6 of the main text is that, the perceived rank-rank slope in the college-graduate and hard-working treatment groups tend to be non-linear. In particular, the slopes of these two lines tend to converge towards that of the baseline rank-rank line when the parent income rank is higher than 60%. Below the 60% cutoff, however, the slopes of the three lines tend to differ more. The small number of percentiles used in the survey instrument limits our ability to fully model the non-linearity in the perceived rank-rank lines, but we have instead conducted an additional analysis where we restrict the sample to those whose parent income rank is below 60%.

Table S5 presents the results in a sample that includes data for all parent income ranks (Panel A) and only those whose parent income ranks below the 60th percentile of the income distribution (Panel B). The change in perceived rank-rank slope becomes greater in magnitude when we restrict the sample to those whose parent income rank is lower than the 60th percentile of the distribution, however, compared to the changes documented by empirical work (see main text), these changes are still substantially smaller.

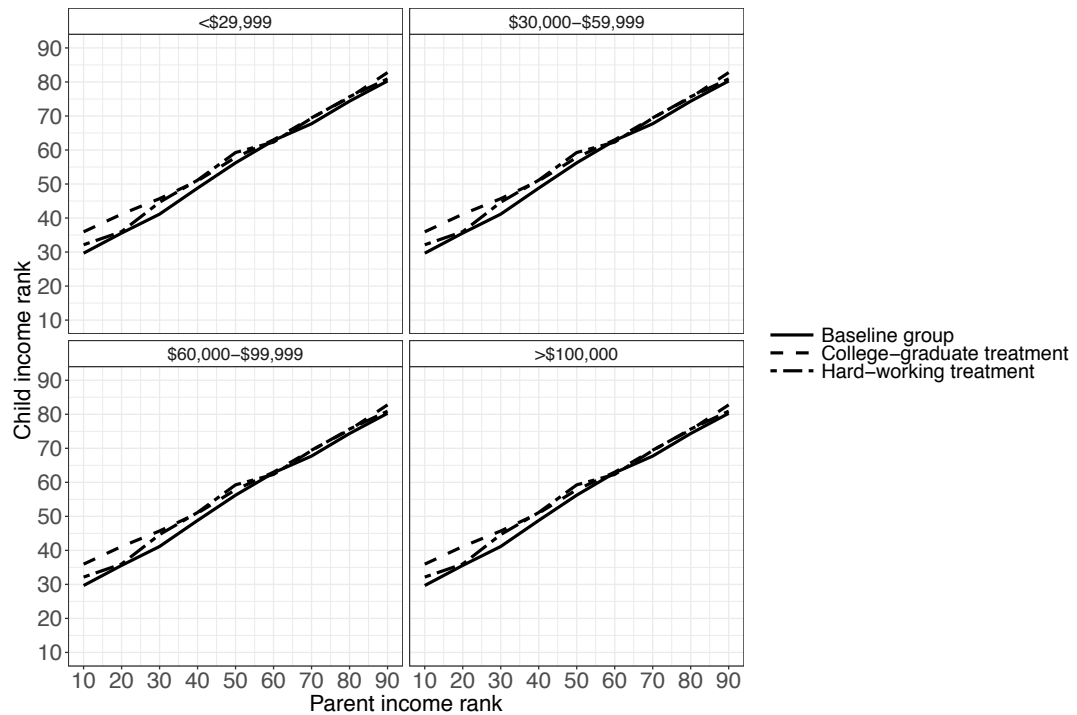
We also examined whether the same pattern hold when we further break down the sample by education and income. The results, presented in Figures S10 and S11, shows that the pattern we observe in Fig.6 is quite consistent across education and income groups.

Table S5. Estimated Rank-rank Slopes in Baseline and Treatment Groups across All Parent Income Ranks and Among the Bottom 60% of Parent Income Ranks

	Baseline	College-graduate Treatment	Hard-working Treatment
<b>Panel A: All parent income ranks</b>			
Rank-rank slope	0.645***	0.559***	0.626***
95% CI	[0.617,0.674]	[0.512,0.605]	[0.587,0.664]
Change from baseline	—	-0.086	-0.019
<b>Panel B: Parent income rank &lt; 60%</b>			
Rank-rank slope	0.709***	0.546***	0.662***
95% CI	[0.672,0.745]	[0.489,0.603]	[0.604,0.719]
Change from baseline	—	-0.163	-0.047



**Fig. S10.** Perceived Rank-rank Relationship in Control and Two Treatment Conditions by Respondent's Education Level.



**Fig. S11.** Perceived Rank-rank Relationship in Control and Two Treatment Conditions by Respondent's Income Level.

9. Robustness Check A: Perceived Rank-rank Relationship Using Median and Mean of Child's Income

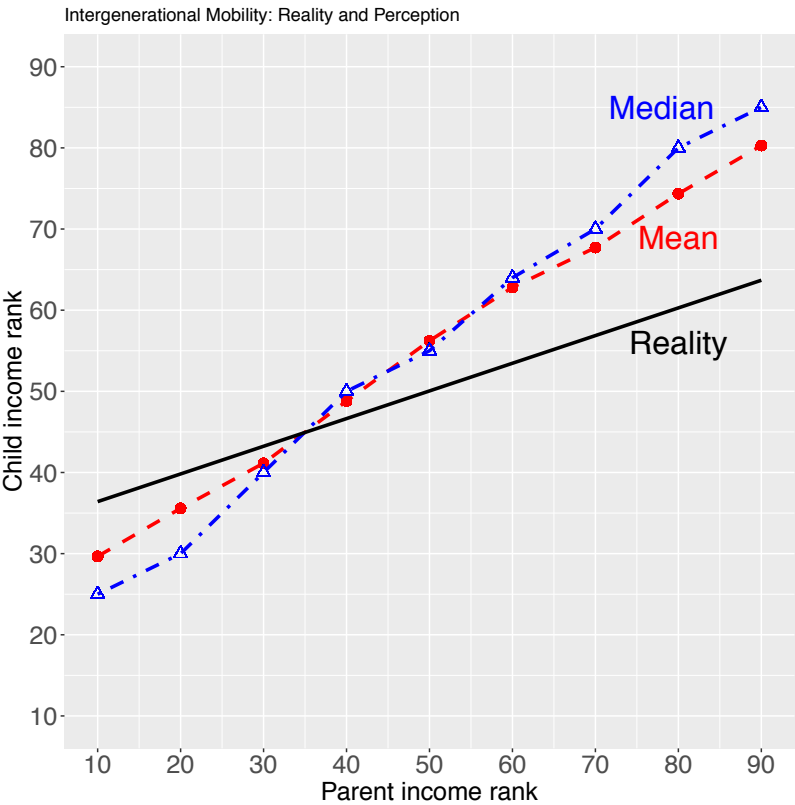


Fig. S12. Perceived Rank-rank Relationship Using Median and Mean of Child's Income.

## 10. Robustness Check B: Perceived Rank-rank Relationship Using Alternative Smoothing Methods

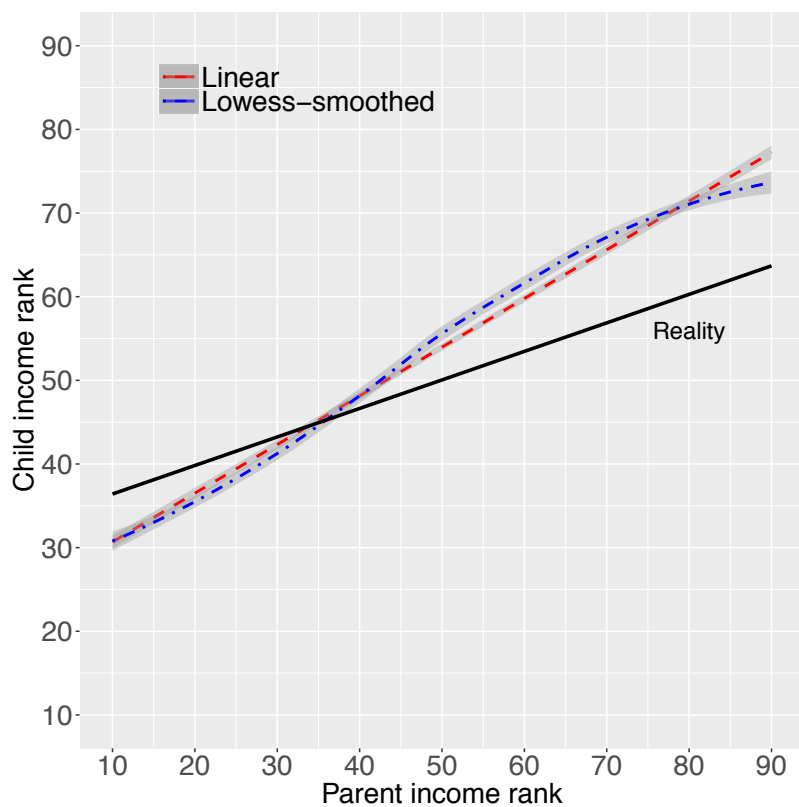


Fig. S13. Perceived Rank-rank Relationship Using Alternative Smoothing Methods.



11. Robustness Check C: Perceived Rank-rank Relationship by the Order of Survey Items

In this robustness check, we examine whether the findings will change if we focus on the first, second, and third survey items separately. In this case, we are using only one data point per person for estimating the perceived rank-rank lines, and the estimation of the rank-rank slope is based on between-person variations. Figure S14 presents the results. The slope of the perceived rank-rank line gets steeper with the number of items answered, but the differences are relative small (around 0.05 for each item increased), and the finding of a pessimistic view on the equality of mobility prospects remains consistent in all cases. We do not have a definitive explanation for the increase in slopes with the number of items answered, but one possible explanation may be that, seeing the ruler and the slider may prime people to think about the income gaps in the society, which then leads them to perceive a greater disparity in mobility prospects between children from poor and rich families. We recommend that future research using our measure compare results with all items and results with only the first item.

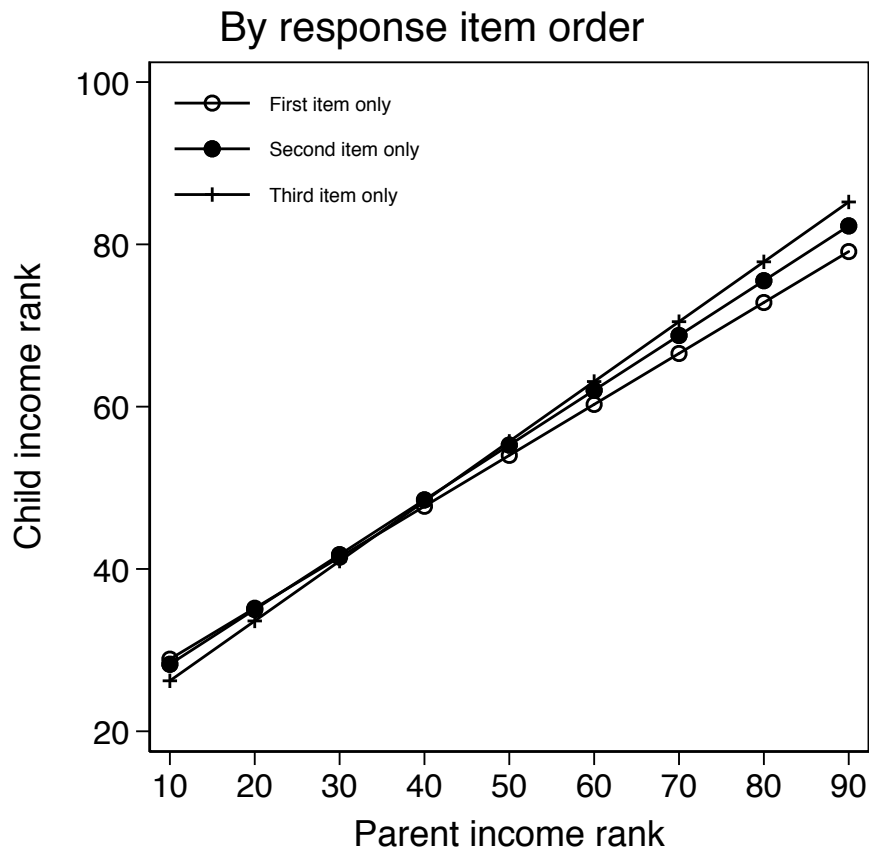


Fig. S14. Perceived Rank-rank Relationship by the Order of Survey Items.

## 12. Robustness Check D: Perceived Rank-rank Relationship With and Without Information on Income Inequality

Note that in both the empirical measures of the rank-rank slope and the perceived rank-rank slope measured by our survey instrument, we have focused on the relative ranking of income instead of the absolute income values. The decision to focus on relative income ranks in soliciting mobility perceptions allows us to avoid inducing the survey respondents to perform more complicated tasks such as thinking about income levels in the “absolute” sense and standardizing absolute income over time. But it is still possible that the individuals’ perceptions of the “absolute” may have influenced the way they evaluate the relative mobility chances. We conduct a robustness check below, which helps examine this possibility.

Specifically, we examine whether showing the respondents information on the actual income distribution in the United States will affect the results. The information on income distribution is presented to the respondents as a text statement, along with a graphic illustration, that demonstrates the household income for families at the 10th, 50th, and 90th percentiles of the income distribution. See Figure S15 for a screenshot of the information provided.

Figure S16 presents the perceived rank-rank relationship both with and without the information provision. The two lines are very close to each other, and are both steeper than the slope in reality. Significance test suggests that there is no statistically significant difference between the two slopes. Hence, our findings on perceptions about intergenerational mobility remain robust to whether the respondents are provided with information about the “absolute” income distribution. However, we also acknowledge that the priming information for income inequality could be construed as quite mild, especially given that it does not refer to the differential changes in income levels at different income ranks in the distribution or the rising economic inequality, which is what prior research has found to affect mobility perceptions (McCall et al. 2017). Also, the baseline survey design with the sliding ruler could itself be priming respondents to think about the income distribution (a conjecture consistent with the results in Figure S14), which may lessen the effect of the income inequality priming.



Suppose we rank family income in the United States from the poorest (left) to richest (right). To give you a sense of the current income distribution, note that in 2016, families making \$15,000 annually ranked higher than 10% of all American families, families making \$60,000 annually ranked in the middle (50%) of all American families, and families making \$145,000 annually ranked higher than 90% of all American families. The picture below illustrates this income distribution:

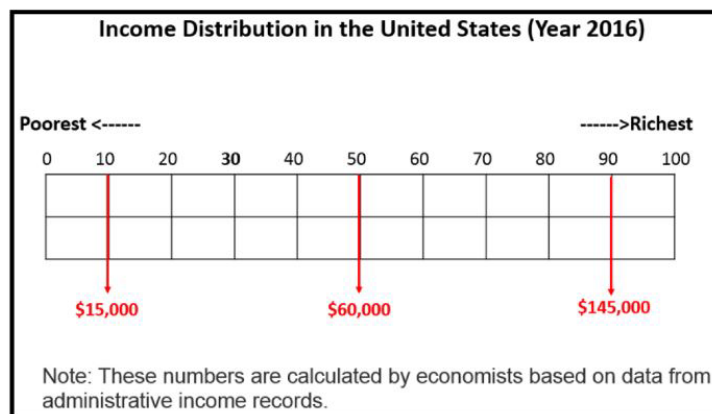
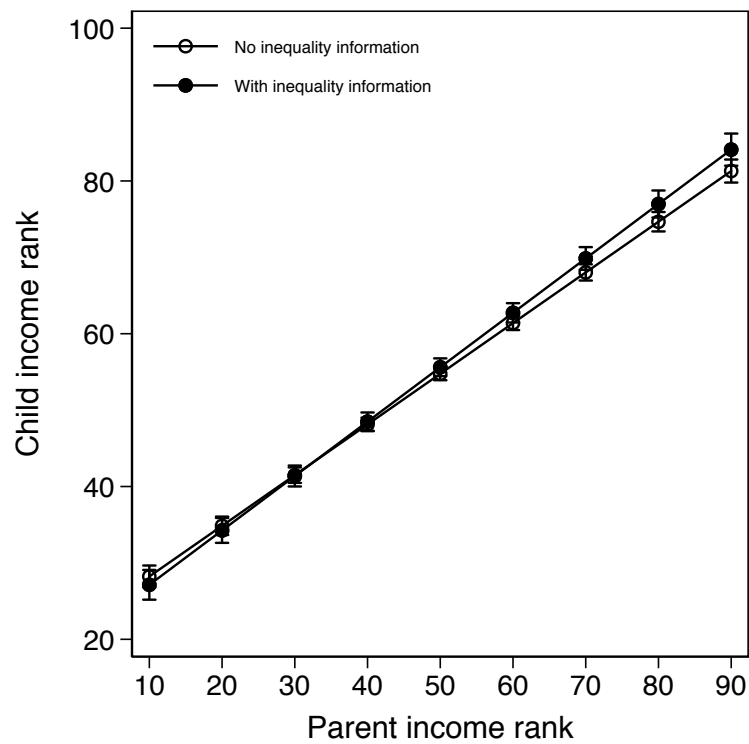


Fig. S15. Priming Information on Income Inequality is Presented to the Respondent.



**Fig. S16.** Perceived Rank-rank Relationship With and Without Information on Income Inequality.

NOTE: The information on income inequality is presented to the respondents as a text statement, along with a graphic illustration, that demonstrates the household income for families at the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> percentiles of the income distribution. The differences between the rank-rank intercept and slope in experimental conditions with and without the information provision are not statistically significant at the 5% level.

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