

EQUALITAS Working Paper No. 77

Choosing or Inheriting the Joneses: The origins of reference  
groups

Martín Leites

Camila Paleo

Xavier Ramos

Gonzalo Salas

September, 2022

# Choosing or Inheriting the Joneses: The origins of reference groups\*

Martín Leites <sup>a</sup>

Camila Paleo <sup>b</sup>

Xavier Ramos <sup>c</sup>

Gonzalo Salas <sup>d</sup>

<sup>a</sup> IECON (Universidad de la República) and EQUALITAS. e-mail: martin.leites@fcea.edu.uy

<sup>b</sup> IECON (Universidad de la República). e-mail: camila.paleo@fcea.edu.uy

<sup>c</sup> Universitat Autònoma de Barcelona, IZA, and EQUALITAS. e-mail: xavi.ramos@uab.cat

<sup>d</sup> IECON (Universidad de la República) and EQUALITAS. e-mail: gonzalo.salas@fcea.edu.uy

## Abstract

Do individuals choose their reference groups, i.e. their Joneses, or are they culturally transmitted across generations? We provide evidence that feeds the theoretical debate about the endogeneity or exogeneity of reference groups. Our findings for Uruguay suggest that reference groups are largely transmitted across generations. We also find individuals to have multiple reference groups and these to be context-specific. Our results are robust to several checks and to endogeneity issues.

*Keywords:* Intergenerational transmission; reference group; income comparisons.

*JEL codes:* D31, D62, D63, Z13.

---

\*This research was funded by the Clemente Estable 2018 Agencia Nacional de Investigación e Innovación (ANII) - grant FCE\_3\_2018\_1\_149516.

# 1 Introduction

Interpersonal comparisons or relative concerns are a key element to understand individual behavior. People compare with others to self-evaluate their wellbeing or their job satisfaction (Easterlin, 1974, 1995; Clark and Oswald, 1996), measure their opinions and abilities (Festinger, 1954), form income prospects (Hirschman and Rothschild, 1973), gain access to better information (Heffetz and Frank, 2011), decide about consumption baskets (Frank, 1985; Charles et al., 2009; Kaus, 2013; Heffetz and Frank, 2011), make effort or labor supply decisions (Boskin and Sheshinski, 1978; Piketty, 1998; Postlewaite, 1998; Bowles and Park, 2005; Austen-Smith and Fryer, 2005; Cullen and Perez-Truglia, 2022), and to form preferences (Heffetz and Frank, 2011; Bowles, 1998) or attitudes towards inequality or fairness (Fehr and Schmidt, 1999, 2003; Clark and D'Ambrosio, 2015; Cojocar, 2014). More generally, reference groups are a source of norms, attitudes, values, tastes, and preferences (Merton, 1968; Clark and D'Ambrosio, 2015).

Despite its relevance, previous empirical work is scarce and has focused on describing which are the relevant reference groups, paying very limited attention to understanding how reference groups are formed. There are different hypothesis about how people form their reference groups. While some scholars argue that individuals actively choose their reference groups, i.e. reference groups are endogenous, other authors contend that the relevance and composition of reference groups is exogenously determined by the social context where people live and by cultural transmission from parents to children.

Providing empirical evidence about the endogeneity or exogeneity of reference groups is crucial to understand preferences, aspirations, and behavior. Piketty (2000) and Bourguignon et al. (2007) emphasize this aspect to explain the persistence of inequality, by stressing the relevance of sociocultural inequalities and their effects through the transmission of preferences and beliefs. These mechanisms could generate mobility traps and also efficiency losses in aggregate well-being. Therefore, understanding how they work is ultimately relevant to gain a better understanding of the trade-off between inequality and efficiency.

We examine whether parents transmit their preferences for status to their offspring by estimating, for the first time, the intergenerational transmission of reference groups. That is, we explore whether reference groups are exogenously determined.

We study young individuals who are about 20 years old and their mothers.<sup>1</sup> Evidence about the formation of reference groups at this age is especially relevant because, as argued by the "hypothesis of impressionable years", this is a crucial stage of life during which individuals form beliefs that are unlikely to vary significantly in later stages (Inglehart and Baker, 2000).

We use data for Uruguay, from the Longitudinal Welfare Study in Uruguay (ELBU, by its Spanish acronym), a unique panel data set, which includes tailor-made questions designed to investigate what are the reference groups and how they are formed. Besides the relevant questions on intensity (how much) and direction (with whom) of income comparisons, the ELBU includes a rich set of control variables of children, their mothers, and the family. Key to our study, mothers can be matched to their children to examine the intergenerational transmission of reference groups.

We find a strong and robust association between the answers of mothers and their offspring, which provides supporting evidence in favor of the view that exogenous factors are responsible for the im-

---

<sup>1</sup>We only consider mothers in the main part of the paper because we have a very reduced number of fathers in the sample. This notwithstanding, we report estimates for fathers in the Appendix, which should be taken with caution given the small sample size and the possibility of self-selection.

portance and type of reference groups people compare with. The intensity and direction of mothers is always the most important determinant of their children’s reports about intensity and direction of comparisons. Furthermore, we also find little evidence on possible sources of endogeneity in the formation of reference groups, as the vast majority of the covariates we include in the regressions, which comprise children’s characteristics and family variables, are not statistically significant. Gender matters. As it also happens with the transmission of some preferences and values, the transmission of reference groups from mothers to daughters is larger than from mothers to sons.

Our baseline results come from individual/household fixed effects models that control for family-invariant characteristics. Our findings on the intergenerational transmission of reference groups are robust to several robustness checks. First, our conclusions hold when we saturate our specifications with a large set of maternal and own control variables. They are also robust to issues of endogeneity due to measurement error in the variables that measure the intensity and direction of mothers’ comparisons, reverse causality, or the omission of relevant variables. To address these concerns, we estimate the intergenerational association using the questions originally used by Clark and Senik (2010), for mothers, and we use the Obviously Related Instrumental Variables model by Gillen et al. (2019). Finally, our results are not sensitive to randomizing mother and household characteristics. This ensures that our intergenerational estimates are not spuriously driven by similarities in observable characteristics between mothers and children or by a correlation between generations.

We contribute to several strands of the literature. First, our findings about the importance of the family in the formation of reference groups informs the literature, mostly theoretical, that inquires whether reference groups are endogenous or exogenous (Falk and Knell, 2004; Bisin and Verdier, 1998). Second, the strong intergenerational transmission of reference groups we find in our sample contributes to the empirical literature on the intergenerational transmission of norms, preferences, and values, which increases our understanding of the persistence of inequalities and poverty (Dohmen et al., 2012; Fernández et al., 2004). Third, our paper also contributes to the literature on interpersonal comparison in at least two directions. First, we provide new evidence about individuals’ heterogeneity on the direction and intensity of comparisons. Our results suggest that people compare with several groups with different intensities. Second, we show for the first time that both intensity and direction of income comparisons are context-specific. Individuals compare with different people and with different intensity when their income falls for exogenous reasons, a crisis, than when they decide about the wage they would like to receive in a new job offer. Previous papers (e.g. Clark and Senik, 2010) ask individuals about their reference groups in a general manner, as if context did not matter. We show it does.

The rest of the paper is organized as follows. Section 2 outlines the arguments that explain why the origin of reference groups are thought to be endogenous or exogenous. Section 3 describes the data and our variables of interest. We provide extensive descriptive statistics to show with whom and with what intensity mothers and children compare. Section 4 explains our empirical strategy. Section 5 presents our main results while Section 6 presents robustness checks and sensitivity analysis. Finally, section 7 includes some final remarks.

## **2 Is the formation of reference groups endogenous or exogenous?**

Evolutionary theories posit that we humans have ‘hardwired’ in ourselves certain preferences that promote survival. Social status, understood as the relative position of an individual in a group, is likely

to be one such preference, as top-ranked members tend to fare better than others –this also applies to animals similar to humans, such as apes and chimpanzees. It would thus be natural for humans to be genetically programmed to care about their relative position in groups they belong to (Postlewaite, 1998). Our ancestors lived in communities with simple social structures and the community was likely to be the sole relevant social group. Modern societies are much more socially complex and social status is related to the relative position of individuals in more than one social group. Moreover, we know that social groups are not the same across individuals. The question then is how social groups are formed or determined? Previous theoretical work has convincingly argued that reference groups are, at least partly, chosen by the individual, and has also provided compelling reasons to believe that individuals do not entirely control and choose with whom they compare. In this section we outline the main arguments that explain why reference groups may be endogenous or exogenous.

### **Endogenous origins of reference groups**

Several economic models assume that the choice of reference groups responds to individuals' optimization decisions, which can be interpreted as rational choices within the traditional human capital investment framework (Becker and Tomes, 1986; Falk and Knell, 2004; Austen-Smith and Fryer, 2005). In these models, the choice of reference groups responds to individual preferences, aspects of social psychology, or the presence of strategic behaviors (Falk and Knell, 2004; Heffetz and Frank, 2011; Clark, 2012; Clark and D'Ambrosio, 2015).

For instance, drawing on findings from social psychology, Falk and Knell (2004) introduce a social comparison model where people actively choose their reference standards to serve motives of self-enhancement and self-improvement. In the model, individuals maximize their utility by finding a good balance between comparing with others that are inferior to feel better (self-enhancement purposes) and comparing with high or demanding reference standards, which helps them do better (self-improvement purposes).

While these models stress the active choice of individuals in the formation of reference groups, they also acknowledge that individual choice is restricted by contextual factors, exogenous to the individual, such as the social environment –that results from the type of political and social institutions or the prevalent social norms and values– or the availability of information (Diener and Fujita, 1997).

### **Exogenous origins of reference groups**

One exogenous determinant of offspring's reference groups is the intergenerational transmission of the reference groups of the parents. Bisin and Verdier (1998) assume that part of the preferences and values of children are not deliberately chosen by them but are rather instilled by their parents. They argue that in the transmission of preferences, social norms, and ideological attitudes down to their offspring, parents are biased towards their own preferences. This helps explain the persistence of cultural traits. We contend that reference groups belong to the set of cultural traits parents care about and want to preserve. Because of this we expect the reference groups parents compare with to be correlated with the reference groups their children compare with. That is, we expect to find intergenerational persistence of reference groups in our empirical analysis.

Intergenerational transmission is not the only exogenous source of reference group formation. The social environment where individuals grow up has also been argued to condition individuals' norms, values, preferences and behavior. The impact that neighborhoods have on individuals results from

social interactions, or peer imitation (Katz et al., 2001). These mechanisms also shape, in an exogenous way, the reference groups of individuals.

Much the same way as we noticed above that exogenous factors are known to influence the decisions of individuals when choosing their reference groups, some individuals are able to break away from socially pre-established reference groups. ‘Acting white’ is a good example. Minority communities or groups that are discriminated against often impose cost on their members who adopt behaviors that are identified with the discriminating group, regardless of the beneficial consequences that such behavior may have on the own individual. For instance, black peers exert strong pressure on their community members who decide to invest in education because this is a behavior socially identified with the white community. Despite this, an increasing share of black individuals have aspirations that are typically identified with the white community and pursue post-compulsory education at the expense of feeling rejected by their community (Austen-Smith and Fryer, 2005).

Putting the above arguments together, it becomes clear that the origin of reference groups is likely to be partly endogenous (genuinely decided by individuals) and partly exogenous. The main aim of this paper is to examine empirically whether and the extent to which parents transmit their own reference groups down to their offspring, which is an exogenous determinant of the formation of reference groups.

### **3 Data and main variables**

#### **3.1 The Longitudinal Welfare Study in Uruguay**

This paper uses data from the third and four waves of the Longitudinal Welfare Study in Uruguay (ELBU, by its Spanish acronym), collected in 2011/12 and 2016/17, respectively. The ELBU interviews a sample of mothers whose children attended the first year of public school in Uruguay (85% of the cohort) in 2004, when the first wave went to the field. To study the intergenerational transmission of reference groups we exploit the information reported by the offspring, aged about 18 years, who were interviewed in the fourth wave for the first time since the ELBU started. The dataset includes socioeconomic characteristics, personality traits of the mothers and offspring and information of the offspring best friends as reported by the offspring. This broad set of controls will help us identify the intergenerational transmission of reference groups. Summary statistics of these variables are included in Appendix Table A2.

#### **3.2 Intensity and direction of interpersonal comparisons**

The fourth wave of the ELBU includes two questions that capture the intensity and direction of income comparisons. Inspired by Duesenberry (1967), to investigate whether comparisons are context-specific, the questions are framed in two different economic situations: Respondents answer the comparison questions when presented with an attractive Job Offer (that we will refer to as ‘Job Offer’ hereafter) and of an own income decrease (‘Economic Crisis’). In the Job Offer scenario, the survey question reads: "Imagine that you get an offer of a permanent full-time job that you like. Your potential employer asks you to indicate the wage you are willing to receive. For each of the following items, please indicate in a scale from 1 to 10 (where 1 is very little and 10 is a lot) how true it is that you would consider, in your proposal, the wage of [reference group]", where the possible reference groups are:

friends, family, neighbors, people with the same job profile, and union workers.<sup>2</sup> In the Economic Crisis scenario, respondents are asked: "Imagine that there is an economic crisis and your household income is reduced. Indicate on a scale from 1 to 10 (where 1 is very little and 10 is a lot), how true it is that your economic satisfaction would be affected if your income falls below the income of [reference group]", where possible reference groups are the same as in the Job Offer scenario. It is important to note that respondents are allowed to choose more than one reference group in their answers, i.e. social groups are not mutually exclusive. This is an important feature of the questions we use, which distinguishes them from previously used questions (e.g. Clark and Senik (2010)). Obviously, respondents also have the possibility to choose different reference groups across the two economic scenarios. Appendix Table A1 shows the wording of every possible response to the two questions. While the above social groups represent external benchmarks, the ELBU also includes an internal benchmark (own past income) for mothers only.

Besides the raw individual intensity reports for each one of the reference groups, we also measure the intensity of comparisons in two additional ways. A first measure computes the maximum value of the answers of each respondent across all the external reference groups, for the Job Offer and Economic Crisis scenarios separately. We will refer to this as the highest-intensity measure. Unlike the raw individual intensity reports, this measure summarizes the intensity of comparison across groups for each individual. Following Friehe et al. (2018), a second measure indicates the number of external groups for which the following two conditions are satisfied: (i) the reported value is greater than 7, and (ii) the former value is also the maximum intensity across all options. That is, this measure considers that a person does not compare at all if she does not report a value higher than 7 for any of the groups.<sup>3</sup> We will refer to this as the number-of-high-intensity-groups measure. This measure of intensity captures the idea that an individual may have several status groups (Weiss and Fershtman, 1998). Table 1 shows the percentage of mothers and children that compares with each group, according to the second measure explained above, i.e. we consider that a person compares to a group if the intensity of income comparison reported for that group is larger than 7. Since answers are not mutually exclusive, individuals will have more than one comparison group whenever the maximum value is the same for more than one group (and larger than 7). That is, columns in Table 1 add up to more than 100. In each case, the Table distinguishes children according to their sex, and mothers according to whether they are unemployed or not.

Labor related groups dominate when the scenario is about a Job offer and the relevant outcome is labor income. The reference group composed of people with the same profile (education and experience) predominates while the second most preferred reference group is that of union workers. This result is confirmed for all children (regardless of their sex). In the case of mothers, labor related groups dominate among those who work. Among unemployed women, the family gains greater relevance in

---

<sup>2</sup>There is only one trade union in Uruguay, that negotiates the working conditions of workers through collective bargaining. Collective agreements are set at industry level and one of the important issues that such agreements establish is the minimum wage employers should pay. Thus, respondents may take the wage level set by these collective agreements as reference points when they respond the question.

<sup>3</sup>Respondents are allowed to answer that they do not compare at all. However, we do not use this answer because we contend that it was misunderstood both by interviewers and respondents. Interviewers misunderstood the answer as many of them entered a value of zero to the option 'I do not compare' when respondents reported comparing with any of the groups available. Note that the minimum value allowed in this question is one, so interviewers mistook when they entered a value of zero to the option 'I do not compare'. In turn, respondents misunderstood the question when they assigned the same (positive) value to one of the possible reference groups and to the option 'I do not compare'. These two answers should go in opposite directions. Respondents may have been confused by the double negation nature of this option.

detriment of the union.

Results differ when the scenario is of Economic Crisis and the relevant outcome is household income. Now what we call social groups (family, friends, neighbors) are more relevant than labor related groups (same profile and union workers). Family is the most relevant comparison group while the group “people with the same profile” comes second and continues to be one of the groups with whom individuals compare the most. The proportion of individuals that compares with any of the groups is usually somewhat larger for children than for mothers. Overall, a bit less than half the mothers and the children report comparing with high intensity with at least one group. Finally, unlike the Job Offer scenario, when the scenario is of Economic Crisis, the comparison group of the mothers is insensitive to their employment status.

Table 1: Percentage of children and mothers who identify with the different comparison groups. Job Offer and Economic Crisis scenarios

	Job Offer						Economic Crisis					
	Children			Mothers			Children			Mothers		
	All	Fem.	Male	All	Empl.	Unemp.	All	Fem.	Male	All	Empl.	Unemp.
	<i>Social groups</i>											
Friends	10.2	9.6	10.7	9.1	9.1	9.0	15.4	14.2	16.7	12.6	12.3	13.5
Neighbors	2.6	2.7	2.5	3.2	3.2	3.4	3.5	3.0	4.1	5.7	5.7	5.6
Families	12.5	13.6	11.3	8.6	7.2	12.4	26.8	31.9	21.4	23.5	24.2	21.9
	<i>Labor-related groups</i>											
Same profile	34.5	34.9	34.0	33.1	32.8	33.7	23.4	22.9	23.9	27.7	27.1	29.2
Union	14.6	13.3	16.0	14.0	15.5	10.1	11.4	9.6	13.2	15.1	15.5	14.0
Does compare	47.4	48.2	46.5	44.2	45.3	41.0	46.5	47.3	43.4	46.3	47.0	44.4
Does not compare	52.6	51.8	53.5	55.8	54.7	59.0	53.5	52.7	56.6	53.7	53.0	55.6

Individuals are considered to compare with a given group if they report a value greater than 7 and this is also the maximum value they report across all groups. This means that individuals may compare with more than one group. Note that if individuals report values greater than 7 for some groups but these are not the maximum values they report (i.e. they report larger values for other groups), they will not be considered to compare with the former groups

Figure 1 shows the distribution of the highest-intensity measure, i.e. the maximum value reported across the external benchmarks, by mothers and children separately, for both scenarios. The distribution is similar in both scenarios for mothers and children, having a mode at the lowest score and large mass at scores larger than 7 –the mass being monotonically increasing as intensity scores increase. Additionally, the mass at score 5 is larger than the mass at any of the other remaining scores (2, 3, 4, 6, 7). The average Highest-intensity measures (not shown) are 5.5 and 5.8 for mothers and children, respectively. We also find that the distribution of mothers’ responses is insensitive to their own employment status.<sup>4</sup>

<sup>4</sup>Due to space constraints the corresponding distributions by mother’s employment status are not reported, but they are available upon request from the authors.



Figure 1: Distribution of the maximum intensity of interpersonal comparisons. Mothers and children, by scenario

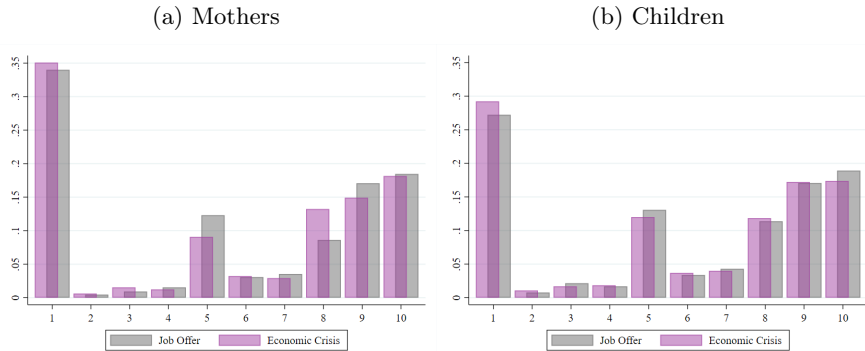
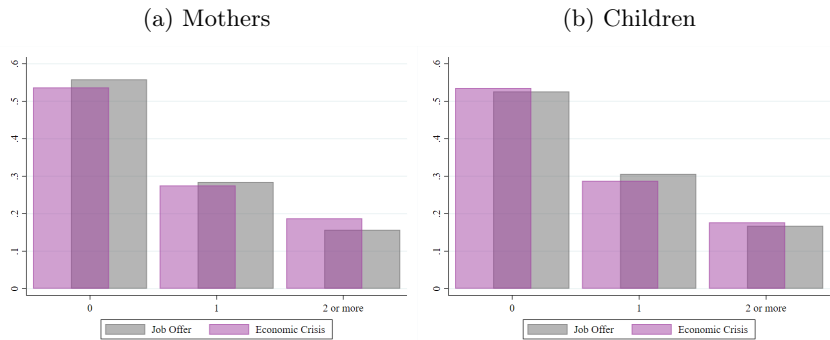


Figure 2 shows the distribution of the number-of-high-intensity-groups measure –recall that individuals can have more than one comparison group. Once again the distributions for children and mothers are similar. The Figure shows that a bit less than one fifth of individuals report comparing with more than one group. These shares are similar by type of respondent (mothers or children) and by scenario, and represent a bit less than half the individuals who report comparing at all. This shows that when studying the direction of income comparisons it is important to use survey questions that allow respondents to pick more than one group.

Figure 2: Distribution of the number of groups with which mothers and children compare, by scenario



Note: The value 0 corresponds to the option *Does not compared* in Table 1.

Do reported intensity scores of different comparison groups follow any pattern? In its upper-left (Job Offer scenario) and its bottom-right (Economic Crisis scenario) quarters, Figure 3 shows that correlations between intensity scores are neither very large –typically lower than 0.6– nor very small – usually larger than 0.3. There are three patterns worth noting. First, correlations between comparison groups are larger for the Economic Crisis scenario than for the Job Offer scenario. Second, ‘family’ is the most complementary comparison group, as it systematically shows larger correlations with the other comparison groups than any other group. Finally, correlations between different comparison groups are very similar for mothers and children.

Figure 3: Correlations between comparison groups



Note: Colors indicate the size of the correlation: light blue if [0.1 to 0.3]; grey-green if (0.3 to 0.4); lilac if  $> 0.4$ . All coefficients are significant at 1%.

### 3.3 Is intensity and direction of comparisons context-specific?

Previous empirical studies that seek to elicit the groups individuals compare with and the intensity of such comparisons share two features: they study comparisons in one outcome variable only, and use questions that are framed in a general setting and not in a particular context. For instance, Clark and Senik (2010) study only income comparisons while Friehe et al. (2018) look only at gross labor income comparisons. None of the two papers provide any detail about the context of the comparisons.

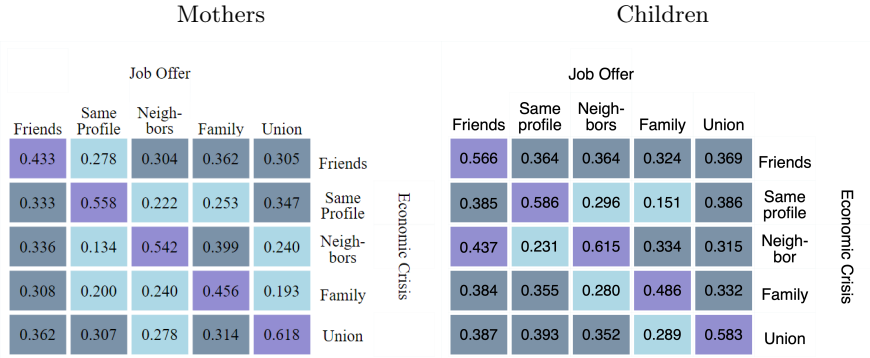
Our study looks at both household income and individual labor income comparisons for the same individuals, and does so in two different situations: in a context of a decrease in household income and of a (possible) increase in individual labor income. This allows us to study whether individual comparisons differ for different outcomes and whether they are context-dependent. However, given the structure of the questions, we cannot separately identify the effects of studying a different outcome from that of using a different setting.

Figure 4 shows correlations between intensity scores across the two scenarios, for mothers (panel (a)) and children (panel (b)). The diagonal of this matrix shows that individuals do not report the same intensity for the same comparison groups in both scenarios (perfect consistence implies that all diagonal cells are equal to 1). Notwithstanding this, the correlations shown in the diagonal are positive and sizable, which shows a certain consistency in the answers and suggests that we are capturing the same object.<sup>5</sup> We also observe that the correlation of reported intensity scores between different

<sup>5</sup>Precisely because of this, in Section 6.2, we use the answer in one of the scenarios as instrument for the answer of the same comparison group in the other scenario to address measurement error issues.

comparison groups is larger when the comparison corresponds to the same scenario than when they apply to different scenarios (compare Figures 3 and 4).

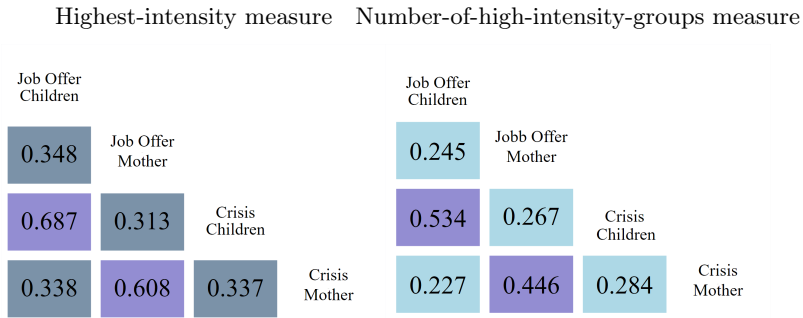
Figure 4: Correlations between comparison groups. Job Offer and Economic Crisis



Note: Colors indicate the size of the correlation: light blue if [0.1 to 0.3]; grey-green if (0.3 to 0.4); lilac if > 0.4. All coefficients are significant at 1%.

Next we examine the relationship between the highest intensity reported across all groups by mothers and children in both scenarios. As Figure 5 shows, in the Highest-intensity measure, the largest correlations (about 0.6) are between answers of the same type of respondent across scenarios (for instance, children in the Job Offer and children in the Economic Crisis scenario). Correlations between mothers and children are much lower (about 0.3), irrespective of the scenario. The correlations are slightly lower for the number-of-high-intensity-groups measure. For example, in the case of the same respondent between scenarios, it is around 0.5.

Figure 5: Correlation of intensity scores. Mothers and Children, Job Offer and Economic Crisis



Note: Colors indicate the size of the correlation: light blue if [0.1 to 0.3]; grey-green if (0.3 to 0.4); lilac if > 0.4. All coefficients are significant at 1%.

Using the number-of-high-intensity-groups measure, Table 1 above suggests that individuals use different comparison groups depending on the scenario they face: Labor-related groups are more predominant in the setup where individuals have to decide about their labor income and social groups are more important when individuals face a fall in household income. Table 2 provides further evidence about this. When we examine the percentage of individuals who report lower, the same, or higher intensity in one scenario than in the other, we find out that a larger share of individuals compare with higher intensity with labor-related groups when they have to decide about their labor income

and a larger share of individuals compare with higher intensity with social groups when they face a fall in household income. This is true both for mothers and children. It is also worth noting that it is always a minority of individuals who report different intensity across both scenarios. More than half the individuals report the same intensity score in both scenarios.

Table 2: Share of individuals reporting different or the same intensity scores, by comparison group. Mothers and children. Job Offer and Economic Crisis

	Job Offer		Same	Economic Crisis		Total
	4 or more	1 - 3		1 - 3	4 or more	
(a) Mothers						
Friends	1.08	4.00	58.46	14.00	22.46	100.0
Neighbors	-.	1.38	73.23	13.08	12.31	100.0
Family	-.	0.92	46.77	14.46	37.85	100.0
Same profile	4.00	6.92	59.23	13.85	16.00	100.0
Union	2.00	3.08	65.38	12.77	16.77	100.0
Highest-intensity measure	1.38	5.54	56.31	19.08	17.69	100.0
(b) Children						
Friends	8.15	9.38	57.69	10.62	14.15	100.0
Neighbors	3.23	7.38	76.00	7.85	5.54	100.0
Family	3.54	5.85	53.69	12.92	24.00	100.0
Same profile	17.23	14.46	52.62	9.08	6.62	100.0
Union	11.54	9.08	62.92	8.00	8.46	100.0
Highest-intensity measure	9.69	14.15	55.23	13.08	7.85	100.0

The columns report the share of individuals whose reported intensity scores for one same comparison group differ across both scenarios by the amount indicated in the heading of the column. Columns 2 and 3 refer to cases where the score is larger in the Job Offer scenario than in the Economic Crisis scenarios, while columns 5 and 6 refer to the opposite cases.

In sum, individuals compare with different groups and with different intensity depending on the situation. In spite of this, to facilitate the presentation, in what follows we explore the intergenerational transmission of comparison groups using the Economic Crisis scenario and present results for the Job Offer scenario in the Appendix. This decision is also supported by the results that the Economic Crisis responses provide consistent information for all mothers and children, irrespective of their employment status.

## 4 Empirical strategy

### 4.1 Are reference groups exogenous? The role of intergenerational transmission

**Intensity** We use different strategies to estimate the intergenerational transmission of intensity of comparisons for the three measures of intensity described in Section 3.2.

The first empirical strategy we use exploits the availability of multiple responses from each child/mother pair to control for individual- and family-specific heterogeneity. To this end, we use the fixed effects model described in equation (1) to obtain an estimate of the intergenerational transmission of intensity of comparisons across all reference groups.

$$Int_{ch}^c = \beta \cdot Int_m^c + \gamma \cdot c + F_{ch} + \epsilon_{ch,c} \quad (1)$$

$Int_{ch}^c$  is the raw intensity report for group  $c$  of child  $ch$  and  $Int_m^c$  is the raw intensity report for

the same group  $c$  of the mother  $m$ .

Our parameter of interest is  $\beta$ , which measures the mother-children transmission. A  $\beta$  of zero means that there is no transmission of intensity of comparisons from mothers to children while a  $\beta$  of one implies perfect transmission, i.e. on average children compare with the same intensity as their mothers.  $F_{ch}$  is a child fixed effect, which captures the effect of all variables that are common to all comparison groups for each child, i.e. all variables that are specific to the children –such as sex, education, labor market status, aspirations, or personality traits– and also of shared family characteristics, such as neighborhood effects or shared external shocks. These fixed effects, thus, reduce issues of omitted variable bias. The  $\gamma$  parameter allows different intercepts per reference group.<sup>6</sup> Since  $Int_{ch}^c$  varies within each individual across all reference groups, we refer to it simply as “Intensity” when we present the results in Section 5.1. Note that the individual fixed effects in equation (1) do not permit identify the impact of individual-specific covariates, as these are constant within individuals. They are thus not included in the regression.

Since we only have one observation per mother/child pair, we use a different empirical strategy to examine the effect of the highest-intensity and the number-of-high-intensity-groups measures. We first estimate family fixed effects ( $F_h$ ), using the intensity measure both of mothers and children as dependent variable (see equation (2)), and then include the predicted family fixed effects from the first-stage regression into the intergenerational transmission equation (3).

$$Int_{i,h} = F_h + \mu_{i,h} \quad (2)$$

where  $Int_{i,h}$  denotes either the highest-intensity or the number-of-high-intensity-groups measures,  $i = \{ch, m\}$  refers to the child or the mother, and  $h$  refers to the family.

$$Int_{ch} = \beta' \cdot Int_m + \varsigma \cdot X_{ch} + \sigma \cdot X_h + \alpha \cdot X_m + \widehat{F}_h + \epsilon'_{ch} \quad (3)$$

Now, the parameter  $\beta'$  captures the intergenerational transmission (or the intergenerational persistence coefficient) of comparison intensity between mothers and children. Besides the predicted family fixed effects,  $\widehat{F}_h$ , regression (3) controls for a set of maternal variables,  $X_m$  –that includes educational level, marital status, and age–, a set of children’s variables,  $X_{ch}$  –that includes educational level, ethnic ancestry, personality traits, place where children report having met their main friends (neighborhood, educational institution, or other places), whether children are emancipated, and sex–, and household variables,  $X_h$  –that includes the log of per capita household income and region of residence. We discuss regression estimates in Section 5.1.

In order to size the bias we would introduce if we did not control for the unobservable individual and family fixed effects in equations (1) and (3), we estimate the intergenerational transmission coefficient from a specification without individual and family fixed effects, respectively. The latter equations are then analogous to the specifications typically used to estimate the intergenerational income elasticity (IGE).

**Direction** To examine whether mothers transmit the groups they like to compare with down to their children, we estimate equation (3) separately for each comparison group  $c$ . Now the dependent variable is the child’s report about how much she compares with group  $c$ . As in (3), the specification

---

<sup>6</sup>Since there is a mechanical relationship between the intercept and the relevant slope,  $\beta$ , allowing the intercept to vary across reference groups helps identify the average intergenerational transmission coefficient.

also includes family fixed effects, which are estimated from the first stage equation (4). We thus run 5 regressions, one per reference group.

Since now the intergenerational transmission is estimated for each comparison group, it is not possible to include individual fixed effects, as we did in equation (1). However, an alternative way to net out the effect of the individual-specific unobservable variables is to work with deviations from the individual mean. This is what we do to estimate equations (4) and (5), where we transform the direction variable by subtracting the average individual score across all groups from the individual score of each group,  $\tilde{Dir}_i^c = Dir_i^c - \frac{1}{5} \cdot \sum_c Dir_i^c$ .

$$\tilde{Dir}_{i,h}^c = F_h^c + \eta_{i,h} \quad (4)$$

$$\tilde{Dir}_{ch}^c = \beta'' \cdot \tilde{Dir}_m^c + \zeta' \cdot X_{ch} + \sigma' \cdot X_h + \alpha' \cdot X_m + \widehat{F}_h^c + \epsilon'_{ch} \quad (5)$$

Equation (5) includes the same controls as equation (3). We discuss the estimates of these regressions in Section 5.2.

## 4.2 Estimation procedure

We estimate equation (1) with fixed effects and cluster standard errors at family level. Equations (3) and (5) are estimated with OLS with robust standard errors. Results are presented in Section 5. Our estimation sample includes mothers and children with non-missing information for all the variables that enter the regressions. The estimation sample includes 648 observations (3,240 in the individual fixed effect estimation, corresponding to the five intensity reports). We do not claim causality as our OLS estimates of the  $\beta$ 's in equations (3) and (5) may face endogeneity problems due to issues of measurement error in parents' responses about their comparisons and reverse causality. Having said this, we present strategies to mitigate these potential concerns in Section 6.

## 5 Results

We present our results in three subsections. First, we discuss average intergenerational transmission estimates of intensity (section 5.1) and direction (section 5.2) of comparisons, and then we explore sources of heterogeneity in the transmission effects (section 5.3) —we look at sex, income, and region.

### 5.1 Intergenerational transmission: intensity of comparisons

This section explores the intergenerational transmission of the intensity of interpersonal comparisons using equations (1) and (3), and direct responses from both generations: mothers and their children. The estimated coefficients are presented in Tables 3 and 4 (we show full estimation results in Table A3 in the Appendix). The estimates of the persistence coefficients are based on the contemporaneous responses of the mother.

**Intensity measure.** Table 3 presents intergenerational transmission estimates of intensity of comparisons from equation (1). Average transmission of intensity is sizable, 0.380, and statistically significant when the intercepts of different groups are restricted to be the same, i.e.  $\gamma = 0$  —see column (3).<sup>7</sup> The

<sup>7</sup>Using random effects to estimate equation (1) yields an intergenerational transmission estimate of 0.364, half way between the OLS and the fixed effects estimates.

OLS estimate without controls (or with the basic controls we observe) is only slightly smaller, which suggests that unobserved individual heterogeneity does not (substantially) bias the intergenerational transmission estimate –see columns (1) and (2). Imposing the same intercept for all comparison groups seems to overstate the average transmission of intensity, because when we lift such restriction, the estimate falls to 0.282 –see column (4). Finally, column (5) indicates that intergenerational transmission estimates do not differ across groups. The transmission of intensity is only different (larger) for the group Family. We return to the discussion about the relevance of the direction of comparisons in the next section.

Average intensity in the Job Offer scenario has the same size as the intensity we find in the Economic Crisis scenario, when we include only individual fixed effects –see column (1a) in Appendix Table A4. However, when we allow intercepts and slopes to differ by reference group, the baseline average intensity in the Job Offer scenario is sensibly lower – see columns (2a and 3a) in Appendix Table A4.

Table 3: Intergenerational transmission. Intensity measure. Crisis scenario

	(1)	(2)	(3)	(4)	(5)
Mother’s Intensity	0.335*** (0.028)	0.333*** (0.028)	0.380*** (0.024)	0.282*** (0.025)	0.253*** (0.038)
Dummy by reference group (ref: Friends)					
Neighbors				-1.229*** (0.108)	-1.155*** (0.144)
Family				0.420*** (0.116)	-0.151 (0.157)
Same profile				0.518*** (0.124)	0.733*** (0.181)
Union				-0.451*** (0.111)	-0.431*** (0.144)
Intensity × Neighbors					-0.049 (0.045)
Intensity × Family					0.159*** (0.042)
Intensity × Same profile					-0.040 (0.040)
Intensity × Union					-0.004 (0.042)
Observations	3,240	3,240	3,240	3,240	3,240
$R^2$	0.114	0.120	0.143	0.220	0.231
Individual Fixed Effects	No	No	Yes	Yes	Yes
Other controls	No	Yes	No	No	No
Dependent variable: Mean 3.459; St. dev. 3.127					

This table shows estimates of equation (1). Dependent variable: score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers). \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. Robust standard errors are clustered at the family level. Full estimates are reported in Appendix Table A3.

**Highest-intensity measure and Number-of-intensity-groups measure.** Intergenerational transmission is also high and strongly significant with the other two measures we employed (see Table 4). The coefficient is 0.314 for the highest-intensity measure and 0.251 for the number-of-high-intensity-groups measure. These results are also robust to the inclusion or exclusion of controls and individual or family fixed effects.<sup>8</sup> This suggests that the intergenerational persistence coefficient is not driven

<sup>8</sup>To include individual fixed effects in equation (3), we use the predicted individual fixed effects from equation (1). We find that estimates that control for individual or family fixed effects are similar and not statistically significantly

by shared characteristics at the household level.

In Table A4 in the Appendix, we present intergenerational transmission of intensity of comparisons estimates for the Job Offer scenario. The estimates suggest that the intergenerational transmission of intensity is similar in both scenarios.

Some authors argue that finding comparison groups to depend on individual characteristics is indicative that the former are partly endogenous (Falk and Knell, 2004; Clark and Senik, 2010). We include a rich set of covariates in our regressions and find very limited support for this argument, as all our control variables are not statistically significant –with the exception of being emancipated. It is worth noting that this lack of significance of control variables on children’s intensity of comparisons is not driven by a possible correlation between these controls and mothers’ intensity of comparisons, for when we exclude the intensity variable of the mother from our specification, results remain largely unchanged (compare columns (1a) and (1b) with (3a) and (3b) in Appendix Table A3).<sup>9</sup>

Table 4: Intergenerational transmission of intensity of income comparisons. Crisis scenario

	Highest-intensity measure			Number-of-high-intensity-groups measure		
Mother’s Intensity:	0.323*** (0.037)	0.322*** (0.037)	0.314*** (0.039)	0.261*** (0.049)	0.260*** (0.050)	0.251*** (0.051)
Observations	648	648	648	648	648	648
$R^2$	0.114	0.120	0.132	0.080	0.083	0.097
Family Fixed Effects	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes
Dependent variable:						
Mean		5.792			0.807	
St. dev.		3.551			1.160	

This table shows estimates of equation (3). Dependent variables are: Highest-intensity measure is the largest score reported across all groups (friends, neighbors, family, people with the same professional profile, and union workers); Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. The set of other control variables include log of per capita household income, highest educational level, gender, ethnicity, emancipated, labor market status, Region of residence, Big Five Inventory, and where met 1st friend. Coefficient estimates of these variables are reported in Table A3 in the Appendix. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

The size of our estimated coefficients on intergenerational persistence of comparison intensity is similar to the estimated transmission of other preferences. For example, using a similar sample of the ELBU, Leites and Salas (2019) find a similar intergenerational persistence of preference for redistribution. Our estimates are also comparable with the estimates of Dohmen et al. (2012) about the intergenerational transmission of risk attitudes and trust, and are larger than those found by Giavazzi et al. (2019), who study the intergenerational transmission of a set of preferences and attitudes for US immigrants.

different from OLS estimates reported in Table 4. Family fixed effects are positive and significant when we use the highest-intensity measure but not when we use the number-of-high-intensity-groups measure –see Appendix Table A3.

<sup>9</sup>Our estimation sample includes only mothers as we have a very reduced number of fathers in the sample, only 70 of them. Table A5 in the Appendix shows that the correlation between the intensity of comparison of fathers and their children is larger (about 0.50, significant at 1%) than the estimated one for mothers. At face value, this would suggest that the transmission of intensity of comparisons is larger for fathers than for mothers. However, this result should be taken with caution as our sample of fathers is very likely to be self-selected, possibly with fathers that devote more raring time to their children, and this may be correlated with the transmission effect we are estimating. Since we do not have information to correct for this sample selection of fathers, we have dropped them from our estimation sample. Such self-selection is unlikely to occur among mothers, as our sample contains a large proportion (85%) of the universe of mothers whose children attended the first year of public school in Uruguay in 2004.



## 5.2 Intergenerational transmission: direction of comparisons

Now we focus on the transmission of the direction of comparisons from mothers to children. To this end, we estimate equation (5) for each one of the five reference groups. Table 5 shows the results for the Crisis scenario. Appendix Tables A6 and A7, report the full set of estimates for each comparison group in both scenarios. Recall that the dependent variable is now the standardized individual score for the relevant reference group (i.e. absolute deviations from the individual score average across all five groups).

The positive and significant estimates indicate that there is intergenerational transmission of reference groups. In other words, the groups mothers choose to compare with are related to the groups their children compare with. The transmission of reference groups is not the same for all groups, as persistence estimates are larger for Family (0.396) and Neighbors (0.323). Our estimates, thus, provide evidence that supports the idea that the selection of reference groups is partly exogenous, as mothers' preferences condition their children's choices.<sup>10</sup>

Do we find some evidence about the endogeneity of reference groups? As we find when we examine intensity of comparisons above, the large set of covariates in our regressions are usually not statistically significant.<sup>11</sup> We thus find no indication of any endogenous origin of the formation of reference groups (Falk and Knell, 2004; Clark and Senik, 2010). As above, the statistical insignificance of control variables is not driven by a possible correlation between these controls and mothers' comparison reports, for when we exclude the comparison variable of the mother from our specifications, results remain largely unchanged.<sup>12</sup>

Also, once again, the transmission of reference groups is not driven by shared family characteristics at the household level, as transmission estimates are robust to the inclusion of family fixed effects (compare the two columns for each group in Table 5).

---

<sup>10</sup>Recall that our estimation sample includes mothers only, as a reduced sample of fathers available in the ELBU is likely to be self-selected. This notwithstanding, we show results for the sample of fathers in Table A5 in the Appendix. Results indicate that the transmission from fathers to their children is only present for three of the five groups (Neighbors, Family, and Same Profile), but in these three cases, persistence is larger than the estimated persistence from the sample of mothers.

<sup>11</sup>See Tables A6 and A7 in the Appendix. Only two personality traits (agreeableness and conscientiousness) show significant effects on some of the groups. Some covariates are significant for specific groups, for example, sex in Family, region of residence in Union, and household income in Neighborhood. Family fixed effects are only statistically significant when the comparison group is the neighbors.

<sup>12</sup>These results are not reported but available upon request.

Table 5: Intergenerational transmission of direction of income comparisons. Crisis scenario

	Social groups				Labor-related groups							
	Friends	Neighbors	Family	Same profile	Union							
Mother's direction	0.138*** (0.050)	0.149*** (0.049)	0.349*** (0.049)	0.323*** (0.050)	0.425*** (0.042)	0.396*** (0.041)	0.205*** (0.043)	0.201*** (0.043)	0.197*** (0.042)	0.231*** (0.041)	0.231*** (0.041)	0.211*** (0.043)
Observations	648	648	648	648	648	648	648	648	648	648	648	648
$R^2$	0.017	0.053	0.101	0.108	0.190	0.243	0.046	0.048	0.091	0.061	0.061	0.082
Family Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	Yes
Other controls	No	No	No	Yes	No	Yes	No	No	Yes	No	No	Yes
Dependent variable:												
Mean	0.074	-1.419						0.973				-0.321
St. dev.	1.723	1.813						2.223				1.853

This table shows estimates of equation (5). Controls are the same as in Table 3. Estimates of the controls are reported in Appendix Table A6. Dependent variable: Standardized individual scores. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Since two of the five reference groups individuals can choose from are related to the labor market (i.e. Same Profile and Union), the intergenerational transmission of reference groups may differ according to the labor status of the mother. To check this, Table A9 in the Appendix presents estimates of equation (5) for each reference group by mother’s employment status. We find that intergenerational persistence estimates are not always larger for employed mothers, implying that the transmission of labor-related reference groups is not always larger when mothers are employed. Transmission of labor-related groups is larger in the Economic Crisis scenario, but then the transmission is also larger for social groups. Results are less clear in the Job Offer scenario, where transmission is larger among employed mothers when the reference groups is individuals from the same Union, but is smaller when it comes to individuals with the same labor market profile (i.e. same experience and qualifications). Note however that given the small sample sizes, differences across subsamples are usually not statistically significant.<sup>13</sup>

In sum, we find strong evidence of intergenerational transmission of reference groups, as mothers’ choices and intensity affect with whom and how much their children compare. The maternal comparison groups are the only variables in our regressions that systematically affect the direction and intensity of children’s comparison groups. This suggests that the formation of reference groups is partly exogenous. We also find little evidence on the possible sources of endogeneity in the formation of reference groups, as the vast majority of the covariates we include in the regressions, which comprise children’s characteristics, maternal characteristics, and family variables, are not statistically significant. Only some personality traits of children are relevant, and when they are, they are so for some reference groups only.

The results we have reported so far are average effects. In the next section, we explore whether the intergenerational transmission of reference groups differs across relevant population subgroups.

### 5.3 Heterogeneity in the formation of reference groups

Previous work indicates that the gender of the parent and of the offspring matters in the intergenerational transmission of certain preferences and tastes. This literature emphasizes the influence of nurture in the formation of gender identities and the importance of intergenerational transmission for gender attitudes and behaviors (Bütikofer, 2013; Farré and Vella, 2013; Morrill and Morrill, 2013; Fernández and Fogli, 2009; Fernández et al., 2004). Another strand of the literature documents differences in the intergenerational correlation between sex. For instance, Lundberg (2005) finds that parents tend to invest more in children of the same sex, which would lead to a higher correlation in achievements in the labor market. However, the evidence on this point is ambiguous, and suggests that the results of sons and daughters are correlated with the abilities of both the father and the mother (Gronqvist et al., 2017).

We first explore whether the transmission of reference groups is more pronounced between mothers and daughters or between mothers and sons.<sup>14</sup> Then, we analyze if there are heterogeneous results according to household income, region of residence, and emancipation status of the child. To this end, we estimate the intergenerational transmission of intensity (eqs. (1) and (3)) and direction (eq. (5)) of

---

<sup>13</sup>When we summarize all the comparison scores into a single measure of intensity, and using Highest-intensity and Number-of-high-intensity-groups measures, we find that the intergenerational persistence of intensity comparisons is larger for non-employed than employed mothers. The opposite happens when considering Intensity measure. Note, however, that given the small sample sizes, differences across subsamples are usually not statistically significant –see Table A8.

<sup>14</sup>Recall that we also examine transmission from fathers (as opposed to mothers) to children in Appendix Table A5.

the comparisons for daughters and sons separately. We do the same for individuals below and above-median income, for individuals living in the capital city (Montevideo) and the rest of the country, and children still co-residing with their parents or already emancipated.

Point estimates of the intergenerational transmission of intensity are higher for daughters than for sons –see Table 6. The difference is economically and statistically relevant when using the intensity measure. The intergenerational transmission is 33% higher among daughters than among sons. However, the difference in means tests shows that the difference in point estimates for the other two measures of intensity cannot be taken at face value, as we cannot reject the null hypothesis that both estimates are equal.

The transmission of intensity does not seem to differ by income level. Only the highest-intensity measure shows larger persistence estimates among low-income individuals. Differences for the other two intensity measures across income groups are small in size and statistically insignificant.

We also find the intergenerational transmission of intensity to be larger outside the capital city, Montevideo. This result holds for the three intensity measures we use.

Finally, the group of emancipated children show a larger intergenerational transmission of intensity than those still living at their parents'.<sup>15</sup> This may in part accommodate the positive coefficient estimate of being emancipated that we find in the OLS regressions of Appendix Table A3.

Table 7 reports transmission estimates of direction by sex, income, region, and emancipation status. By looking at the transmission for each one of the reference groups separately we can see which reference groups drive the results we find for intensity, which are based on summary measures of individual reported comparison for each one of the five reference groups. The larger intergenerational transmission we reported above for daughters is the result of this transmission being larger for all reference groups.<sup>16</sup>

Differences in transmission of reference groups, reported in panel (b), are not statistically significant by income levels, which is consistent with our findings that transmission of intensity does not differ by income levels. The larger transmission of intensity that we find outside the capital city is driven by the reference group of family members, while the larger transmission that we find for emancipated children seems to be driven by three reference groups: friends, family, and union workers. Differences in estimates are smaller and statistically insignificant for the other four groups –see panels (c) and (d) in Table 7.

---

<sup>15</sup>Note that given the small sample size of emancipated children the  $p$ -values of the test of means indicating whether the two transmission estimates are different are reasonably low.

<sup>16</sup>Differences of transmission is smaller for the reference groups of Friends and Family, and given the small sample sizes, they are not statistically significant.

Table 6: Intergenerational transmission of intensity of income comparisons by sex, income, and region of children. Crisis Scenario

	Sex		Income		Region		Emancipated	
	Daughter	Son	High	Low	Montevideo	Other	Yes	No
Intensity measure - Individual Fixed Effects								
Mother's Intensity	0.340*** (0.033)	0.212*** (0.036)	0.297*** (0.037)	0.261*** (0.033)	0.241*** (0.036)	0.311*** (0.034)	0.377*** (0.080)	0.266*** (0.026)
Difference of means tests: Are the estimates different?								
p-values	0.009		0.472		0.161		0.185	
Observations	1,660	1,580	1,615	1,625	1,380	1,860	345	2895
R <sup>2</sup>	0.250	0.195	0.197	0.243	0.206	0.234	0.317	0.207
Dependent variable:								
Mean	3.455	3.463	3.259	3.658	3.551	3.391	3.577	3.445
St. dev.	3.216	3.219	3.160	3.261	3.256	3.186	3.345	3.201
Highest-intensity measure - Family Fixed Effects								
Mother's Intensity	0.342*** (0.051)	0.275*** (0.056)	0.259*** (0.054)	0.379*** (0.052)	0.253*** (0.057)	0.375*** (0.050)	0.234** (0.103)	0.334*** (0.040)
Difference of means tests: Are the estimates different?								
p-values	0.373		0.111		0.104		0.367	
Observations	332	316	325	323	276	372	69	579
R <sup>2</sup>	0.175	0.150	0.107	0.194	0.160	0.180	0.292	0.147
Dependent variable:								
Mean	5.955	5.620	6.120	5.461	5.833	5.761	6.667	5.687
St. dev.	3.532	3.569	3.401	3.671	3.541	3.563	3.501	3.545
Number-of-high-intensity-groups measure - Family Fixed Effects								
Mother's Intensity	0.311*** (0.069)	0.211*** (0.067)	0.297*** (0.077)	0.218*** (0.065)	0.145** (0.066)	0.314*** (0.064)	0.395*** (0.092)	0.240*** (0.053)
Difference of means tests: Are the estimates different?								
p-values	0.324		0.434		0.067		0.144	
Observations	332	316	325	323	276	372	69	579
R <sup>2</sup>	0.152	0.124	0.115	0.124	0.133	0.149	0.473	0.093
Dependent variable:								
Mean	0.816	0.797	0.871	0.743	0.764	0.839	1.000	0.784
St. dev.	1.096	1.225	1.205	1.111	1.131	1.182	1.057	1.171

Regressions of the Highest-intensity measure and Number-of-intensity-groups measure include controls. Controls are the same as those reported in Table A3 in the Appendix. The regression of the Intensity measure includes reference groups fixed effects. Dependent variables: The Intensity measure is the score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers); the Highest-intensity measure is the largest score reported across all groups; the Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. The *p*-values show the test of equal coefficient estimates between groups. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. Robust standard errors are clustered at the family level in the individual FE regression.

Table 7: Intergenerational transmission of the direction of income comparisons by sex, income, and region of children. Crisis scenario. Estimates with family fixed effects

	Friends			Neighbors			Family			Same profile			Union		
	Daughter	Son		Daughter	Son		Daughter	Son		Daughter	Son		Daughter	Son	
(a) By sex of children:															
Mother's direction:	0.183** (0.075)	0.111* (0.059)	0.430*** (0.057)	0.215*** (0.081)	0.430*** (0.057)	0.356*** (0.058)	0.256*** (0.057)	0.129** (0.061)	0.311*** (0.063)	0.129** (0.061)	0.311*** (0.063)	0.129** (0.061)	0.311*** (0.063)	0.129** (0.061)	0.311*** (0.063)
Difference of means tests: Are the estimates different?	0.450		0.029		0.361		0.128		0.025		0.025		0.025		0.025
p-values															
Observations	332	316	332	316	332	316	332	316	332	316	332	316	332	316	332
R <sup>2</sup>	0.091	0.051	0.216	0.123	0.252	0.252	0.131	0.105	0.134	0.105	0.134	0.105	0.134	0.105	0.134
Dependent variable:	-0.082	0.239	-1.407	-1.441	0.945	0.432	0.918	1.037	-0.374	1.037	-0.374	1.037	-0.374	1.037	-0.374
Mean	1.747	1.690	1.755	1.877	2.447	2.157	2.345	2.096	1.916	2.096	1.916	2.096	1.916	2.096	1.916
St. dev.															
(b) By household income:															
Mother's direction:	0.194*** (0.054)	0.078 (0.079)	0.310*** (0.070)	0.353*** (0.068)	0.391*** (0.055)	0.406*** (0.060)	0.160*** (0.057)	0.235*** (0.059)	0.169*** (0.057)	0.235*** (0.059)	0.169*** (0.057)	0.235*** (0.059)	0.169*** (0.057)	0.235*** (0.059)	0.169*** (0.057)
Difference of means tests: Are the estimates different?	0.225		0.660		0.848		0.364		0.247		0.247		0.247		0.247
p-values															
Observations	325	323	325	323	325	323	325	323	325	323	325	323	325	323	325
R <sup>2</sup>	0.129	0.055	0.130	0.142	0.261	0.241	0.077	0.146	0.093	0.146	0.093	0.146	0.093	0.146	0.093
Dependent variable:	0.145	0.004	-1.646	-1.201	0.745	0.644	1.084	0.867	-0.329	0.867	-0.329	0.867	-0.329	0.867	-0.329
Mean	1.600	1.844	1.864	1.738	2.368	2.278	2.221	2.229	1.901	2.229	1.901	2.229	1.901	2.229	1.901
St. dev.															
(c) By region:															
Mother's direction:	Mvdeo (0.076)	Other (0.062)	Mvdeo (0.076)	Other (0.066)	Mvdeo (0.058)	Other (0.058)	Mvdeo (0.059)	Other (0.058)	Mvdeo (0.060)	Other (0.058)	Mvdeo (0.060)	Other (0.059)	Mvdeo (0.060)	Other (0.059)	Mvdeo (0.060)
Difference of means tests: Are the estimates different?	0.867		0.649		0.008		0.779		0.300		0.300		0.300		0.300
p-values															
Observations	276	372	276	372	276	372	276	372	276	372	276	372	276	372	276
R <sup>2</sup>	0.082	0.065	0.172	0.120	0.199	0.338	0.138	0.118	0.085	0.118	0.085	0.118	0.085	0.118	0.085
Dependent variable:	0.000	0.130	-1.521	-1.351	0.609	0.759	0.935	1.006	-0.022	1.006	-0.022	1.006	-0.022	1.006	-0.022
Mean	1.772	1.691	1.864	1.776	2.368	2.289	2.064	2.341	1.898	2.341	1.898	2.341	1.898	2.341	1.898
St. dev.															
(d) By emancipation status of children:															
Mother's direction:	0.369*** (0.134)	0.126** (0.052)	0.406*** (0.108)	0.312*** (0.053)	0.640*** (0.142)	0.376*** (0.043)	0.082 (0.149)	0.201*** (0.044)	0.412*** (0.119)	0.201*** (0.042)	0.412*** (0.119)	0.201*** (0.042)	0.412*** (0.119)	0.201*** (0.042)	0.412*** (0.119)
Difference of means tests: Are the estimates different?	0.092		0.434		0.075		0.443		0.096		0.096		0.096		0.096
p-values															
Observations	69	579	69	579	69	579	69	579	69	579	69	579	69	579	69
R <sup>2</sup>	0.299	0.049	0.357	0.129	0.478	0.220	0.205	0.086	0.389	0.086	0.389	0.086	0.389	0.086	0.389
Dependent variable:	-0.258	0.114	-1.838	-1.374	1.191	0.636	1.481	0.916	-0.577	0.916	-0.577	0.916	-0.577	0.916	-0.577
Mean	1.853	1.707	1.679	1.825	2.707	2.268	2.756	2.149	2.186	2.149	2.186	2.149	2.186	2.149	2.186
St. dev.															

Regressions include the same controls as in Appendix Table A6. *p*-values show significance of tests of equal coefficient estimates between groups. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

## 6 Sensitivity analysis and robustness checks

Without additional assumptions about the behavior of the error term conditional on our controls in equations (1), (3) and (5), the estimated persistence parameters cannot be interpreted as causal. The estimated coefficients represent the best linear prediction of the child’s responses. Some endogeneity issues may threaten the correct identification of intergenerational persistence estimates obtained by OLS or FE reported thus far. The source of such bias may be related to measurement error, reverse causality, or omitted variables (especially so for the OLS regressions and less so for the FE regressions).

In section 6.1, we discuss the implications of measurement error and present an exercise that specifically addresses this issue. In section 6.2, we present an instrumental variable strategy, which addresses the three sources of biases and provides consistent estimates. Finally, in section 6.3, we address problems of spurious correlation.

### 6.1 Alternative measures to address issues of consistency of mother’s responses: Clark and Senik’s (2010) question

A first objection that could be raised to our empirical strategy is that the variables we use to capture the intensity and direction of comparisons may suffer from measurement error issues. For instance, respondents may not fully understand our question or they may incorporate some type of bias in their responses (e.g. they do not pay attention or provide strategic responses, as in the context of happiness –see van Praag and Ferrer-i Carbonell (2008)). If so, our measures of intensity and direction of comparison would be measured with error. If we assume classical measurement error in the mother and children responses, our estimates of the intergenerational persistence of reference groups would be downward biased. Alternatively, if the measurement error terms of mothers and children are positively correlated, our estimates of intergenerational persistence of reference groups could be upward biased. However, this problem seems implausible because the surveys of children and parents were carried out in different times and at different places (they did not share physical space), so we do not expect the error terms to be correlated.

Yet, another possibility is that the framing of the questions causes the same type of error in the responses of both parents and children. To alleviate concerns about the measurement error this may entail, we estimate the intergenerational transmission equations (1) and (3) substituting our measure of mother’s comparisons intensity for the intensity measure by Clark and Senik (2010).<sup>17</sup> This strategy avoids the potential problem of correlation of the error terms of mothers and children due to the framing of the question.

Figure A1 in the Appendix compares the distribution of this question in the ELBU and in the European sample used in Clark and Senik (2010).<sup>18</sup> As Appendix Figure A2 shows, the distribution of intensity of our measures differs from the distribution of intensity of Clark and Senik’s (2010) measure. The Job Offer and Economic Crisis scenarios show greater intensity at the extremes (values of 0, 5,

---

<sup>17</sup>Mothers report the reference groups they compare with using Clark and Senik’s question twice in the ELBU, in the third (2011/12) and fourth waves (2016/17). The estimates reported in Table 8 use the average of both waves.

<sup>18</sup>Clark and Senik (2010) used two questions: a) How important is it for you to compare your income to others? Answers range on a scale from 0 (not important at all) to 6 (very important). In the ELBU, the response range is more limited, from 1 to 5. To measure direction of comparisons, they used the following question: Which persons are you more likely to compare your income to? The following response options were offered: coworkers, family members, friends, someone else, I do not compare. The same categories are used in the ELBU. Both questions (intensity and direction) are found in waves 3 and 4 of the ELBU.

and 6) in detriment of intermediate values.<sup>19</sup>

Since it seems implausible to assume that the measurement error of both variables is correlated, finding a positive  $\beta$  parameter would suggest that the correlation between mothers' and children's intensity is explained by factors other than measurement error, possibly the intergenerational transmission of reference groups.

The results reported in columns (1), (3), and (5) of Table 8 corroborate the strong, significant, and positive intergenerational persistence we find with our measures of intensity –see Section 5.1. This suggests that our  $\beta$  estimate does not suffer from serious error measurement problems.

Table 8: Intergenerational transmission of income comparisons intensity with Clark and Senik's (2010) measures. Crisis Scenario

	Intensity measure		Highest-intensity measure		Number-of-high-intensity-groups measure	
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's response: Clark and Senik's questions						
Intensity	0.563*** (0.191)	0.334* (0.185)	0.642** (0.282)	0.368 (0.271)	0.190** (0.095)	0.144 (0.092)
Mother's response: Our (ELBU) questions						
Intensity		0.282*** (0.029)		0.309*** (0.039)		0.246*** (0.051)
Observations	3,240	3,240	648	648	648	648
$R^2$	0.087	0.159	0.035	0.133	0.032	0.100

All regressions include controls. Control variables are the same as in Table A3 in the Appendix. The regression with the Intensity measure (cols. (1) and (2)) includes reference groups fixed effects. Dependent variables: Intensity measure is the score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers); Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. Regressions with Highest-intensity measure and Number-of-high-intensity-groups measure also include family fixed effect; Regressions with Intensity measure are estimated without individual fixed effects. Clark and Senik intensity variable is a dummy equal to 1 if the income comparison intensity reported with the question used in Clark and Senik (2010) is greater than 1. On a Likert scale from 1 to 5, 54.94% of mothers report an income intensity comparison of 1 with this measure. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. Robust standard errors in the regressions with the Intensity measure are clustered at family level.

Next, in addition to Clark and Senik's intensity measure, we also include our measure in the regression. We report the key estimates of this augmented specification in columns (2), (4), and (6) of Table 8. Since both measures capture the same object and the dependent variable (i.e. children's intensity) is our (ELBU) measure of intensity, we expect our (ELBU) measure of intensity to be significant in detriment of the significance of Clark and Senik's measures. Results show that this is indeed the case.

## 6.2 Instrumental variable

As a complementary strategy, we use instrumental variables to examine measurement error issues. As it is well known, measurement error leads to attenuation bias. The size of the bias depends on the amount of information of the true variable which is available in the observed variable. We follow the Obviously Related Instrumental Variables (ORIV) model (Gillen et al., 2019),<sup>20</sup> which assumes that the variables are measured with independent i.i.d. error and that there are two alternative measures

<sup>19</sup>To compare both measures, we group the answers from our questions into seven categories. Unfortunately, we cannot build a one-to-one relationships between our direction questions and Clark and Senik's (2010).

<sup>20</sup>Gillen et al. (2019) suggest this approach to deal with measurement error in the context of experimental laboratory based measures. They use duplicate elicitations of the variables with measurement error as instruments.



of the explanatory variable with i.i.d. error and constant variance. Under these assumptions, the authors demonstrate that the second measure of the explanatory variable can be used as instrument in order to mitigate the attenuation bias. ORIV yields consistent coefficients and standard errors. We treat mothers' intensity comparison reports in the Economic Crisis scenario as endogenous variables and their intensity comparison answers in the Job Offer scenario as instruments, as we deem they are closely-related survey measures. As Tables 4 and 5 above show, both comparison variables (in the Job Offer and Economic Crisis scenarios) are sufficiently correlated and could be measured with error. The F-statistic of the first-stage regression reported in Tables 9 and 10 also suggest that the instruments are not weak. As we pointed out above, we are assuming that the measurement error of the comparison intensity variables in the Job Offer and Economic Crisis scenarios are independent of each other and that errors have the same variance. The idea is that the related noisy measure of the endogenous variable can be used to recover a consistent estimate of the true transmission coefficient.

Tables 9 and 10 present the results for children's intensity and direction of comparison, while Appendix Tables A10 and A11 report the results of the first-stage regressions. When we examine intensity, the dependent variables in the second stage is one of our three measures of intensity: Intensity, Highest-intensity, and Number-of-high-intensity-groups. In the specifications where controls can be included (i.e. all of them but when the dependent variable is the Intensity measure), controls are the same as those used in the previous section. Next to the IV estimates we also report OLS or FE estimates (when appropriate) for comparison purposes. To evaluate the weakness of the instruments and the potential bias, we follow Bound et al. (1995) and carry out a joint significance test of the instruments in the two-stage method ancillary equation.<sup>21</sup>

We find IV coefficients to be larger than the corresponding OLS, which suggest that the latter underestimate the intergenerational transmission of reference groups. This, in turn, is consistent with the presence of measurement error issues in our intensity and direction variables, which introduce attenuation bias.

Table 9: Intensity of income comparisons. Crisis scenario. Instrumental Variables estimates

	Intensity measure		Highest-intensity measure		Number-of-high-intensity-groups measure	
	FE	2SLS / FE	OLS	2SLS	OLS	2SLS
Mother's Intensity	0.282*** (0.025)	0.347*** (0.042)	0.314*** (0.039)	0.481*** (0.062)	0.251*** (0.051)	0.526*** (0.114)
F-statistic for IV in 1st stage	-.	25.00	-.	18.12	-.	8.59
Observations	3,240	3,240	648	648	648	648
$R^2$	0.220	0.216	0.132	0.100	0.097	0.012

Regressions of the Highest-intensity measure and Number-of-intensity-groups measure include controls. The control variables are the same as in Table A3 in the Appendix. Regressions of the Intensity measure include reference groups fixed effects. Dependent variables: Intensity measure is the score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers); Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. Regressions of the Highest-intensity measure and Number-of-high-intensity-groups measure include family fixed effects. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. In FE robust standard errors are clustered at the family level.

<sup>21</sup>Values of the F-statistic below 10 are usually taken as a sign of weak instruments and bias problems –see Cameron and Trivedi (2005).

Table 10: Direction of income comparisons. Crisis scenario. Instrumental Variables estimates

	Social groups						Labor-related groups			
	Friends		Neighbors		Family		Same profile		Union	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Mother's direction	0.149*** (0.050)	0.227 (0.212)	0.323*** (0.050)	0.422*** (0.086)	0.396*** (0.041)	0.406*** (0.106)	0.197*** (0.042)	0.335*** (0.079)	0.211*** (0.043)	0.265*** (0.080)
F-statistic for IV in 1st stage	--	4.22	--	12.77	--	7.68	--	11.69	--	11.14
Observations	648	648	648	648	648	648	648	648	648	648
$R^2$	0.053	0.041	0.132	0.117	0.243	0.215	0.091	0.046	0.082	0.076

All regression include controls and family fixed effects. Controls are the same as in Appendix Table A6. Dependent variable: standardized income comparison for each group. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

### 6.3 Estimates with randomized mother and household characteristics

The correlation we estimate in previous sections between mothers' and children's answers could be spurious, as they could be driven by similarity in observable characteristics or by a life cycle effect (i.e. a correlation across generations rather than an effect between mothers and their children). To address this issue we obtain OLS estimates of the intergenerational persistence after randomizing mother's responses and family information. Dohmen et al. (2012) used a similar strategy to address whether the intergenerational correlation is driven by similarity in regional characteristics.

We first substitute the intensity and direction of the mother's comparisons with a randomly assigned response from the pool of mothers, and run equations (1) and (3) for intensity and (5) for direction. We also run OLS equations (3) and (5) with randomized family information (i.e log of per capita income and region of residence), in addition to randomizing mother's answers.

Table 11 presents the results for intensity of comparison while Table 12 presents the results for direction of comparisons. None of the intergenerational persistence estimates from the placebo regressions that are reported in these two Tables are statistically significant. This suggests that our baseline estimates are not driven by the similarity in observable characteristics or by life cycle effects but capture the transmission of reference groups from mothers to children.

Table 11: Intensity of income comparisons. Crisis scenario. Randomized mother and household characteristics

	Highest-intensity measure		Number-of-high-intensity-groups measure		Intensity measure
	(1)	(2)	(3)	(4)	(5)
Randomized mother's Intensity	0.008 (0.038)	-0.021 (0.038)	0.062 (0.040)	-0.041 (0.032)	0.016 (0.023)
Observations	650	650	650	650	3,240
$R^2$	0.025	0.021	0.027	0.024	0.000
Randomized:					
Mother variables	Yes	Yes	Yes	Yes	Yes
Household variables	No	Yes	No	Yes	-.

Regressions of the Highest-intensity measure and Number-of-intensity-groups measure include controls. The control variables are the same as in Appendix Table A3. Dependent variables: Intensity measure is the score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers); Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. In individual FE (col. (5)), robust standard errors are clustered at the family level.

Table 12: Direction of income comparisons. Crisis scenarios. Randomized mother and household characteristics

	Social groups						Labor-related groups			
	Friends		Neighbors		Family		Same profile		Union	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Randomized Mother's direction	0.011 (0.040)	0.028 (0.042)	0.028 (0.044)	0.025 (0.047)	-0.001 (0.036)	-0.002 (0.039)	0.030 (0.039)	-0.008 (0.040)	0.000 (0.037)	-0.008 (0.037)
Observations	650	650	650	650	650	650	650	650	650	650
$R^2$	0.033	0.032	0.043	0.029	0.085	0.083	0.048	0.049	0.034	0.025
Randomized:										
Mother variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

All regressions include controls. Control variables are the same as in Appendix Table A6. Dependent variable: Standardized income comparison for each group. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

## 7 Final comments

We know that income comparisons are important to understand the values, attitudes, preferences and behavior of individuals. However, we have a very limited knowledge about how reference groups are formed. Do individuals deliberately choose with whom and how much they compare or are reference groups exogenously determined by the social context where people live and by cultural transmission?

We study empirically the origins of reference groups. Our results suggest that parents instill their reference groups into their children. We find that the intergenerational transmission of reference groups is actually the most important determinant we find in our empirical models, and we show that the correlation between parents and their children is not due to issues of measurement error, omitted variables or the correlation between the two generations.

Since reference groups and income comparisons are important determinants of individual behavior

and well-being, parents condition the behavior and well-being of their offspring by instilling their reference groups into them. This may be an efficient way for parents to invest in their children. However, the transmission of reference groups may also serve another goal, namely the preservation of the cultural identity of the parents (Bisin and Verdier, 1998). The structure of our data, however, does not allow us to examine why parents instill their preference to their children. This is a promising avenue for further research.

Previous work argues that the transmission and the ensuing persistence of reference groups is likely to perpetuate social differences in aspirations, which in turn explain persistence in socio-economic disparities and mobility traps (Piketty, 2000; Bourguignon et al., 2007). In this paper, we show the existence of the intergenerational transmission of reference groups. Future work will have to look at the relationship between the persistence of reference groups and the lack of social mobility in our societies.

## References

- Austen-Smith, D. and Fryer, R. G. (2005). An economic analysis of "Acting White". *Quarterly Journal of Economics*, 120(2):551–583.
- Becker, G. S. and Tomes, N. (1986). Human Capital and the Rise and Fall of Families. *Journal of Labor Economics*, 4(3, Part. 2):S1–S39.
- Bisin, A. and Verdier, T. (1998). On the cultural transmission of preferences for social status. *Journal of Public Economics*, 70(1):75–97.
- Boskin, M. J. and Sheshinski, E. (1978). Optimal redistributive taxation when individual welfare depends upon relative income. *Quarterly Journal of Economics*, 92(4):589–601.
- Bound, J., Jaeger, D. A., and Baker, R. M. (1995). Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. *Journal of the American Statistical Association*, 90(430):443–450.
- Bourguignon, F., Ferreira, F. H., and Walton, M. (2007). Equity, efficiency and inequality traps: A research agenda. *Journal of Economic Inequality*, 5(2):235–256.
- Bowles, S. (1998). Endogenous preferences: The cultural consequences of markets and other economic institutions. *Journal of Economic Literature*, 36(1):75–111.
- Bowles, S. and Park, Y. (2005). Emulation, inequality, and work hours: Was Thorsten Veblen right? *Economic Journal*, 115(507):F397–F412.
- Bütikofer, A. (2013). Revisiting 'mothers and sons' preference formation and the female labor force in Switzerland. *Labour Economics*, 20:82–91.
- Cameron, A. C. and Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications*. Number 1. Cambridge University Press.
- Charles, K. K., Hurst, E., and Roussanov, N. (2009). Conspicuous consumption and race. *Quarterly Journal of Economics*, 124(2):425–467.
- Clark, A. (2012). Happiness, Habits and High Rank: Comparisons in Economic and Social Life. *SOEPpaper No. 452*.
- Clark, A. and D'Ambrosio, C. (2015). Attitudes to income inequality: Experimental and survey evidence. In *Handbook of Income Distribution. Vol. 2*, pages 1147–1208. Elsevier.
- Clark, A. and Senik, C. (2010). Who compares to Whom? The anatomy of income comparisons in Europe. *Economic Journal*, 120(544):573–594.
- Clark, A. E. and Oswald, A. J. (1996). Satisfaction and comparison income. *Journal of Public Economics*, 61(3):359–381.
- Cojocaru, A. (2014). Prospects of upward mobility and preferences for redistribution: Evidence from the Life in Transition Survey. *European Journal of Political Economy*, 34:300–314.

- Cullen, Z. and Perez-Truglia, R. (2022). How Much Does Your Boss Make? The Effects of Salary Comparisons. *Journal of Political Economy*, 130(3).
- Diener, E. and Fujita, F. (1997). Social comparisons and subjective well-being. In *Buunk and Gibbons (Eds.), Health, coping, and well being: Perspectives from social comparison theory*, pages 329–357. Lawrence Erlbaum Associates.
- Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2012). The intergenerational transmission of risk and trust attitudes. *Review of Economic Studies*, 79(2):645–677.
- Duesenberry, J. S. (1967). *Income, saving, and the theory of consumer behavior*. Oxford University Press.
- Easterlin, R. (1974). Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In *Nations and Households in Economic Growth*, pages 89–125. Academic Press.
- Easterlin, R. A. (1995). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior and Organization*, 27(1):35–47.
- Falk, A. and Knell, M. (2004). Choosing the Joneses: Endogenous goals and reference standards. *Scandinavian Journal of Economics*, 106(3):417–435.
- Farré, L. and Vella, F. (2013). The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labour Force Participation. *Economica*, 80(318):219–247.
- Fehr, E. and Schmidt, K. M. (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics*, 114(3):817–868.
- Fehr, E. and Schmidt, K. M. (2003). Theories of fairness and reciprocity: Evidence and economic applications. In *Advances in Economics and Econometrics: Theory and Applications, Eighth World Congress, Volume 1*.
- Fernández, R. and Fogli, A. (2009). Culture: An empirical investigation of beliefs, work, and fertility. *American Economic Journal: Macroeconomics*, 1(1):146–77.
- Fernández, R., Fogli, A., and Olivetti, C. (2004). Mothers and sons: Preference formation and female labor force dynamics. *Quarterly Journal of Economics*, 119(4):1249–1299.
- Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations*, 7(2):117–140.
- Frank, R. H. (1985). The demand for unobservable and other nonpositional goods. *American Economic Review*, 75(1):101–116.
- Friehe, T., Mechtel, M., and Pannenberg, M. (2018). Positional income concerns and personality: evidence from Germany. *Applied Economics Letters*, 25(14):1024–1028.
- Giavazzi, F., Petkov, I., and Schiantarelli, F. (2019). Culture: persistence and evolution. *Journal of Economic Growth*, 24(2):117–154.
- Gillen, B., Snowberg, E., and Yariv, L. (2019). Experimenting with measurement error: Techniques with applications to the caltech cohort study. *Journal of Political Economy*, 127(4).

- Gronqvist, E., Öckert, B., and Vlachos, J. (2017). The Intergenerational Transmission of Cognitive and Non-Cognitive Abilities. *Journal of Human Resources*, 52(4):887–918.
- Heffetz, O. and Frank, R. H. (2011). Preferences for status: Evidence and economic implications. In *Handbook of Social Economics*, volume 1, pages 69–91. North-Holland.
- Hirschman, A. and Rothschild, M. (1973). The changing tolerance for income inequality in the course of economic development. *Quarterly Journal of Economics*, 87(4):544–566.
- Inglehart, R. and Baker, W. E. (2000). Modernization, Cultural Change, and the Persistence of Traditional Values. *American Sociological Review*, pages 19–51.
- Katz, L. F., Kling, J. R., and Liebman, J. B. (2001). Moving to opportunity in Boston: Early results of a randomized mobility experiment. *Quarterly Journal of Economics*, 116(2):607–654.
- Kaus, W. (2013). Conspicuous consumption and "race": Evidence from South Africa. *Journal of Development Economics*, 100(1):63–73.
- Leites, M. and Salas, G. (2019). Intergenerational transmission of preferences for redistribution. *DT IECON*, 20/19.
- Lundberg, S. (2005). The Division of Labor by New Parents: Does Child Gender Matter? *IZA Discussion Papers*, 1787.
- Merton, R. K. (1968). Contributions to the Theory of Reference Group Behavior. *Social Theory and Social Structure*.
- Morrill, M. S. and Morrill, T. (2013). Intergenerational links in female labor force participation. *Labour Economics*, 20:38–47.
- Piketty, T. (1998). Self-fulfilling beliefs about social status. *Journal of Public Economics*, 70(1):115–132.
- Piketty, T. (2000). Theories of persistent inequality and intergenerational mobility. In *Handbook of Income Distribution*, volume 1, pages 429–476. Elsevier.
- Postlewaite, A. (1998). The social basis of interdependent preferences. *European Economic Review*, 42(3-5):779–800.
- van Praag, B. and Ferrer-i Carbonell, A. (2008). Happiness Quantified: A Satisfaction Calculus Approach.
- Weiss, Y. and Fershtman, C. (1998). Social status and economic performance: A survey. *European Economic Review*, 42(3-5):801–820.

# Appendix

Table A1: Labels and wording of categories for Job Offer and Economic Crisis questions

Labels	a) Job Offer	b) Economic Crisis
	... would you take into account, for your salary proposal, what ...	...if your income falls below the income ...
Union	.... the union to which I belong negotiated	... of union workers
Friends	... your friends earn	... of your friends
Same profile	... people with the same experience and qualification earn	... of people who have the same experience and qualification
Neighbors	... your neighbors earn	... of your neighbors
Families	... your relatives earn	... of your family
Does not compare	I would not compare with anyone	My conformity would not be affected

Note: The Job Offer scenario is: *Imagine that you get an offer of a permanent full-time job that you like. Your potential employer asks you to indicate the wage you are willing to receive. For each of the following items, please indicate on a scale from 1 to 10 (where 1 is very little and 10 is a lot) how true it is that you would consider in your proposal....* The Economic Crisis scenario is: *Imagine that there is an economic crisis and your household income is reduced. Indicate on a scale from 1 to 10 (where 1 is very little and 10 is a lot), how true it is that your economic satisfaction would be affected if your income falls below income ...*

Table A2: Descriptive Statistics

Variable	Mean	Std Dev.	Min.	Max.
(a) Intensity and Direction variable (Crisis Scenario)				
Children				
Highest-intensity measure	5.792	3.551	1	10
Number-of-high-intensity-groups	0.807	1.160	0	5
Direction: Friends	0.075	1.726	-5.4	7.2
Direction: Neighbors	-1.424	1.814	-7.2	4.6
Direction: Family	0.695	2.322	-4.2	7.2
Direction: Same Profile	0.976	2.226	-5.4	7.2
Direction: Union	-0.322	1.855	-6.4	7.2
Mother				
Highest-intensity measure	5.529	3.714	1	10
Number-of-high-intensity-groups	0.849	1.258	0	5
Direction: Friends	-0.261	1.621	-4.8	7.2
Direction: Neighbors	-1.218	1.636	-7.2	3
Direction: Family	0.451	2.386	-5.4	7.2
Direction: Same Profile	1.097	2.330	-4.2	7.2
Direction: Union	-0.069	1.981	-7.2	7.2
(b) Children's covariates				
Female	0.512	0.500	0	1
Ethnicity	0.822	0.382	0	1
Emancipated	0.106	0.309	0	1
Education Level: Primary education	0.065	0.246	0	1
Education Level: High School	0.625	0.484	0	1
Education Level: Vocational School	0.173	0.378	0	1
Education Level: Tertiary	0.137	0.344	0	1
Employed	0.247	0.432	0	1
Where Met friend: School	0.495	0.500	0	1
Where Met friend: Neighborhood	0.329	0.470	0	1
Where Met friend: Other	0.176	0.381	0	1
BFI: Extroversion	27.244	5.383	10	40
BFI: Agreeableness	33.794	4.988	17	45
BFI: Conscientiousness	30.032	6.037	11	45
BFI: Neuroticism	22.697	5.917	8	40
BFI: Openness	34.213	6.842	15	50
(c) Household's covariates				
Region: Montevideo	0.426	0.495	0	1
Log of household income	8.628	0.794	5.333	11.103

648 observations are used in all variables



Table A3: Intergenerational transmission of intensity of income comparisons. Crisis Scenario. Full estimation

	Highest-intensity measure			Number-of-high-intensity-groups measure		
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
Mother's Intensity		0.314*** (0.038)	0.314*** (0.039)		0.253*** (0.049)	0.251*** (0.050)
Family Fixed Effect			0.077** (0.037)			0.049 (0.046)
Female	0.317 (0.294)	0.287 (0.270)	0.325 (0.270)	0.032 (0.101)	0.048 (0.095)	0.056 (0.095)
Ethnicity	0.088	0.113	0.076	-0.017	0.009	0.015
Emancipated	1.063** (0.483)	0.847* (0.453)	0.814* (0.458)	0.260* (0.141)	0.236* (0.128)	0.234* (0.129)
Education level (ref: primary education)						
High School	0.158 (0.645)	0.038 (0.574)	0.060 (0.581)	-0.047 (0.200)	-0.121 (0.176)	-0.118 (0.177)
Vocational School	0.288 (0.705)	0.184 (0.644)	0.158 (0.652)	-0.022 (0.218)	-0.068 (0.197)	-0.077 (0.198)
Tertiary	-0.175 (0.771)	-0.077 (0.706)	-0.070 (0.713)	-0.226 (0.226)	-0.216 (0.203)	-0.212 (0.205)
Employed	0.077 (0.352)	-0.022 (0.329)	-0.042 (0.329)	0.161 (0.115)	0.154 (0.112)	0.154 (0.112)
Where Met friend (ref: school)						
Neighborhood	0.043 (0.342)	0.066 (0.314)	0.112 (0.316)	-0.016 (0.107)	-0.033 (0.102)	-0.025 (0.101)
Other	0.063 (0.381)	0.223 (0.363)	0.220 (0.358)	-0.101 (0.126)	-0.123 (0.118)	-0.125 (0.118)
Big Five Inventory						
Extroversion	-0.007 (0.028)	-0.011 (0.026)	-0.011 (0.025)	-0.002 (0.009)	-0.002 (0.008)	-0.002 (0.008)
Agreeableness	0.059* (0.031)	0.029 (0.029)	0.030 (0.029)	0.021** (0.009)	0.014 (0.009)	0.014 (0.009)
Conscientiousness	-0.017 (0.025)	-0.002 (0.023)	0.001 (0.023)	-0.010 (0.008)	-0.008 (0.008)	-0.008 (0.008)
Neuroticism	0.019 (0.027)	0.024 (0.025)	0.025 (0.025)	0.011 (0.008)	0.009 (0.008)	0.009 (0.008)
Openness	0.024 (0.022)	0.010 (0.021)	0.010 (0.021)	0.009 (0.007)	0.004 (0.007)	0.004 (0.007)
Region: Montevideo	0.108 (0.299)	0.126 (0.279)	0.127 (0.278)	-0.091 (0.103)	-0.036 (0.098)	-0.031 (0.097)
Log of household income (ten thousands)	0.338* (0.192)	0.197 (0.174)	0.187 (0.174)	0.055 (0.071)	0.049 (0.064)	0.047 (0.064)
Constant	-0.258 (2.442)	0.337 (2.187)	-0.162 (2.167)	-0.509 (0.801)	-0.266 (0.755)	-0.305 (0.751)
Difference of means tests:						
Are the estimates of intergenerational transmission different due to the inclusion of the family fixed effect?						
p-values	-		0.955	-		0.538
Observations	648	648	648	648	648	648
R <sup>2</sup>	0.023	0.126	0.132	0.023	0.095	0.097

This table shows estimates of equation (3). Dependent variables: Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is number of reference groups for which individuals report an intensity larger than 7. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Table A4: Intergenerational transmission of intensity of income comparisons. Job Offer Scenario. Full estimation

	Intensity measure			Highest-intensity measure			Number-of-high-intensity-groups measure		
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)	(1c)	(2c)	(3c)
Mother's Intensity	0.371***	0.195***	0.157***		0.331***	0.330***		0.242***	0.239***
	(0.022)	(0.024)	(0.038)		(0.037)	(0.037)		(0.054)	(0.055)
Family Fixed Effect						0.057			0.063
						(0.037)			(0.042)
Female				-0.077	-0.128	-0.133	0.006	-0.003	-0.002
				(0.291)	(0.266)	(0.266)	(0.085)	(0.082)	(0.082)
Ethnicity				0.048	0.042	0.042	0.060	0.048	0.038
				(0.373)	(0.338)	(0.336)	(0.106)	(0.110)	(0.109)
Emancipated				1.120***	0.691*	0.672	0.255*	0.181	0.188
				(0.427)	(0.408)	(0.413)	(0.133)	(0.128)	(0.128)
Education level (ref: primary education)									
High School				-0.027	-0.118	-0.079	-0.056	-0.075	-0.058
				(0.639)	(0.527)	(0.531)	(0.169)	(0.161)	(0.163)
Vocational School				-0.003	-0.178	-0.172	-0.010	-0.022	-0.014
				(0.702)	(0.601)	(0.605)	(0.187)	(0.181)	(0.182)
Tertiary				0.185	0.212	0.237	0.014	0.003	0.022
				(0.761)	(0.649)	(0.651)	(0.204)	(0.186)	(0.187)
Employed				-0.027	-0.212	-0.207	0.074	0.046	0.052
				(0.334)	(0.307)	(0.307)	(0.097)	(0.096)	(0.095)
Where Met friend (ref: school)									
Neighborhood				-0.129	0.032	0.064	0.161*	0.159*	0.163*
				(0.342)	(0.314)	(0.316)	(0.107)	(0.102)	(0.101)
Other				0.063	0.223	0.220	-0.101	-0.123	-0.125
				(0.381)	(0.363)	(0.358)	(0.126)	(0.118)	(0.118)
Big Five Inventory									
Extraversion				-0.007	-0.011	-0.011	-0.002	-0.002	-0.002
				(0.028)	(0.026)	(0.025)	(0.009)	(0.008)	(0.008)
Agreeableness				0.059*	0.029	0.030	0.021**	0.014	0.014
				(0.031)	(0.029)	(0.029)	(0.009)	(0.009)	(0.009)
Conscientiousness				-0.017	-0.002	0.001	-0.010	-0.008	-0.008
				(0.025)	(0.023)	(0.023)	(0.008)	(0.008)	(0.008)
Neuroticism				0.019	0.024	0.025	0.011	0.009	0.009
				(0.027)	(0.025)	(0.025)	(0.008)	(0.008)	(0.008)
Openness				0.024	0.010	0.010	0.009	0.004	0.004
				(0.022)	(0.021)	(0.021)	(0.007)	(0.007)	(0.007)
Region: Montevideo				0.108	0.126	0.127	-0.091	-0.036	-0.031
				(0.299)	(0.279)	(0.278)	(0.103)	(0.098)	(0.097)
Log of household income (ten thousands)				0.338*	0.197	0.187	0.055	0.049	0.047
				(0.192)	(0.174)	(0.174)	(0.071)	(0.064)	(0.064)
Dummy by reference group (ref: Friends)									
Neighbors		-1.082***	-1.141***						
		(0.101)	(0.135)						
Family		-0.333***	-0.178						
		(0.124)	(0.160)						
Same profile		1.610***	1.211***						
		(0.135)	(0.197)						
Union		0.115	0.005						
		(0.121)	(0.159)						
Intensity × Neighbors								0.010	
								(0.052)	
Intensity × Family								-0.069	
								(0.053)	
Intensity × Same profile								0.106**	
								(0.045)	
Intensity × Union								0.040	
								(0.047)	
Constant	2.167***	2.620***	2.728***	-0.258	0.337	-0.162	-0.509	-0.266	-0.305
	(0.666)	(0.099)	(0.114)	(2.442)	(2.187)	(2.167)	(0.801)	(0.755)	(0.751)
Difference of means tests:									
Are the estimates different of intergenerational transmission due to the inclusion of the family fixed effect?									
p-values				--	0.792	--	--	0.375	
Observations	3,240	3,240	3,240	648	648	648	648	648	648
R <sup>2</sup>	0.136	0.253		0.019	0.133	0.136	0.022	0.076	0.080
Individual Fixed Effects	Yes	Yes	Yes	No	No	No	No	No	No

This table shows estimates of equation (3). Dependent variables: Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Table A5: Intensity and Direction of income comparisons. Transmission from father to children. Crisis scenario. Estimates with family fixed effects

	Intensity			Direction				
	Intensity measure	Highest-intensity measure	Number-of-high-intensity-groups measure	Social groups			Labor-related groups	
				Friends	Neighbors	Family	Same profile	Union
Father's response:								
Intensity	0.395*** (0.079)	0.522*** (0.108)	0.499*** (0.101)					
Direction				0.156 (0.231)	0.418*** (0.107)	0.440*** (0.081)	0.495*** (0.127)	0.096 (0.125)
Observations	350	70	70	70	70	70	70	70
R <sup>2</sup>	0.280	0.477	0.417	0.165	0.430	0.594	0.464	0.291

Regressions of the Highest-intensity and Number-of-intensity-groups measures include the same controls as in Appendix Table A3. The regression of the Intensity measure includes reference groups fixed effects. Dependent variables: Intensity measure is the score reported in each group (friends, neighbors, family, people with the same professional profile, and union workers); Highest-intensity measure is the largest score reported across all groups; Number-of-high-intensity-groups measure is the number of reference groups for which individuals report an intensity larger than 7; Direction is the standardized individual scores. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. In individual FE robust standard errors are clustered at the family level.

Table A6: Intergenerational transmission of direction of income comparisons. Full estimation. Crisis scenario

	Friends	Neighbors	Family	Same profile	Union
Mother's Direction	0.149*** (0.049)	0.327*** (0.049)	0.398*** (0.041)	0.200*** (0.041)	0.211*** (0.043)
Family Fixed Effects	-0.007 (0.039)	0.075** (0.036)	0.024 (0.035)	0.036 (0.039)	-0.017 (0.036)
Female	-0.205 (0.144)	0.009 (0.142)	0.426** (0.167)	-0.175 (0.183)	-0.118 (0.156)
Ethnicity (white)	-0.292 (0.202)	0.077 (0.200)	-0.114 (0.208)	0.275 (0.201)	0.058 (0.195)
Emancipated	-0.227 (0.235)	-0.561*** (0.207)	0.565* (0.296)	0.391 (0.336)	-0.139 (0.266)
Education level (ref: primary education)					
High School	0.369 (0.275)	-0.202 (0.263)	0.248 (0.312)	-0.221 (0.355)	-0.090 (0.338)
Vocational School	0.549* (0.303)	-0.291 (0.295)	0.133 (0.355)	-0.185 (0.404)	-0.177 (0.366)
Tertiary	0.146 (0.331)	0.019 (0.319)	-0.007 (0.379)	0.019 (0.470)	-0.148 (0.381)
Employed	0.225 (0.161)	-0.032 (0.168)	-0.391** (0.196)	0.222 (0.203)	-0.098 (0.183)
Where Met friend (ref: school)					
Neighborhood	-0.024 (0.164)	0.181 (0.156)	0.111 (0.183)	-0.239 (0.197)	-0.041 (0.165)
Other	-0.019 (0.176)	-0.093 (0.189)	-0.140 (0.220)	0.155 (0.243)	0.043 (0.180)
Big Five Inventory					
Extraversion	-0.006 (0.013)	0.007 (0.013)	0.016 (0.015)	-0.011 (0.016)	-0.0002 (0.014)
Agreeableness	0.001 (0.016)	-0.026* (0.014)	0.076*** (0.017)	-0.055*** (0.018)	-0.008 (0.016)
Conscientiousness	-0.021* (0.012)	0.022* (0.013)	-0.038*** (0.014)	0.050*** (0.016)	-0.003 (0.013)
Neuroticism	-0.015 (0.013)	0.002 (0.012)	0.006 (0.015)	-0.004 (0.015)	0.017 (0.014)
Openness	0.002 (0.010)	0.001 (0.011)	0.011 (0.013)	-0.018 (0.014)	0.004 (0.012)
Region: Montevideo	-0.173 (0.149)	-0.114 (0.150)	-0.043 (0.179)	-0.035 (0.176)	0.413** (0.163)
Log of household income (ten thousands)	0.131 (0.091)	-0.194* (0.103)	0.073 (0.107)	0.001 (0.112)	-0.024 (0.097)
Constant	0.076 (1.045)	0.783 (1.116)	-2.763** (1.250)	2.114 (1.333)	-0.257 (1.106)
Difference of means tests: Are the estimates different of intergenerational transmission?	0.940	0.307	0.547	0.388	0.699
P-values					
Observations	648	648	648	648	648
R <sup>2</sup>	0.053	0.127	0.242	0.090	0.082

\*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Table A7: Intergenerational transmission of direction of income comparisons. Full estimation. Job Offer scenario

	Friends		Neighbors		Family		Same profile		Union	
Mother's Direction	0.110** (0.045)	0.110** (0.045)	0.214*** (0.048)	0.214*** (0.048)	0.108*** (0.045)	0.105** (0.045)	0.271*** (0.041)	0.273*** (0.040)	0.181*** (0.043)	0.182*** (0.043)
Family Fixed Effects	-0.029 (0.039)	-0.029 (0.039)	0.006 (0.042)	0.006 (0.042)	0.046 (0.044)	0.046 (0.044)	0.046 (0.044)	0.037 (0.037)	0.033 (0.039)	0.033 (0.039)
Female	-0.083 (0.155)	-0.083 (0.156)	0.096 (0.129)	0.096 (0.129)	0.233 (0.172)	0.230 (0.172)	-0.256 (0.190)	-0.262 (0.190)	0.001 (0.171)	0.002 (0.171)
Ethnicity (white)	-0.323 (0.205)	-0.331 (0.205)	0.261 (0.184)	0.260 (0.184)	-0.143 (0.222)	-0.161 (0.223)	0.206 (0.229)	0.195 (0.228)	-0.054 (0.209)	-0.040 (0.210)
Emancipated	-0.562** (0.272)	-0.562** (0.272)	-0.399* (0.210)	-0.399* (0.210)	0.954*** (0.336)	0.966*** (0.335)	0.049 (0.331)	0.041 (0.333)	-0.107 (0.320)	-0.110 (0.319)
Education level (ref: primary education)										
High School	-0.279 (0.329)	-0.270 (0.331)	-0.274 (0.255)	-0.277 (0.255)	-0.573** (0.279)	-0.580** (0.280)	0.252 (0.402)	0.280 (0.407)	0.919*** (0.338)	0.929*** (0.339)
Vocational School	0.076 (0.359)	0.088 (0.362)	-0.254 (0.297)	-0.255 (0.299)	-0.405 (0.336)	-0.410 (0.335)	-0.061 (0.444)	-0.031 (0.448)	0.627* (0.369)	0.633* (0.369)
Tertiary	-0.173 (0.390)	-0.169 (0.391)	-0.305 (0.306)	-0.308 (0.307)	-0.525 (0.366)	-0.532 (0.366)	0.013 (0.503)	0.002 (0.506)	1.053** (0.421)	1.066** (0.421)
Employed	-0.042 (0.158)	-0.045 (0.159)	0.068 (0.160)	0.067 (0.161)	0.314 (0.191)	0.315* (0.190)	-0.625*** (0.223)	-0.613*** (0.223)	0.278 (0.206)	0.273 (0.205)
Where Met friend (ref: school neighborhood)										
Neighborhood	-0.043 (0.165)	-0.046 (0.165)	0.124 (0.147)	0.123 (0.148)	0.098 (0.184)	0.102 (0.183)	-0.167 (0.215)	-0.165 (0.214)	0.012 (0.186)	0.009 (0.185)
Other	-0.056 (0.185)	-0.056 (0.184)	-0.014 (0.163)	-0.015 (0.163)	0.371 (0.234)	0.366 (0.233)	-0.302 (0.265)	-0.292 (0.265)	0.035 (0.228)	0.040 (0.228)
Big Five Inventory										
Extroversion	-0.023* (0.014)	-0.023* (0.014)	-0.001 (0.012)	-0.002 (0.012)	0.016 (0.015)	0.017 (0.015)	0.002 (0.017)	0.001 (0.017)	0.006 (0.015)	0.006 (0.015)
Agreeableness	-0.004 (0.015)	-0.003 (0.015)	-0.014 (0.013)	-0.014 (0.013)	0.070*** (0.018)	0.071*** (0.018)	-0.037* (0.020)	-0.037* (0.020)	-0.018 (0.017)	-0.018 (0.017)
Conscientiousness	0.001 (0.014)	0.001 (0.014)	0.001 (0.012)	-0.063*** (0.016)	-0.036*** (0.014)	-0.036*** (0.014)	0.038** (0.016)	0.037** (0.016)	-0.003 (0.015)	-0.003 (0.015)
Neuroticism	-0.020 (0.013)	-0.020 (0.013)	-0.004 (0.011)	-0.004 (0.011)	-0.003 (0.015)	-0.002 (0.015)	0.005 (0.017)	0.006 (0.017)	0.021 (0.015)	0.021 (0.015)
Openness	-0.014 (0.011)	-0.014 (0.011)	0.005 (0.010)	0.005 (0.010)	0.019 (0.013)	0.019 (0.013)	-0.024 (0.015)	-0.023 (0.015)	0.013 (0.013)	0.012 (0.013)
Region: Montevideo	0.077 (0.147)	0.076 (0.147)	0.063 (0.133)	0.063 (0.133)	0.191 (0.173)	0.188 (0.172)	-0.463** (0.192)	-0.464** (0.192)	0.127 (0.171)	0.124 (0.171)
Log of household income (ten thousands)	0.043 (0.098)	0.043 (0.098)	-0.182** (0.083)	-0.181** (0.083)	-0.044 (0.114)	-0.042 (0.113)	0.266** (0.117)	0.266** (0.117)	-0.102 (0.109)	-1.107 (0.110)
Constant	1.776* (1.051)	1.743 (1.065)	0.799 (0.967)	0.804 (0.971)	-2.253* (1.311)	-2.294* (1.300)	0.151 (1.446)	0.093 (1.448)	-0.342 (1.286)	-0.337 (1.286)
Observations	648	648	648	648	648	648	648	648	648	648
R <sup>2</sup>	0.049	0.050	0.079	0.079	0.077	0.079	0.119	0.121	0.066	0.068

\*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Table A8: Intergenerational transmission of intensity of income comparisons by mother's employment status

	Intensity measure		Highest-intensity measure		Number-of-high-intensity-groups measure	
Panel (a) Mother's response - Crisis Scenario:						
Intensity as the offspring	0.220*** (0.045)	0.301*** (0.029)	0.367*** (0.067)	0.288*** (0.045)	0.252*** (0.081)	0.233*** (0.060)
	Difference of means tests: Are the estimates different?					
p-values	0.134		0.330		0.847	
Observations	890	2,350	178	470	178	470
R <sup>2</sup>	0.172	0.237	0.244	0.123	0.247	0.097
Dependent variable:						
Mean	3.157	3.574	5.270	5.628	0.843	0.834
St. dev.	3.093	3.256	3.700	3.718	1.248	1.180
Panel (b) Mother's response - Jobb Offer:						
Intensity as the offspring	0.204*** (0.047)	0.193*** (0.028)	0.449*** (0.064)	0.278*** (0.044)	0.284*** (0.099)	0.217*** (0.064)
	Difference of means tests: Are the estimates different?					
p-values	0.832		0.027		0.575	
Observations	890	2,350	178	470	178	470
R <sup>2</sup>	0.221	0.264	0.296	0.098	0.194	0.065
Dependent variable:						
Mean	3.189	3.301	5.236	5.683	0.685	0.753
St. dev.	3.109	3.127	3.739	3.661	1.053	0.985
Employed mother	No	Yes	No	Yes	No	Yes

Estimates of the Highest-intensity measure and Number-of-intensity-groups measure include controls. The controls used are the same that those we reported in Table A3 in the Appendix. Intensity measure include reference groups fix effect. Dependent variable: Intensity measure - score reported in each group (friends, neighbors, family, people with the same professional profile, and workers from the same union); Highest-intensity measure - largest score reported across all groups; Number-of-high-intensity-groups measure - number of reference groups for which individuals report an intensity larger than 7. Highest-intensity measure and Number-of-high-intensity-groups measure include family fixed effect. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. In individual FE robust standard errors are clustered at the family level.

Table A9: Intergenerational transmission of direction of income comparisons by mother's employment status. Estimates with family fixed effect

	Social groups					Labor-related groups				
	Friends		Neighbors		Family	Same profile		Union		
Panel (a) Mother's response - Crisis Scenario:										
Direction as the offspring	-0.045 (0.092)	0.210*** (0.058)	0.278*** (0.101)	0.335*** (0.057)	0.349*** (0.080)	0.406*** (0.047)	0.176** (0.085)	0.199*** (0.047)	0.173** (0.083)	0.222*** (0.051)
	Difference of means tests: Are the estimates different?									
p-values	0.019		0.623		0.541	0.809		0.621		
Observations	178	470	178	470	178	470	178	470	178	470
R <sup>2</sup>	0.103	0.069	0.179	0.138	0.256	0.251	0.148	0.093	0.083	0.097
Dependent variable:										
Mean	-0.129	0.152	-1.202	-1.508	0.607	0.728	0.904	1.003	-0.180	-0.376
St. dev.	1.624	1.758	1.634	1.873	2.136	2.391	2.267	2.212	1.844	1.964
Panel (b) Mother's response - Jobb Offer:										
Direction as the offspring	-0.031 (0.073)	0.169*** (0.054)	0.202** (0.095)	0.233*** (0.052)	0.180** (0.086)	0.086 (0.053)	0.331*** (0.083)	0.243*** (0.046)	0.132 (0.097)	0.195*** (0.048)
	Difference of means tests: Are the estimates different?									
p-values	0.028		0.774		0.347	0.359		0.566		
Observations	178	470	178	470	178	470	178	470	178	470
R <sup>2</sup>	0.167	0.068	0.110	0.102	0.209	0.059	0.216	0.111	0.115	0.077
Dependent variable:										
Mean	-0.211	-0.073	-1.234	-1.467	-0.491	-0.543	1.699	2.022	0.165	0.061
St. dev.	1.635	1.759	1.681	1.609	2.059	2.150	2.481	2.448	2.043	2.102
Employed mother	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

This table shows estimates of equation (5). Estimates of the control variables included in the regression are reported in Table A6 in the Appendix. Dependent variable: Standardized individual scores. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.

Figure A1: Comparison of results of the intensity and direction of interpersonal comparisons in ELBU (children and mothers) with results in Clark and Senik (2010)

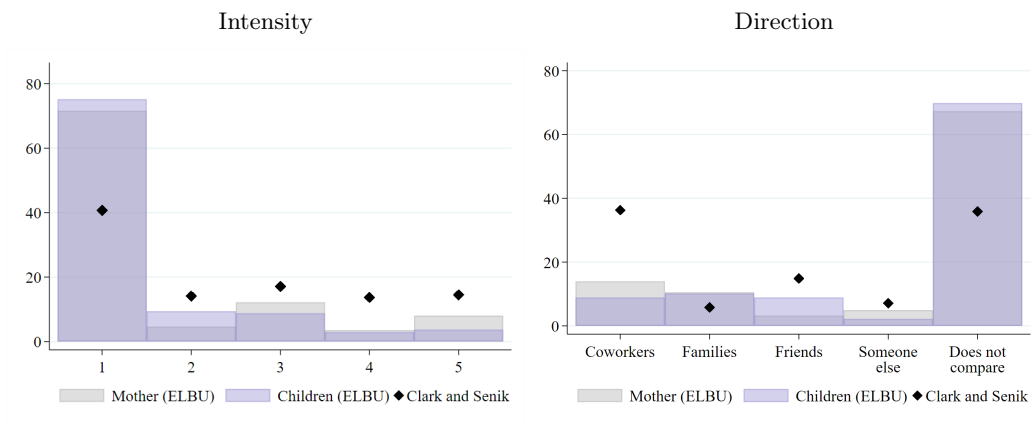


Figure A2: Comparison of intensity of interpersonal comparisons in Job Offer and Economic Crisis questions with results from Clark and Senik (2010)

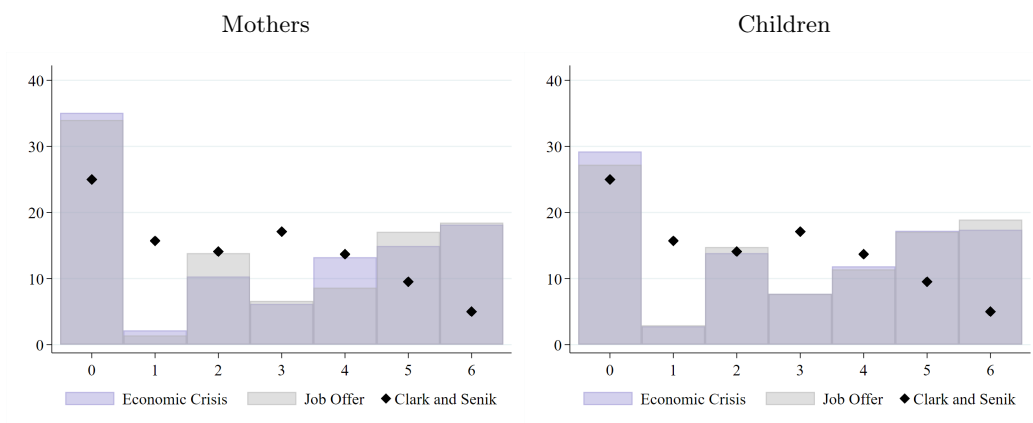


Table A10: Intensity of income comparisons. Instrumental variables. First stage. Crisis Scenario

	Intensity measure	Highest-intensity measure	Number-of-high-intensity-groups measure
Family Fixed Effect		-0.005 (0.033)	0.002 (0.045)
Sex (1=Female)		-0.002 (0.239)	-0.086 (0.087)
Racial ancestry (1=White)		0.088 (0.303)	-0.053 (0.125)
Emancipated (1=Yes)		-0.100 (0.420)	-0.076 (0.149)
Employed (1=Yes)		-0.021 (0.274)	0.010 (0.116)
Region (1=Montevideo)		0.091 (0.255)	-0.145 (0.091)
Log of household income (ten thousands)		0.144 (0.155)	0.004 (0.057)
Education Level (ref: primary)			
High School		0.214 (0.435)	0.259 (0.158)
Vocational School		0.013 (0.489)	0.225 (0.194)
Tertiary		-0.263 (0.552)	-0.024 (0.186)
Meet friend (ref: education)			
Neighborhood		0.219 (0.273)	0.086 (0.099)
Other		0.229 (0.350)	0.205 (0.144)
Big Five Inventory			
Extraversion		0.035 (0.024)	0.002 (0.009)
Agreeableness		0.059** (0.024)	0.020* (0.012)
Conscientiousness		-0.021 (0.020)	-0.003 (0.008)
Neuroticism		-0.025 (0.022)	0.004 (0.008)
Openness		0.019 (0.018)	0.014** (0.007)
Instrument:			
Intensity: Job Offer Scenario	0.459*** (0.118)	0.607*** (0.034)	0.566*** (0.066)
Dummy by reference group (ref: Friends)			
Neighbors	-0.491*** (0.114)		
Family	0.856*** (0.113)		
Same profile	0.459*** (0.118)		
Union	0.002 (0.113)		
Constant	1.865*** (0.060)	-1.732 (1.964)	-0.959 (0.685)
Observations	3,240	648	648
R <sup>2</sup>	0.300	0.389	0.225

Notes: \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses. In individual FE robust standard errors are clustered at the family level.



Table A11: Direction of income comparisons. Instrumental variables. First stage. Crisis Scenario

	Friends	Neighbors	Family	Same profile	Union
Family Fixed Effects	0.007 (0.035)	0.046 (0.031)	0.066* (0.039)	0.111*** (0.039)	0.053 (0.041)
Sex (1=Female)	0.127 (0.141)	0.002 (0.115)	0.364* (0.197)	-0.165 (0.173)	-0.307** (0.144)
Racial ancestry (1=White)	-0.268 (0.190)	0.217 (0.166)	-0.370 (0.233)	0.072 (0.169)	0.237 (0.160)
Emancipated (1=Yes)	-0.052 (0.198)	-0.039 (0.187)	-0.029 (0.303)	0.093 (0.274)	-0.045 (0.216)
Employed (1=Yes)	-0.001 (0.147)	0.038 (0.131)	0.256 (0.218)	-0.189 (0.199)	-0.128 (0.167)
Region (1=Montevideo)	-0.077 (0.141)	-0.078 (0.122)	-0.130 (0.194)	0.252 (0.167)	0.057 (0.145)
Log of household income (ten thousands)	0.172* (0.094)	-0.052 (0.070)	0.169 (0.124)	0.014 (0.121)	0.032 (0.090)
Education Level (ref: primary)					
High School	0.087 (0.279)	-0.144 (0.204)	-0.282 (0.364)	0.204 (0.331)	0.250 (0.275)
Vocational School	0.076 (0.297)	-0.044 (0.240)	0.012 (0.391)	-0.024 (0.375)	0.005 (0.295)
Tertiary	0.249 (0.340)	-0.044 (0.243)	0.032 (0.430)	0.117 (0.422)	-0.198 (0.311)
Meet friend (ref: education)					
Neighborhood	0.192 (0.150)	-0.078 (0.133)	0.099 (0.214)	-0.120 (0.190)	-0.077 (0.150)
Other	0.058 (0.160)	0.077 (0.146)	0.248 (0.232)	-0.221 (0.221)	-0.128 (0.170)
Big Five Inventory					
Extraversion	0.009 (0.012)	-0.025** (0.011)	-0.014 (0.017)	0.041*** (0.015)	-0.012 (0.012)
Agreeableness	-0.003 (0.015)	-0.015 (0.011)	0.071*** (0.019)	-0.006 (0.016)	-0.049*** (0.014)
Conscientiousness	0.012 (0.012)	0.012 (0.009)	-0.054*** (0.018)	0.017 (0.015)	0.013 (0.011)
Neuroticism	0.003 (0.012)	0.011 (0.011)	-0.036** (0.018)	0.008 (0.015)	0.011 (0.013)
Openness	0.002 (0.012)	0.000 (0.008)	0.006 (0.015)	-0.018 (0.013)	0.009 (0.011)
Instrument:					
Intensity: Job Offer	0.201*** (0.047)	0.552*** (0.043)	0.403*** (0.053)	0.475*** (0.040)	0.455*** (0.041)
Scenario	0.618 (1.099)	0.562 (0.884)	-0.421 (1.413)	-1.109 (1.403)	0.516 (1.065)
Constant					
Observations	648	648	648	648	648
$R^2$	0.075	0.343	0.166	0.293	0.316

Notes: \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%. Standard errors in parentheses.