

Standing On the Shoulders of Birth

Intergenerational Mobility, Inequality, and Pro-Social
Preferences

Lindokuhle Njozela

School of Economics

University of Cape Town

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Supervisor

Professor Justine Burns

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Table of Contents

Table of Contents	ii
List of Figures	v
List of Tables	vi
1 A Once in A Lifetime Chance	1
1.1 Contribution	2
2 An Accident of Birth	6
2.1 Motivation	6
2.2 Inequality and Mobility: Interdependency	9
2.3 The Drivers of Persistence	11
2.4 Redistribution	12
2.5 The South African Context	14
3 At the Mother’s Knee	17
3.1 Cultural Persistence and Change	18
3.1.1 The Origins of Trust	18
3.1.2 Socialisation and the Family	20
3.2 Ingroup Favouritism and Group Based Trust	23
3.3 Data and Descriptive Statistics	25
3.3.1 Measuring Trust and Ingroup Favouritism	26
3.3.2 Sample Characteristics	32
3.4 Methodology	36
3.5 Results	39
3.5.1 Intergenerational Transmission of Trust Attitudes	39
3.5.2 Robustness Checks and Sub-Sample Analysis	42
3.5.3 Intergenerational Transmission of Ingroup Favouritism	51
3.6 Discussion	53
4 By Design	56

4.1	Defining Fairness and Determining Status	57
4.2	Experimental Design	58
4.3	Quality of Responses	62
4.3.1	ELQ Validity	63
4.3.2	Implied Intergenerational Mobility	64
4.3.3	Socio-economic Correlates of Income Steps and Allocated Status	68
5	In Status We Trust	73
5.1	Status and Interpersonal Trust	73
5.2	Design: Trust Game	76
5.3	Balance Tests	79
5.4	Estimation	84
5.5	Results: Proposers	86
5.6	Results: Responders	98
5.6.1	Full Panel	98
5.6.2	Cross-Sectional Sample Analysis	106
5.7	Discussion	110
6	A Lottery of Birth	113
6.1	Cooperation in Public Goods Games	114
6.1.1	The Effects of Inequality	114
6.1.2	Fairness, Norms, and Reciprocity	115
6.1.3	Altruism and Inequality Aversion	117
6.1.4	Endowment Origins	118
6.2	Design: Public Goods Game	121
6.2.1	Group Characteristics	126
6.2.2	Potential Mobility	127
6.2.3	Group Pot Size and Inequality	129
6.3	Treatment Descriptive Statistics	130
6.4	Specification	133
6.5	Share of Endowment Contributed	134
6.5.1	Heterogeneity in Treatment Analysis	137
6.6	Tokens Contributed	143

6.7	Fair Share and Reciprocity	152
6.8	Discussion	156
6.8.1	Inequality Aversion and Share of Endowment Contributed	156
6.8.2	Altruism and Tokens Contributed	157
7	Blood, Sweat, and Privilege	159
7.1	Racialised Trust Across the Generations	159
7.1.1	Contribution and Findings	159
7.1.2	Limitations and Avenues for Further Research	160
7.2	Fairness, Inheritance, and Cooperation	161
7.2.1	Contribution and Findings	161
7.3	Inequality and Intergenerational Mobility	162
7.3.1	Contribution and Findings	162
7.4	Experiment Limitations and Avenues for Further Research	163
7.5	Policy Implications	165
7.6	Conclusion	165
	Appendices	167
	Appendix A Intergenerational Transmission of Trust Attitudes	167
A.1	Age, Trust, and Ingroup Favouritism	167
	Appendix B Experiment Instructions and Visuals	176
B.1	Experiment Instructions for Treatment Three	176
B.2	Z-Tree Screens Seen by Participant	199
	Appendix C Public Goods Game	203
C.1	Orthogonality in Treatment	203
	References	208

List of Figures

1	Distribution of Ingroup Favouritism	30
2	Distribution of Reported Income Steps	65
3	Intergenerational Mobility in Income Steps	67
4	Proposer's Share of Endowment Transferred by Treatment	88
5	Responder's Token Returns by Token Endowment	99
6	Example Deck of Cards Shown to Participants	125
7	Distribution of Total 100 Token Cards in Group	129
8	Average Share of Endowment Contributed Over Rounds	134
9	Relationship Between Share of Endowment and Tokens Contributed by Treatment and Endowment	144
10	Tokens Contributed by Treatment	145
11	Racial Trust and Ingroup Favouritism by Child's Age	167
12	Example Status Allocation Screen	199
13	Example Trust Game Proposers Screen	199
14	Example Trust Game Responder Screen	200
15	Example Public Goods Game Endowment Allocation Screen	200
16	Example Public Goods Game Task Information Screen	201
17	Example Public Goods Game Group Text Information Screen	201
18	Example Public Goods Game Group Table Information Screen	202
19	Example Public Goods Game Contribution Screen	202
20	Example Public Goods Game Earnings Screen	203
21	Average Share of Endowment Contributed by Endowment and Treatment	205
22	Average Share of Endowment Contributed by Advantage and Treatment	205

List of Tables

1	Mean Degrees of Trust: Maternal and Child	28
2	Weighted Mean Sample Characteristics by Maternal Trust	33
3	Main Results: Intergenerational Transmission of Trust Attitudes	40
4	Intergenerational Transmission of Reported Trust Attitudes	43
5	Intergenerational Transmission Maternal Residence Sub-Samples	45
6	Intergenerational Transmission Sub-Samples: Resident Mothers	47
7	Intergenerational Transmission Sub-Samples: Non-Resident Mothers	49
8	Specificity of Transmission by Maternal Residence	51
9	Intergenerational Transmission of Ingroup Favouritism	52
10	Correlations: Income Step, Status, and Socio-Economic Characteristics	69
11	Determinants of Reported Income Steps and Status Allocation	71
12	Trust Game Mean Sample Characteristics by All Treatments	80
13	Determinants of Treatment Assignment	83
14	Mean Proposer and Responder Characteristics	84
15	Proposer's Share of Endowment Transferred	90
16	Proposer's Share of Endowment Transferred: Alternative Estimators	93
17	Proposer's Share of Endowment Transferred: Status Homogeneity	95
18	Proposer's Share of Endowment Transferred: Treatment Sub-Samples	97
19	Pooled Responder's Share of Endowment Returned	100
20	Pooled Responder's Share of Endowment Returned: Alternative Estimators	102
21	Proposer's Share of Endowment Returned: Status Homogeneity	103
22	Pooled Responder's Share of Endowment Returned: Treatment Heterogeneity	105
23	Cross-Sectional Responder's Share of Endowment Returned	107
24	Cross-Sectional Responder's Share of Endowment Returned	109
25	Public Goods Game Mean Sample Characteristics	131
26	Main Regressions: Share of Endowment Contributed	135
27	Share of Endowment Contributed Treatment Heterogeneity	138

28	Share of Endowment Contributed Treatment Heterogeneity in Contributions by Round	141
29	Main Regressions: Tokens Contributed	146
30	Tokens Contributed Treatment Heterogeneity	148
31	Treatment Heterogeneity in Token Contributions by Round	150
32	Change in Contributions from Group Deviation	153
33	Deviation from Group Contributions and Change in Share of Endowment Contributed by Period	155
A.34	Intergenerational Transmission: Full Trusts Own Race Regressions	168
A.35	Intergenerational Transmission: Full Trusts Other Races Regressions . . .	169
A.36	Intergenerational Transmission: Full Trusts Others Regressions	170
A.37	Intergenerational Transmission: Ordered Logit Odds Ratios Robustness Check	171
A.38	Intergenerational Transmission: Probit Marginal Effects Robustness Check	172
A.39	Intergenerational Transmission of Ingroup Favouritism: Ordered Logit Odds Ratios Robustness Check	173
A.40	Intergenerational Transmission: Children with No Fathers in the Data . .	174
A.41	Intergenerational Transmission: Mothers and Fathers	175
C.42	Public Goods Game Treatment Allocation Regressions	204
C.43	Alternative Estimators: Share of Endowment	206
C.44	Alternative Estimators: Tokens Contributed	207

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Dedication

In 2006, a 15-year-old boy watched *An Inconvenient Truth*. Immediately afterwards, he went to fill the cistern with a 2kg bottle of water and vowed to never take a bath again and only shower. While knowing virtually nothing about himself, life, or the world, he knew that he cared and had to do something.

As he grew up, “never bathing and always showering” became “often showering and rarely bathing”. The 2kg bottle of water in the cistern became a common feature, not a permanent one. But 15 years later, he has managed to complete a thesis that speaks to the core of what he knew all those years ago and what he still knows now: I care and I have to do something.

I dedicate this thesis to that 15-year-old me who changed my life forever. Despite many years of capitulating to incrementalism and pessimism, he remains an inviolable part of my soul. It is my great honour to present here, in my small way, the work he demanded.

Kuhle, I hope I’ve lived a life you’re proud of, and I hope I will continue to live a life I am proud of.

Forever and always,

Lindo.

Abstract

Poor outcomes arising from natural and social circumstances to which individuals are born, over which they have no control, are widely seen as normatively objectionable and potential obstacles for economic growth. Understanding the persistence and effects of circumstances of birth is crucial to abating these adverse effects, particularly in the context of rising global inequality.

The existing literature is limited in two respects. Firstly, it lacks a comprehensive description of the persistence of intergenerationally transmitted preferences that contribute to the deterministic nature of accidents of birth. Secondly, the effects of dyadic and multi-generational (im)mobility on voluntary pro-social behaviour to mitigate the consequences of birth are rarely studied. This thesis fills these gaps in the South African context – a country with high and strongly racialised (a “natural” circumstance of birth) inequality, and comparatively low intergenerational mobility.

Using a nationally representative dataset, significant correlations are observed in inter-racial trust attitudes between mothers and children. However, this effect is substantially smaller and largely insignificant for non-coresident mothers and children. Disaggregating the trust attitudes shows strong intergenerational correlations amongst individuals who completely mistrust their race and other race groups, irrespective of mother-child co-residence.

In trust and public goods games with identical treatment designs, inherited socio-economic status is assigned in two treatments based on real-world self-reported parental or grandparental socio-economic status. The results show weak overall effects on trust orientated behaviour in the trust game with socio-economic status inherited from parents or grandparents. However, there is substantial heterogeneity in behaviour with inherited social status in the trust game with trust and trustworthiness tending to favour individuals who inherit a low socio-economic status.

Introducing inherited advantages for relatively higher endowment attainment in a public goods game shows increased contributions with parentally inherited status, but not from grandparents. Heterogeneous treatment effects show weak evidence of inequality aversion yet substantial altruistic preferences with parentally inherited advantages.

1 A Once in A Lifetime Chance

“My birth is my fatal accident”. — Rohith Vemula¹

The circumstances of an individual’s birth, whether fortunate or unfortunate, have far reaching consequences on every aspect of life. The phrase, “an accident of birth”, reflects the natural and social circumstances that an individual is born into over which they have no control (Spiegelberg, 1961). The differences in the general context into which an individual is born are highly likely to have a large impact on an individual’s potential socio-economic status and well-being. The relative misfortune or fortune of an individual’s birth can be related to differences in race, gender, caste, religion, nationality, household socio-economic status, and many others (Piraino, 2015; Ferreira and Gignoux, 2011; Belhaj Hassine, 2012; Pistolesi, 2009; United Nations Development Programme, 2020*a*; United Nations Development Programme, 2021).

These factors have an impact on many aspects of the human experience, including health, education, labour market outcomes, and overall well-being (United Nations Development Programme, 2020*a*; United Nations Development Programme, 2021). The deterministic nature of an individual’s circumstances of birth are commonly considered normatively objectionable (Rawls, 1971; Dworkin, 1981*a*; Dworkin, 1981*b*; Cohen, 1989) and obstacles to achieving economic growth (Hassler and Rodriguez Mora, 2000; Aiyar and Ebeke, 2020; Marrero and Rodríguez, 2013; Maoz and Moav, 1999). Addressing the pervasive inequalities related to accidents of birth has been a continual goal for policy-makers in many countries, as the following excerpt from the 2015 United Nations General Assembly shows: “universal respect ... for race, ethnicity and cultural diversity; and of equal opportunity permitting the full realization of human potential ...” (United Nations General Assembly, 2015, p. 4).

These various accidents of birth are often conceptualised as intergenerational mobility and inequality in access to social and economic opportunities. Intergenerational mobility reflects the correlation between an individual’s lifetime outcomes with those of their parents. The evidence shows that, while there is considerable variation across countries, parental characteristics are highly associated with those of their offspring (Black, Devereux et al., 2011; Corak, 2013; Solon, 1999; Narayan, Van der Weide, Cojocaru, Lakner,

¹Quoted in “Fatal Accidents of Birth: Stories of Suffering, Oppression and Resistance” by Harsh Mander.

Redaelli, Mahler, Ramasubbaiah and Thewissen, 2018). In addition, the degree of intergenerational mobility in a country is associated with the levels of income inequality and inequalities in access to opportunity (Brunori, Ferreira and Peragine, 2013; Corak, 2013). In countries with low intergenerational mobility, income inequality and inequalities in opportunities tend to be high (Brunori et al., 2013; Corak, 2013).

Although not necessarily causally related to intergenerational mobility, with the rising levels of global inequality (United Nations Development Programme, 2020*b*), the association between intergenerational mobility and inequality is sufficient cause to be concerned with the potential effects of accidents of birth on individual and social welfare. In addition, with the widespread and rising perception that inequalities from factors beyond one's control are unfair, low levels of intergenerational mobility with rising inequalities may heighten social tensions and conflicts (Barone and Mocetti, 2016). Assessing the effects of accidents of birth and intergenerational mobility on social attitudes is the focus of this thesis.

1.1 Contribution

There is widespread evidence of persistence in intergenerational outcomes, particularly in developing countries or those with limited social welfare (Narayan et al., 2018; Corak, 2013; Black et al., 2011). For instance, a son born to a father with twice as much income as another father, can on average expect to earn between sixty and seventy percent more than the son of a lower income father in Brazil, South Africa, India, Nigeria, and Peru (Jantti, Bratsberg, Roed, Raaum, Naylor, Osterbacka, Bjorklund and Eriksson, 2006; Corak, 2006). Developed countries have far lower persistence (and thus far higher intergenerational mobility), with estimates of the paternal earnings advantage falling between seven percent and fifty percent in the United Kingdom, the United States, Denmark, and Sweden (Jantti et al., 2006; Corak, 2006).

Despite the usefulness of intergenerational mobility as a broad gauge of how circumstances of birth may affect lifetime outcomes, the advantages and disadvantages conferred on an individual, by parents and birth, are nuanced. A measure as broad as intergenerational mobility cannot possibly capture all of these aspects. The deterministic nature of accidents of birth is highly context dependent. Cross-country variation in demographics, culture, and the heritability of economically relevant traits, can lead to very different

outcomes from inequality.

It is possible to partition individuals in a society using very many categories which describe a person's circumstances of birth, and determine their later life outcomes. At the extremes, as few as six to as many as 7,000 categories can be found (Cogneau and Mesplé-Somps, 2008; Pistolesi, 2009), and even with more modest estimates, the number of these categories can range between approximately seventy and one hundred (Ferreira and Gignoux, 2011; Belhaj Hassine, 2012). Of these categories, parental education and the individual's race, are on balance the most commonly used observable circumstances to consider (Cogneau and Mesplé-Somps, 2008; Pistolesi, 2009; Piraino, 2015; Ferreira and Gignoux, 2011). Countries with high levels of inequality and high income persistence provide opportunities to study the ways in which an accident of birth can pre-determine many life outcomes. South Africa, as one of the most unequal societies in the world and typified by low intergenerational mobility, is an ideal case to test the relationship between these typical features of accidents of birth, and social attitudes and norms such as trust, reciprocity and cooperation. In this thesis, South Africa will be used as the country of analysis.

A more detailed description of the South African context will be provided in Chapter 2. For this section, it is sufficient to note three relevant characteristics of South African society. Firstly, South Africa is a country with low intergenerational income mobility and high levels of inequality (StatsSA, 2019; United Nations Development Programme, 2020*b*; Piraino, 2015; Finn, Leibbrandt and Ranchhod, 2016). Secondly, South Africa's long history and pervasive legacy of racialised inequality and oppression make race (a clear accident of birth) as well as class, strong determinants of life outcomes. (Piraino, 2015). Thirdly, nearly half of all South Africans cite the high levels of inequality and racial divides as the two most common sources of dissension in the country (Potgieter, 2019).

Widespread discrimination in social and economic interactions on the basis of ethnicity or race are documented in a rich literature about South Africa (Burns, 2006; Arrow, 1998; Quillian, Pager, Hexel and Midtbøen, 2017; Bertrand and Mullainathan, 2004). Given the large racial disparities in well-being in South Africa and other parts of the world (StatsSA, 2019; United Nations Development Programme, 2021), understanding the persistence of racially discriminatory attitudes is crucial.

Using a nationally representative dataset, this thesis addresses the persistence of

racialised attitudes in South Africa. Building on the sizeable literature showing the intergenerational transmission of various attitudes and traits (Dixit, 2003; Bisin, Topa and Verdier, 2004; Guttman, 2000; Patacchini and Zenou, 2016; Doepke and Zilibotti, 2017; Tabellini, 2008; Hiller, 2008; Dohmen, Falk, Huffman and Sunde, 2012), as well as ingroup favouritism and biases (Jugert, Eckstein, Beelmann and Noack, 2016; Degner and Dalege, 2013; Socha and Diggs, 1999), estimates of the intergenerational correlation in race-orientated trust attitudes between mothers and children are presented.

Although the intergenerational transmission of other factors such as income, education, and mental health have been studied in South Africa (Eyal and Burns, 2019; Burns and Keswell, 2012), no literature exists describing the patterns of racial trust transmission in the country. In addition, the analysis includes estimates of intergenerational correlation in racial trust for parents and their adult children, which is a novel contribution given that most of the literature focuses on younger children (Degner and Dalege, 2013). This is important, as transmission may change over age. This analysis is possible given the unique structure of South African households, which are large, often three-generational, and are likely to contain non-related household members (Klasen and Woolard, 2009). Due to the legacy of Apartheid, mothers often live apart from their children, affording useful heterogeneity to explore intergenerational relationships, which is not typically present in other countries.

The results show that there are strong intergenerational correlations in racial trust attitudes and ingroup racial preference in trust. However, this correlation is highly dependent on co-residency between mothers and their children. Children who do not live in the same household as their mothers show far weaker, and often insignificant, correlations, implying that the shared environment is a strong driver of transmission. Much of the literature focuses on maternal intergenerational transmission, and this thesis provides an additional minor contribution through a limited investigation of paternal transmission, the results of which confirm those observed for mothers.

Several studies address the issue of intergenerational mobility and social attitudes (Shaleva, 2015; Gugushvili, 2016; Alesina and Giuliano, 2011; Alesina, Stantcheva and Teso, 2018; Schuck and Shore, 2019; Benabou and Ok, 2001; Piketty, 1995). Much of this literature focuses on preferences for redistribution, and attitudinal responses to an individual's (perceived) mobility, and their beliefs regarding the degree of intergenerational

mobility of society more generally (Barone and Mocetti, 2016; Alesina et al., 2018; Shal-eva, 2015; Gugushvili, 2016; Alesina and Giuliano, 2011). The evidence is consistent and shows that individuals' beliefs and experience of upwards mobility are positively related to their support for redistributive policies (Alesina et al., 2018; Alesina and Giuliano, 2011).

However, as with most attitudinal survey-based studies, causal effects are challenging to establish and all of these studies have focused on intergenerational transmission across two generations. In addition, in-principle support for redistributive or equity based policies often does not translate into actual support for policy implementation (Dixon, Durrheim and Thomae, 2017; Dixon, Durrheim and Tredoux, 2007). Experiments are a commonly used way to circumvent these issues, creating exogeneity to plausibly estimate causal effects, and allowing the researcher to test whether beliefs translate into actions. This thesis reports two sets of experiments to replicate real-world intergenerational inequalities in a lab environment, using both two- and three-generation mobility, thus adding to the limited literature on multi-generational mobility and trust and redistribution, particularly among adult children. Berg, Dickhaut and McCabe (1995) trust games, and a linear public goods game are used.

The format of the treatments in both games is as follows: individuals are exogenously allocated a social status based on their self-reported socio-economic position of their parents and grandparents. Aside from the inherent differences between the trust game and the public goods game in general, a key distinction in the design of this experiment is wealth and endowment inequality. In the trust game, the only source of heterogeneity is the individual's inherited social status with all individuals receiving the same initial wealth endowment. In the public goods game, heterogeneity in social status as well as wealth is introduced. This key difference allows for two separate investigations: Does intergenerational (im)mobility *itself* affect social attitudes, and do the origins of endowments as accidents of birth affect cooperative behaviour and redistributive attitudes?

The structure of this thesis is as follows. Chapter 2 investigates the pertinent literature for these questions. In Chapter 3, the intergenerational transmission of various forms of trust is analysed. Chapter 4 describes the basic format and treatment allocation used for both experiments, including balancing tests across treatments. Chapter 5 presents the results of the trust game, while Chapter 6 contains the outcomes from the public goods game. Chapter 7 concludes.

2 An Accident of Birth

“Where justice is denied, where poverty is enforced, where ignorance prevails, and where any one class is made to feel that society is in an organized conspiracy to oppress, rob, and degrade them, neither persons nor property will be safe” — Frederick Douglass

2.1 Motivation

The perceived unfairness of circumstances of birth has many implications (Rawls, 1971; Dworkin, 1981*a*; Dworkin, 1981*b*; Cohen, 1989). Fairness is a broad term which encompasses several aspects of interpersonal relations and institutions. It is a fundamental aspect of justice (Rawls, 1958), used to evaluate the equity of outcomes and their engendering processes (Fehr and Schmidt, 1999; Thibaut and Walker, 1978). It also forms a part of reciprocity in rewarding benevolence and punishing unkindness (Rabin, 1993). Amongst several other contexts, fairness is a core principle in designing effective self-governing institutions for natural resource preservation (Ostrom, 2002; Ostrom and Hess, 2000), maintaining employee morale and bargaining over wages, (Greenberg, 2011; Rees, 1993), and promoting political participation (Carman, 2010). Despite the rational predictions of pure self-interest, a wealth of evidence, particularly from experimental economics, has established strong preferences for fair outcomes, even with considerable costs of enforcement to the individual².

As determinants of individual outcomes, circumstances are commonly considered to be unfair if they at least do not correspond to abilities or efforts (Rawls, 1971; Dworkin, 1981*a*; Dworkin, 1981*b*; Cohen, 1989). The specific factors that are deterministic are context dependent and vary considerably across societies (Brunori et al., 2013). Factors which determine life outcomes and which can be considered as fairly or unfairly assigned can be broadly categorised into aspects which reflect social inequalities such as race, gender, nationality or geography, culture, and parental socio-economic outcomes³ (Piraino, 2015; Ferreira and Gignoux, 2011; Belhaj Hassine, 2012; Pistoiesi, 2009).

Apart from fixed characteristics such as race and gender, intergenerational mobility

²See Fehr and Schmidt (2001), Fehr and Schmidt (2006), Chaudhuri (2011), Engel (2011) for a reviews.

³Commonly measured by paternal education, and occupation.

in the factors mentioned above is often measured, and serves as a descriptive measure of changes in circumstance. Intergenerational elasticities⁴, or correlations, depending on the outcomes and predictors of interest, vary considerably across countries (Solon, 1999; Corak, 2013; Black et al., 2011; Narayan et al., 2018). Intergenerational mobility is most commonly estimated for easily observed outcomes such as income, occupation, and educational attainment. The most commonly used measure of intergenerational mobility is the slope coefficient in a linear regression of child’s outcome as function of parental outcome, with the literature commonly focused on fathers and sons⁵. The estimate reflects a degree of persistence in outcomes across generations. The larger the slope coefficient, the more deterministic parental outcomes are to individual outcomes. Thus, a higher intergenerational estimate indicates lower mobility.

Intergenerational correlations do not necessarily indicate the persistence of disadvantage. It may be that the lower ends of the income distribution are relatively more mobile than individuals born into the higher end of the income distribution. In addition, the sign of the correlation does not indicate whether mobility is upwards or downwards. Moreover, cross-country comparisons in mobility are not always regarded as conclusive, given the differences in measurement and data (see for instance Emran and Shilpi (2019) for a review).

As such, estimates across countries differ considerably, from 0.07 in Denmark to 0.67 in South Africa (Checchi, Peragine and Serlenga, 2010; Piraino, 2015; Finn et al., 2016). The average intergenerational earnings elasticity in high income countries is approximately 0.35, and 0.5 in low to medium income countries (Nybom, 2018). Developed countries have far lower persistence, with a paternal earnings advantage of between 0.07 and 0.5 in the United Kingdom, the United States, Denmark, and Sweden (Jantti et al., 2006; Corak, 2006). Across forty-two countries, the correlations range from 0.10 in Ethiopia to 0.66 in Peru (Hertz, Jayasundera, Piraino, Selcuk, Smith and Verashchagina, 2008). Regional differences are also evident in educational attainment and mobility. Intergenerational correlations in schooling are highest in Latin America at 0.6 (Hertz et al., 2008). In addition, while average mobility in educational attainment has been increasing globally,

⁴A value of zero indicates a society in which intergenerational outcomes are entirely unrelated, and a value of one is a society in which parental circumstances perfectly predict lifetime outcomes.

⁵ $y_c = \beta_0 + \beta_1 y_p + \epsilon$ where y_c is child outcome, y_p is parental outcome, β_0 is a time trends in outcomes across generations, and β_1 reflects the transmission coefficient of interest.

approximately forty-eight percent of children born to parents in the top educational quartile remain there, while only fourteen percent of children born to parents in the bottom half make it to the top quartile (Narayan et al., 2018).

Recent advances in the literature have also provided estimates of multigenerational transmission. These are beneficial, as intergenerational measures between parents and children underestimate intergenerational correlations which function over more than two generations (Mare, 2011; Lindahl, Palme, Massih and Sjögren, 2015; Zeng and Xie, 2014; Clark, 2014; Braun and Stuhler, 2018). However, it is also plausible that multigenerational effects function solely through adjacent generations, in that any intergenerational correlations between grandparents and grandchildren are a direct result of transmission through the individual's parents (Becker and Tomes, 1979; Hodge, 1966; Behrman and Taubman, 1985; Peters, 1992; Warren and Hauser, 1997; Lucas and Kerr, 2013). The empirical evidence is inconclusive on this proposition. Numerous studies find no multigenerational effect (Hodge, 1966; Behrman and Taubman, 1985; Peters, 1992; Warren and Hauser, 1997; Lucas and Kerr, 2013), while others do observe significant evidence of transmission from grandparents to grandchildren (Lindahl et al., 2015; Zeng and Xie, 2014; Clark, 2014; Braun and Stuhler, 2018).

Where multigenerational effects are observed, these are often lower than estimates of direct parent and child correlations, (Narayan et al., 2018; Solon, 2018), with the exception of Clark (2014), who finds very large multigenerational elasticities of 0.7. A key feature which distinguishes these results is household living arrangements, with resident grandparents found to be particularly important for grandchild outcomes, compared to non-resident (Zeng and Xie, 2014). With longer life expectancy, and nearly forty percent of the world's population living in extended family households which include relatives other than parents and children (Pew Research Center, 2019), understanding multigenerational transmission will become increasingly informative.

The implications of high inequality and low mobility are likely to be profound. Societies with high intergenerational mobility are better able to promote innovation across generations (Hassler and Rodriguez Mora, 2000), demonstrate accumulation and efficient allocation of human capital (Maoz and Moav, 1999), display higher economic growth (Aiyar and Ebeke, 2020; Marrero and Rodríguez, 2013), and lower levels of income inequality (Solon, 2002; Corak, 2013). In addition, mobility increases perceptions of

meritocracy and the fairness of income generating institutions, thus promoting political stability (Houle, 2019; Heiserman, Simpson and Willer, 2020).

While low intergenerational mobility is often interpreted as a cause for concern, low persistence or perfect mobility is not necessarily desirable. A highly mobile society may not be considered meritocratic, fair, or economically efficient, given the large intergenerational correlation which is observed in instances of deep parental investment in children (Ichino, Karabarbounis, Moretti and Salvanes, 2008; Swift, 2004). Given the high degree of similarity in many income-generating characteristics such as genetic ability, cultural attitudes towards work, and consumption preferences, between parents and children, some degree of persistence is inevitable (Becker and Tomes, 1979; Bowles and Gintis, 2002; Blanden, Gregg and Macmillan, 2007; Doepke and Zilibotti, 2008). While mobility is often indicative of a fair society and thus legitimises and support institutional stability, paradoxically, it may also have a deleterious effect on political stability and solidarity. (Acemoglu, Egorov and Sonin, 2018; Gugushvili, 2020).

2.2 Inequality and Mobility: Interdependency

Although descriptions of intergenerational mobility are important, the degree of inequality, and its relationship to mobility, is also of interest. Countries with low intergenerational mobility tend to have high inequality, in what is known as the Great Gatsby Curve (Corak, 2013; Solon, 1999). This phenomenon is broadly attributed to some form of inherited endowment. These endowments include skill, ability, occupational choices, risk preferences and other economically relevant attitudes, immutable identity or group markers, and parental resources (Becker and Tomes, 1979).

In particular, inequality of opportunity plays a key role in cementing socio-economic circumstances of birth. A strong relationship is observed between inequality and intergenerational persistence in education and income (Brunori et al., 2013). Decompositions of intergenerational persistence find that race, wealth and schooling are important in the transmission of economic status (Bowles and Gintis, 2002; Blanden et al., 2007; Adermon, Lindahl and Waldenström, 2018). These results accord with the higher intergenerational mobility found in more equal countries, and in countries with larger state welfare programmes (Solon, 2002; Corak, 2013). However, factors such as neighbourhood sorting can reduce the efficacy of (universal) welfare programmes in abating the relationship between

income inequality and mobility (Heckman and Landersø, 2021).

If intergenerational inequalities result from an unequal distribution of opportunities from circumstances of birth, this may be considered objectionable, or unfair. However, as noted above, inequality arising from persistence through parental investment towards their children's success, and the child's own efforts or (inherited) talents may be perceived as fair (Rawls, 1971; Dworkin, 1981*a*; Dworkin, 1981*b*; Cohen, 1989). There is a vast array of ways in which parents confer opportunity and advantage to their children, which includes income generating characteristics such as genetic ability, cultural attitudes, and preferences (Becker and Tomes, 1979; Bowles and Gintis, 2002). This makes it difficult to ascertain how much of the intergenerational persistence which contributes to inequality can be considered fair or unfair. Overall, estimates from forty-one countries of the share of overall inequality which is due to inequality of opportunity, range from two to thirty-four percent (Brunori et al., 2013).

International comparisons of inequality of opportunity are considerably more difficult to make than those of intergenerational mobility⁶. What is considered inequality of opportunity is greatly varied and context dependent, and thus consistent measurement is challenging, and comparison is often inadvisable (Brunori et al., 2013).

Despite the challenges in measurement, understanding the relative importance of the factors which determine inequality or mobility has meaningful policy implications and consequences for social goals. For example, policy aimed at improving intergenerational mobility may be futile if the elasticities and correlations of economic outcomes between parents and children are due largely to genetic transmission of skill or ability (Bowles and Gintis, 2002). Moreover, ability-driven outcomes characterise a meritocratic society and thus are unlikely to be deemed objectionable in and of themselves, or to require policy intervention. On the other hand, if life-time outcomes are determined substantially by race or gender, policies can be established to promote equality across these groups. Understanding the factors behind income persistence is crucial.

⁶See reviews by Brunori et al. (2013) for details on the substantial methodological and conceptual caveats in interpreting cross-country estimates and, for instance, Ramos and Van de Gaer (2016) and Pignataro (2012) on the measurement and conceptual difficulties in the estimates.

2.3 The Drivers of Persistence

Parental socialisation is likely to perpetuate intergenerational outcomes. In a break from the tradition of exogenously determined preferences, recent literature has explored endogenous preference formation from parental socialisation (Bisin and Verdier, 2011; Doepke and Zilibotti, 2017). There is a substantial literature which empirically tests for socialisation mechanisms for a variety of preferences both through surveys and experiments (Guiso, 2008; Dohmen et al., 2012; Lupu and Peisakhin, 2017; Chowdhury, Sutter and Zimmermann, 2018; Cipriani, Giuliano and Jeanne, 2013; Ben-Ner, List, Putterman and Samek, 2017). These include attitudes such as trust and risk preferences (Dohmen et al., 2012), among many others.

Common justifications for persistent inequalities are suggested as inevitable consequences of innovation and differential returns to ability (Blanden et al., 2007; Doepke and Zilibotti, 2008). High-ability individuals are better able to participate in job markets with higher returns and wages than those of low ability. The resultant inequality is therefore justified as a meritocratic society. As ability (such as intelligence) is a heritable genetic trait, intergenerational mobility estimates capture some just inequalities and are thus not of much concern in and of themselves. A society concerned with inequality of outcomes or social mobility may be better able to achieve their desired distribution of resources by intervening in other ways if intergenerational inequality is simply a matter of genetic inheritance. Genetic endowments are constant from conception throughout the life course. The fixed nature of genetic inheritance is often used as indicative of intergenerational transfers in ability and thus status.

However, recent advances in epigenetic theory have challenged this approach. While an individual's genetic make-up is fixed, environmental or other external factors may change how the genes are expressed. Two genetically identical individuals may differ in their capacity to exercise their ability because of changes in the genomes associated with gene in what is known as *in utero* based inequality (Currie, 2011). Bowles and Gintis (2002) present estimates of the relative importance of the various factors associated with intergenerational mobility in the United States. Their estimates indicate that twenty percent of the intergenerational correlation in earnings is attributable to IQ conditional on schooling, forty percent attributable to schooling conditioned on IQ, twelve percent to personality measured as fatalism, twenty-eight percent to race, with very little, if

any, attributed to genetic transmission. Contribution to intergenerational correlation in incomes were of a similar magnitude.

Cumulative advantage has long interested researchers (Dannefer, 2020). As the rich become richer and the poor become poor, very little attention has been paid to the role of inheritance and social position of origins on wealth accumulation. This is a distinct process from much of the existing literature which largely considers racial differences in wealth accumulation. These advantages play an important role in perpetuating historical injustice such as discrimination and slavery in the United States (Gittleman and Wolff, 2004). The returns from wealth sustain the racial wealth gap despite similar saving rates between White and African American individuals after controlling for income (Gittleman and Wolff, 2004). In many countries, redress and redistribution are important topics as a way to reduce inequality caused by past historical injustice.

2.4 Redistribution

As discussed, perceptions are important when considering the drivers and consequences of inequality and immobility, and the need to regulate them or respond from either an individual or societal perspective. Accidents of birth involve elements beyond the individual's control, which can be described as fortune, or luck. An individual's outcomes are formed by two elements of luck: luck which comes from factors beyond their control and luck which arises from deliberate decisions (Dworkin, 1981*a*)⁷. Advantages and misfortunes which arise from luck that is not a consequence of the individual's choices should be equalised, while those which arise from the individual's actions should be (relatively) tolerated (Arneson, 1989; Dworkin, 1981*a*; Cohen, 1989). This luck egalitarianism argues that it is no less unfair for children who inherit abilities which reduce their life outcomes than children whose outcomes are determined by race and gender (Arneson, 1989; Dworkin, 1981*a*; Cohen, 1989). In both cases the determinants are beyond one's control and the individual cannot be held responsible or rewarded for the benefits of their genetic lottery. There is evidence that individuals are more willing to redistribute inequality in wealth from brute luck than option luck (Tinghög, Andersson and Västfjäll, 2017).

A seminal contribution to the literature by Benabou and Ok (2001) builds on the

⁷These are sometimes referred to as brute luck and option luck, respectively (Dworkin, 1981*a*).

median-voter theorem and incorporates beliefs about future mobility to explain why redistributive policies are not more widely supported in unequal society. First, the median-voter theorem posits that high levels of inequality are not sustainable in a democratic society in which policies are determined by a simple fifty-plus-one decision making rules (Meltzer and Richard, 1981). The key tenet on which this hypothesis rests is in that countries in which the median voter is poorer than the average voter, by virtue of low income voters constituting a greater share of disadvantaged members of society, would favour redistributive policies and thus inequality would be reduced (Meltzer and Richard, 1981). However, Benabou and Ok (2001) argues that as voters expect to move up the income ladder in the future, they oppose current redistributive policies which would be beneficial to them since they expect to be subject to these same taxations in the future as they move up the income distribution (Benabou and Ok, 2001; Cojocaru, 2014). These beliefs on upward mobility are often overly optimistic in societies with a tradition of relatively limited government interventions (Alesina et al., 2018). Consequently, inequality persists despite the purely self-interested reasons to support redistributive policies.

These motivational beliefs lead to beliefs in a just world which rewards effort, despite information to the contrary. (Lerner, 1980; Nudelman, 2013; Furnham and Procter, 1989). Such a belief is relatively stable, and necessary in that it provides incentives to make particular decisions today, with the confidence that they will be rewarded appropriately in the future. However, such biases can lead to persistence of unjust systems, particularly in terms of redistribution, as the belief in a just world attributes misfortune such as poverty to individual weakness of the poor, and not structural impositions of unjust institutions (Furnham and Gunter, 1984; Benabou and Tirole, 2006). The general importance of beliefs about the fairness of the income generating process, which is a common theme in these theories, is supported by several empirical findings (Alesina and Angeletos, 2005; Corneo and Grüner, 2002; Oishi, Kesebir and Diener, 2011). Countries with high levels of inequality and low mobility, such as South Africa, provide an opportunity to examine the stability of beliefs and attitudes in a society with high levels of injustice, and inadequate redistribution.

2.5 The South African Context

South Africa has a long history of racial discrimination and oppression of Black African, Coloured, and Indian/Asian race groups⁸. Although widespread and affecting all of these groups, the racial hierarchy during Apartheid broadly placed White individuals at the highest echelon and Black Africans at the bottom. Large and persistent racial disparities are evident in outcomes such as education, health, labour market participation, and the various other correlates of poverty and social marginalisation.

Decades of separation during Apartheid created lasting legacies (Hall and Posel, 2019). Spatial segregation during Apartheid resulted in male migration to cities and mines in pursuit of employment opportunities, while children and wives were left residing in rural or underdeveloped areas (Savage, 1986). High rates of poverty and unemployment have led to the dissolution, re-formation, and merging of households, to provide informal safety nets against poverty and negative economic shocks (Klasen and Woolard, 2009; McElroy, 1985; Wiemers, 2014). These strategies often create large households which are often observed to be fixed in poverty traps, with few employed members (Woolard and Klasen, 2005; Leibbrandt, Woolard and Ebrahim, 2016; Edmonds, Mammen and Miller, 2005).

Unsurprisingly, the country is characterised by very low intergenerational earnings mobility (StatsSA, 2019; United Nations Development Programme, 2020*b*; Piraino, 2015; Finn et al., 2016). The Gini Coefficient in South Africa is 0.65, with estimates of the intergenerational earnings elasticity of 0.67 - both which are amongst the highest in the world (Piraino, 2015; Finn et al., 2016). In addition, more than a fifth of the intergenerational earnings inequality in South Africa can be explained by paternal education and race alone (Piraino, 2015). Wealth inequality is also extremely high, with the top ten percent of the population owning eighty-six percent of aggregate wealth (Chatterjee, Czajka and Gethin, 2020). While inter-racial inequalities have reduced since the end of Apartheid, they remain large, and aggregate inequality has not diminished since democracy.

Evaluating the social attitudinal effects of Apartheid is difficult due to data constraints, although some progress has been made in this respect (Mariotti and Fourie, 2014). Two competing hypotheses arise regarding the effects of widespread racialised

⁸These are all racial categories used during Apartheid as fundamental to the regime's policy of racial segregation which are still used in South Africa post-Apartheid. "Coloured" is an umbrella term for mixed race and Cape Malay ancestry.

discrimination during Apartheid, and its subsequent socio-economic legacy, on social attitudes. On the one hand, the scarcity of resources may have fostered a culture of mistrust, while on the other hand the need for survival and resistance of the Apartheid regime may have fostered a sense of trust and community (Abel, 2019). There is a dearth of empirical literature on these dynamics. Existing studies show some support for both hypotheses (Abel, 2019; Amodio and Chiovelli, 2018). Abel (2019) shows that communities which live in former homelands are more trusting of their neighbours, people in general, and of their own and other ethnic groups. Conversely, Amodio and Chiovelli (2018) show that at the time of democratic transition and mass changes in migration, areas with increased ethnic diversity experienced substantially increased rates of violence.

Attitudes such as trust are spatially and context dependent, and the vestiges of segregationist policies remain evident in present day South Africa. Racial spatial segregation in South Africa is amongst the highest in the world. In South Africa, Theil's entropy index (a measure of average segregation), is 0.49⁹ (Statistics, 2016). For comparison, in the year 2000, Detroit, the most racially segregated large city in the United States, had a Theil's entropy index of 0.48. In contrast, Johannesburg, the least segregated and largest city in South Africa, has a Theil's entropy index of 0.57 (Statistics, 2016). This deep-rooted segregation plays out in limited interracial contact which may foster positive group relationships (Allport, Clark and Pettigrew, 1954; Pettigrew and Tropp, 2006), with only fifteen percent of South Africans reporting frequent inter-racial contact at home, in social gatherings, or in public recreational areas (Potgieter, 2019). This is a salient issue given that Corno, La Ferrara and Burns (2019) find interracial contact in the South African context can have positive effects on reducing interracial prejudice. Moreover, the reduction in interracial prejudice can increase the academic performance of disadvantaged (Black African) race groups (Corno et al., 2019).

Despite this, attitudes towards reconciliation and race relations appear to be improving (Potgieter, 2017; Potgieter, 2019). Nearly sixty percent of South Africans believe that progress has been made towards reconciliation since the end of Apartheid, and approximately forty percent consider race relations to have improved since Apartheid (Potgieter, 2019). However, race continues to be a polarising feature of social transmission with approximately seventy percent of South Africans believing that the continued

⁹At the local municipality level.

use of race as a measure of transformation, and society’s failure to address racism, as key barriers to reconciliation (Potgieter, 2019). Aside from inequality, race is the most commonly cited (fifty percent) source of division in the country. In addition, between 2002 and 2019, South Africans displayed a relatively high and stable desire for a unified society, although beliefs that this is possible are relatively less optimistic (Potgieter, 2019; Potgieter, 2017).

In contrast to beliefs in reconciliation, trust in South Africa is particularly low, with only nine percent agreeing that most people can be trusted (Plus4 Research, 2021). However, there is considerable ingroup based trust, with a greater sense of within group trust than outgroup trust (Potgieter, 2019; Potgieter, 2017; Plus4 Research, 2021). While reported ingroup trust is relatively high (between sixty percent and eighty-five percent), trust towards non-South Africans is considerably lower at approximately fifty percent¹⁰ (Potgieter, 2019). The high end of these measures of trust are insular, and measure trust towards colleagues, neighbours, and relatives. (Potgieter, 2019). Outgroup trust is relatively the same for various identities, and group markers (apart from foreign nationals), with high outgroup race trust at approximately eight percent, moderate trust (“quite a lot”) at nineteen percent, and weak trust (“somewhat”) at thirty-nine percent (Potgieter, 2019).

Levels of trust in South Africa have much room for improvement, particularly across racial groups. The transmission of trust across the generations in South Africa has not been examined in the literature, a particularly important exercise given the legacy of Apartheid for the generations born under and post-Apartheid. Using a nationally representative dataset of South Africans in 2017, patterns in different forms of trust, and its intergenerational transmission from mothers to children, is analysed in Chapter 3.

¹⁰Measured as trust a great deal, quite a lot, and somewhat.

3 At the Mother's Knee

“Education commences at the mother’s knee, and every word spoken within hearsay of little children tends toward the formation of character” — Hosea Ballou

While traditionally assumed to be exogenously determined, there is a growing literature in Economics which focuses on the socialisation process across generations as an engendering and sustaining mechanism of traits, beliefs and attitudes (Dixit, 2003; Bisin et al., 2004; Guttman, 2000; Patacchini and Zenou, 2016; Doepke and Zilibotti, 2017; Tabellini, 2008; Hiller, 2008). There is a substantial literature which empirically tests for socialisation mechanisms for a variety of preferences, both through surveys (Guiso, 2008; Dohmen et al., 2012; Lupu and Peisakhin, 2017; Grossman, Manekin and Miodownik, 2015; Kosse, Deckers, Pinger, Schildberg-Hörisch and Armin, 2018; Wilhelm, Brown, Rooney and Steinberg, 2008; Lupu and Peisakhin, 2017; Jennings, Stoker and Bowers, 2009) and experiments (Bettinger and Slonim, 2006; Cipriani et al., 2013; Ben-Ner et al., 2017; Chowdhury et al., 2018; Alan, Baydar, Boneva, Crossley and Ertac, 2017; Levin and Hart, 2003).

In addition, there is a growing body of evidence of cultural transmission of trust over time, including events such as the slave trade in Africa, and the persistence of attitudes towards government and redistribution after the reunification of East and West Germany. South Africa is an interesting case for understanding the persistence of attitudes given the country’s transition from Apartheid to democracy. One may expect that a history of large scale racial segregation and discrimination would imprint substantial racialised attitudes, particularly a sense of ingroup unity and trust attitudes more favourable to one’s own race group. Given the high levels of racially-based inequality and pervasive poverty, inter-racial trust may be a key aspect of increasing social capital, and thus reducing these racial inequalities. This chapter explores the intergenerational correlation in trust attitudes in South Africa, focusing on heterogeneous transmission effects and the long-term persistence of intergenerationally transmitted attitudes. The main attitudes of interest being racial trust, trust in others, and ingroup favouritism in trust attitudes.

The remainder of this chapter is structured as follows. Firstly, the literature on the formation and intergenerational persistence of trust and ingroup favouritism is reviewed

in Sections 3.1 and 3.2. This provides the basis and motivation for the analysis presented in this chapter. Thereafter, the data and methodology are described in Sections 3.3 and 3.4, and the results are presented in Section 3.5. The chapter concludes with a discussion of the results and associated limitations in Section 3.6.

3.1 Cultural Persistence and Change

3.1.1 The Origins of Trust

Generalised trust is one of the most commonly considered forms of trust. From a social welfare perspective, it is argued that trust attitudes towards strangers are the most important determinant of social outcomes. There are several theories associated with the formation of generalised trust (Whiteley, Van Deth, Maraffi, Newton and Whiteley, 1999; Uslaner, 2000; Banfield, 1958; Putnam et al., 2000; Yamagishi and Yamagishi, 1994)¹¹. These can be broadly separated into two categories (Delhey and Newton, 2003): individual factors (Erikson, 1950; Banfield, 1958; Carl and Billari, 2014; Uslaner, 2002) and environmental characteristics (Yamagishi and Yamagishi, 1994; Putnam et al., 2000).

Social theories argue that trust is determined by the characteristics of society instead of those of the individual (Putnam et al., 2000; Yamagishi and Yamagishi, 1994). From this perspective, societal characteristics such as political stability, the strength of informal social networks, and the prevalence of voluntary community associations create conditions which support the development of trust attitudes (Putnam et al., 2000; Yamagishi and Yamagishi, 1994).

The theory of individual-based formation of generalised trust argues that trust is a stable personality trait which is formed in childhood through socialisation (Uslaner, 2000; Uslaner, 1999). The theory of individual-based formation of generalised trust argues that trust is an innate attitude and belief which develops early in life, and is stable over time (Uslaner, 2002). While an individual's generalised trust may vary somewhat, there is an underlying psychological and moral element which remains unchanged by new experiences (Uslaner, 2002; Uslaner, 2000). This perspective emphasises that generalised trust beliefs, once internalised, cannot be substantially impacted by interactions with others (Uslaner, 2002; Uslaner, 2000; Uslaner, 1999). Trust is therefore a moral decision,

¹¹Namely, personality theory, success and well-being theory, voluntary organisation theory, social network theory, community theory, societal theory (Delhey and Newton, 2003).

impacted by important developmental events which are associated with other pro-social traits and positive attitudes, such as optimism and an overarching regard for others in many spheres of life (Uslaner, 2002; Jones, 1996; Franklin, Janoff-Bulman and Roberts, 1990).

Another perspective that focuses on individual specific characteristic argues that an individual's success in life, social status, and cognitive ability, are the basis of trust (Banfield, 1958; Carl and Billari, 2014). The central tenet of this perspective is that as trust inherently involves risk taking, an individual's social position can disproportionality affect their willingness to engage in trusting exchanges. This reluctance to engage in trusting exchanges prevents the individual from gaining information that could alter their beliefs (Yamagishi, 2001; Banfield, 1958; Carl and Billari, 2014).

Empirical evidence on these theories is mixed, which in part reflects the potential overlap between the two. In several studies, personality traits such as optimism are positively associated with generalised trust, which supports the theory of trust attitudes based on individual moral development (Uslaner, 2002; Ljunge, 2014; Fernández, 2011; Moschion and Tabasso, 2014). There is similar empirical support for individual circumstances as determinants of trust, particularly in children. (Almås, Cappelen, Salvanes, Sørensen and Tungodden, 2015; Bauer, Chytilová and Pertold-Gebicka, 2014; Kosse et al., 2018; Almås et al., 2015). Children from low-income households are less altruistic (Bauer et al., 2014; Bettinger and Slonim, 2006), more selfish (Bauer et al., 2014), and less willing to cooperate with others (Almås et al., 2015). However, educational interventions exist which increase pro-sociality to levels which can persist (even in cases of relatively short interventions of nine months) for up to four years (Bettinger and Slonim, 2006; Cappelen, List, Samek and Tungodden, 2016). As with individual theories, the importance of societal characteristics for trust is evident in a variety of studies (Glanville and Paxton, 2007; Paxton and Glanville, 2015; Delhey and Newton, 2003; Freitag and Traunmüller, 2009).

One key aspect of the societal characteristics based perspective is worth noting. A societal view of trust formation can lead to self-reinforcing low or high trust equilibria, as a result of differences in individual willingness to engage in trust related exchanges (Guiso, 2008). Individuals in high trust communities will engage in trusting exchanges which, as a result of the high levels of trust in their community, are likely to be positive.

These positive exchanges then confirm the individual's beliefs that individuals are in general trustworthy (Yamagishi, 2001; Guiso, 2008). The confirmation of the individual's beliefs then lead to a greater willingness to engage in further trusting exchanges, which provide additional confirmation of the individual's beliefs.

In contrast, individuals in low trusting communities will be reluctant to trust others. This then limits the information they can receive about the trustworthiness of others. The frequency of the exchanges is essential, as each exchange presents an opportunity for the individual to acquire more information on the general trustworthiness of strangers, and therefore, more opportunities to adjust trust attitudes (Guiso, 2008). Not only are individuals in a trusting society receiving positive information, they are also engaging more in such transactions, thereby increasing the reinforcement process. Individuals in mistrusting communities are sceptical of transacting with others, limiting their ability to acquire information. In the few cases in which they do, they place excessive weight on the generalisability of the (presumably) negative interactions. The frequency of exchanges in these polarised communities 'locks-in' high trust and low trust equilibria (Guiso, 2008).

3.1.2 Socialisation and the Family

It is well recognised that parents play a substantial role in the formation and persistence of cultural traits (Guiso, 2008; Dohmen et al., 2012; Bisin and Verdier, 2011). Cultural transmission through socialisation is distinguished in three ways: vertical transmission, oblique transmission, and horizontal transmission. Vertical transmission is the direct passing on of culture from parents to their children, oblique transmission acts through a non-parental adult role model, and horizontal transmission functions through one's peers (Cavalli-Sforza and Feldman, 1981; Boyd and Richerson, 1988; Bisin and Verdier, 2011). These distinctions are widely adopted and characterise most of the existing theoretical literature (Bisin and Verdier, 2011). Parents choose how much effort to exert to socialise their children towards a particular trait with endogenously determined probabilities of successful transmission. Although parents are assumed to be altruistic towards their children, they evaluate the welfare of their children from the traits to be transmitted through the parents' own utility function. In doing so, parents are biased towards their own traits, and their incentives are such that culture persists through this so-called imperfect altruism (Bisin and Verdier, 2000).

In evaluating the socialisation effort, parents observe the cultural heterogeneity which would influence their child's characteristics through oblique transmission mechanisms (Bisin and Verdier, 2000), with children and parents from minority groups facing higher socialisation costs. The child's exposure to traits unlike those of their parent can result from the socialisation of teachers, friends, and other culturally dominant role models. Minority group parents therefore invest more effort in socialising their children within the family to preserve their culture and prevent assimilation (Bisin and Verdier, 2000; Bisin and Verdier, 2001). The failure of direct socialisation in heterogeneous societies would result in the child's imitation of role models outside of the family, and thus potentially to traits undesirable to the parents. On the other hand, majority groups are incentivised to invest less in the socialisation of their children, as failed parental transmission can still result in the child adopting the parent's desired trait through outside socialisation from role models or their majority group peers. Both environmental influences, and the basic features of vertical, oblique and horizontal transmission with endogenously determined vertical socialisation, by imperfectly altruistic parents, are central to many models of socialisation (Dixit, 2003; Bisin et al., 2004; Guttman, 2000; Patacchini and Zenou, 2016; Doepke and Zilibotti, 2017; Tabellini, 2008; Hiller, 2008).

Predictions of intergenerational transmission indicate that parents mate according to the similarity of traits, such that each parent exerts less socialisation effort than they would individually or with a partner of a different trait (Bisin and Verdier, 2000; Bisin and Verdier, 2001). Parents of differing traits require each parent to socialise their children towards their trait, which requires more effort as the child is receiving conflicting messages about which trait to adopt (Bisin and Verdier, 2000; Bisin and Verdier, 2001).

There is substantial literature that empirically tests socialisation mechanisms for a variety of preferences both through surveys and experiments. Survey evidence supporting these theories shows positive correlations between child and parental attitudes (Guiso, 2008; Dohmen et al., 2012; Lupu and Peisakhin, 2017; Grossman et al., 2015; Kosse et al., 2018; Wilhelm et al., 2008; Lupu and Peisakhin, 2017; Jennings et al., 2009). Domains in which these correlations exist are, to name a few, political preferences (Jennings et al., 2009; Grossman et al., 2015; Lupu and Peisakhin, 2017); trust and risk preferences (Dohmen et al., 2012; Guiso, 2008); and identity (Lupu and Peisakhin, 2017). These correlations are positive, substantial in size, and robust to a host of controls. However,

it has been found that almost fifty percent of the estimated transmission of trust may reflect transient intergenerational similarities, and not permanent transmission (Giulietti, Rettore and Tonini, 2016*a*).

On the experimental side, the literature is scant and the evidence of intergenerational transmission is mixed. Social preference tasks played with parents and young children find no intergenerational correlation (Bettinger and Slonim, 2006; Cipriani et al., 2013; Ben-Ner et al., 2017), while positive correlations are found in other instances (Chowdhury et al., 2018). A more stable finding of positive transmission emerges with regards to factors such as risk (Alan et al., 2017; Levin and Hart, 2003), and time preferences (Kosse and Pfeiffer, 2012).

Possible explanations for the differences in consistency between experimental and survey literature are the age of the “children” in the samples¹² and the nature of the preferences transmitted. Social preferences in children and adolescents vary with age (Fehr, Bernhard and Rockenbach, 2008; Fehr, Glätzle-Rützler and Sutter, 2013; Gummerum, Hanoch, Keller, Parsons and Hummel, 2010; Sutter, Zoller and Glätzle-Rützler, 2019). Age effects may thus explain the difference in results, as the experimental literature focuses mainly on parent-child pairs with young children (Sutter et al., 2019) while survey estimates are mostly based on adolescent and adult children due to the nature of the available data. Secondly, games played with young children are primarily dictator games or variants of this, as young children are unlikely to comprehend more complex game structures. Surveys explore a wider variety of preferences in several contexts.

The magnitudes of intergenerational correlations are often large and have drawn some important methodological criticisms. One useful example is Dohmen et al. (2012) who use principal component analysis to estimate the intergenerational transmission of trust using the German Socio-Economic Panel Study. They find large coefficients and strong transmission. However, Giulietti, Rettore and Tonini (2016*b*) argue that the correlations reflect transient components of trust that are related to the shared environment in which children and parents experience and acquire information. In this case, the transmissions estimated reflect more of the shared environment than the parent-child relationship they attempt to estimate. Using several waves of the German Socio-Economic Panel, Giulietti

¹²Some studies use child samples with children defined in the usual sense of an individual aged below the age of eighteen, while other studies make use of adults who are also children, deemed adult children.

et al. (2016*b*) find support for their criticism, as correlations found in the cross-sectional studies are substantially reduced (by as much as a third of the original estimates) after accounting for transient factors.

A somewhat separate strand of literature focuses on the relationships between immigrant trust and their country of origin. Evidence shows positive correlations in first and second-generation immigrants with trust in their country of origin (Moschion and Tabasso, 2014; Uslaner, 2002; Uslaner, 2008; Ljunge, 2014). Given that immigrants have limited contact and exposure to their countries of origin, this implies that trust is transmitted transnationally by parental influences to their children, and their children’s children. Although not a direct measure of intergenerational parent-child transmission, this provides evidence of vertical transmission (Uslaner, 2008).

3.2 Ingroup Favouritism and Group Based Trust

Differential attitudes and behaviours based on group identity are widely observed in a rich and voluminous literature (see Hewstone, Rubin and Willis (2002) for an extensive review). Broadly defined, ingroup bias, or ethnocentrism, is the positive evaluation of one’s own group relative to the outgroup. In some instances, the definition further requires evidence of unjustifiable or unfair favouritism towards one’s own group. This additional delineation requires observed discrimination to be evaluated and found prejudicial or hostile towards the outgroup. Conversely, ingroup bias evaluated simply as favourable evaluations of one’s own group - whether justifiable or otherwise - can occur with or without prejudice reflecting ingroup love and/or outgroup hate. There is much debate on the nature and occurrence of these two phenomena, with clear implications for understanding how these two formulations of ingroup bias affect various social outcomes.

A critique of standard generalised trust questions is that they depend on whom the individual considers to be “most people”¹³ (Fukuyama, 1995). The concept of “most people” may differ both across countries, and within countries, based on group markers or those with whom the respondent most frequently interacts. In this sense, assessing the economic impact of trust on a national level becomes problematic, as the measure

¹³Many surveys use the same trust question, which is commonly the standard generalised trust question as posed in the General Social Survey. The question is: “Generally speaking, do you believe that most people can be trusted, or can’t you be too careful in dealing with people” (Uslaner, 2002).

of trust may not refer to the population as a whole (Fukuyama, 1995). The radius of trust (who respondents consider to be “most people”) from generalised trust measures in World Values Survey shows considerable variation in the ingroup-outgroup connotations of “most people”, although in the majority of surveyed countries “most people” has outgroup connotations (Delhey, Newton and Welzel, 2011).

Depending on the outcome of interest and the cause of the bias, trust may be beneficial for social welfare or deleterious. For instance, favourable resource allocation to one’s own group in the case of socio-economically deprived groups may lead to reductions in group-based inequalities, which in turn lead to several benefits for society. On the other hand, biased resource allocation to one’s own group may exacerbate existing inequalities if that group is advantaged. Secondly, prejudice and animosity towards the outgroup can lead to conflict arising directly from the prejudice intended to punish or deprive the outgroup. The necessity and form of remedial policy interventions requires an understanding of the difference between ingroup and outgroup bias.

Degner and Dalege (2013) provide a comprehensive meta-analysis of the large literature on the transmission of ingroup attitudes. They find three common features. Firstly, much of the current literature is particularly focused on young children and adolescents. Of the 131 studies in the review, the average age of children in the studies is thirteen, with an upper limit of twenty-one (Degner and Dalege, 2013). Secondly, much of the literature relies on children’s reports of their parent’s attitudes. This can lead to bias towards a false consensus in which children either do not know their parent’s attitudes and thus project their own attitudes onto their parents, or they assume their parent’s attitudes are similar to their own (Aboud and Doyle, 1996; Gniewosz and Noack, 2006). In both cases, this will lead to substantial overestimation of the association in attitudes. The second methodological limitation is that measures of prejudice are often elicited through different instruments for parents and their children (which also vary based on children’s age and life stage). Although parent-child associations are evidence regardless of differences in the measurement instrument used, the correlations are weaker in cases in which different instruments are used for parents and their children (Degner and Dalege, 2013).

Intergenerational transmission in this chapter is estimated in South Africa - a society with a recent history of institutionalised and heavy-handed racial discrimination. The large institutional change from Apartheid to democracy is likely to have had meaningful

consequences for the intergenerational transmission of race-based attitudes.

3.3 Data and Descriptive Statistics

The South African National Income Dynamics Study (NIDS) is a nationally representative survey, which tracks a panel of individuals first observed in 2008, and their household members (Brophy, Branson, Daniels, Leibbrandt, Mlatsheni and Woolard, 2018). The modules included in the data are a child, adult, household, and proxy questionnaire. To date the NIDS has conducted five waves in approximately two year intervals since 2008. The dataset includes a host of questions on socio-economic outcomes on a breadth of issues. The attitudinal module of the survey contains several questions on trust attitudes, life satisfaction, happiness, and perceived socio-economic position of the household. Despite the panel nature of the dataset, trust variables related to race were only included in the survey in the fifth and latest wave administered in 2017. This wave will be the focus of this chapter. The adult questionnaire, in which attitudinal questions are asked, is administered to all household members who are at least fifteen years of age at the time interview.

The unique feature of the NIDS in the South African context is the ability to identify parent-child pairs of various types from early childhood, well into the child's adult years. All original continuing sample members from Wave 1 are tracked and re-interviewed, along with whoever they are living with in that wave (even if those are individuals not present in the first wave of data collection¹⁴) (Brophy et al., 2018). This tracking leads to the inclusion of parent-child pairs in the sample regardless of whether they are co-residents of the same household. The tracking of non-resident parents and children is particularly useful in that shared environmental effects from living in the same household can substantially bias the intergenerational transmissions estimates. However, due to high attrition rates of White, Indian, and Asian respondents of the original panel sample, Wave 5 of the NIDS includes a top-up sample for these race groups (Brophy et al., 2018). The top-up sample members of the NIDS are by design only co-resident parents and

¹⁴Note - the NIDS is an individual level panel survey. Each continuing sample panel member, as defined by being interviewed in Wave 1, or being born to an original Wave 1 member, is followed for re-interview. In each wave, the household members of each panel member are also interviewed, even if not panel members themselves. They form part of the NIDS as long as they live with a NIDS panel member (Brophy et al., 2018).

children, as they are newly interviewed in singular households (Brophy et al., 2018).

The full sample of successfully interviewed adults, defined as individuals who are older than fifteen, in Wave 5 of the NIDS is approximately 24,000¹⁵. It is important to note that for the remainder of this chapter the term “child” is used to describe all offspring without regard for their age. That is, “children” in the sample range from fifteen years old to seventy-two years old with an average age of twenty-seven¹⁶. The full sample of adult mother-child pairs is 8,702 individual children with 4,522 unique mothers. Due to the high rates of paternal absence in South Africa, there is a large size difference between the sample of mothers compared to fathers. Only 2,391 children (aged fifteen and above) with 1,248 unique fathers can be successfully identified in the data. Due to this large sample disparity between mothers and fathers (in size and characteristics), and for reasons of brevity, the main analysis of this chapter will focus on intergenerational correlations between mothers and children. The literature shows that trust transmission is either of a similar magnitude for mothers and fathers (Dohmen et al., 2012), or that mothers have a greater impact on the transmission of trust (Ljunge, 2014). Therefore, excluding fathers from the main analysis is unlikely to result in large qualitative changes to the substantive conclusions of this chapter¹⁷. Taking missing values of the regression variables into account, the full sample drops to 6,918 individual children¹⁸.

3.3.1 Measuring Trust and Ingroup Favouritism

NIDS asks a series of questions about trust. The main trust questions used in the analysis relate to race-based trust and are phrased in the questionnaire as follows:

1. Trust in one’s own race group is asked as: “How much do you trust people from your race group?”

¹⁵In unsuccessful interviews, the reason for refusal as mistrusting surveys occurs in only two percent of cases. Therefore there is no reason to be concerned with sample selection bias towards more cooperative or trusting individuals.

¹⁶Trust attitudes are largely the same across the age distribution as can be seen in Figure 11 of Appendix Item A.

¹⁷Nonetheless, the main regressions are run for children with identifiable mothers and fathers and included in Table A.41 of Appendix Item A for completeness. The substantive conclusions of the maternal analysis presented in the body of this chapter are consistent when considering fathers.

¹⁸The large drop in the sample size is largely due to responses to the attitudinal questions on relative socio-economic variables. Responses of “don’t know” are common for these variables. These variables are discussed in more detail further in this chapter.

2. Trust in other race groups is asked as: “How much do you trust people from other race groups?”
3. Trust in others is asked as: “How much do you trust other people you know?”

Responses to these questions are coded on a four point scale with items “not at all” (coded as one), “just a little” (coded as two), “I trust them somewhat” (coded as three), and “I trust them a lot” (coded as four)¹⁹. It is important to note that the racial trust questions are asked of general individuals, while trust in others uses individuals the respondent knows as the reference point. This difference means that trust in others cannot be compared directly to racialised trust as a measure of generalised trust attitudes.

This chapter analyses both trust and relative trust attitudes. For the purpose of this chapter, trust attitudes are coded as binary variables with individuals who responded with “I trust them somewhat” and “I trust them a lot” coded as trusting, with the binary trust variable equal to one. Individuals who responded with “not at all” and “just a little” are recorded as mistrusting, with the binary trust variable equal to zero.

Weighted means for each of the possible responses to the trust questions are reported in Table 1. Panel A of the table reports means for children and Panel B for mothers. Columns 1 to 4 report means for each possible response option and Column 5 reports means for all trusting individuals (responses of either “I trust them somewhat” or “I trust them a lot”). Beginning with children in Panel A of Table 1, the majority of children report trusting their own race just a little. A lower share (thirty-two percent) report being not at all trusting of their own race group in Column 1. Only a trivial proportion - four percent - report trusting their own race a lot. These trust levels result in twenty-six percent of children being recorded as trusting their own race, as shown in Column 5. There are two main differences in children’s trust attitudes towards their own race compared to other race groups. Firstly, the majority of children report being not at all trusting of other race groups, which is the converse of the attitudes towards their own race. Secondly, trust in other race groups is lower than trust in one’s own race in Column 5. These results are near identical for mothers, as shown in Panel B. For both mothers

¹⁹Response options of “refused” and “don’t know” are also included in the survey. It can be argued that “don’t know” is a valid response to these questions and is not in fact missing data. However, there is no clear logical way to include “don’t know” as a response option in conjunction with the other responses. Only a trivial proportion of the sample, 0.7%, responded “refused” or “don’t know”, and thus these responses are considered missing data throughout.

and children, there are statistically significant differences between the distribution of trust in own race group and trust in other race groups²⁰.

Table 1: Mean Degrees of Trust: Maternal and Child

	(1)	(2)	(3)	(4)	(5)
Reported Trust	Not At All	Just A Little	Somewhat	A Lot	Trusting
Panel A: Child					
Mean Own Race	0.32	0.42	0.22	0.04	0.26
Mean Other Races	0.45	0.35	0.16	0.04	0.20
Observations	6,918				
Panel B: Mother					
Mean Own Race	0.30	0.43	0.23	0.03	0.26
Mean Other Races	0.43	0.36	0.17	0.03	0.20
Observations	3,974				

NOTES: This table reports weighted means of for each level of reported trust for children and mothers.

The second part of the analysis in this chapter focuses on relative trust attitudes towards one’s own race group compared to other race groups. This is a measure of ingroup favouritism in trusting attitudes. However, ingroup racial trust attitudes are not asked directly in the questionnaire. A measure of racial preferences in trust is therefore inferred from the responses to the direct questions on ingroup and outgroup trust. This measure is constructed from the difference between the reported numerical value for trust in one’s own race and trust in other race groups. For example, an individual who reports trust in their own race group as “I trust them a lot” (a response of four) and trust in other race groups as “just a little” (a response of two) will have a score of positive two, which reflects ingroup favouritism. On the other hand, an individual who reports a greater degree of trust towards other race groups such as “I trust them a lot” (a response of four) than their own race group, such as “just a little” (a response of two), will have a score of negative two, which indicates outgroup favouritism. This difference results in a racial group favouritism trust measure that ranges from negative three to positive three.

The resultant values from differencing the trust measures have no intrinsic meaning as the differences are the same regardless of the reported level of trust. For instance, positive one (higher ingroup trust) is the same for respondents who answered “I trust

²⁰Kruskal-Wallis equality-of-populations rank tests (not reported in the table) yield p-values of 0.0001 for both mothers and children.

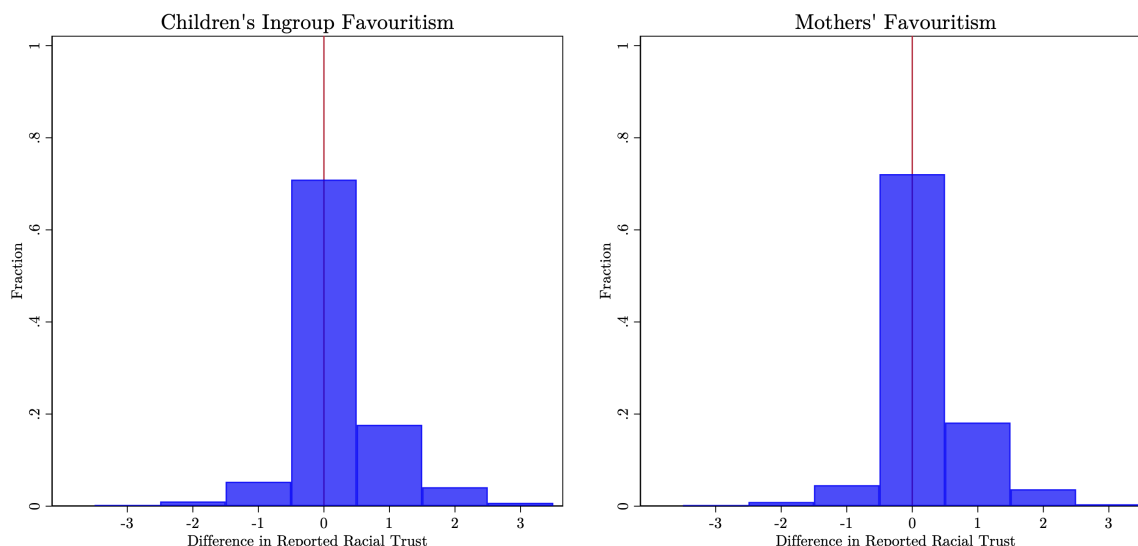
them a lot” (a response of four) for their own race and “I trust them somewhat” (a response of three) for other race groups, as it is for those who answered “just a little” (a response of two) for own race group and “not at all” (a response of one) for other race groups. However, three of these numerical differences in trust can be attributed meaning. The first is negative three which represents high outgroup trust (“I trust them a lot”, a response of four) and no ingroup trust (“not at all”, a response of one) . The second is zero which represents equal trust in ingroup versus outgroup without reference to the degree of trust, and the third is positive three which represents high ingroup trust (“I trust them a lot”, a response of four) and no outgroup trust (“not at all”, a response of one). Based on this variable that ranges from minus three to positive three, ingroup favouritism in trust is therefore coded as a binary variable that indicates a strictly higher level of trust - a positive value regardless of the number itself - for one’s own race group from the difference between ingroup trust and outgroup trust²¹. Negative values (outgroup favouritism) and zeros (race neutral trust) are both coded as zero. This means that individuals who do not display ingroup favouritism could be race neutral or might favour the outgroup in their trust attitudes. Thus, as the inferred ingroup favouritism measure is the same for all responses with the same difference in values, regardless of the reported level of trust, ingroup favouritism does not necessarily indicate outgroup mistrust, nor does it convey high levels of ingroup trust. It merely indicates relatively greater trust towards the ingroup, relative to the outgroup.

In Figure 1 the distribution of differences in reported levels of ingroup trust and outgroup trust is shown, with child ingroup favouritism on the left, and maternal on the right. Medians are reported with the vertical line in each graph. There are four main conclusions to be drawn from Figure 1. Firstly, only a small fraction of individuals report outgroup favouritism in their trust attitudes, at five percent for children and mothers. Secondly, the large majority of individuals are trust neutral (seventy percent) with a racial difference in trust of zero. Thirdly, the fraction of individuals with positive values, indicating ingroup favouritism, is approximately twenty-two percent for both mothers and children. Lastly, differences in ingroup versus outgroup trust are relatively small in that only four percent of individuals have a trust difference in favour of their own race

²¹Robustness checks, to be described in forthcoming sections of this chapter, are undertaken where the binary variable indicator of ingroup favouritism is replaced with the raw ordinal differences described here.

greater than one. This in part reflects the limited number of only four possible responses to the trust questions, and could also possibly reflect respondent anchoring in terms of the order of the survey questions.

Figure 1: Distribution of Ingroup Favouritism



NOTES: This figure shows the distribution of differences in ingroup and outgroup trust used to derive ingroup favouritism. Negative values indicate greater trust in other races than one's own race. Positive values reflect greater trust in one's own race than other races. Equal ingroup and outgroup trust is represented by zero. Medians are represented by the vertical lines.

There are three other noteworthy measurement issues relating to inferred ingroup favouritism and the racialised trust questions directly. These are the aggregation of different race groups into one question encompassing “all other race groups”, the possibility of social desirability in responses to the questions, and potential order effects from the sequencing of the trust questions in the questionnaire. Firstly, with four main racial groups in South Africa and the differences in the nature of racial relationships under Apartheid and after, “other races” is a particularly difficult term to interpret. For instance, a Coloured individual's response includes White, Black African, Indian, and Asian race groups. It is reasonable to assume that one of these race groups is particularly salient to the respondent, and that there are differences in the degree of trust afforded to the three race groups. In addition, there is no reason to assume that the salient other race group is the same for all individuals of the same race group. There is no way to concretely dis-

entangle these implications. Nonetheless, for the purposes of defining general racialised trust, this issue is simply one of interpretation and does not compromise the results.

The second and third issues of social desirability and anchoring or order effects both relate to the truthfulness of the responses. General limitations to eliciting truthful responses on discrimination and other potentially sensitive social attitudes are widespread, with social desirability perhaps playing a key role in distorting truthful perceptions towards socially accepted norms (Krumpal, 2013; Bradburn, Sudman and Wansink, 2004; Gehlbach and Barge, 2012). That racial discrimination and prejudice are widely condemned in South Africa would most likely result in a social desirability effect towards reporting equal trust, despite true differences in attitudes. This would result in these estimates being a lower bound of true racialised differences in trust.

In addition, the truthfulness and perceived social desirability of responses are likely to depend on the racial pairing of the respondent and the individual conducting the interview. A respondent paired with an interviewer of another race group may perceive particularly acute pressure to appear race neutral in their attitudes. Fortunately the data includes interviewer characteristics and race, and for the majority of the sample, same-race pairing of respondent and interviewer occurs²². This is another indication that the race group differences in trust observed in this sample are likely to be conservative estimates.

Lastly, the trust questions are ordered such that trust in others is posed to the respondents first, followed by trust in one's own race group, and thereafter trust in other race groups. It is well known that the ordering of questions may result in anchoring to previous answers and therefore adjustment of subsequent responses based on the previous answers (Gehlbach and Barge, 2012; Fowler Jr, 2013). A likely consequence of this is that responses to the racial trust questions may be anchored and artificially adjusted by respondents to match or relate to their response to trust in others they know, which is the first of the three trust questions posed. As with social desirability, this anchoring would likely lead to lower rates of reported differences in racial trust attitudes.

²²In a pooled sample of resident and non-resident mothers, eighty-eight percent of Black African children are interviewed by a Black African interviewer, seventy-one percent of Coloured children by a Coloured interviewer, twenty-nine percent of White children by a White interviewer, and no Indian or Asian children are interviewed by an Indian or Asian interviewer since none of the interviewers fall into this race group. A more detailed exposition is provided in the forthcoming methodology section.

3.3.2 Sample Characteristics

This section reports sample characteristics and descriptive statistics. These are reported in Table 2, which includes significance tests for mean differences in child, maternal, and household characteristics conditional on maternal trust attitudes, namely whether the mother is categorised as trusting or not. This is done for each of the three trust measures²³. In addition, the table reports mean differences between mothers who display ingroup favouritism in their trust attitudes and mothers who do not. Each observation is a child, except for maternal and household characteristics which are based on a sample of unique mothers. For the purposes of reporting in this section, ingroup favouritism will be referred to in the same terms as the other trust variables. That is, individuals who display ingroup favouritism are referred to as “trusting” which is simply shorthand for “more trusting of their own race”. For the purposes of exposition and simplicity, the in-text description of the table will focus on the column labelled “All” which reflects overall means for the sample. Where appropriate, references to the specific differences will be made, otherwise, the description in-text is in reference to the overall sample.

²³The table is limited to characteristics which capture general aspects of the sample. Several other conceptually related characteristics are omitted from the in-text discussion in the interest of brevity.

Table 2: Weighted Mean Sample Characteristics by Maternal Trust

Variables	All	Mother Own Race		Mother Other Races		Mother Others		Mother Ingroup Favouritism	
		Trusting	Mistrusting	Trusting	Mistrusting	Trusting	Mistrusting	Yes	No
Trusts Own Race	0.26	0.41	0.21 ***	0.43	0.22 ***	0.36	0.20 ***	0.26	0.26
Trusts Other Race	0.20	0.35	0.14 ***	0.36	0.15 ***	0.28	0.14 ***	0.19	0.20
Trusts Others	0.39	0.51	0.35 ***	0.52	0.36 ***	0.55	0.29 ***	0.45	0.38 ***
Ingroup Racial Bias	0.22	0.23	0.22	0.19	0.23 *	0.26	0.20 ***	0.36	0.19 ***
Black African	0.87	0.81	0.89 **	0.76	0.89 ***	0.82	0.90 ***	0.91	0.85 **
Coloured	0.10	0.11	0.09	0.15	0.08 ***	0.12	0.08 **	0.07	0.10
White	0.02	0.05	0.02 **	0.06	0.02 **	0.04	0.01 **	0.01	0.03 **
Indian/Asian	0.01	0.03	0.01	0.03	0.01 *	0.02	0.01 *	0.01	0.02
Age in Years	26.30	26.48	26.23	26.36	26.28	26.46	26.19	26.21	26.32
Female	0.53	0.47	0.55 ***	0.48	0.54 *	0.51	0.54 *	0.49	0.53 *
Years of Education	10.67	10.79	10.63	10.80	10.64	10.68	10.67	10.67	10.68
Satisfied with Life	0.47	0.46	0.47	0.49	0.46	0.48	0.46	0.43	0.47
Perceived Current Income Step	2.69	2.76	2.66 *	2.74	2.67	2.73	2.65	2.74	2.67
Co-Resident Mother	0.67	0.65	0.68	0.65	0.68	0.66	0.68	0.70	0.66
Co-Resident Father	0.25	0.28	0.24	0.30	0.24 **	0.25	0.25	0.25	0.26
Present Father	0.50	0.54	0.49 *	0.55	0.49 **	0.51	0.49	0.50	0.50
Mother Trusts Own Race	0.26	-	-	0.83	0.12 ***	0.53	0.09 ***	0.45	0.21 ***
Mother Trusts Other Race	0.20	0.64	0.05 ***	-	-	0.38	0.09 ***	0.03	0.26 ***
Mother Trusts Others	0.40	0.80	0.26 ***	0.75	0.31 ***	-	-	0.52	0.37 ***
Mother Ingroup Racial Bias	0.23	0.39	0.17 ***	0.04	0.28 ***	0.30	0.19 ***	-	-
Mother Age in Years	52.59	53.41	52.30 **	53.21	52.44	53.45	52.03 **	52.16	52.73
Mother Years of Education	7.80	8.27	7.63 **	8.48	7.63 ***	8.00	7.67	7.78	7.81
Household in Rural Area	0.34	0.39	0.32 **	0.36	0.33	0.37	0.32 *	0.40	0.32 **
Household Size	4.63	4.43	4.70 *	4.48	4.66	4.61	4.64	4.61	4.63
Monthly Household Income	10 346	12 314	9 638 **	13 346	9 575 ***	11 928	9 288 ***	9 352	10 644 *
Domestic Violence is Common	0.29	0.28	0.30	0.27	0.30	0.30	0.29	0.31	0.29
Violence in General is Common	0.28	0.26	0.29	0.26	0.28	0.28	0.28	0.28	0.28
Gangsterism is Common	0.40	0.33	0.42 ***	0.34	0.41 **	0.37	0.41	0.42	0.39
Murder is Common	0.42	0.39	0.44	0.36	0.44 ***	0.41	0.43	0.48	0.41 **
Substance Abuse is Common	0.79	0.75	0.81 **	0.72	0.81 ***	0.77	0.81	0.81	0.79
Observations	6 909	2 093	4 825	1 588	5 321	2 963	3 951	1 538	5 371

NOTES: This table reports tests for weighted mean differences in child, maternal, and household characteristics, by maternal trust attitudes and ingroup favouritism in trust attitudes. Household income is denominated in South African rands (ZAR). *** p<0.01, ** p<0.05, * p<0.1

Child Trust

Beginning with the Column labelled “All” in Table 2, reported trust is low on average, with only thirty-nine percent of children reporting that they trust individuals they know, “a lot” or “somewhat”. Measures of race-based trust are lower, with twenty-six percent of children reporting trust in members of their own group, and only twenty percent reporting trust in members of the outgroup. Trust is highest towards others, and lowest towards individuals of other races.

The substantial difference in average trust towards individuals of their own race compared to other race groups is reflected by the average ingroup favouritism of twenty-two percent. Importantly, there are consistent and highly significant, both statistically and economically, differences in children’s trust attitudes based on their mother’s trust attitudes. The general pattern across all measures of trust attitudes is that children of trusting mothers are approximately twice as likely to be trusting themselves, compared to children whose mothers exhibited low trust. This provides suggestive evidence of substantial intergenerational correlations in trust attitudes.

A large majority of the sample is comprised of Black African children, with the other three race groups comprising thirteen percent of the sample. The proportion of White, Indian, or Asian children is trivial at less than two percent. Across all domains, children of mistrusting mothers are more likely to be Black African. Conversely, children of mistrusting mothers are less likely to be White, Coloured, Indian, or Asian.

The average age of children is twenty-six years. This average age means that children were on average born circa 1991 which is three years prior to the end of Apartheid. Children in the sample have, on average, completed eleven years of education, which is relatively high in the South African context. Across all forms of trust, a higher proportion of children of mistrusting mothers are female, although these differences are relatively small.

Nearly half of all children report being satisfied with their lives. Of the six steps in the income ladder, the average income step is step three which indicates that children on average consider their household to be in the middle of the income distribution with essentially no differences in perceived income based on maternal trust²⁴. Rates of maternal

²⁴Life satisfaction is measured as a binary variable from the question: “Using a scale of 1 to 10 where 1 means “Very dissatisfied” and 10 means “Very satisfied”, how do you feel about your life as a whole

co-residence are relatively high, with two-thirds of children living in the same household as their mother. In comparison, only a quarter of children live in the same household as their father. There are largely no differences in co-residence status based on maternal trust.

Maternal Trust

Maternal trust attitudes are very similar to those of their children with relatively high levels of trust towards others (forty percent), and greater ingroup trust (twenty-six percent) than outgroup trust (twenty percent). As would be expected, a greater share of mothers who are mistrusting in one of the trust questions are also mistrusting in the other trust questions. For instance, sixty-four percent of mothers who trust their own race group also trust other race groups, while only five percent of mothers who are mistrusting of their own race group report trusting other race groups. Similarly, eighty percent of mothers who trust their own race group also trust others they know, while only twenty-six percent of mothers who do not trust their own race group report being trusting of others.

Mothers are on average fifty-three years old with eight years of complete education. There are some differences in these characteristics based on the mother's trust. However, these are relatively small, with trusting mothers having completed only one additional year of education, and being approximately two years older. The lower levels of education for mothers compared to children reflect the general trend, particularly amongst Black Africans, of increased educational attainment following the end of Apartheid (Louw, van Der Berg, Yu et al., 2006).

right now?" Satisfied with life is equal to one for all responses higher than six. Perceived income step relative to other South Africans is measured as the original ordinal responses to: "Please imagine a six step ladder where the poorest people in South Africa stand on the bottom (the first step) and the richest people in South Africa stand on the highest step (the sixth step)." Other attitudinal measures not reported in the descriptive statistics are perceived income and whether the individual is religious. Perceived income position compared to others in the respondents' neighbourhood is asked as "How would you classify your household in terms of income, compared with other households in your village/suburb?". Responses are coded on a five point scale from one to five, increasing as relative income position increases. These five values correspond to the responses "much above average income", "above average income", "average income", "below average income", and "much below average income". A substantial number of respondents indicate the response to these questions as "don't know". There is no clear logical way of recording these values as part of the scale responses. Thus, they are treated as missing despite the reduction in sample size. The ordinal measures of the the individual's relative income position in the neighbourhood are standardized to a mean of zero and a standard deviation of one.

Household Characteristics

In terms of household characteristics, a third of households are in rural areas compared to urban areas, with trusting mothers more likely to live in a rural area. Households, on average, consist of five household members. Monthly household income is, on average, 10,000 South African rands, which is slightly lower than the average monthly national household income of 11,500 rands (StatsSA, 2015). Where meaningful differences in household income occur, household income tends to be higher for trusting mothers, with a difference of approximately 3,000 rands or, put differently, a monthly household income thirty percent larger than mistrusting mothers. Household perceptions of the prevalence of neighbourhood disorder varies based on the specific form of disorder considered, ranging from twenty-nine to seventy-nine percent of household reporting the frequency of the different forms of disorder as fairly common or very common. As would be expected, mistrusting mothers are more likely to live in households with perceptions of relatively higher rates of neighbourhood disorder. The only exception to this is amongst mothers who display ingroup favouritism, and this is evident only for the prevalence of murder.

In general the descriptive statistics are in line with logical expectations and with the literature. These can be summarised as follows. There is initial evidence of strong and substantial intergenerational correlations in trust attitudes. A large majority of the sample is comprised of Black Africans. Educational attainment is positively related to the mother's own trust attitudes, but this is not the case for children's educational attainment. Trust appears to be higher amongst mothers in rural areas and mothers who live in households with a higher household income. Lastly, mistrusting mothers tend to have higher perceptions of the frequency at which neighbourhood disorder occurs.

3.4 Methodology

The estimation strategy for intergenerational transmission of trust uses probit regression specified by Equation 1.

$$Trust_c = \beta_0 + \beta_1 Trust_m + \mathbf{X}_c + \mathbf{X}_m + \mathbf{X}_{hh} + \epsilon \quad (1)$$

Child c 's trust attitudes, $Trust_c$, are regressed on their mother's trust, $Trust_m$, for each of the three trust measures and the ingroup favouritism measure. β_1 is the primary

coefficient of interest in this chapter. With intergenerational transmission, β_1 should be positive or negative, and with no intergenerational transmission β_1 should be zero. A negative coefficient reflects a situation where the more trusting parents are, the less likely children are to be trusting. The vectors \mathbf{X}_c , \mathbf{X}_m , and \mathbf{X}_{hh} are control variables for the child, mother, and household characteristics respectively.

Child and maternal controls in \mathbf{X}_c and \mathbf{X}_m include demographic and attitudinal measures. Demographic characteristics are age in years, gender, race dummies, years of completed education, employment status, marital status; and height as a genetic inheritance proxy²⁵. Maternal and child's age in years are logged for interpretation since a one hundred percent increase in age corresponds to an approximation of a one generation change. As the descriptive statistics suggest that children who do not live with their mother are of later life-stages, a control for whether the child is the household head is included. Paternal controls for whether the child's father is resident in the household as well as whether the child's father can be identified in the data are included in the regressions. Attitudinal controls for children and mothers are life satisfaction, perceived current income step relative to other South Africans, perceived income position compared to others in the neighbourhood, and a binary variable for religious individuals. Household controls include the log of monthly household income, the number of resident household members, dummy variables for province of residence, whether the household is in a rural or urban area, and standardized indices for household access to basic services and perceived neighbourhood disorder²⁶. Controls for the interviewer's race, gender, and years of experience are included to account for social desirability effects²⁷.

²⁵For a review of the association between genetics and personality traits, see Bouchard and Loehlin (2001).

²⁶Access to basic services is the sum of binary indicators for access to electricity, piped tap water in dwelling, working street-lights in the neighbourhood, on-site flush toilet, and neighbourhood refuse removal. Neighbourhood disorder is the sum of the five point ordinal responses describing the perceived frequency of domestic violence, violence in general, murder, theft, substance abuse, and gang activity in the neighbourhood as "Fairly common", "very common", "not common", "very rare", and "never happens".

²⁷The specification controls for interviewer race and not for whether the interviewer is of the same race as the respondent. This alternative approach may be valid. However, the race of the interviewer itself may affect the responses. Controlling for interviewer race instead of the racial pairing of interviewers and respondents is preferred, largely due to the aggregate nature of the racial trust variables. Controlling for interviewer race as a same race group pairing with the respondent does not change the main results.

Estimation Issues/Challenges

Issues of endogeneity and reverse causality in intergenerational transmission are common and potentially large. The intergenerational transmission coefficient is confounded by a vast array of attitudinal factors which are unobserved or measured with error. Reverse causality is possible in that mothers may adopt the preferences of their children instead of children adopting the preferences of their mother. Given that the sample consists of individuals with a wide age range from fifteen to seventy-two, these adult children may plausibly have a meaningful influence on their mothers' attitudes. Finding a convincing instrumental variable to estimate only one direction of causality proved difficult²⁸.

In addition, household attitudes are also captured in the transmission coefficient, which biases the coefficient upwards. To ameliorate this bias as much as possible, household trust attitudes are controlled for using the aggregate number of trusting household members excluding the child and their mother. The different and varied relationships within households make it impossible to control for the trust of a specific household member²⁹ other than the child's mother in a tractable way. Conditional on the number of resident household members, the aggregate measure accounts for the household trust in a manner which is easily implemented in the specification. In some cases, the number of trusting household members includes the child's father while in others it does not. Controls for paternal residence, and whether the child's father can be identified in the data are included in the regressions³⁰. The controls described in this section are referred

²⁸Several potential instrumental variables were explored, all of which proved to be unsatisfactory instruments. Some of these included whether the mother's religious and spiritual beliefs were of Black African tradition, the year of birth pre-and post-apartheid of deceased grandparents, and characteristics of the child's place of birth.

²⁹Apart from trust measures, the attitudes of other household members are not included in the regressions. This is a result of household structures and issues of missing data. Children are in some cases either the only adult in the household, or the only adult for whom non-missing data is available for the majority of the attitudinal measures. Unlike the trust measures which are essentially always answered with valid responses, the questions of perceived socio-economic position have a relatively high prevalence of missing data. Given the prevalence of missing data, adding attitudinal measures of other household members to the regressions would unduly reduce the sample size.

³⁰In addition, a separate set of regressions are reported in Table A.40 of Appendix Item A in which the sample is limited to children whose father is not identified in the data. The assumption made in this sub-sample analysis is that fathers who are not identifiable in the data are not an active part of the child's life. Therefore, there is no or little transmission and endogeneity of paternal trust. The validity of this assumption is debatable. This strategy is therefore largely for illustrative purposes as a potential robustness check. The results from the main analysis are virtually identical in these single

to as baseline controls throughout the chapter. All standard errors are clustered at the household level. The alternative of clustering the standard errors at the maternal level does not change the results.

3.5 Results

The results from the analysis are presented separately, with the transmission of trust attitudes first, followed by the transmission of ingroup favouritism. Sub-sample analysis follows.

3.5.1 Intergenerational Transmission of Trust Attitudes

Table 3 reports the main results for the transmission of trust in other races, trust in one's own race group, and trust in others. The full set of baseline controls are included in all regressions³¹. Trusting mothers refers to the trust attitudes of mothers corresponding to the category of trust indicated as the dependent variable. That is, trusting mothers refers to mothers who are trusting of their race in the regressions for child's trust in own race (Columns 1 and 2), trust in other races for the regressions of child's trust in other races (Columns 3 and 4), and trust in others for the regression of child's trust in others (Columns 5 and 6). The same applies for the number of trusting household members. In addition, alongside each of the main regressions, interaction terms for trusting co-resident mothers are included. The base case in these regressions is non-resident mistrusting mothers.

mother households.

³¹See Tables A.34, A.35, and A.36 in Appendix Item A for results of the full specifications. Robustness checks for the main results using probit marginal effects are reported in Table A.38 of Appendix Item A.

Table 3: Main Results: Intergenerational Transmission of Trust Attitudes

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Trusts Own Race		Trusts Other Races		Trusts Others	
Trusting Mother	0.16*** (0.01)	0.01 (0.02)	0.18*** (0.01)	0.05* (0.03)	0.18*** (0.01)	0.07*** (0.02)
Co-Resident Mother	0.01 (0.02)	-0.05** (0.02)	-0.01 (0.02)	-0.05*** (0.02)	0.04* (0.02)	-0.02 (0.02)
Co-Resident Trusting Mother		0.20*** (0.03)		0.17*** (0.03)		0.14*** (0.03)
Trusing HH Members	0.12*** (0.01)	0.11*** (0.01)	0.12*** (0.01)	0.11*** (0.01)	0.10*** (0.01)	0.10*** (0.01)
Coloured	0.03 (0.02)	0.03 (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.03 (0.02)	0.03 (0.02)
Indian/Asian	0.13** (0.05)	0.12** (0.05)	0.13** (0.05)	0.12** (0.05)	0.17*** (0.05)	0.16*** (0.05)
White	0.18*** (0.05)	0.18*** (0.05)	0.23*** (0.05)	0.23*** (0.05)	0.19*** (0.05)	0.19*** (0.05)
Female	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.02)	-0.01 (0.02)
Log Age in Years	-0.04 (0.03)	-0.04 (0.03)	0.01 (0.02)	0.00 (0.02)	-0.02 (0.03)	-0.03 (0.03)
Years of Education	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Log Mother's Age in Years	0.03 (0.04)	0.03 (0.04)	-0.03 (0.04)	-0.03 (0.04)	0.02 (0.04)	0.02 (0.04)
Mother's Years of Education	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)	0.00** (0.00)
Interviewer Coloured	0.06** (0.03)	0.06** (0.03)	-0.02 (0.03)	-0.03 (0.03)	0.04 (0.03)	0.04 (0.03)
Interviewer White	-0.00 (0.06)	-0.01 (0.06)	-0.04 (0.06)	-0.05 (0.06)	-0.00 (0.06)	-0.00 (0.06)
Log Household Income	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02** (0.01)
Rural Area	0.05*** (0.02)	0.05*** (0.02)	0.03** (0.01)	0.03** (0.01)	0.04** (0.02)	0.03** (0.02)
Observations	6,918	6,918	6,907	6,907	6,927	6,927
R-squared	0.14	0.14	0.16	0.16	0.15	0.16

NOTES: This table reports Linear Probability Model estimates for trust attitudes for the full sample. The dependent variables are indicated in the table. "Trusting Mother" in all cases is of the same trust attitudes as the corresponding dependent variable. "Trusting HH Members" is the number of trusting household members in the domain corresponding to the dependent variable. The number of trusting household members excludes the individual and their mother's trust. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The main result is that there is an economically and statistically significant correlation in intergenerational trust attitudes in own race group. Column 1 shows that a child with a mother who trusts their race group is sixteen percentage points more likely to trust their race group as well. As mentioned earlier, intergenerational correlations may differ based on whether children and their mothers reside in the same households. The interaction term in Column 2, between maternal residence status and maternal trust, is used to test this hypothesis. Indeed, there is a large and significant interaction effect amongst trusting mothers who live in the same household as their child. The total effect in Column 2 is a fifteen percentage point increase in the likelihood of a trusting co-resident mother having a trusting child. Similarly, mistrusting co-resident mothers are less likely to have a trusting child by five percentage points. However, there is no significant intergenerational correlation amongst children with non-resident mothers as can be seen in Column 2. This indicates that the intergenerational transmission observed in Column 1 is driven by mothers and children who live in the same household.

Similar results are found for trust in other race groups in Column 3 and 4. The significant increase of eighteen percentage points (Column 3) in the likelihood of a mother who trusts other race groups having a child who trusts other race groups is almost entirely driven by co-resident mothers. A non-resident mother who trusts other race groups is associated with an increased likelihood of their child trusting other race groups of five percentage points. This effect is only marginally significant at the ten percent level. In contrast, co-resident mothers have a highly statistically significant association with their child's trust both in terms of trusting and mistrusting mothers. Maternal mistrust for co-resident mothers is associated with a five percentage point reduction in the likelihood of their child trusting other race groups. A mother who trusts other race groups is seventeen percentage points more likely to have a child who also trusts other race groups. This effect is again similar in magnitude to the main results without interaction terms.

However, trust in others the individual knows is significantly correlated between mothers and children, for resident and non-resident mothers (see Column 6). A non-resident mother who trusts others they know is associated with an increased likelihood of having a child who trusts others they know of seven percentage points. A co-resident mother who trusts others they know is nineteen percentage points more likely to have a child who trusts others they know as well. There is no effect for mistrusting non-resident mothers.

3.5.2 Robustness Checks and Sub-Sample Analysis

Degree of Trust

The cut-off point for the binary variable to indicate trust and mistrust may mask heterogeneous effects in the transmission. This may be particularly true for non-resident mothers whose transmission may be at a specific degree of trust. That is, the meaningful correlations in intergenerational trust may vary depending on how trusting the mothers are. This possibility is tested in Table 4. Each column in Table 4 represents a separate regression with the dependent variable in each column of the table as the degree of trust indicated by the respondents³². In all cases, the dependent variable is coded in binary form with one representing each of the four degrees of trust. For instance, “not at all” is equal to one if this was the individual’s degree of trust and zero if it was any of the three alternative responses. The same coding is applied to maternal trust. That is, where the dependent variable is “not at all”, maternal trust in that regression is also equal to one if the mother’s response is “not at all” and zero for all other responses. Interpretation of each coefficient is thereafter compared to all other possible degrees of trust.

The three panels in the table indicate which of the trust questions are used in the regressions. “Mother’s Degree of Trust” refers to the same item response as the dependent variable. For instance, in Column 1 of Panel A, the dependent variable is whether the child reported being not at all trusting of their own race group. “Mother’s Degree of Trust” in this regression is a binary indicator for whether the mother reported being not at all trusting of their own race. Similarly, in Column 2, the dependent variable is whether the child reported “just a little” as their trust attitudes towards their own race group. In this case, “Mother’s Degree of Trust” is a binary indicator for whether the mother reported being “just a little” trusting of their own race. This logic applies to all of the regressions in the table. Co-Resident Mothers’ Degree of Trust is an interaction term between Mother’s Degree of Trust, and Co-Resident Mother.

The final row of each panel reports the mean of the children’s trust at each of the four degrees. Note that there is very little variation in the highest degree of trust (“a lot”) with a mean of child’s trust between four and five percent. Nonetheless, these results are reported for completeness.

³²All regressions in the table include the full set of controls.

Table 4: Intergenerational Transmission of Reported Trust Attitudes

Sample	(1)	(2)	(3)	(4)
	Panel A: Own Race Trust			
Dependent Variable	Not At All	Just A Little	Somewhat	A Lot
Mothers' Degree of Trust	0.09*** (0.03)	0.01 (0.02)	0.00 (0.02)	0.02 (0.03)
Co-Resident Mother	-0.09*** (0.02)	-0.08*** (0.02)	-0.02 (0.02)	-0.02* (0.01)
Co-Resident Mothers' Degree of Trust	0.26*** (0.03)	0.21*** (0.03)	0.19*** (0.03)	0.09** (0.04)
Mean Child Trust	0.30	0.41	0.25	0.05
Sample	(5)	(6)	(7)	(8)
	Panel B: Other Race Trust			
Dependent Variable	Not At All	Just A Little	Somewhat	A Lot
Mothers' Degree of Trust	0.08*** (0.03)	0.01 (0.02)	0.03 (0.03)	-0.05*** (0.01)
Co-Resident Mother	-0.10*** (0.02)	-0.06*** (0.02)	-0.04** (0.02)	-0.01 (0.01)
Co-Resident Mothers' Degree of Trust	0.24*** (0.03)	0.20*** (0.03)	0.17*** (0.03)	0.22*** (0.03)
Mean Child Trust	0.42	0.35	0.19	0.04
Sample	(9)	(10)	(11)	(12)
	Panel C: Others			
Dependent Variable	Not At All	Just A Little	Somewhat	A Lot
Mothers' Degree of Trust	0.12*** (0.03)	0.04 (0.02)	0.04 (0.02)	0.09*** (0.03)
Co-Resident Mother	-0.02 (0.02)	-0.10*** (0.02)	-0.01 (0.02)	-0.01 (0.01)
Co-Resident Mothers' Degree of Trust	0.15*** (0.03)	0.16*** (0.03)	0.13*** (0.03)	0.15*** (0.04)
Mean Child Trust	0.20	0.38	0.33	0.09

NOTES: This table reports Linear Probability Model estimates for degree of trust attitudes for the full sample. The dependent variables are indicated in the table. Each column in each panel represents a separate regression. "Mothers' Degree of Trust" in all cases is of the same trust attitudes as the corresponding dependent variable. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Beginning with trust in own race group reported in Panel A, the main result from this panel is that the only instance in which there is a correlation between non-resident mother's degree of trust and their child's degree of trust is at the lowest degree of trust ("not at all"), reported in Column 1. This effect shows that non-resident mothers who do not trust their race group at all are nine percentage points more likely to have a child who also does not trust their race group at all.

In terms of resident mothers, maternal degree of trust is correlated with child's degree of trust in all cases with one exception for somewhat trusting mothers and children (Column 3). In Column 1, co-resident mistrusting mothers who report a degree of trust other than "not at all" are nine percentage points less likely to have a child who reports their degree of trust as "not at all". The same is true for co-resident mothers who report a degree of trust other than "just a little" in Column 2. These mothers are eight percentage points less likely to have a child who reports their degree of trust as "just at little".

The remaining results for Panel A in Table 4 show that the interaction effect between a mother's degree of trust and their residence status is significant and substantial in all cases as can be seen in the rows "Co-resident Mother's Degree of Trust". The total interaction effects are twenty-six percentage points in Column 1, thirteen percentage points in Column 2, seventeen percentage points in Column 3, and seven percentage points in Column 4.

The results for the degree of trust in other races in Panel B of Table 4 are substantively similar to those of own race group trust in Panel A. Transmission amongst non-resident mothers is only evident at the lowest degree of trust (Column 5) at eight percentage points. While a negative correlation is evident in Column 8, the trivially low mean of four percentage points makes this an unreliable estimate. Lastly, in Panel C of Table 4, the results for trust in others are qualitatively equivalent to those of racialised trust described in Panel A and Panel B.

These results indicate that there are strong correlations between the degree to which children trust their own race, other race groups, and others they know³³. In addition, the absence of significant correlations in the aggregate trust measures between children and non-resident mothers is due to heterogeneity in the degree of trust transmitted.

³³Ordered logit odds ratios are reported in Appendix A.37. The results are substantively similar to those reported here with odds ratios between 1.99 and 2.25 for co-resident mothers, and only between 1.12 and 1.25 for non-resident mothers.

Non-resident mothers appear to transmit only the lowest degree of trust.

Resident versus Non-Resident Sample

As an additional robustness check, sub-samples analysis is performed for resident and non-resident mothers. Maternal residence is clearly endogenous to a host of factors. For instance, children who are employed or married are more likely to form their own households. Comparing resident and non-resident mothers with a single interaction effect does not account for these various other sources of potential interactions. Therefore, sub-sample analysis is useful in this regard.

Table 5 reports the robustness check for samples of children with co-resident mothers and children without. The results from the main regression are qualitatively similar with some trivial changes to the quantitative conclusions. The only result possibly worth noting as somewhat different is the statistical insignificance of maternal transmission of trust in other races amongst non-resident mothers in Column 4. Although this coefficient was significant in the previous analysis, it was only at the ten percent level.

Table 5: Intergenerational Transmission Maternal Residence Sub-Samples

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Resident Trusts Own Race	Non-Resident	Resident Trusts Other Races	Non-Resident	Resident Trusts Others	Non-Resident
Trusting Mother	0.21*** (0.01)	-0.00 (0.02)	0.23*** (0.02)	0.04 (0.03)	0.22*** (0.01)	0.06*** (0.02)
Observations	5,232	1,686	5,225	1,682	5,240	1,687
R-squared	0.17	0.10	0.19	0.10	0.18	0.11

NOTES: This table reports Linear Probability Model estimates for trust attitudes for resident and non-resident mothers and children. "Trusting Mother" in all cases is of the same trust attitudes as the corresponding dependent variable. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Child Characteristics: Sub-Samples

The results thus far consistently show strong transmission associations for resident mothers and their children, but weaker transmission from non-resident mothers. As a final

robustness check, the results are tested in various sub-samples based on child characteristics. In addition, this analysis provides results for potential heterogeneity in transmission as well as robustness checks. Four samples are selected for resident and non-resident mothers: gender of the child, age group, race, and household headship. Maternal transmission may be stronger for daughters if mothers are more prominent role models for daughters than sons (Dohmen et al., 2012). The age analysis accounts for the differences in adjustment of trust attitudes transmitted from mothers as the child experiences more interactions relevant to their trust as they grow older. This same reasoning is applied to household headship which is a better measure of the child's independence from their mother than simply age. Heterogeneous race effects are clearly relevant in the South African context, especially given that trust attitudes are racialised. A Black African mother for instance may consider White, Coloured, Indian, or Asian individuals as more trustworthy given their largely higher socio-economic position. The inverse is possible for the other race groups who may consider Black Africans as less trustworthy given their socio-economic experience. The results from this sub-sample analysis are reported in Table 6 for resident mothers and Table 7 for non-resident mothers.

Table 6 reports the results from this sub-sample analysis for resident mothers. The results are remarkably consistent in all samples. The intergenerational correlation in all cases is approximately a twenty-two percentage point increase in the likelihood of having a trusting child for all trust variables, for both sons and daughters in Panel A. The age related transmission in Panel B shows the same pattern with transmission coefficients of similar magnitudes for younger children (less than thirty years of age) and older children. Racial differences in transmission between Black African individuals and individuals of the other race groups (White, Coloured, Indian, or Asian individuals) are evident in Panel C, only for trust in other race groups. In this case, the intergenerational correlation for children who are not Black Africans is thirty-percentage points, and twenty percentage points for children who are Black Africans. Lastly, the household headship sub-sample analysis in Panel D shows similar transmission coefficients for all trust variables. The sample of children who are non-household heads and live with their mother is small (200 observations), thus the correlations are largely suggestive.

Table 6: Intergenerational Transmission Sub-Samples: Resident Mothers

	(1)	(2)	(3)	(4)	(5)	(6)
	Resident Mother					
Panel A: Gender	Daughters	Sons	Daughters	Sons	Daughters	Sons
Mother Trusts Own Race	0.21*** (0.02)	0.22*** (0.02)				
Mother Trusts Other Race			0.23*** (0.02)	0.23*** (0.02)		
Mother Trusts Others					0.22*** (0.02)	0.22*** (0.02)
Observations	2,894	2,338	2,886	2,339	2,896	2,344
Panel B: Age	Age <= 30	Age > 30	Age <= 30	Age > 30	Age <= 30	Age > 30
Mother Trusts Own Race	0.21*** (0.02)	0.23*** (0.03)				
Mother Trusts Other Race			0.23*** (0.02)	0.24*** (0.03)		
Mother Trusts Others					0.22*** (0.02)	0.23*** (0.03)
Observations	4,003	1,229	3,996	1,229	4,009	1,231
Panel C: Race	Black African	Other Races	Black African	Other Races	Black African	Other Races
Mother Trusts Own Race	0.21*** (0.02)	0.19*** (0.03)				
Mother Trusts Other Race			0.20*** (0.02)	0.30*** (0.04)		
Mother Trusts Others					0.22*** (0.02)	0.21*** (0.03)
Observations	4,311	921	4,308	917	4,315	925
Panel D: Headship	Household Head	Non-Head	Household Head	Non-Head	Household Head	Non-Head
Mother Trusts Own Race	0.29*** (0.08)	0.21*** (0.02)				
Mother Trusts Other Race			0.18** (0.09)	0.23*** (0.02)		
Mother Trusts Others					0.25*** (0.08)	0.22*** (0.01)
Observations	201	5,031	200	5,025	201	5,039

NOTES: This table reports sub-sample Linear Probability Model estimates for trust attitudes for resident mothers and children. In all panels, the dependent variable in columns 1 and 2 is child's own race trust, child's other race trust in columns 3 and 4, and child's trust in others in columns 5 and 6. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

There is some heterogeneity amongst children with non-resident mothers in Table 7. By and large, maternal transmission is statistically insignificant for the racial trust attitudes for all child characteristics. The only exception to this being a positive effect of maternal trust amongst Black Africans in terms of trust in other races as shown in Panel C of Table 7. However, this effect is weakly significant at the ten percent level. In terms of trust in others, there is evidence of heterogeneous transmission. While there is no effect for daughters, a significant correlation is evident for sons in Panel A of eight percentage points. Transmission by age in Panel B is only significant for children older than thirty at thirteen percentage points. In terms of race in Panel C, there is a significant correlation for non-resident mothers for Black African children as well as children of the three race groups. The sample of White, Coloured, Indian, or Asian individuals is small with only about 200 observations, and the effects are only significant at the ten percent level. The transmission amongst these other race groups is therefore considered only as suggestive. Lastly, amongst children who are heads of their households in Panel D, maternal trust in others is significantly correlated (ten percentage points) with their child's trust for children who are heads of their households.

The evidence on transmission is consistent and robust. While resident mothers transmit trusting attitudes across all three forms of trust, non-resident maternal transmission is only evident in the transmission of trust in others. Co-resident maternal transmission is largely of the same magnitude across various samples for child characteristics. For non-resident mothers, there is considerable heterogeneity in the effects of with regards to trust in others. It appears that transmission occurs for sons and not daughters, for children older than thirty, and for children who are the heads of their households. One way to reconcile these patterns amongst children of non-resident mothers is that there is a strong association between these child characteristics: household headships is positively related to age and is likely to be gendered. Therefore, children who are heads of their households are likely to be older, and men.

Table 7: Intergenerational Transmission Sub-Samples: Non-Resident Mothers

	(1)	(2)	(3)	(4)	(5)	(6)
	Non-Resident Mother					
Panel A: Gender	Daughters	Sons	Daughters	Sons	Daughters	Sons
Mother Trusts Own Race	-0.01 (0.03)	0.01 (0.04)				
Mother Trusts Other Race			0.04 (0.03)	0.03 (0.04)		
Mother Trusts Others					0.05 (0.03)	0.08** (0.04)
Observations	929	757	925	757	929	758
Panel B: Age	Age <= 30	Age > 30	Age <= 30	Age <= 30	Age <= 30	Age > 30
Mother Trusts Own Race	-0.01 (0.03)	0.03 (0.04)				
Mother Trusts Other Race			0.05 (0.03)	0.03 (0.04)		
Mother Trusts Others					0.04 (0.03)	0.13*** (0.04)
Observations	1,076	610	1,075	607	1,077	610
Panel C: Race	Black African	Other Races	Black African	Other Races	Black African	Other Races
Mother Trusts Own Race	0.00 (0.03)	-0.07 (0.08)				
Mother Trusts Other Race			0.05* (0.03)	-0.02 (0.08)		
Mother Trusts Others					0.06** (0.03)	0.14* (0.08)
Observations	1,480	206	1,477	205	1,481	206
Panel D Headship	Household Head	Non-Head	Household Head	Non-Head	Household Head	Non-Head
Mother Trusts Own Race	-0.01 (0.03)	0.01 (0.04)				
Mother Trusts Other Race			0.02 (0.03)	0.06 (0.04)		
Mother Trusts Others					0.10*** (0.03)	0.00 (0.04)
Observations	1,082	604	1,080	602	1,083	604

NOTES: This table reports sub-sample Linear Probability Model estimates for trust attitudes for non-resident mothers and children. In all panels, the dependent variable in columns 1 and 2 is child's own race trust, child's other race trust in columns 3 and 4, and child's trust in others in columns 5 and 6. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The consistent result of transmission amongst non-resident mothers emerging only in the form of trust in others is worth exploring further. This exercise is undertaken next.

Underlying Trust Attitudes

As discussed in the literature review, although trust attitudes have a strong contextual component, there is also the possibility of an underlying dispositional component of trust which forms part of the context specific attitudes (Uslaner, 2002). In addition, trust attitudes towards strangers or others in general, often have underlying identity markers in whom the individual considers a stranger (Delhey et al., 2011). Given the relatively low rates of inter-racial contact in South Africa (Potgieter, 2019), trust in others the individual knows is likely to reflect some aspects of racialised trust. This may be a particularly important aspect of transmission amongst children with non-resident mothers for whom intergenerational correlations are evident only for trust in others. It may be the case that the segregated nature of racial interactions in South Africa results in an indirect transmission of racialised trust from mothers, which functions through the child's trust in others. This possibility is briefly explored next.

The regressions in Table 8 report the effects of maternal trust in all contexts and child's trust (in their own race and other race groups) as determinants of trust in others, with the full set of controls included in both regressions. In Column 1, amongst children with resident mothers the only statistically significant maternal trust variable is mother's trust in others. This coefficient is of a similar magnitude to the results thus far. As would be expected, both variables for the child's own trust are statistically significant, positively associated with the child's trust in others, and large in magnitude. Trust towards one's own race is particularly large at thirty-eight percentage points which is more than twice the size of the coefficient for trust in other races. This difference is highly statistically significant at the one percent level.

For children with non-resident mothers (Column 2), although maternal trust in others is also significant and of a similar magnitude as the results thus far, at five percentage points, this coefficient is only significant at the ten percent level. As with the children who are co-resident with their mothers, the child's racial trust variables are significantly correlated with the child's trust in others, and large in magnitude. Similarly, the correlation for child's trust in their own race is twice as large that of trust in other races, and

statistically significant at the one percent level.

Table 8: Specificity of Transmission by Maternal Residence

Sample	(1)	(2)
	Resident Mother	Non-Resident Mother
Dependent Variable	Trusts Others	Trusts Others
Mother Trusts Own Race	-0.03 (0.02)	-0.02 (0.03)
Mother Trusts Other Race	-0.03 (0.02)	0.01 (0.03)
Mother Trusts Others	0.17*** (0.02)	0.05* (0.02)
Trusts Other Race	0.15*** (0.02)	0.20*** (0.04)
Trusts Own Race	0.38*** (0.02)	0.38*** (0.03)
Observations	5,215	1,682
R-squared	0.34	0.32

NOTES: This table reports Linear Probability Model estimates for child's trust in others they know by maternal residence status. Full set of controls included in all regressions. Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

In summary, the results in Table 8 show that maternal transmission of trust attitudes towards others is context specific and has no underlying racial trust connotations. However, there is a strong racial component in the individual's trust in others the individual knows. Individuals' attitudes towards others they know appear to reflect trust in one's own race group which is a highly significant and large determinant of trust in others.

3.5.3 Intergenerational Transmission of Ingroup Favouritism

The final results for this chapter are now presented, which focus on the transmission of ingroup favouritism in trust attitudes. To recall, these results use the measure calculated for ingroup favouritism using the relative difference between two measures of trust: trust in one's own race and trust in other races.

Table 9: Intergenerational Transmission of Ingroup Favouritism

	(1)	(2)	(3)	Panel A: Main Regression					
VARIABLES	All	Resident	Non-Resident						
Mother Ingroup Favouritism	0.13*** (0.01)	0.17*** (0.02)	0.01 (0.03)						
Observations	6,901	5,219	1,682						
R-squared	0.08	0.10	0.06						
	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Panel B: Resident									
	Daughter	Son	Age <= 30	Age > 30	Black African	Other Races	HH Head	Non-Head	
Mother Ingroup Favouritism	0.17*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	0.16*** (0.03)	0.17*** (0.02)	0.16*** (0.04)	0.11 (0.08)	0.18*** (0.02)	
Observations	2,883	2,336	3,994	1,225	4,304	915	200	5,019	
R-squared	0.13	0.09	0.10	0.12	0.10	0.11	0.29	0.10	
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
Panel C: Non-Resident									
Sample	Daughter	Son	Age <= 30	Age > 30	Black African	Other Races	HH Head	Non-Head	
Mother Ingroup Favouritism	-0.00 (0.03)	0.02 (0.04)	0.03 (0.03)	-0.03 (0.04)	0.02 (0.03)	-0.03 (0.08)	0.01 (0.03)	0.02 (0.04)	
Observations	925	757	1,075	607	1,477	205	1,080	602	
R-squared	0.09	0.08	0.08	0.08	0.06	0.26	0.07	0.10	

NOTES: This table reports Linear Probability Model estimates for ingroup favouritism. Panel A includes the full sample and maternal residence status. Panel B is subsample analysis amongst resident mothers, and Panel C amongst non-resident mothers. Each coefficient represents a separate regression. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Similar linear probability models of the intergenerational transmission coefficient are estimated, using ingroup favouritism as the transmission variable of interest, and the transmission coefficients are collated and presented in Table 9, for a variety of sub-samples similar to those in the previous analysis.

It is immediately clear from the main regressions in Panel A of Table 9 that there is no evidence of intergenerational transmission amongst non-resident mothers and children of ingroup favouritism, while there are strong correlations, of a similar magnitude to the trust variable analysis, amongst co-resident mothers and children³⁴. Panel B, which is a sample of co-resident mothers and children, shows similar patterns of transmission as the trust variables. That is, intergenerational correlations are highly significant with practically no differences across the different samples. Similarly consistent results are found for the effect of non-resident mother's ingroup favouritism with no statistically significant coefficients and coefficients of very small magnitudes.

The following section of this chapter provides a discussion of the results and concluding remarks.

3.6 Discussion

Trust is a key aspect of social and individual welfare. It facilitates investments, provides social support, and promotes cooperation. However, there is a long history of discrimination in trust attitudes on a variety of characteristics. A germane aspect in the South African context is race, given the country's long history of racial discrimination, inequalities, and oppression. The widely reported low levels of trust in the country are confirmed in this analysis. In addition, there is substantial ingroup favouritism in the trust attitudes, particularly when one factors in the very likely under-reporting of racial preferences in attitudes.

While much has been discussed in the literature on race-based trust attitudes, and a considerable literature has addressed the formation of these attitudes, the evidence is not only mixed, but also limited often to young children. This chapter bridges this gap by providing a description of intergenerational transmission of racialised trust, trust in others, and ingroup favouritism, with a sample of children spanning a wide age range.

³⁴See Appendix Item A.39 for ordered logit odds ratio estimates. The results from the ordered logit regressions are the same as those presented here.

This analysis yields a key benefit: the ability to address broader issues of the persistence of intergenerational correlations. With children of a large age range, it is possible to consider for analysis those who are not resident with their mothers. This potentially ameliorates the substantial confounds of a shared environment by mothers and children.

The results are consistent throughout, showing strong and robust correlations amongst children and mothers who live in the same household. However, there is weaker evidence of intergenerational correlations amongst children and mothers who do not live in the same household. The only exception to this result is that correlations are evident for trust towards others the individual knows. This suggests that there is indeed some transmission which occurs and persists when children and mothers no longer share the same environmental influences. Lastly, while there are no overall correlations in racialised trust amongst mothers and children who do not live in the same household, the results show significant correlations at the lowest levels of trust. Children with mothers who do not trust their own race, or other race groups, are more likely to also report complete mistrust towards all races.

There are at least three ways of explaining this result. The first is that there is considerable bias in the intergenerational transmission when mothers and children live in the same household. In this case, the differences in transmission by resident and non-resident mothers may not reflect persistence, and instead simply may indicate a substantial reduction in the upward bias of a shared environment. However, given that the transmission is evident for others the individual knows, it may also be the case that the persistence of intergenerational correlations is highly context dependent. While methods of disentangling transient environmental confounds on the persistence of intergenerational trust exist, these require a panel dataset. The National Income Dynamics Study dataset used in this thesis may prove useful for future research in this regard if more waves of data are collected on the racial trust attitudes.

The other potential explanation aside from context specific transmission may be a shared social network between mothers and children. The phrasing of the question explicitly asks the individuals to consider others they know. In answering this question, both mothers and their children may be considering the same set of individuals. In contrast, the racial trust questions ask broadly about other race groups and are a generalised form of trust. Unfortunately the data cannot be used to directly assess the hypothesis of

a relatively similar social network driving the persistence, as the NIDS does not collect identifying data for friends or non-sample family members.

Lastly, the racialised spatial segregation in South Africa may have an effect on these results. Children and mothers who live in neighbourhoods with different degrees of racial homogeneity may develop differences in their racialised attitudes. Data limitations preclude further analysis of this aspect given the high level of spatial aggregation in the publicly available data³⁵.

If the results in this chapter accurately reflect context dependent persistence of inter-generational trust, this could have large implications for how policies to promote trust are designed. Policies designed to target specific forms of trust may be more effective than the general tendency towards treating trust attitudes as homogeneous in a society. Having examined the transmission of trust in a survey data setting, the analysis now moves to an experimental framework. Chapter 4 describes the design used as a basis for the analysis in the following two chapters.

³⁵Due to COVID-19, physical access to the secure data room containing specific geographic location in the NIDS was not available in 2020 and 2021, precluding its use in this thesis.

4 By Design

As discussed in Chapter 2, a central tenet of many concepts of justice and fairness is the source from which differential outcomes arise, particularly in exogenous factors such as circumstances of birth (Rawls, 1971; Dworkin, 1981*a*; Dworkin, 1981*b*; Cohen, 1989). In addition, an abundance of evidence shows that fairness, trust attitudes, and the permissibility of inequality are closely related (Organisation for Economic Co-operation and Development, 2017; Alesina, Angeletos et al., 2002; Alesina and Angeletos, 2005). These two strands of literature suggest that the unfairness of deterministic circumstances of birth may have important implications for inequality and trust.

Several studies have addressed the issue of intergenerational mobility and social attitudes associated with trust, inequality, redistribution, and attributions of poverty (Barone and Mocetti, 2016; Alesina et al., 2018; Shaleva, 2015; Gugushvili, 2016; Alesina and Giuliano, 2011). This literature has largely focused on beliefs and attitudes either associated with the (subjective) experience of intergenerational mobility (Shaleva, 2015; Gugushvili, 2016; Alesina and Giuliano, 2011), or the formation of the beliefs themselves (Alesina et al., 2018; Schuck and Shore, 2019), and commonly from a theoretical perspective (Benabou and Ok, 2001; Cojocaru, 2014; Benabou and Tirole, 2006; Piketty, 1995). The general findings support a link between intergenerational mobility and social preferences. Namely, (perceived) experiences of downward mobility are negatively associated with interpersonal trust. Upwards mobility increases the likelihood of attributing the cause of poverty as an outcome of individual choices and characteristics (Shaleva, 2015; Gugushvili, 2016). In addition, support for redistributive policies increases with perceptions of low intergenerational mobility in a society (Alesina et al., 2018; Schuck and Shore, 2019)

As with the large majority of attitudinal survey based studies, causal effects are challenging to establish. Alesina et al. (2018) is a notable exception to this. The authors conduct a multi-national online experiment where individuals are exogenously assigned to a treatment. In the treatment, individuals are presented with pessimistic information about the degree of upwards intergenerational mobility. The results show that the treatment substantially shifted attitudes towards support for government redistributive policies, although only amongst politically left-wing individuals. In a conceptually related study, Fehr, Rau, Trautmann and Xu (2020) investigate the impact of unfair inequality in a trust game, using a real-effort task with payment mechanism variation in the first stage.

The authors find that unjust inequality significantly lowers trust and trustworthiness.

The remainder of this thesis builds on this literature using laboratory experiments conducted in South Africa³⁶. The main feature of the experimental design is exogenously varied intergenerational mobility, which is based on the real-world reported intergenerational socio-economic position of the participants. Chapters 5 and 6 provide a detailed description of the design features salient to each experiment, while a high-level overview is provided here of the features common to both. The key features are as follows: students were recruited to participate in the experiment in which they played two trust games and a public goods game, across three treatments. Each treatment allocated the participants a social status. Social status was randomly allocated in the control (Treatment One). In the remaining two treatments, social status was allocated based on the participant's self-reported socio-economic status of their parents (Treatment Two), or their grandparents (Treatment Three).

This chapter describes the experimental design in terms of implementation and the mechanisms used to generate a real-world social status measure. In addition, various tests are performed of the validity of status allocation as a reasonable measure of real-world intergenerational mobility.

4.1 Defining Fairness and Determining Status

Two key objectives are considered in the design of the experiment. The first is related to the demarcation between fair and unfair income generating processes, and the second to the inferred causes of socio-economic status. Randomly assigned wealth is considered a fair income generating process in this experiment, while inherited circumstances are considered as an unfair process. It is true that both of these processes result in wealth from factors beyond the individual's control. Both are thus arguably unfair as discussed in detail in Section 2. A plausible remedy to this issue is to assign inherited status in the experiment based on real-world socio-economic conditions. Doing so adheres more closely to real world conditions, and leads to a clearer demarcation between fair and unfair processes³⁷.

³⁶Ethical approval for the experiments was granted by the University of Cape Town's Commerce Ethics committee. Reference: REC 2019/10/020.

³⁷A potentially interest avenue of potential research would be comparisons between earned wealth in effort tasks and inherited circumstances.

The second key objective is to remove from the inherited status assigned in the experimental context all considerations associated with the individual level causes of inherited status (as reviewed in Section 2). Fairness and justice as concepts in the following experiments are defined as solely related to institutional processes and determinations. This is an important point as fairness and justice associated with the behaviour and preferences of individuals may be inferred from real-world status. That is, status may be considered to result from poor decision-making or low effort in achieving success. A careful balance is thus necessary between inherited real-world status as a source of unfairness, and real-world status as a consequence of individual attributes. This requires some clear institutional or exogenous determination of status in addition to the real-world inheritance of status.

These two objectives were achieved through eliciting perceived real-world socio-economic position from the participants and thereafter exogenously determining the definition of low and high socio-economic status based on the responses. Inherited status in the experiment is thus both a true reflection of the participant’s intergenerational circumstance and is limited, as far as possible, from being associated with any individual level causes of status.

4.2 Experimental Design

Beginning in October 2019, study participants were recruited using email and other announcements to all students at the University of Cape Town. Details of the task were not mentioned in the email, aside from that the research required participants to attend face-to-face sessions in which a decision-making task would take place, estimated to last ninety minutes. No mention of the terms “economics”, or “experiment” was made. Participants were promised a seventy rand show-up fee and the possibility of earning up to 350 rand³⁸ depending on the decisions made by them and other participants. Participants were randomly allocated to one of three treatments.

Interested students were required to complete a short online questionnaire, collecting

³⁸Seventy rand and 350 rand are approximately five and twenty-two United States dollars respectively. To contextualise these potential earnings, student tutors at the University of Cape Town earn between 104 rand per hour for undergraduate tutors and 185 rand per hour for PhD graduate tutors. This is equivalent to approximately seven and twelve USD respectively at the time the experiments were conducted.

data on personal characteristics and perceived socio-economic status. Questions were asked regarding self-identified race and gender, socio-economic status, citizenship, field of study (including participation in any course involving game theory or behaviour economics content), risk preferences, altruism, trust, and previous participation in any other experiments. To elicit inherited social status, drawing from similar experiments by Burns, Langer and Rusch (2019) and Kreft, Burns and Langer (2019), the pre-session online questionnaire used an Economic Ladder Question (ELQ) as quoted below (Ravallion and Lokshin, 1999)³⁹. The ELQ is widely used in surveys and experiments (Cantril, 1965; Ravallion and Lokshin, 1999) and has been validated in a variety of settings and countries (Deaton, 2008). Data was collected on the ELQ as follows:

“Please imagine a ten-step ladder where the poorest people in South Africa stand on the bottom step (the first step) and the richest people in South Africa stand on the highest step (the tenth step). On which step was your family on when you were 15-years-old?”⁴⁰

The ELQ as asked above gives a reference point to perceived parental socio-economic status. To measure intergenerational mobility, it is also useful to obtain the income step of the preceding generation: students’ grandparents. The ELQ is rephrased slightly in order to obtain this measure as follows:

“Please imagine a ten-step ladder where the poorest people in South Africa stand on the bottom step (the first step) and the richest people in South Africa stand on the highest step (the tenth step). On which step was the *head of your family* on when they were 15-years-old?”

The assumption behind this phrasing is that the head of the family’s income step at age fifteen corresponds to that of their parents - in most cases the students’ grandparents. Verbal and written instructions made the intentions of both versions of the ELQ question clear to participants⁴¹. The grandparent ELQ measure has a fairly catch-all nature as

³⁹Ravallion and Lokshin (1999) pose the Economic Ladder Question as nine rungs instead of the ten rungs used here. In addition, no reference is made to whom in society the comparison of the ladder is made while the ELQ used here references South Africans.

⁴⁰The question was accompanied by a visual representation of the ladder. See Appendix Item B

⁴¹Appendix Item B contains the information given to all participants. Instructions in all treatments were read from a detailed PowerPoint presentation. Some sentences are designed to be grammatically

it encompasses several household structures and triadic relationships. This is discussed further in Section 4.3.1.

To assign inherited socio-economic status, the median reported income step of all participants in the experiments was calculated. For parental ELQ, this median value was five, and for grandparent ELQ, this was four. Those above the median were allocated a status of high, those below were allocated to low, and those on the median were randomly allocated high or low status. The language used in the experiment referred to “Above Median Participant” for high status and “Below Median Participant” for low status. The method of deriving high or low status was explained in full to participants - see Appendix Item B.

Each treatment will be discussed in more detail in the chapters to follow, however it is instructive to anchor on these facts. Treatment One participants were allocated either high or low status randomly, independent of their answers to the ELQ questions. In Treatment Two, participants were classified to high or low as described above, according to parental ELQ (considered parentally inherited status). In Treatment Three, grandparent ELQ was used for this status classification. Treatment One is also referred to simply as the Random Allocation treatment, while Treatment Two and Three were referred to as Inheritance treatments. The difference between Treatment Two and Treatment Three is considered to be the degree of persistence of inherited socio-economic status, since Treatment Three pegs the participant’s status to their grandparents’ (three generation transmission) and Treatment Two pegs the participant’s status on their parents (two generation transmission).

Participants were allocated to the three treatments using computerised random allocation stratified by race, gender, and income step, and invited to sign up online to participate in an experiment session. Students were randomly allocated to session times.

All sessions were conducted on individual computers using Z-Tree (Fischbacher, 2007). Upon arrival for the sessions at computer labs in the University of Cape Town, participants were randomly allocated to computers based on high or low status. Participants

incomplete in the presentation to avoid cumbersome visual representations. All such sentences were verbally completed by the instructor who was the same person in all sessions of the experiment. Full set of PowerPoint slides for the grandparents treatment are in the appendices. Selected slides for the differences between parental and random status treatments are included in the appendices for comparison. Colour and bold accents in the quoted excerpt are as seen by the participants in the PowerPoint presentation during the session.

were spread out in a computer lab with a capacity of sixty individuals. Sessions were no larger than twenty-four participants and, to ensure privacy and anonymity, no smaller than twelve participants. Participants were not informed as to the basis for allocation to specific computers, nor did the allocated computers have any differentiating features.

For each experiment session to continue, certain conditions had to be met. An equal number of high and low status participants was required, and the total number of session participants had to be a multiple of four. Prior to the session, participants were informed that each session required a certain number of people, and only on arrival were informed that a multiple of four participants was required for each session. If the distribution of high and low status was not equal in any session, certain participants could be re-allocated to high or low status. These were those participants who originally reported median income step values, and thus were originally randomly allocated to either high or low status randomly. A second random re-allocation of these individuals had no impact on the study design. Which of these median value participants were re-allocated was chosen at random from the session register, with no knowledge given to participants of these changes.

If the experiment conditions still could not be met due to either an incorrect high/low distribution even after re-allocation, or fewer than twelve participants arriving, the entire session was cancelled, with all participants asked to sign up for another session. If excess participants (beyond a multiple of four, or excess participants of a particular status) were present, these were turned away and asked to sign-up for another session (with any exclusion choice between same status participants being made randomly). Participants were paid their seventy rand show-up fee regardless of whether they participated in the tasks for the session they had arrived for.

Each session consisted of three tasks. The language used in the instructions referred to each of these elements of the experiment as “tasks”, and not games⁴². For each treatment, the first two tasks were trust games, followed by a public goods game as the last task. Instructions for the first trust game were issued without any information about the format of the subsequent tasks. Following the completion of the first trust game, participants were informed of the second trust game, and instructions for the public goods game were

⁴²Instructions for each session were delivered verbally, on slide presentations, and were repeated on the participants’ screens once the tasks had begun. See Appendix Item B for the full experiment instructions for each treatment type.

made after completion of the second trust game. The strategy method was employed in both trust games in order to conceal the game results before the public goods game⁴³. The outcomes and earnings from the two trust games were revealed after the public goods game was completed. Participants were not permitted access to any materials during the game. Any questions from participants which arose were answered one-on-one, and no questions or answers were audible to other participants. Order effects from the trust games on the public goods games are not expected to be present, given that the trust games were played first in all treatments. In addition, regression analysis (not shown here) confirms no differences in the contributions in the public goods games between proposers and responders.

The tasks had no time limit and participants were asked to make their decisions carefully. However, participants were asked to be mindful of time, as no participant could continue with the subsequent tasks until all participants had made their decisions. Following the public goods game (the third task), participants were informed of their token earnings from the first two tasks (the trust games). Thereafter, participants' rand earnings were revealed to them and payment was made through cellphone based cash transfers. Participants were not made aware of the conversion rate of tokens to rands at any point during the experiment.

A note regarding the dates in which the experiment was conducted is necessary. Experimental sessions run from the 23rd of October 2019 to the 27th of November 2019. A three-week break was necessary due to exams. The implementation was identical before and after the break with sessions for all three treatments conducted before and after this break. Phase controls are included in all regressions to account for this break in the experimental timeline.

4.3 Quality of Responses

Welfare measurement is a subject of complicated and lengthy debate. The substance of the contestation is that subjective indicators are measured with considerable error and may not align with the true values of a variable (Jahedi and Méndez, 2014). However,

⁴³The use of the strategy method versus direct real-time game play is the subject of uncertainty (see for a review Brandts and Charness (2011)). These controversies will be discussed in more detail in the trust game chapter.

subjective measures are often better able to predict behavioural trends than their objective counterparts (Ricci, 2016; Bussolo, Ferrer-i Carbonell, Giolbas and Torre, 2021). The choice between using subjective versus objective measures is context dependent. It is nonetheless worth interrogating the responses to the ELQ used in this experiment as it forms the central part of the design.

The use of random stratified allocation should eliminate any potentially confounding relationships between treatment status and reporting or measurement error, or with other socio-economically salient markers. Nonetheless, this potential concern provides a second reason for evaluating the quality of the responses to the ELQ. The phrasing and subsequent framing of the ELQ is analysed in Section 4.3.1. Section 4.3.2 then considers the degree of intergenerational mobility as derived from reported income step. In addition, the patterns in income step and allocated high or low status, particularly those associated with socio-economic indicators and participant characteristics (using data from the online questionnaire), are examined.

4.3.1 ELQ Validity

One may be concerned about the catch all nature of the grandparents question as it, by design, encompasses several household structures and triadic relationships. The pre-session questionnaire asked participants to report their relationship to the household head. The majority of households (fifty-three percent) are headed by respondents' fathers while only thirty-five percent identify their mother as the household head. The remaining eleven percent of the participants identified a non-parental household head such as a grandparent, sibling, aunt or uncle, etc. Based on these patterns, the assumption that most household heads are parents (and thus that a grandparent would have been a household head when the parent was a child) is not unreasonable.

The phrasing on the grandparents' income step as evaluating the step of the household head when they were in adolescence as opposed to directly asking about grandparents or specifying a parent is for two main reasons. Firstly, specifying the household head accounts for possible differences in the respondent's maternal and paternal grandparents' income step. Focusing the question on household headship creates conceptual clarity in selecting grandparents as the intended target for whom the ladder is evaluated. Secondly, specifying a parent requires an arbitrary assumption as to the household structure of the

participants. This is particularly true in South Africa in that low-income households tend to be multi-generational, comprised of extended families, and headed by women (Amoateng, Heaton and Kalule-Sabiti, 2007; StatsSA, 2018). These differences in household structure would make selecting a specific parent not only arbitrary, but also likely result in systematic unobservable differences in reported income steps.

The second key aspects in the phrasing of the ELQ’s for both parents and grandparents is the reference to South Africa. A broader reference point such as comparison of income steps to “others” or some other unspecified group would make it extremely difficult to understand potential differences in income steps across participants. A narrow reference point such as to the participant’s neighbourhood is similarly problematic, as neighbourhood wealth and income are likely to vary considerably across participants, and cannot be easily observed or verified. Lastly, recruitment for the experiments was not limited to South African citizens only. All willing participants, regardless of nationality or country of permanent residence, were permitted to participate. Non-South African citizens evaluating ancestral income steps relative to South Africa can be considered problematic, as these participants have very little (if any) understanding of the South Africa income distribution in the past (particularly going back two generations). As the pre-session online questionnaire elicited nationality⁴⁴, this latter issue is addressed by including control variables for nationality.

4.3.2 Implied Intergenerational Mobility

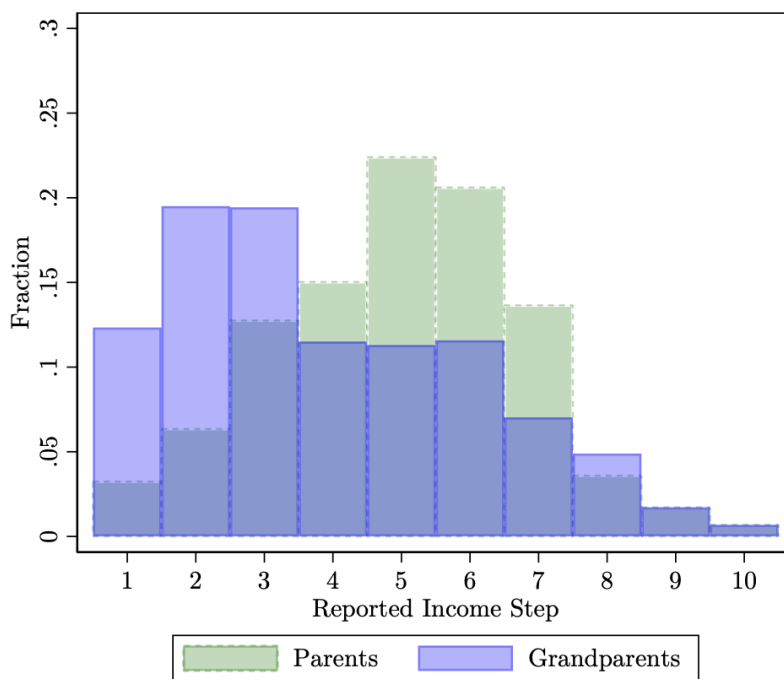
It is possible that the participants’ reported income step is not the same as their true income step, which would result in measurement error. Socio-economic status is subjective and thus the gap between the economic ladder rungs may also be inconsistently perceived by players. In addition, as with other scales, players may assign different meaning to gaps between rungs depending on where they are on the ladder (for example the gap between rungs one and two could be perceived differently to the gap between rungs seven and eight). However, as the steps are aggregated to a relatively high level, errors in reporting are mitigated. In addition, the substance of the experiment is focused on real-world socio-economic position *in relation* to other participants in the experiment. Thus, the

⁴⁴Approximately seventy percent of participants are South Africans, fifteen percent are from other African countries, and the remainder either not specifying a nationality or from countries such as the UK, Canada, and China.

participant’s true income step is of no material consequence to the experiment as long as the participant believes that their reported income step is correct, and by implication, that the reported income steps of other participants are correct as well. Moreover, participants were not informed of the value of the median income step, but were only informed whether they were above or below the median. Withholding the median income step can reasonably be argued to eliminate potential effects of differences between perceived and true income step, as the experimental framing makes only relative standing salient. In addition, the random stratification to treatment based on income step, race and gender reduces concerns regarding measurement error at the treatment level.

Figure 2 shows the distribution of reported income step for grandparents and parents, delineated in purple and green respectively. The parental income step distribution lies to the right of the grandparent income step distribution, according with the previously reported median values of five and four respectively. This pattern is to be expected given the international evidence that individuals tend to believe in considerably high degrees of intergenerational upwards mobility. Figure 2 thus provides initial support for the validity of the responses to the income step questions.

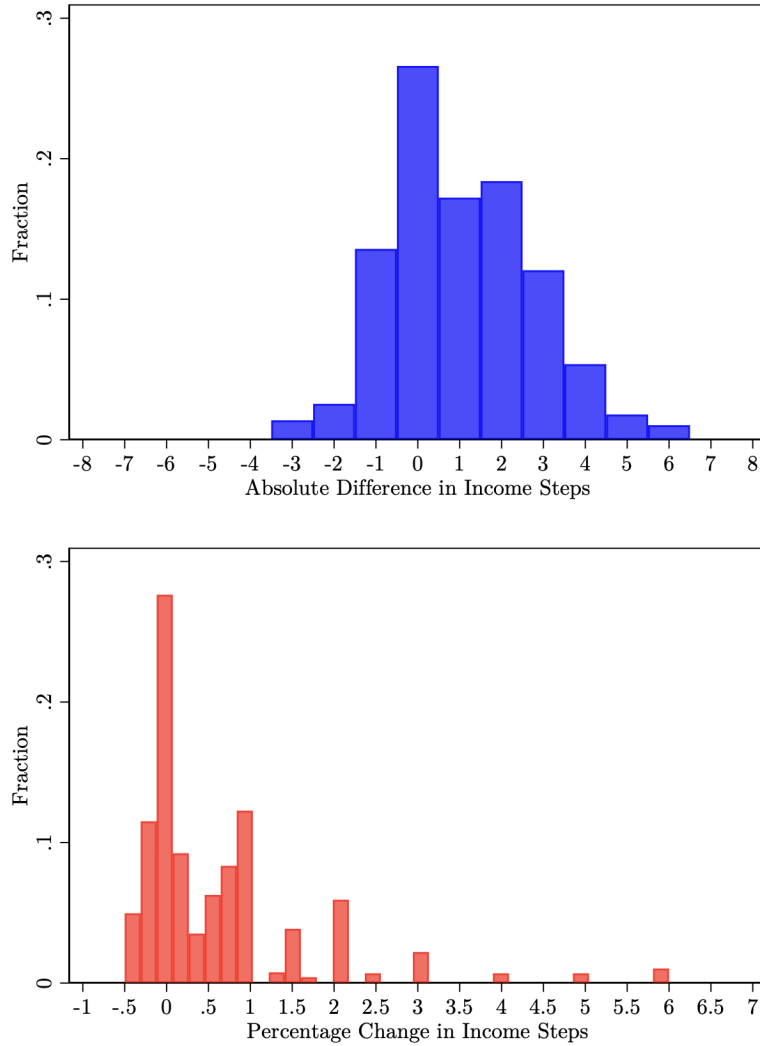
Figure 2: Distribution of Reported Income Steps



NOTES: This figure shows the distribution of reported income step for grandparents and parents, delineated in purple and green respectively.

The credibility of measuring the degree of intergenerational mobility as implied by reported income step depends on the plausibility of the difference between parental and grandparent income step. This is analysed in Figure 3, which shows the absolute difference in reported income step between a participant's parents and grandparents (above), and the percentage differences relative to grandparents' income step (below). As the absolute differences do not indicate where on the economic ladder the mobility occurs, it is helpful to show percentage differences in the bottom figure. For both figure, negative values indicate a parental income step lower than the grandparent's income step (downwards mobility), and positive values represent upwards mobility.

Figure 3: Intergenerational Mobility in Income Steps



NOTES: The top panel of this figure shows the difference in an individual's reported income step for their parents and grandparents. The bottom panel shows the percentage change in an individual's reported income step for their parents and grandparents.

Figure 3 shows that absolute differences in income steps between parents and grandparents range from downwards mobility of three steps, to upwards mobility of six steps. Average mobility in absolute terms is one income step upwards. Downward mobility is relatively rare, with only eighteen percent of participants reporting their parents as on a lower income step than their grandparents. In contrast, fifty-six percent of participants have parents who they perceive to be on a higher income step than their grandparents, with the remaining twenty-seven percent reporting no mobility.

Figure 3 shows that the percentage change in intergenerational income steps ranges from -0.5 to six. On average, the relative change in parents socio-economic position compared to grandparents is 0.6 percent. That is, parents are on average on an income step just under two-thirds higher than that reported for grandparents. Of the fifty-six percent of participants who report upwards mobility, the average relative change in income position is one percent. The seventeen percent who report downward mobility on average have parents who are twenty percent less well off than the participants' grandparents. In contrast, the average relative change amongst participants with upwardly mobile parents is 1.15 percent, implying that upwardly mobile parents are more than twice as well off as grandparents. Excluding the extremes of the upwardly mobile parents, defined simply as a relative change greater than two, results in an average positive change of 0.7 percent.

Any percentage value greater than one represents a doubling of the relative positions of parents compared to grandparents. The percentage of participants reporting this degree of upwards mobility is just under eighteen percent. Such an increase is possible, especially given the transition from apartheid to the democratic dispensation in South Africa. This political change, experienced by both parents and grandparents, reduced previously insurmountable socio-economic limitations which were imposed on the majority of the population. In the absence of an objective indicator of credible intergenerational mobility, and given the small sample size reporting such high mobility, the patterns above are not considered concerning.

4.3.3 Socio-economic Correlates of Income Steps and Allocated Status

Certain objective measures of socio-economic status were collected in the pre-session questionnaire. Table 10 reports Pearson correlation coefficients between these objective socio-economic status indicators, and reported income step and derived income status (high or low, in relation to the median income step)⁴⁵. As status is randomly allocated in Treatment One, these correlations are calculated only for participants in Treatments Two and Three, thus eliminating noise from the random allocation in Treatment One.

⁴⁵Only a selection of the participant characteristics elicited in the questionnaire are examined in this section, for the sole purpose of investigating the validity of the income step measures. Chapter 5 presents a detailed investigation of all participant characteristics.

Table 10: Correlations: Income Step, Status, and Socio-Economic Characteristics

Variables	Inherited High Status	Parent's Income Step	Grandparent's Income Step
Black African	-0.22***	-0.28***	-0.30***
White	0.30***	0.36***	0.40***
Coloured	0.01	-0.03	-0.01
Indian/Asian	0	0.08	0.02
Grant Recipient in Household	-0.17***	-0.35***	-0.28***
Financial Aid Recipient	-0.33***	-0.43***	-0.28***
Mother is Household Head	-0.04	-0.11**	-0.08
Father is Household Head	0.13**	0.26***	0.11**
Non-Parental Household Head	-0.16**	-0.24***	-0.05
Observations	239	315	315

NOTES: This table reports Pairwise Pearson Correlation Coefficients between allocated status and reported parents and grandparents income step. Correlations for inherited status are for Treatments Two to Four. Correlations for reported income steps include the full sample of treatments. "Grant Recipient in Household" represents a member of the household who receives a government cash transfer. Non-Parental household head includes grandparents, siblings, other relatives or non-relatives. Financial aid recipients are participants who receive means tested financial aid through government support for their tuition. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For the three measures of income status: allocated high status based on income step, parental income step, and grandparent income step, the correlations are consistent across all three measures, and as would be expected in the South African context. Black Africans are significantly less likely to be high status⁴⁶, with White South Africans more likely to be high status. Financial aid recipients are also less likely to be high status as are participants who live in a household with a government cash transfer recipient. Household headship shows that participants in households headed by their father are more likely to be high status while those in households headed by someone other than the participant's parents (grandparents, aunt or uncle, sibling etc.) are less likely to be high status. The same patterns are observed with parental income step and grandparent's income step. Characteristics not significantly correlated with high status are two race variables (Coloured and Indian/Asian), and female household headship. These results are

⁴⁶All significant differences reported are significant at the one or five percent level.

reassuring in that the induced status in the experiment does indeed capture real-world socio-economic patterns.

The correlations in Table 10 are unconditional. To further investigate the credibility of the income step measures and the random allocation of treatment based on those measures, regression analysis is presented in Table 11. This analysis serves two purposes: to aid in the discovery of any determinants of status which may threaten the conditional exogeneity of treatment required for the experiments, and to display the conditional associations between each determinant from Table 10. The outcomes investigated in Table 11 are parental and grandparent income step (Columns 1 and 2), and high status in the Inheritance treatments sample (Treatments Two and Three), and the Random Allocation treatment sample (Treatment 1 - see Column 4). For simplicity, Columns 1 and 2 present OLS results, although in ordered logit regressions, the log odds of reporting a higher income step are virtually identical to the OLS coefficients reported here. Given the binary nature of income status, probit average marginal effects are presented in Columns 3 and 4

The regression results of Table 11 accord with the correlation analysis in Table 10, in that all coefficients are similarly of the signs expected given income and wealth patterns in South Africa. For reported parental income step in Column 1, with the exception of female, all other socio-economic predictors of parental income step are positive, significant, and large. White individuals (in contrast to Black African participants) and financial aid recipients report the largest income step changes (1.55 and -1.01 respectively), with these coefficients taking on expected signs. The largest effect in Column 2 (grandparent income step) is observed again for White individuals, and is much larger, at 2.4 income steps. Other significant variables - Coloured, family government grant receipt, and financial aid receipt - are of similar magnitudes in Column 2, at approximately a 0.7 step decrease in reported grandparent's income step.

Table 11: Determinants of Reported Income Steps and Status Allocation

	(1)	(2)	(3)	(4)
Sample	All Treatments		Inheritance Treatments	Random Allocation
DEPENDENT VARIABLE	Parents Income Step	Grandparents Income Step	High Status	High Status
White	1.55*** (0.22)	2.39*** (0.31)	-0.06 (0.14)	
Coloured	0.56** (0.24)	0.66** (0.31)	-0.05 (0.12)	-0.10 (0.18)
Indian/Asian	0.66** (0.33)	0.40 (0.45)	-0.13 (0.17)	-0.08 (0.23)
Female	0.24 (0.18)	-0.05 (0.22)	-0.02 (0.09)	-0.18 (0.12)
Grant Recipient in Household	-0.65*** (0.19)	-0.71*** (0.23)	0.11 (0.09)	-0.03 (0.15)
Financial Aid Receptient	-1.01*** (0.20)	-0.71*** (0.25)	-0.09 (0.10)	-0.16 (0.16)
South African Citizen	-0.45** (0.21)	-0.19 (0.29)	-0.03 (0.10)	0.11 (0.17)
Mother is Household Head	-0.38** (0.18)	-0.17 (0.24)	0.09 (0.10)	-0.35** (0.14)
Non-Parental Household Head	-0.81** (0.31)	0.29 (0.40)	-0.08 (0.13)	-0.38** (0.17)
Parents Income Step			0.24*** (0.05)	-0.05 (0.05)
Grandparents Income Step			0.12*** (0.03)	0.02 (0.04)
R-squared	0.35	0.24		
Wald Chi2			66.86	10.91
p-value			0.00	0.364
Observations	315	315	239	71

NOTES: This table reports demographic and socio-economic determinants of status allocation and reported income steps for parents and grandparents. Probit marginal effects are reported for allocated status and OLS coefficients for reported income steps. Regressions for reported income steps include the full sample of treatments. Inheritance treatments include Treatment Two to Treatment Four. "Grant Recipient in Household" represents a member of the household who receives a government cash transfer. Non-Parental household head includes grandparents, siblings, other relatives or non-relatives. Financial aid recipients are participants who receive means tested financial aid through government support for their tuition. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In Columns 3 and 4, the dependent variable is a binary indicator for high status. No significant differences are expected in Column 4, where status is randomly assigned (the Treatment One sample). Column 3 is the inheritance treatment sample (Treatments Two and Three). In both Columns 3 and 4, controls for parental and grandparent income step are included. White is excluded in Column 4 due to a lack of White participants in Treatment One (71 participants). Beginning with inherited status in Column 3, conditional on reported income step, none of the socio-economic or demographic factors are significant (except for the expected measures for parental and grandparent income step). This supports the validity of the conditional exogeneity of status allocation.

Similarly, the majority of variables are not significantly associated with high status in the random allocation, as shown in Column 4. The only exception to this is household headship. Relative to households headed by fathers, participants with non-parental household heads or maternal heads are less likely to be allocated low status. These results are not particularly concerning given the low number of participants who are in households not headed by their father, the lack of an obvious reason for this pattern to occur, and the absence of significance in the other coefficients. Lastly, the chi-squared statistic is highly insignificant in the random status allocation treatment (p -value = 0.36), implying the full model (which contains the factors which are most likely to affect cooperative behaviour) does not perform better than the null, when predicting high status. This adds further evidence of appropriate exogeneity in treatment allocation in the experiments to follow.

Chapter 4 has given a broad description of the experimental set-up and evaluated the various measures used to create measures of socio-economic status. In Chapter 5 the first experiment, evaluating the relationship between allocated and inherited status and trust, is presented.

5 In Status We Trust

Chapter 3 focused on the effects of race as an accident of birth on trust attitudes. The results show that race is indeed an important aspect of determining trust and that these racialised trust attitudes have intergenerational linkages. However, the nature of the questions make it impossible to assess whether racialised socio-economic disparities or race itself determine differential attitudes. Much of the existing literature is affected by the same confounds in isolating either socio-economic status or race based trust. Studies which arguably remove these concerns have done so largely through exogenous group based identity generated by artificial means, without any real-world connotations. Using a standard trust game, this chapter builds on the literature by exogenously determining socio-economic status, while maintaining the real-world significance of socio-economic status as described in Chapter 4.

This chapter is structured as follows. Section 5.1 reviews the literature on status and interpersonal trust. Having discussed several aspects of the general literature on trust attitudes in Chapter 3, this review adopts a narrow focus on socio-economic factors related to trust. Thereafter, the design and details of the trust game are presented in Section 5.2. Sections 5.3 and 5.4 provide descriptions of the data and the regression specification. The results are presented in Sections 5.5 and 5.6 for proposers and responders, respectively. The chapter concludes with a discussion of the results in Section 5.7.

5.1 Status and Interpersonal Trust

Low socio-economic status is commonly found to be negatively associated with pro-social attitudes (Stamos, Altsitsiadis and Dewitte, 2019; Kim, Sommet, Na and Spini, 2022; Qi, Li and Du, 2018; Brandt, Wetherell and Henry, 2015; Alesina and La Ferrara, 2002). Lower socio-economic status lowers reported trust in a variety of commonly used survey measures (Gächter, Herrmann and Thöni, 2004). These associations are evident in adults and childhood (Stamos et al., 2019; Guillou, Grandin and Chevallier, 2021). There are several possible explanations for this association, such as the disproportionately greater costs from misplaced trust by lower income individuals discussed in Chapter 3.

In addition, higher trust tends to be exhibited towards high status individuals (Qi et al., 2018; Bettencourt, Charlton, Dorr and Hume, 2001; Lount Jr and Pettit, 2012).

A common explanation for this finding is that inferences are made about the cause of the individual's status, with high status individuals attributed positive characteristics such as high work effort. Low status individuals are assumed to be low status due to individual failures such as laziness or poor decision-making (Kraus, Park and Tan, 2017; Gugushvili, 2016). Secondly, individuals and groups which have been discriminated against in society are less likely to be trusting as they do not expect to be treated fairly (Alesina and La Ferrara, 2002; Smith, 2010; Tyler, 2003). Conversely, high status individuals are admired and respected, leading to expectations that they will be treated well and fairly (Lount Jr and Pettit, 2012). The desirable public attitudes towards high status groups creates incentives for individuals to protect their social status by adhering to socially desirable norms (Kumru and Vesterlund, 2008; Turner, Hogg, Oakes, Reicher and Wetherell, 1987; Tajfel, Billig, Bundy and Flament, 1971; Mullen, Brown and Smith, 1992; Marques and Yzerbyt, 1988).

There is a dearth of empirical literature on how changes in intergenerational socio-economic status affect trust attitudes. A noteworthy exception is Shaleva (2015), who shows that generalised trust increases with the experience of upwards intergenerational mobility, and decreases with downwards mobility. The author argues that perceived unfairness of immobility is a key factor in corrosive social attitudes, and that mobile societies have unstable social categories which prevent the formation of stable interpretations of society and groups in which trust can be placed. Kim et al. (2022) find that upwards mobility increases the attributions of poverty to individual versus societal factors.

Another gap in the literature is that the effects of intergenerational transmission on social attitudes are only considered across two generations from parents to children. Although there is conflicting evidence of multigenerational transmission of socio-economic outcomes (Hodge, 1966; Behrman and Taubman, 1985; Clark, 2014; Braun and Stuhler, 2018), that some instances of multigenerational transmission are found warrants an analysis of how type of transmission affects attitudes.

Many of the studies on socio-economic correlates with trust use a variety of methods which are often specific to the academic discipline of the context. Economics commonly uses trust games as experimental methods for understanding trust, and consequently a large literature has developed using trust games (see Johnson and Mislin (2011), Chaudhuri (2008), and Camerer (2011) for reviews). The basic structure of the trust game is

that two parties are paired, with one individual tasked with deciding how much to send to the other party. The amount sent is multiplied by some factor. The recipient party then decides how much, if anything at all, to return to the sender. The game has no binding commitments for the second party returns (Berg et al., 1995).

Several of these studies focus on differences in behaviour based on characteristics (Fershtman and Gneezy, 2001; Burns, 2012; Yagman and Keswell, 2015; Wilson and Eckel, 2006; Slonim and Guillen, 2010; Falk and Zehnder, 2007; Butler, 2014) such as attractiveness (Wilson and Eckel, 2006), race (Burns, 2012; Yagman and Keswell, 2015), ethnicity (Fershtman and Gneezy, 2001), and gender (Slonim and Guillen, 2010). This experiment differs from the existing literature in that the social group is based on both real-world status and lab generated allocation of status. The existing literature is based either on real-world status or purely artificial status.

In South Africa, there is evidence of mistrust towards Black Africans in trust games (Burns, 2012; Yagman and Keswell, 2015). Burns (2012) conducts trust game experiments on a sample of high school students in South Africa. The author finds significantly lower transfers to Black Africans than other races, a result based on negative stereotypes. Yagman and Keswell (2015) use accents instead of race directly to test for discrimination. In South Africa, accents differ between native and non-native English language speakers. The authors find support that a Black African sounding accent lowers offers in the trust game.

Lastly, the term “trust game” is commonly used although the nature of the interactions reflect behavioural motivations other than trust attitudes (Ashraf, Bohnet and Piankov, 2006; Brülhart and Usunier, 2012; Cox, 2004)⁴⁷. There are two main alternative social attitudes which may drive behaviour in a trust game: reciprocity and altruism (Ashraf et al., 2006; Brülhart and Usunier, 2012; Cox, 2004; Baran, Sapienza and Zingales, 2010). By varying the responder’s endowment, Brülhart and Usunier (2012) find that transfers are the same to rich and poor individuals. In some cases trust may reflect reciprocity in that returning amounts sent make people feel good about themselves regardless of the outcome of the game (Brülhart and Usunier, 2012). The basic experimental design cannot distinguish between trust, altruism, and reciprocity in a direct manner.

⁴⁷In its original formulation the game was referred to as an “investment game” (Berg et al., 1995).

The remainder of this chapter explores three main questions. Firstly, does inherited socio-economic status affect trust and trustworthiness? Secondly, does the degree of persistence of intergenerational transmission of socio-economic status affect behaviour? Thirdly, are there differences in trust and trustworthiness based on the inheriting a low versus high socio-economic position? The next section begins this analysis by presenting a description of the specific design used in this experiment.

5.2 Design: Trust Game

The experiment consisted of two Berg et al. (1995) trust games that are identical in structure. Trust games are played sequentially between two players - a sender and a responder. The sender must decide how many tokens from their endowment to send to a responder. Any amount transferred by the sender is tripled by the experimenter. These tripled tokens are added to the responder's endowment. The responder then decides how many of their total tokens to return to the sender. The game ends once the responder has made their decision. The number of final tokens earned by the sender is the sum of the tokens from their initial endowment that they did not send to the responder, added to the tokens returned to them by the responder. The responder's final endowment is the total tokens they received from the sender's tripled transfer, minus the tokens they returned to the sender.

The efficient outcome to maximise joint welfare is for the proposer to send their entire endowment to the responder which, due to the multiplicative factor, increases the pair's wealth. The joint welfare maximisation is invariant to the distribution of tokens between the two players in cases where players receive equal endowments to begin with. Recognising that the purely self-interested responder rationally decides to keep all of their tokens for themselves, the prediction is that the proposer sends zero tokens to the responder, who then in turn, returns zero tokens to the proposer.

The interaction is considered to represent elements of trust and trustworthiness as the proposer sends tokens from their endowment which the responder can then choose to return or keep, without any formal way of ensuring the responder returns any tokens. Thus, the greater the number of tokens the proposer sends, the more trusting they are considered to be. As the responder can keep any number of tokens they receive from the sender, the greater the number of tokens they return to the sender (equivalent to

honouring the proposer's trusting beliefs), the more trustworthy they are considered to be.

The trust games in this experiment adopted this exact structure. Endowments were equal for both proposers and responders with all participants receiving an initial and unconditional endowment of fifty tokens. Amounts sent by the proposers were tripled by the experimenter and thereafter allocated to the responders. This transferred amount was added to the responder's endowment, and from this "new" total they could choose to return tokens to the responders, from zero to their full endowment. Participants were randomly allocated to roles as either the proposer or the responder. In addition, their status, based on ELQ, as either high or low status, was made public in the game. When considering their offer, the proposer knew the status of the responder, and vice versa. Full information was available - each person knew that their partner would know their status. The games were played with an equal number of low status and high status participants in each role. It is worth reiterating: the "inequality" in the trust games is based purely on social status and not endowments.

The experiment consists of two games in each session, and thus, concealing the results of each game is important to limit spillover effects from one game to the other. Typically, the structure of the trust game is sequential. Therefore, the responder can only make a choice after observing the amount sent by the proposer, in what is commonly referred to as the direct method. An alternative approach is to use the strategy method. This method is chosen as it limits spillover effects. The strategy method requires responders to pre-commit to a series of hypothetical choices conditional on each of the possible amounts sent by the proposer. That is, the responders indicate how many tokens they would return to the proposer, as if the proposers had sent each of the possible transfers.

While the strategy method has the same game-theoretical predictions as the direct method, there is some controversy regarding the behavioural consequences of the two methods (see Brandts and Charness (2011) and Johnson and Mislin (2011) for reviews). The critiques fall broadly into three relevant criteria for this experiment. Firstly, the strategy method may alter the responder's decisions, as how much to return to proposers is decided in advance, without the possibility of an emotional response that could arise from observing and directly responding to a transfer sent by the responder in real time. Secondly, using the strategy method, responders may make relatively more careless de-

cisions at possible transfer amount choices which they believe will not actually be sent by responders. For example, a responder who believes that the proposer may actually send their full endowment makes different decisions than a responder who does not believe this outcome would materialise. A third dimension with the strategy method is the cognitive load of the choices faced by the responders. A large strategy set of possible return transfers to consider instead of simply one, as in the direct method, may reduce the attentiveness of the responders.

While these three factors are valid concerns, there is no empirical consensus on these issues or the behavioural consequences of the direct versus strategy method more generally (Brandts and Charness, 2011). On balance, however, meta-analysis finds no significant effect of the strategy method on behaviour in trust games (Johnson and Mislin, 2011). In this experiment, to limit the choices faced by the responders to a manageable strategy set, proposers were only permitted to send amounts in multiples of five tokens, ranging from zero to their full fifty token endowments. Responders, therefore, faced eleven possible return transfer choices and made eleven decisions concerning the share of endowment they would return to proposers for each possibility. The five token restriction imposed on proposers means that the total token endowment from which responders could make return transfers ranged from fifty tokens (their initial endowment with zero tokens sent by the proposer) to two hundred tokens (for the case of a full fifty token endowment sent by the proposer)⁴⁸.

Participants were informed in each trust game that their payoffs at the end of the experiment would be based on the actual decisions made in the task. Proposers and respondents were matched randomly. Proposers and respondents made their decisions simultaneously. The final outcome of the game was conditional on the tokens sent by the proposer, and the respondent's pre-committed response to that choice (out of the eleven possibilities). That is, the amount to send, chosen by the proposer, was used to select which of the eleven return transfers by the responders would be implemented as the outcome of the game. The players' decisions were only revealed at the end of the game.

The two trust games in this experiment differ only in the status matching of responders

⁴⁸As the tokens returned by the responder are tripled multiples of five, the responder's endowments increase in fifteen token increments

and proposers. In one game, the participant is matched with a high status partner and in the other, with a low status partner. This results in four possible status pairs; 1) high status proposer with low status responder; 2) high status proposer with high status responder; 3) low status proposer with high status responder; and 4) low status proposer with low status responder. In each of the trust games, individuals play one game matched with a high status partner and one game matched with a low status partner. To mitigate order effects, the status of the participant's partner in each game was randomly assigned at the individual level. For instance, within the same session, some low status proposers sent amounts to their high status partner in the first game, while other low status proposers sent amounts to their low status partner in the second game. This is possible due to the strategy method and concealing the outcome of the games until the end of the experiment. Participants were informed of this randomisation.

5.3 Balance Tests

This section reports balance tests that compare mean differences in participant characteristics by treatment, and mean differences in characteristics between proposers and responders. Treatment One participants had status randomly allocated, with Treatments Two and Three (referred to as inheritance treatments), in which status was determined by parental or grandparent income step respectively. To recall, two trust games are played by participants, followed by a public goods game⁴⁹.

⁴⁹The sample size for Treatment Two is larger than Treatment One and Three due to an additional part of the research project which falls outside of the scope of this analysis. The trust games are not affected by this omission.

Table 12: Trust Game Mean Sample Characteristics by All Treatments

	All	Treatment One	Treatment Two	Treatment One	Treatment Three	Treatment Two	Treatment Three
Participated in Similar Experiments	0.20	0.18	0.21	0.18	0.21	0.21	0.21
Financial Aid Receptent	0.38	0.39	0.39	0.39	0.35	0.39	0.35
South African Citizen	0.78	0.82	0.76	0.82	0.82	0.76	0.82
Black African	0.62	0.64	0.58	0.64	0.68	0.58	0.68
White	0.13	0.07	0.15 *	0.07	0.13	0.15	0.13
Coloured	0.18	0.18	0.21	0.18	0.11	0.21	0.11 *
Indian/Asian	0.06	0.08	0.04	0.08	0.07	0.04	0.07
Female	0.59	0.55	0.62	0.55	0.57	0.62	0.57
Enrolled in Economics	0.30	0.37	0.27	0.37	0.31	0.27	0.31
Enrolled in Social Science	0.67	0.67	0.69	0.67	0.64	0.69	0.64
Willing to Take Risks	0.82	0.79	0.83	0.79	0.81	0.83	0.81
Altruistic	0.50	0.46	0.51	0.46	0.51	0.51	0.51
Trusts Others in General	0.12	0.14	0.10	0.14	0.13	0.10	0.13
Parents' Income Step	4.97	4.74	5.10	4.74	4.90	5.10	4.90
Grandparents' Income Step	3.92	3.64	4.05	3.64	3.90	4.05	3.90
Observations	316	76	168	76	72	168	72

NOTES: This table reports mean sample characteristics by treatment. All variables are binary with differences tested using two-sided proportion test, except for reported parents' and grandparents' reported income step. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Beginning with treatment balance, Table 12 reports general characteristics of the sample, as well as pairwise mean differences in characteristics across the three treatments. In the overall sample of 316 participants, the majority are Black African, female, and South African citizens. A large portion (two-thirds) are students in the Social Sciences (which excludes those in the Engineering or Science faculties), and over a third are financial aid recipients. Some previous participation of experiments and awareness of behavioural economics and game theory is present in the sample, although these students are not in the majority. Attitudinally, eight-two percent report being willing to take risks⁵⁰ in general, twelve percent report being trusting⁵¹ of others in general, and fifty percent are altruistic⁵². The average parental income step is approximately five (out of ten) and the average grandparent's income step is four.

Table 12 shows near complete balance across all three treatments, with only two differences observed, which were significant at the ten percent level. A smaller share of the Treatment One sample is White compared to that of Treatment Two, and similarly, fewer participants in Treatment Three were Coloured compared to those in Treatment Two. Both are minority race groups and thus higher variation in their numbers is to be expected.

As a final treatment balance check, regressions of the likelihood of being assigned to each of the treatments are reported in Table 13. The reported regressions are probit marginal effects which include the full set of variables described in Table 12. The dependent variables are coded such that the treatment allocations are tested in pairs. That is, in Column 1 the value of one represents allocation to Treatment One and zero repre-

⁵⁰Risk taking was elicited with the question from the German Socio-Economic Panel: How do you see yourself: "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risks'".

⁵¹Trust was elicited using the question is taken from the ANES 1964 Time Series Study: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? a) Most people can be trusted; b) Need to be very careful."

⁵²Altruistic preferences were elicited using the Rushton, Chrisjohn and Fekken (1981) scale with some adaptations to the pool of questions for the South African context and time constraints. Altruism in the full sample is coded in relative terms with reported altruism items below the median coded as zero and above the median coded as one to indicate altruism. In all regression specifications, instead of a binary indicator for relative altruism, the scale is standardized to a mean of zero and a standard deviation of one. This better captures the relative nature of the altruism items than a crude binary measure although as differences in standardized variables across groups have no meaningful interpretation, for all descriptive statistics the binary measure is used.

sents allocation to Treatment Two. In the language used in the table, this corresponds to “Treatment One instead of Treatment Two” and so on. In Column 2, the dependent variable is equal to one if the participant is allocated to Treatment One and zero if they are allocated to Treatment Three. Lastly, in Column 3, the dependent variable is equal to one if the participant is allocated to Treatment Two and zero if they are allocated to Treatment Three.

The substitutive purpose of the regressions is to test the null hypothesis that all coefficients are simultaneously equal to zero, and consequently, that participant characteristics do not perform better in predicting treatment allocation than a null regression. Therefore, Wald Chi-Squared statistics and corresponding p-values are reported in the table. Only coefficients that are statistically significant in at least one of the three regressions are included in the table in the interest of brevity. A full set of controls is described in the table notes.

The results reported in Table 13 indicate that the race distribution is significantly different across treatments, with the exception of treatment allocation between Treatment One and Three which show no racial differences. In Column 1, White participants are twenty-two percentage points less likely to be allocated to Treatment One compared to Treatment Two, than Black African participants. In Column 3, racial differences are significant for both White and Coloured participants. Relative to Black African participants, White participants are fourteen percentage points more likely to be allocated to Treatment Two than Treatment Three, and similarly sixteen percentage points more likely than Coloured participants. Lastly, South African citizens are less likely to be allocated to Treatment Two than Treatment Three.

Despite these differences, the model Wald Chi-squared reported in the final two rows of the table show that the predictors of treatment allocation for all three treatments do not perform better than the null model for all three pairwise comparisons. In summary, the regressions indicate that although the distribution of race does differ across treatments, these differences do not affect the desired general conclusion, of an insignificant model predicting treatment allocation. The goal of full treatment balance given the fairly limited sample size per treatment may be considered ambitious, and the limited differences observed are encouraging. No systematic reason exists for these differences, and in all regression analysis which follows, race controls are included, as in any analysis using

South African data.

Table 13: Determinants of Treatment Assignment

Dependent Variable	(1) Treatment One instead of Treatment Two	(2) Treatment One instead of Treatment Three	(3) Treatment Two instead of Treatment Three
White	-0.22*** (0.07)	-0.15 (0.18)	0.14* (0.08)
Coloured	-0.07 (0.08)	0.12 (0.13)	0.16** (0.07)
South African Citizen	0.08 (0.08)	-0.06 (0.12)	-0.13* (0.07)
Observations	243	148	239
Wald Chi2	18.37	6.792	11.98
Prob > Chi2	0.244	0.963	0.681

NOTES: This table reports probit marginal effects of the likelihood of being allocated to each of the three treatment pairs: treatment one or two, treatment one or three, and treatment two or three as indicated in the column titles of the table. Each column represents a separate regression. Only variables which are statistically significant (at the ten percent level) for at least one of the regressions are reported. Full set of addition controls (reported in the appendices) gender; full set of race dummies; reported parent and grandparent income step; financial aid receipt; past or current enrollment in an economics course with a curriculum which includes behavioural and experimental economics; enrollment in a social science faculty; previous participation in similar experiments; self-reported survey measures of risk attitudes, trust in others, and altruism. Wald Chi-Squared statistics and accompanying p-values for joint significance of the full regressions are provided at the bottom of the table. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Differences in mean proposer and responder characteristics are examined in Table 14 to verify the random nature of the allocation to each role. In all but one case, there is no significant difference in mean characteristics between proposers and responders. Nine percent of responders are Indian or Asian, compared to three percent of proposers. However, since only nineteen participants (six percent of the sample) are Indian or Asian this difference is inconsequential. As all other characteristics do not differ significantly between proposers and responders, and are similar to the results in Column 1 of Table 12, these results are not reported in text. It is clear that the randomisation process to the proposer or respondent roles was not related to participant characteristics.

Table 14: Mean Proposer and Responder Characteristics

Variables	PROPOSER	RESPONDER	
Experience in Experiments	0.20	0.21	
Financial Aid Receptient	0.37	0.39	
South African Citizen	0.78	0.79	
Black African	0.60	0.63	
White	0.13	0.12	
Coloured	0.16	0.20	
Indian/Asian	0.09	0.03	**
Female	0.56	0.62	
Enrolled in Economics	0.29	0.31	
Enrolled in Social Science	0.66	0.68	
Willing to Take Risks	0.85	0.78	
Altruistic	0.46	0.54	
Trusts Others in General	0.11	0.13	
Parents Income Step	4.84	5.10	
Grandparents Income Step	3.87	3.96	
Number of Participants	158	158	

NOTES: This table reports mean characteristics for proposers and responders in all treatments. Income steps means tested with student t-tests. All binary variable differences are based on two-sided proportion tests. *** p<0.01, ** p<0.05, * p<0.1

5.4 Estimation

The regressions are estimated separately for proposers and responders, using the following model (Equation 2):

$$ShareTransferred_{ci} = \beta_0 + \beta_1 T2_{ci} + \beta_2 T3_{ci} + \beta_3 HPartner_{ci} + \beta_4 HParticipant_{ci} + \mathbf{X} + \epsilon \quad (2)$$

The dependent variable $ShareTransferred_{ci}$ is the share of endowment transferred by individual i . Although measured as a share of endowment, there are key differences in the dependent variable between proposers and responders. The sample is pooled over all the choices, c , made by the proposers and responders. As proposers made two decisions, with one decision in each of the two games, c represents two choices which result in a pooled panel sample of 316 observations. Responders, on the other hand, made eleven choices in each of the two games and therefore c takes on twenty-two values which result in a panel

data set with a sample size of 3,476 observations. Cluster corrections for the standard errors in all regressions (both proposer and respondent) are at the individual level for each of the two games. $T2_{ci}$ and $T3_{ci}$ are dummy variables for participant i 's treatment allocation to either Treatment One (omitted base category), the parental inheritance treatment ($T2$), or the grandparents' inheritance treatment ($T3$). $HPartner_{ci}$ is a binary variable equal to one if participant i is matched with a high status partner and zero if they are matched with a low status participant when making choice c . $HParticipant_{ci}$ indicates participant i 's own status with high status participants coded as one and low status participants coded as zero.

The proposer's share of endowment transferred is simply the number of tokens they sent to responders, divided by the proposer's fifty token endowment. As the possible amounts that proposers can send are limited to increments of five tokens in each game, the proposer's share of endowment takes on eleven discrete fractional responses which can only increase in increments of 0.1⁵³. In contrast, the responder's share of endowment transferred is a continuous fractional response variable. This is due to the fact that responder's transfers are restricted only in that transfers must be integer values capped at their possible endowment. This possible endowment, which is the denominator of the fraction, is calculated as the responder's initial fifty token endowments added to the tripled number of tokens they may receive from the proposer. An exhaustive set of dummy variables for all possible endowments responders may have received is included in the regressions.

Controls in \mathbf{X} are participant i 's own status as either high status or low status, and participant i 's partner's status as either high status or low status. All other controls in \mathbf{X} are for participant i 's own characteristics, which are gender, race dummies, reported parent and grandparent income step, financial aid receipt, past or current enrollment in an economics course with a curriculum that includes behavioural and experimental economics, enrollment in a social science faculty, previous participation in similar experiments, self-reported survey measures of risk attitudes, generalised trust attitudes, and altruism, and, lastly, South African citizenship. These controls will be referred to as

⁵³The regression results which follow interpret coefficients in percentage point changes. In reality one percentage point changes could not occur, but only changes in increments of 0.1 units. However, percentage point changes have an easily understandable interpretation and are a simple way to reflect movements up or down the distribution of share transferred, and are thus used going forward.

baseline controls for the remainder of this chapter⁵⁴. Lastly, a full set of dummy variables for each of the eleven decisions made by responders are included in all regressions for the analysis of responders' transfers.

All regressions in this chapter use Ordinary Least Squares estimation. As the dependent variable is a bounded fractional response, OLS predictions may fall outside of this range, which is a recognised issue. Fractional regressions are more appropriate given the nature of the dependent variables (Papke and Wooldridge, 1996). However, these models would be inappropriate for the analysis in this chapter primary due to the fact that non-linear regression models cannot be used for cross-sample comparisons (Allison, 1999) as well as adding substantial complications to the interpretation of interaction effects (Ai and Norton, 2003). Interaction effects and cross-sample analysis form a key part of this chapter therefore OLS is preferred to these otherwise more appropriate estimators. The main OLS results are validated and compared to fractional regression and two-limit tobit estimates as a robustness check. Use of the tobit serves another purpose, investigating any concern regarding the limited nature of the transfers proposers can make. A proposer may be willing to transfer some token amount lower than five, but as this is not possible, they revert to transferring zero. Tobit estimates address this potential censoring issue.

5.5 Results: Proposers

This section reports the results from the trust games for proposers beginning with a description of the choices made regarding amounts sent to responders. Thereafter the main regression results are presented with accompanying robustness checks using alternative estimators. This is followed, lastly, by results from analysis of treatment heterogeneity.

Figure 4 shows the distribution of share of endowment sent by proposers across treatments, pooled over both trust games. In all figures presented in these descriptive statistics, the red vertical line represents the mean. The distribution of transfers is significantly different⁵⁵ for the inheritance treatments (Treatments Two and Three, derived from parental and grandparent status respectively) compared to random allocation (Treatment

⁵⁴An administrative control for whether the individual participated in the experiments before or after the three-week break in implementation is added in all regressions and referred to where necessary as Phase One.

⁵⁵For Treatment Two Mann-Whitney $z = -1.83$ and $p\text{-value} = 0.08$. For Treatment Three Mann-Whitney $z = -2.29$ and $p\text{-value} = 0.02$

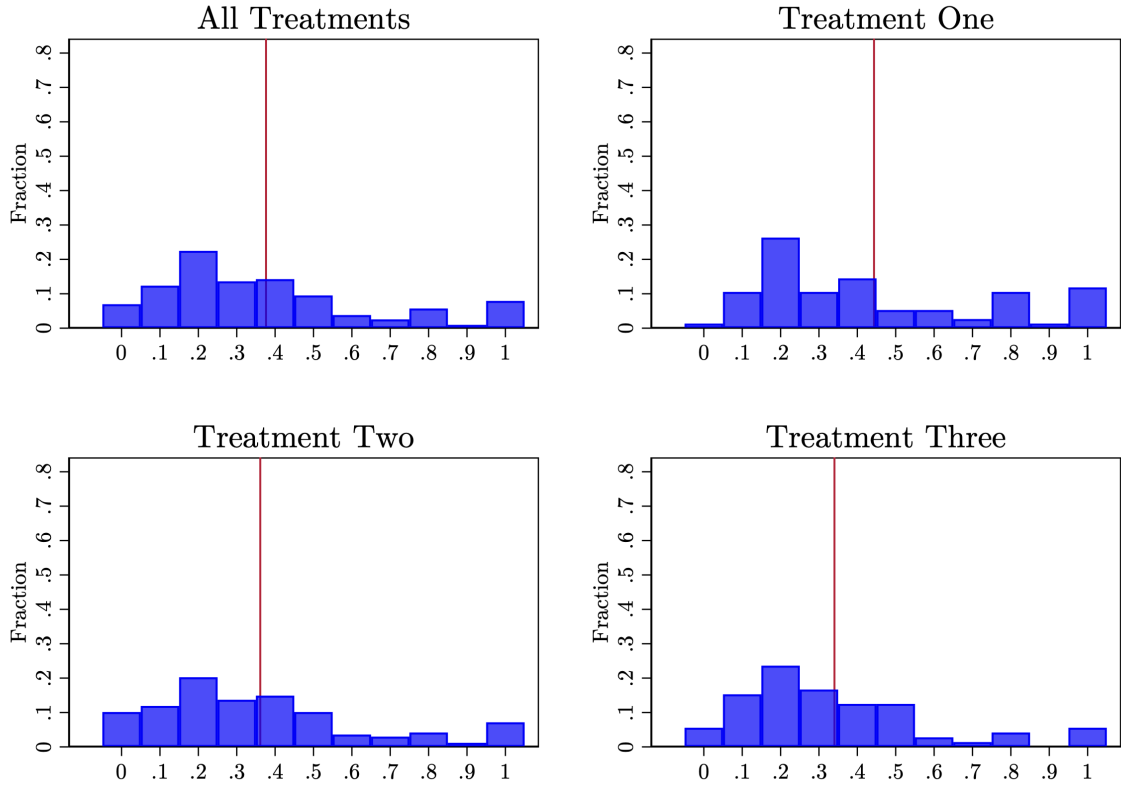
One). The average overall endowment share sent by proposers is thirty-eight percent⁵⁶. The transfers of proposers with randomly allocated status are forty-four percent of the proposer's endowment, which is eight percentage points higher than Treatment Two, and ten percentage points higher than transfers in Treatment Three⁵⁷. The lower share of endowment transferred by proposers in the inheritance treatments provides preliminary evidence of lower trust where inherited social status, as opposed to randomly allocated status, is made salient.

Figure 4 shows that approximately eight percent of proposers transfer their entire endowment. Despite the lower average contributions, twelve percent of transfers from participants with randomly allocated status are the proposer's entire endowment, which is substantially larger than Treatments Two and Three, at seven and six percent respectively. Similarly, transfers of zero occur in six percent of the sample but this is far lower in Treatment One - at one percent - than Treatment Two at ten percent and Treatment Three at six percent. This suggests that proposers with randomly allocated status are more willing to trust their responders by sending at least five tokens more than proposers in the inheritance treatments. In other words, when inherited status is made salient, proposers are less willing to trust their partners by transferring their full endowments, and are more likely to transfer nothing.

⁵⁶This is qualitatively in line with results from other trust games in the literature in which transfers are on average approximately fifty percent of the proposer's endowment (Johnson and Mislin, 2011). In addition, it is worth bearing in mind that these full sample statistics are considerably skewed towards Treatment Two as this treatment has more than double the number of participants in the other treatments.

⁵⁷For Treatment Two $p = 0.04$. For Treatment Three, $p = 0.01$.

Figure 4: Proposer's Share of Endowment Transferred by Treatment



NOTES: This figure shows the distribution of the share of endowment sent by proposers across treatments, pooled over both trust games. The red vertical lines represent the mean for the respective sample.

These initial findings are explored in regression results reported in Table 15. Columns 1 to 3 report the base specification from Equation 2, with Treatment One (random status allocation) the omitted base category. Column 4 adds an exhaustive list of dummy variables to the regression for each possible status pairing, as either high status matched with high status, high status matched with low status, low status matched with high status, or low status matched with low status (the base case).

Result #1: There is weak evidence that when inherited status is made salient, proposers make lower transfers.

Without any controls in Column 1, the coefficients for both treatment effects are negative, with a reduction in transfers of eight percentage points for Treatment Two and ten percentage points for Treatment Three, the two groups of participants with

inherited status from parents or grandparents. However, only the Treatment Three effect is statically significant and even so, only slightly below the ten percent level ($p = 0.09$). The direction of the treatment effects is the same in Column 2 with the addition of controls for the participant's own status, the status of their partner, and the order in which the games were played. With these controls, the Treatment Three effect becomes insignificant ($p = 0.14$) and no change occurs for Treatment Two. These results remain the same with the addition of the full set of controls in Column 3.

Table 15: Proposer's Share of Endowment Transferred

Dependent Variable	(1)	(2)	(3)	(4)
	Share of Endowment Transferred			
Treatment Two	-0.08 (0.05)	-0.07 (0.05)	-0.08 (0.05)	-0.08 (0.05)
Treatment Three	-0.10* (0.06)	-0.09 (0.06)	-0.07 (0.06)	-0.07 (0.06)
High Status Proposer		0.06 (0.04)	0.06 (0.05)	
High Status Responder		-0.07*** (0.01)	-0.07*** (0.02)	
Low Status Proposer & High Status Responder				-0.06*** (0.02)
High Status Proposer & High Status Responder				-0.01 (0.05)
High Status Proposer & Low Status Responder				0.06 (0.05)
Order of Games (High Status Responder First)		-0.03 (0.04)	-0.00 (0.04)	-0.00 (0.04)
Full Controls	No	No	Yes	Yes
Constant	0.44*** (0.05)	0.49*** (0.07)	0.72*** (0.12)	0.72*** (0.12)
Observations	316	316	316	316
R-squared	0.02	0.07	0.25	0.25

NOTES: This table reports OLS estimates for share of endowment transferred by proposers. The sample includes both decisions made by the proposers. "High Status Responder First" is a dummy variable equal to one if the participant was matched with a high status responder in the first game i.e. a control for the order in which the two games were played. The baseline comparison group for proposer and responder status pairs is low status proposers matched with low status responders. Unreported controls are added to each regression as indicated in the table. Robust standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Result #2: High status responders receive lower transfers on average, especially from low status proposers.

The proposer's own status has no significant effect on transfers in all regressions reported in the table. However, responder status matters. High status responders receive a significantly lower share of the proposer's endowment than low status responders, by seven percentage points. This is a substantial effect as it represents an eighteen percent reduction in transfers relative to the mean. The order in which the proposer played the two trust games - either being matched with a high status responder first or a low status responder first - has no significant effect on transfers. This indicates that order effects are not a meaningful concern for the results.

In Column 4, the status pairing dummies show that, relative to low status proposers paired with low status responders, low status proposers paired with high status responders transfer a six percentage point lower share of their endowment. High status proposers on the other hand transfer the same share of their endowment to low and high status responders as low status proposers do to low status responders. Virtually the entire reduction in transfers to high status responders is driven by low status proposers.

Recognising the limitations associated with OLS in these regressions, robustness checks of the results using fractional logit regressions and two-limit tobit regressions are presented in Table 16. Column 1 and Column 4 replicate the OLS regressions in Table 15 for ease of reference. Given that OLS and tobit coefficients are not directly comparable, the tobit results are used to establish robustness rather than for the purposes of numerical comparison.

The results are by and large consistent across all three estimators, with only trivial differences in coefficients and no changes in statistical significance. High status responders are again observed to receive lower transfers, especially from low status proposers. However, tobit estimates and the fractional regression marginal effects differ from the OLS results for Treatment Two (parental inheritance). For the tobit estimates, transfers in Treatment Two are lower than Treatment One by ten percentage points ($p = 0.06$) and eight percentage points ($p = 0.09$) for fractional regression marginal effects. These differences are marginal given their only borderline significance, and may simply reflect a slightly higher degree of censoring in Treatment Two associated with its larger sample

size. In Columns 5 and 6, the effects of status pairing are consistent throughout, with statistically highly significant reductions in transfers by low status proposers paired with high status responders, and of similarly large magnitudes.

Table 16: Proposer's Share of Endowment Transferred: Alternative Estimators

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Share of Endowment Transferred					
Estimator	OLS	Two-Limit Tobit	Fractional Logit Marginal Effects	OLS	Two-Limit Tobit	Fractional Logit Marginal Effects
Treatment Two	-0.08 (0.05)	-0.10* (0.05)	-0.08* (0.05)	-0.08 (0.05)	-0.10* (0.05)	-0.08* (0.05)
Treatment Three	-0.07 (0.06)	-0.08 (0.06)	-0.07 (0.06)	-0.07 (0.06)	-0.08 (0.06)	-0.07 (0.06)
High Status Proposer	0.06 (0.05)	0.06 (0.06)	0.06 (0.05)			
High Status Responder	-0.07*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)			
Low Status Proposer & High Status Responder				-0.06*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)
High Status Proposer & High Status Responder				-0.01 (0.05)	-0.02 (0.06)	-0.01 (0.05)
High Status Proposer & Low Status Responder				0.06 (0.05)	0.06 (0.06)	0.06 (0.05)
Constant	0.72*** (0.12)	0.75*** (0.13)		0.72*** (0.12)	0.74*** (0.13)	
Observations	316	316	316	316	316	316

NOTES: This table reports robustness checks for the OLS estimates using two-limit Tobit and Fractional Logit regressions. The sample includes both decisions made by the proposers. OLS columns replicate the results from the main analysis for ease of comparison. The baseline comparison group for proposer and responder status pairs is low status proposers matched with low status responders. Full set of controls included in all regressions. Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

While status pairing comparisons to low status proposers matched with low status responders are useful, there may be other differences between the various combinations of status pairs. To test this, Table 17 reports regression results which are identical to those in Table 15 except that the base case comparison group for the status pairings is changed. Each column of Table 17 is a separate regression with the reference comparison group indicated in the columns of the table. The base category in the first two columns of the table is homogeneous status pairs and the base categories in the last two columns are heterogeneous status pairs. Column 1 of the table is a replication of the reference category in the main results (low status proposers with low status responders) for ease of comparison.

Result #3: Low status responders receive higher transfers from high status proposers.

Column 2 of in Table 17 shows that the only statistically significant difference in transfers, relative to high status proposers matched with a high status responder, are made by high status proposers matched with a low status responders. These transfers are seven percentage points greater.

Result #4: The higher transfers to low status responders, and lower transfers to high status responders, are evidence for heterogeneous status pairings.

The results so far have focused on transfers compared to homogeneous status pairs. Columns 3 and 4 change the comparison group to heterogeneous status pairs. Column 3 in Table 17 shows that relative to low status proposers matched with high status responders (a heterogeneous status pair), high status proposers matched with low status responders transfer a twelve percentage point greater share of their endowment. Similarly, low status proposers matched with low status responders transfer six percentage points more of their endowment. Column 4 show the same pattern with significantly lower transfers to high status responders both by high and low status proposers.

Table 17: Proposer’s Share of Endowment Transferred: Status Homogeneity

Dependent Variable	(1)	(2)	(3)	(4)
	Share of Endowment Transferred			
Reference Category:	Low Proposer & Low Responder	High Proposer & High Responder	Low Proposer & High Responder	High Proposer & Low Responder
Low Status Proposer & High Status Responder	-0.06*** (0.02)	-0.05 (0.05)		-0.12** (0.05)
High Status Proposer & High Status Responder	-0.01 (0.05)		0.05 (0.05)	-0.07*** (0.03)
High Status Proposer & Low Status Responder	0.06 (0.05)	0.07*** (0.03)	0.12** (0.05)	
Low Status Proposer & Low Status Responder		0.01 (0.05)	0.06*** (0.02)	-0.06 (0.05)
Constant	0.72*** (0.12)	0.71*** (0.14)	0.66*** (0.12)	0.78*** (0.14)
Observations	316	316	316	316
R-squared	0.25	0.25	0.25	0.25

NOTES: This table reports OLS estimates for share of endowment transferred by proposers. The sample includes both decisions made by the proposers. Full set of controls are included in all regressions. The baseline comparison group for all coefficients is indicated in the column titles. Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The results thus far have been based on the full sample of treatments. As status in Treatment One is random, it is likely that the favourable transfers to low status participants are stronger in the inheritance treatments. This is tested with subsample analysis for each treatment in Table 18.

Columns 1 to 3 of the table are treatment samples and Columns 4 to 6 report the differences in the estimated coefficients reported in the first three columns of the table. Differences are estimated with a full set of interaction terms between the treatment dummies and all other controls for each pairwise combination of treatments. For instance, differences between Treatment Two and Treatment One are from interaction terms of the Treatment Two dummy variable with the full set of controls estimated in a sample of participants in Treatment Two or Treatment One. In unreported regression, the results are tested for robustness using seemingly unrelated regressions. Both methods yield near identical results.

Result #5: The greater transfers to low status responders are evidenced only in the inheritance treatments, and are of the same magnitude for inheritance defined by either parent or grandparent income status.

The results in Columns 1, 2, and 3 show that the lower transfers by low status proposers to high status responders are evident only in the two inheritance treatments. This reduction is highly significant and of a comparable magnitude to the main regression results from the full sample at approximately eight percentage points. Columns 4, 5, and 6 report the statistical significance and magnitude of the effects across the three treatments. The results in these columns show the differences in transfers based on status pairings. That there are no significant differences in these effects between the inheritance treatments and random allocation in Treatment One (reported in Columns 4 and 5) are as expected. Similarly, in Column 6 these effects do not differ significantly between the two inheritance treatments.

Table 18: Proposer's Share of Endowment Transferred: Treatment Sub-Samples

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Share of Endowment Transferred					
	Treatment Sample			Difference in Treatment Coefficients		
	T1	T2	T3	T2 - T1	T3 - T1	T2 - T3
Low Status Proposer & High Status Responder	0.00 (0.02)	-0.08*** (0.03)	-0.09** (0.04)	-0.08** (0.03)	-0.09** (0.05)	0.02 (0.05)
High Status Proposer & High Status Responder	0.07 (0.08)	0.05 (0.08)	0.08 (0.11)	-0.03 (0.11)	0.01 (0.14)	-0.03 (0.13)
High Status Proposer & Low Status Responder	0.10 (0.09)	0.13* (0.08)	0.16 (0.13)	0.03 (0.11)	0.06 (0.15)	-0.03 (0.14)
Constant	0.76** (0.31)	0.70*** (0.19)	0.92*** (0.20)			
Observations	76	168	72			
R-squared	0.52	0.37	0.55			

NOTES: This table reports treatment sub-sample regressions. Baseline comparison is low status proposers matched with low status responders. "Difference in Treatment Coefficients" refers to the difference in coefficients across the treatment samples as indicated in the column titles. Coefficients reported in the "Difference in Treatment Coefficients" columns may not exactly correspond to eyeball differences in coefficients in the "Treatment Sample" columns due to rounding off. Full set of baseline controls are included in all regression. Robust standard errors clustered at the individual-level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Result #6: There is weak evidence of status homogeneity effects with parentally inherited status.

The only other statistically significant effect for status pairings is that high status proposers paired with a low status responder in Treatment Two (Column 2) transfer a higher share of their endowment, by thirteen percentage points ($p = 0.09$). In Treatment Three the effect is highly insignificant ($p = 0.23$).

In summary, the results thus far show weak overall treatment effects of inherited status. However, consistent evidence is found of higher transfers to low status participants. This behaviour is not affected by ingroup status effects as it is evident amongst homogeneous and heterogeneous status pairs. In addition, as this effect is observed only in the inheritance treatments, there appears to be a strong response to unfairness associated with a deterministic accident of birth. This is rather remarkable as all participants received the same initial endowment. The next section reports results for responders.

5.6 Results: Responders

The results from the trust game for responders are reported with the same structure as the proposers with descriptive statistics first, followed by main regression results and robustness checks, with treatment heterogeneity reported last. The analysis is divided into two parts with the first being the full panel sample of twenty-two choices, and the second being a limited panel only of choices made at each of the possible endowment levels, instead of all twenty-two.

5.6.1 Full Panel

Result #7: Untrustworthiness is prevalent in all treatments with little reciprocity in transfers.

A clear way of considering the reciprocity and trustworthiness of responders is to map their returns as a function of the transfers they receive from the proposer. This is done in Figure 5. The left-hand panel of the figure shows the total number of tokens returned by the responder as their total token endowment increases, with higher transfers from

the proposers. The right-hand panel illustrates this as the share of endowment returned.

There is a clear increasing trend in the average number of tokens returned as the tokens received from proposers increases, and the responder's endowment increase as well. Seen as a share of endowment transferred in the right-hand panel, average transfers by responders initially increase steadily as their endowment and receipts from the proposers increase. However, these increases become practically insignificant as the responders' potential endowment increases beyond 110 tokens. Average transfers by responders are at most twenty-eight percent of their endowment, which occurs when they receive a one hundred percent transfer of the proposer's endowment.

Figure 5: Responder's Token Returns by Token Endowment



NOTES: This figure shows scatter plots for the number of tokens returned by responders and as a share of the responder's endowment. The lines in both figures represent average returns.

Turning to regression results for responders' share of endowment returned in Table 19. The regressions in the table are based on the full pooled sample with the full set of controls as per the baseline specification, which includes dummy variables for all the possible number of tokens received from proposers.

Table 19: Pooled Responder's Share of Endowment Returned

Dependent Variable	(1)	(2)	(3)	(4)
	Share of Endowment Returned			
Treatment Two	0.03 (0.02)	0.03 (0.02)	0.04* (0.02)	0.04* (0.02)
Treatment Three	0.03 (0.02)	0.03 (0.02)	0.04 (0.02)	0.04 (0.02)
High Status Responder		0.02 (0.02)	0.01 (0.02)	
High Status Proposer		-0.02 (0.02)	-0.02 (0.02)	
Low Status Responder & High Status Proposer				-0.03 (0.02)
High Status Responder & High Status Proposer				-0.02 (0.02)
High Status Responder & Low Status Proposer				-0.00 (0.03)
Order of Games (High Status Proposer First)		0.02 (0.02)	0.02 (0.02)	0.02 (0.02)
Full Controls	No	No	Yes	Yes
Constant	0.18*** (0.02)	0.03 (0.03)	0.05 (0.06)	0.06 (0.06)
Observations	3,476	3,454	3,454	3,454
R-squared	0.01	0.13	0.19	0.19

NOTES: This table reports OLS estimates for share of endowment returned by responders. The sample includes all twenty-choices made by responders. "High Status Proposer First" is a dummy variable equal to one if the participant was matched with a high status proposer in the first game i.e. a control for the order in which the two games were played. The baseline comparison group for proposer and responder status pairs is low status responders matched with low status proposers. Unreported controls are added to each regression as indicated in the table. Robust standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Result #8: Reciprocity is higher in inheritance treatments.

In Column 1 without any controls, there are no significant treatment effects although both coefficients are positive. Adding controls in Column 2 for the responder's own status, the status of the proposer they have been matched with, the order in which the

games were played, and endowment dummies has no effect on the treatment results. A statistically significant Treatment Two effect becomes evident with the full set of controls in Column 3 corresponding to a four percentage points increase in the responder's share of endowment returned ($p = 0.06$). This is a relatively large effect, which reflects a twenty percent increase in transfers from the mean. Treatment Three effects are only marginally significant at the ten percent level ($p = 0.10$).

Result #9: The responder's status and the status of their matched proposer does not affect returns.

In all regressions in Columns 1 to 3, the responder's own status and the status of the proposer they have been matched with are insignificant, as is the order in which the games were played. In Column 4, the absence of status pairing effects is consistent. All status pairings are insignificantly different from the base case of homogenous responder-proposer low status pairs.

The robustness checks in Table 20 confirm these results. In all the regressions, the Treatment Two effects are a four percentage point increase in the share of endowment returned and significant at the ten percent level. The only difference in treatment effects is that Treatment Three transfers are significantly lower than Treatment One when the regressions in Columns 3 and 6 are estimated using fractional logit regressions. However, this is again weakly significant ($p = 0.09$). In addition, the effects of status are insignificant regardless of the estimator used for the regression.

Table 20: Pooled Responder's Share of Endowment Returned: Alternative Estimators

	(1)	(2)	(3)	(4)	(5)	(6)
	Share of Endowment Returned					
Estimator	OLS	Two-Limit Tobit	Fractional Logit Marginal Effects	OLS	Two-Limit Tobit	Fractional Logit Marginal Effects
Treatment Two	0.04* (0.02)	0.04* (0.03)	0.04* (0.02)	0.04* (0.02)	0.04* (0.03)	0.04* (0.02)
Treatment Three	0.04 (0.02)	0.05 (0.03)	0.04* (0.02)	0.04 (0.02)	0.05 (0.03)	0.04* (0.02)
High Status Responder	0.01 (0.02)	0.00 (0.02)	0.01 (0.02)			
High Status Proposer	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)			
Low Status Responder & High Status Proposer				-0.03 (0.02)	-0.04 (0.03)	-0.03 (0.02)
High Status Responder & High Status Proposer				-0.02 (0.02)	-0.03 (0.03)	-0.02 (0.02)
High Status Responder & Low Status Proposer				-0.00 (0.03)	-0.01 (0.03)	-0.00 (0.02)
Constant	0.05 (0.06)	-0.08 (0.07)		0.06 (0.06)	-0.08 (0.07)	
Observations	3,454	3,454	3,454	3,454	3,454	3,454
R-squared	0.19			0.19		

NOTES: This table reports robustness checks for the OLS estimates using two-limit Tobit and Fractional Logit regressions. The sample includes all twenty-two decisions made by responders. OLS columns replicate the results from the main analysis for ease of comparison. The baseline comparison group for proposer and responder status pairs is low status responders matched with low status proposers. Full set of controls included in all regressions. Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #10: There are no significant differences in the share of endowment returned by responders, regardless of homogeneous or heterogeneous status pairs.

As with the proposers, the potential status homogeneity in the pairings may affect the share of endowment transferred. Table 21 reports the main specification with different reference categories for the status pairings. Across all four columns of Table 21, the coefficients are statistically insignificant with magnitudes very close to zero. The share of endowment returned in the full sample appears to be independent of the proposer status.

Table 21: Proposer’s Share of Endowment Returned: Status Homogeneity

Dependent Variable	(1)	(2)	(3)	(4)
	Share of Endowment Returned.			
Reference Category	Low Responder & Low Proposer	High Responder & High Proposer	Low Responder & High Proposer	High Responder & Low Proposer
Low Responder & High Status Proposer	-0.03 (0.02)	-0.01 (0.02)		-0.03 (0.03)
High Responder & High Status Proposer	-0.02 (0.02)		0.01 (0.02)	-0.02 (0.02)
High Responder & Low Status Proposer	-0.00 (0.03)	0.02 (0.02)	0.03 (0.03)	
Low Responder & Low Status Proposer		0.02 (0.02)	0.03 (0.02)	0.00 (0.03)
Constant	0.06 (0.06)	0.04 (0.06)	0.03 (0.06)	0.06 (0.06)
Observations	3,454	3,454	3,454	3,454
R-squared	0.19	0.19	0.19	0.19

NOTES: This table reports OLS estimates for share of endowment returned by responders. The sample includes all decisions made by responders. Full set of controls are included in all regressions. The baseline comparison group for all coefficients is indicated in the column titles. Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #11: High status proposers receive lower returns only with status inherited from grandparents.

The next set of regressions reports treatment heterogeneity in status effects in Table 22. Relative to low status responders matched with low status proposers, status

pairing effects are only significant in Treatment Three and in the same group as that of proposers: low status participants matched with a high status partner. Low status responders matched with a high status proposer return eight percentage points less than low status responders matched with a low status proposer. This effect is as would be expected significantly different from Treatment Two and Treatment One.

The lack of status pairing effects amongst responders in the parental inheritance treatment is worth noting. Unlike proposers, these effects suggests that responders are more sensitive concerning reciprocity with persistent intergenerational immobility.

Table 22: Pooled Responder's Share of Endowment Returned: Treatment Heterogeneity

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Treatment Sample			Difference in Treatment Coefficients		
	T1	T2	T3	T2 - T1	T3 - T1	T2 - T3
Low Status Responder & High Status Proposer	-0.01 (0.04)	-0.02 (0.03)	-0.08** (0.03)	-0.01 (0.02)	-0.07** (0.03)	0.05** (0.02)
High Status Responder & High Status Proposer	-0.02 (0.04)	-0.05 (0.04)	-0.03 (0.05)	-0.03 (0.06)	-0.01 (0.07)	-0.02 (0.08)
High Status Responder & Low Status Proposer	-0.06 (0.04)	-0.03 (0.04)	0.02 (0.05)	0.03 (0.07)	0.09 (0.07)	-0.05 (0.08)
Constant	0.06 (0.13)	0.07 (0.10)	0.09 (0.07)			
Observations	836	1,826	792			
R-squared	0.32	0.22	0.45			

NOTES: This table reports treatment sub-sample regressions. Baseline comparison is low status responders matched with low status proposers. "Difference in Treatment Coefficients" refers to the difference in coefficients across the treatment samples as indicated in the column titles. Coefficients reported in the "Difference in Treatment Coefficients" columns may not exactly correspond to eyeball differences in coefficients in the "Treatment Sample" columns due to rounding off. Full set of baseline controls are included in all regression. Robust standard errors clustered at the individual-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The pooled sample of responder’s returns may mask treatment and status interaction effects with changes in receipts and endowment. Both the treatment, and the status of proposers may plausibly affect the potential choices responders make. This possibility is explored in the next section in which the regressions are run separately for each of the possible transfers from proposers.

5.6.2 Cross-Sectional Sample Analysis

The results for the pooled sample of the eleven different transfer decisions by responders to both high and low status responders are reported in Table 23. The table is separated into eleven columns with each column representing the potential number of tokens received by the responder from the proposer. The mean share of endowment returned, represented by the line “Share Returned” in the table, from responders to proposers, is reported for each level of endowment, as well as the share of the proposers’ endowment corresponding to each of the responders’ endowments (“Share Received”). To illustrate, in Column 1, the proposer sends zero percent of their initial fifty token endowment, leaving the responder’s endowment at its initial level of fifty tokens. The average share then returned by responders is seven percent. For Column 2, responders receive ten percent of the proposer’s initial endowment (thus their endowment increases by ten percent of the proposer’s fifty tokens (five tokens), multiplied by three), which when added to the respondent’s initial endowment of fifty tokens, yields sixty-five tokens - see “Total Token Endowment”. Responders return thirteen percent of this amount. The in-text reporting of the results will focus on trends and not any specific endowment level.

Table 23: Cross-Sectional Responder's Share of Endowment Returned

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Share of Endowment Returned										
Treatment Two	0.02 (0.03)	0.01 (0.03)	0.03 (0.03)	0.02 (0.03)	0.04 (0.03)	0.04 (0.03)	0.05* (0.03)	0.06* (0.03)	0.05 (0.03)	0.06 (0.04)	0.05 (0.04)
Treatment Three	0.01 (0.03)	0.01 (0.03)	0.02 (0.03)	0.01 (0.03)	0.03 (0.03)	0.03 (0.03)	0.07* (0.04)	0.07* (0.04)	0.04 (0.04)	0.05 (0.04)	0.06 (0.04)
Low Status & High Status Pair	-0.05** (0.02)	-0.04** (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.02* (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.03** (0.02)	-0.03** (0.02)	-0.03** (0.01)	-0.03** (0.02)
High Status & High Status Pair	-0.02 (0.03)	-0.01 (0.03)	-0.00 (0.02)	-0.02 (0.03)	-0.02 (0.03)	-0.02 (0.03)	-0.01 (0.03)	-0.02 (0.03)	-0.02 (0.03)	-0.02 (0.04)	-0.02 (0.04)
High Status & Low Status Pair	-0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	-0.01 (0.03)	-0.00 (0.03)	0.00 (0.03)	0.01 (0.03)	-0.00 (0.03)	-0.01 (0.04)	0.00 (0.04)	-0.01 (0.04)
Share Returned	0.07	0.13	0.17	0.19	0.21	0.23	0.24	0.24	0.25	0.26	0.28
Share Received	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Total Token Endowment	50	65	80	95	110	125	140	155	170	185	200
Observations	314	314	314	314	314	314	314	314	314	314	314
R-squared	0.11	0.08	0.09	0.11	0.12	0.14	0.16	0.16	0.14	0.15	0.12

This table reports OLS estimates for share of endowment returned by responders for each possible level of endowment and tokens received from the proposers. The baseline comparison group for proposer and responder status pairs is low status responders matched with low status proposers. Full set of controls included in all regressions, excluding endowment controls. Robust standard errors clustered at the individual level in parentheses. Robust standard errors clustered at the individual-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #12: On average, there are no strong treatments effects regardless of the proposer's transfers.

The results show that there are no treatment effects at essentially all levels of endowment, with some statistically and economically weak effects observed only in two cases at higher levels of endowment⁵⁸.

Result #13: Low status responders transfer a significantly lower share of their endowment to high status proposers at almost all endowment levels.

In contrast, low status responders' transfers to high status proposers are significantly lower at almost all levels of endowment, compared to low status responder transfers to low status proposers (as seen by the coefficients on "Low Status & High Status Pair"). The magnitude of these effects is relatively consistent remaining between five and two percentage points. In terms of economic significance, this is arguably a small effect representing an approximate change from the mean across endowment levels of ten percent. At lower levels of endowments with a lower mean, these are very large effects. However, in terms of actual tokens transferred at these levels, they are negligible effects.

Lastly, heterogeneous treatment effects across the endowment levels are reported in Table 24. The table separates the three treatment samples into Panel A, Panel B, and Panel C. Panel A corresponds to Treatment One, Panel B to Treatment Two, and Panel C to Treatment Three. There are two main results from the table (see Result #14).

Result #14: Low status responders transfer a lower share of their endowment to high status responders at all levels of endowment for Treatment Three while only at lower levels of endowment for Treatment Two.

The first is that the lower transfers by low status responders to high status proposers are entirely driven by the inheritance treatment as observed earlier in the pooled sample treatment heterogeneity analysis⁵⁹. The second result is that the lower transfers with low status and high status pairs are consistent at essentially all endowment levels for Treatment Three and only evident at lower endowment levels for Treatment Two. The magnitude of these reductions is consistent at four percentage points in Treatment Two and between seven and eleven percentage points in Treatment Three.

⁵⁸P-values in these cases range from 0.074 to 0.099.

⁵⁹Reported in Table 22.

Table 24: Cross-Sectional Responder's Share of Endowment Returned

Dependent Variable	Share of Endowment Returned										
Total Token Endowment	50	65	80	95	110	125	140	155	170	185	200
Share Received	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Panel A: Treatment One											
Low Status & High Status	-0.04 (0.07)	-0.00 (0.05)	0.04 (0.04)	0.01 (0.04)	-0.01 (0.04)	-0.03 (0.04)	-0.02 (0.04)	-0.00 (0.03)	-0.03 (0.03)	-0.01 (0.02)	-0.01 (0.03)
High Status & High Status	-0.04 (0.06)	-0.02 (0.04)	-0.03 (0.04)	-0.06 (0.04)	-0.03 (0.05)	-0.04 (0.05)	-0.02 (0.06)	-0.01 (0.06)	-0.03 (0.06)	-0.00 (0.06)	0.00 (0.06)
High Status & Low Status	-0.09 (0.06)	-0.06 (0.04)	-0.05 (0.04)	-0.09** (0.04)	-0.08 (0.05)	-0.07 (0.05)	-0.06 (0.05)	-0.05 (0.06)	-0.06 (0.06)	-0.05 (0.06)	-0.02 (0.07)
Share Returned	0.06	0.12	0.15	0.18	0.19	0.20	0.20	0.20	0.23	0.22	0.25
Panel B: Treatment Two											
Low Status & High Status	-0.04** (0.02)	-0.04*** (0.01)	-0.04** (0.02)	-0.04** (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.00 (0.02)	-0.00 (0.02)
High Status & High Status	-0.03 (0.05)	-0.01 (0.05)	-0.04 (0.05)	-0.03 (0.05)	-0.05 (0.06)	-0.05 (0.06)	-0.06 (0.06)	-0.08 (0.06)	-0.08 (0.07)	-0.08 (0.07)	-0.08 (0.08)
High Status & Low Status	-0.01 (0.06)	0.03 (0.05)	-0.02 (0.05)	-0.02 (0.06)	-0.02 (0.06)	-0.03 (0.06)	-0.03 (0.06)	-0.05 (0.06)	-0.05 (0.07)	-0.05 (0.07)	-0.06 (0.08)
Share Returned	0.08	0.14	0.18	0.20	0.22	0.24	0.25	0.25	0.26	0.27	0.29
Panel C: Treatment Three											
Low Status & High Status	-0.07 (0.04)	-0.07*** (0.03)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07*** (0.02)	-0.07** (0.03)	-0.08** (0.03)	-0.08** (0.04)	-0.08** (0.03)	-0.08** (0.03)	-0.11*** (0.03)
High Status & High Status	-0.03 (0.06)	-0.05 (0.06)	-0.02 (0.07)	-0.01 (0.07)	-0.02 (0.07)	-0.04 (0.08)	-0.04 (0.08)	-0.02 (0.08)	0.03 (0.08)	-0.01 (0.08)	-0.14 (0.10)
High Status & Low Status	0.02 (0.07)	-0.00 (0.06)	0.03 (0.07)	0.05 (0.07)	0.05 (0.07)	0.04 (0.08)	0.00 (0.09)	0.03 (0.08)	0.05 (0.07)	0.08 (0.08)	-0.10 (0.10)
Share Returned	0.06	0.12	0.17	0.18	0.21	0.23	0.26	0.27	0.26	0.27	0.30

The results of this chapter are summarised and discussed next in Section 5.7.

5.7 Discussion

The effects of socio-economics status on trust attitudes are well documented. Much of the literature finds lower trust and trustworthiness amongst low status individuals. Individuals with a high group status, socio-economically and otherwise, are trusted more than individuals with low status. A relatively smaller literature has explored the effects of intergenerationally inherited status. An individual's current status is in part a consequence of the individual's own decisions and factors. On the other hand, intergenerationally inherited status is beyond the individual's control and purely an accident of birth. Given the broad consensus that accidents of birth are unfair, and that fairness matters for social and individual welfare, it is important to understand how this distinct form of socio-economic status affects trust attitudes. This was the focus of this chapter with three main interests. The first is the consequences on overall trust and trustworthiness in treatments with unfair inequality. The second is the effects of multigenerational persistence in inherited status, and the third is inherited status-based effects on trust related behaviour.

The main treatment results can be summarised as follows. Firstly, there is some evidence of statistically weakly significant but practically insignificant effects for for both inheritance treatments (Treatments Two and Three). Despite the statistically weak significance, the sign of the coefficients are of opposite directions for proposers and responders. Coefficients for responders in both inheritance treatments are positive while for proposers both inheritance treatments are associated with a negative coefficient. This suggests that trust is lower with unfair accidents of birth, while trustworthiness and reciprocity is higher. In a conceptually related study based on survey data, Shaleva (2015) find that upwards intergenerational mobility increases trust and downwards mobility reduces trust. This suggests that the weak overall treatment effects for proposers may be driven by these competing effects of downwards and upwards mobility.

Secondly, there is evidence of status-pairing effects for proposers but not responders. For responders these can be summarised as significantly different transfers when matched with a responder of a different status. These transfers are always in favour of the low status participants for both high and low status proposers. Relative to low status pro-

posers matched with a low status responders, transfers by low status proposers are lower towards high status responders. Further analyses of status-pairing effects are conducted with different reference categories. The results show that, relative to proposers matched with a high status responder, high status proposers consistently transfer a greater share of their endowment to low status responders. However, this is only true when compared to pairs of different statuses: High status proposer transfers to high status responders are the same when compared to low status proposers matched with low status responders.

In terms of low status proposers, the results are the same as high status proposers. With the exception of low status proposers matched with a low status responder, low status proposers always transfer a greater share of their endowment to low status responders compared to high status responders. Again, the effects suggest that same status pairings do not affect transfers to responders: Transfers by low status proposers to low status responders are the same as transfers from high status proposers to high status responders.

These overall patterns mask considerable treatment heterogeneity in that the lower transfers to high status responders and proposers are evident only in the inheritance treatments. For proposers this only occurs for both inheritance treatments (with effect sizes of the same magnitude), while for responders only in the grandparent treatment.

The results are quite remarkable in that despite no endowment inequality in the game, transfers are almost always in favour of low status participants. One possible explanation for this is the real-world inheritance framing in that individuals infer material inequality from the status allocation. This would imply some real-world inequality aversion. Alternatively, the effects may be driven by feelings of guilt associated with unfairly inheriting a high status, and conversely feelings of frustration or an anticipated discrimination amongst low status participants. The guilt therefore manifests as a form of altruism amongst high status participants for whom the risk of material losses is outweighed by the psychological benefits of behaving altruistically against injustice. The frustration or expectation of discrimination from high status partners results in lower transfers to these partners. Lastly, as the key difference between parents and grandparents is that, given the recent nature of Apartheid and that the participants are of a relatively young age, grandparental status was strong influenced directly by Apartheid policies. This may result in a heightened sense of injustice in the grandparents' treatment and thus less cooperative

behaviour by low status responders. Investigating these explanations is beyond the scope of the experimental design and a topic for future research. It is worth noting that the common finding in the literature is that an individual's own socio-economic status tends to favour trust attitudes towards higher status individuals, while with an inherited status the inverse is true.

Chapter 6 builds on these results by introducing endowment inequality associated with intergenerational socio-economic status.

6 A Lottery of Birth

The results from Chapter 5 showed that inherited status has a substantial effect even without inequality. This chapter explores the effects inherited status with endowment inequality.

The Great Gatsby Curve shows that countries with low intergenerational mobility tend to have high inequality (Corak, 2013). Several reasons for the persistence of inequality and its relationship to lifetime and intergenerational mobility have been proposed, as discussed in Chapter 2. The central premise underlying this relationship are overly optimistic beliefs about one's own prospects of upward mobility, and misconceptions of the true degree of intergenerational mobility in society (Benabou and Ok, 2001; Alesina et al., 2018; Benabou and Tirole, 2006). As a result, a tolerance for contemporaneous inequality emerges alongside low intergenerational mobility.

A large empirical literature exists which investigates the relationship between wealth and social preferences, which on balance finds inequality is associated with undesirable social preferences, a conclusion supported by theoretical literature. One of the main challenges in addressing inequality in wealth is the tension between the proportional and absolute monetary values required to achieve equality. Absolute differences are much higher at higher levels of income, even with a relatively low tax rate. Individuals are thus opposed (or at the very least reluctant) to redistribute. This chapter uses a public goods game to explore these issues, with the design of this experiment following from the basic formulation introduced in Chapter 4.

The remainder of the chapter is structured as follows. Section 6.1 reviews the literature on cooperation in public goods games, with a focus on fairness norms, redistributive and altruistic behaviour, and the origins of endowment. Thereafter, details of the public goods game used in this chapter are presented in Section 6.2, followed by descriptive statistics and the empirical strategy in Sections 6.3 and 6.4, respectively. The results from the experiment are reported in Sections 6.5 to Section 6.7. Lastly, concluding remarks are presented in Section 6.8.

6.1 Cooperation in Public Goods Games

This section provides a review of the literature on heterogeneity and endowment origins in public goods games⁶⁰. For exposition purposes inequality and endowment origins are discussed separately. The key concepts discussed under inequality include its effects on contributions (Section 6.1.1), norms such as fairness and reciprocity (Section 6.1.2), and preferences such as altruism and inequality aversion (Section 6.1.3). An overview of the origins of heterogeneity is presented in Section 6.1.4.

6.1.1 The Effects of Inequality

A substantial literature exists which uses the public goods game as a framework for analysing social dilemmas (see Ledyard (1995), Zelmer (2003), and Chaudhuri (2011) for reviews)). Despite the purely self-interested rational Nash Equilibrium, on average voluntary contributions to the public account are substantially greater than zero (Ledyard, 1995; Zelmer, 2003; Chaudhuri, 2011). Many other stylised facts have emerged from this literature. However, the effects of heterogeneity and inequality on contributions are ambiguous.

Complicating comparison, inequality has been defined in different ways: as differences in the marginal per capita return⁶¹, difference in participant endowments⁶², and differences in show-up fee⁶³. The most common inequality measure used is that of differences in endowments⁶⁴. Within this narrower definition of inequality, there remains conflicting evidence with some null results, and some negative effects observed (Fung and Au, 2014; Heap et al., 2016; Ramalingam and Stoddard, 2021; Hofmeyr et al., 2007; Cherry et al., 2005). A tentative evidence base indicates inequality could be associated with lower contributions (Ledyard, 1995; Zelmer, 2003).

⁶⁰The literature on ingroup and outgroup membership in public goods game is omitted from the review as the design has no group heterogeneity in identity with an equal number of high and low status participants in each group. See for instance Cadsby and Maynes (1998) and Solow and Kirkwood (2002) for the effects of group identification in public goods games.

⁶¹Tan (2008), Marwell and Ames (1979), Fischbacher, Schudy and Teyssier (2012) and Fellner, Iida, Kröger and Seki (2011).

⁶²Hofmeyr, Burns and Visser (2007), Buckley and Croson (2006), and Cherry, Kroll and Shogren (2005).

⁶³Anderson, Mellor and Milyo (2008).

⁶⁴Heap, Ramalingam and Stoddard (2016), Hofmeyr et al. (2007), Cherry et al. (2005), Fung and Au (2014), and Ramalingam and Stoddard (2021).

Heap et al. (2016) attempts to reconcile this divergent literature, arguing that much of the endowment induced inequality conflates individual endowments with the degree of inequality. By virtue of endowment inequality, even when total group wealth is held constant, endowments allocated to the unequal treatment may differ from those allocated in the equal treatments, conflating the effects of wealth with the effects of inequality (Heap et al., 2016). From this perspective, adverse effects of inequality appear to be a consequence of lower contributions by wealthier participants (Heap et al., 2016). However, there is considerable variation in endowment effects in the literature, based at least on the measure of contributions as proportional to the endowment or as total token contributions (Hofmeyr et al., 2007; Buckley and Croson, 2006; Cherry et al., 2005).

6.1.2 Fairness, Norms, and Reciprocity

Fairness and conditional cooperation suppose that individuals respond and adjust their behaviour conditional on fair behaviour by others⁶⁵. The potential norms which guide conditional cooperation can be broadly defined as equity and equality⁶⁶. Equity norms consider the fairness of outcomes, taking into account some relevant measure of proportionality in capacities or abilities to affect the outcome. Equality reflects a fair outcome, without regard to the limitations or constraints which produce inequality.

In homogeneous groups, efficiency, equity, and equality all plausibly lead to the same fairness of equal contributions by all group members, as there is no proportionality to consider. In unequal groups, equal contributions need not arise as the preferred norm from equity and equality (Otten, Buskens, Przepiorka and Ellemers, 2020; Reuben and Riedl, 2013; Gangadharan, Nikiforakis and Villeval, 2017; Martinangeli, 2021). Heterogeneity in society may be associated with differences in behavioural expectations, and a lack of common beliefs and norms (Reuben and Riedl, 2013; Otten et al., 2020). Reuben and Riedl (2013) discuss the following contribution norms which are observed to promote

⁶⁵The most common test for conditional cooperation in public goods games is punishment. The appeal of punishment possibilities in assessing contribution norms is in that although norms may exist they cannot be observed unless they are enforced. In games with punishment the usual contribution phase of the game is followed by a phase in which participants can reduce the earnings of other group members by allocating punishment points. Deviations from a fair contribution are often punished and the punishment is effective in sustaining contributions (Chaudhuri, 2011).

⁶⁶See Konow (2003) for a detailed review of the theoretical and empirical investigation of equity and equality.

fairness in unequal groups: efficiency norms maximising social welfare, equity in contributions (proportional to endowments), equality in contributions norms (equal contributions independent of endowments), and an equality in final earnings norm, requiring greater contributions from richer group members⁶⁷.

The key difference between these four norms is the distribution of group wealth. Efficiency norms are only redistributive if all group members contribute their entire endowment, which would lead to complete redistribution of wealth. An equity in contributions norm is redistributive in that the final payoffs for the group members will be of a lower absolute difference in tokens than the difference in initial token endowments. Equality in contributions maintains the absolute difference in wealth between richer and poorer players such that it is equal to the initial difference in endowments. Lastly, equality in earnings by definition results in complete wealth equality.

There is evidence of equity in contributions in unequal groups, with the rich contributing more in absolute terms (Reuben and Riedl, 2013; Martinangeli, 2021). Equal and full contributions (regardless of endowment) have also been commonly observed (Otten et al., 2020). In addition, contributions are the same even when group heterogeneity in normative contribution preferences exists, despite that such heterogeneity would predict lowered cooperation (through the inability to establish expected contribution patterns) (Otten et al., 2020). Importantly, preferences for norms of equity in contributions are only observed when enforced with punishment (Reuben and Riedl, 2013), which may explain trends of lower contributions by higher income individuals (Hofmeyr et al., 2007; Buckley and Croson, 2006).

⁶⁷Equity in contributions and equality in earnings both require a larger number of tokens to be contributed by richer players. However, the two are not equivalent in their requirements for richer players contributions. Equity in contributions requires all players to contribute according to the ratio of their wealth which necessarily means that richer players contribute a greater number of tokens equivalent to the ratio of their endowment compare to the endowment of poorer players. For instance, if richer players have an endowment of twice as many tokens as poorer players, to maintain contributions of an equal share of endowments as poorer players, rich players must contribute twice as many tokens as the poorer players. On the other hand, equality in earnings requires richer participants to contribute a number of tokens equivalent to the absolute difference between their endowment and the endowment of poorer players. Since the returns from the public account are shared equally by all group members, the only way to equalise final earnings is for richer players to compensate for the differences in endowment. Using fifty tokens and one hundred tokens as endowments in the group for illustration, to ensure equal final payoffs, richer players must contribute fifty tokens more than the number of tokens poorer players contribute regardless of the absolute number of tokens contributed by the poorer players.

6.1.3 Altruism and Inequality Aversion

There are at least two preference-based explanations of the equitable contribution norms: inequality aversion and altruism. Inequality averse players act to reduce inequalities even if this comes at a personal monetary cost (Fehr and Schmidt, 1999). In the public goods setting, high endowment inequality averse players must contribute a greater share of their endowment to the public account to reduce the degree of inequality in group earnings (Buckley and Croson, 2006).

Altruism is another potential equity promoting mechanism. Altruists derive utility from both their income and the income of others, and prefer to maximise social wealth. An altruist will never act to increase their wealth if doing so results in a net loss of income for society (Becker, 1976; Becker, 1974). Thus altruists will always contribute to the public account, as their loss from contributing is always offset by the gain to the other group members (Hofmeyr et al., 2007; Buckley and Croson, 2006). In heterogeneous groups, an altruist with a larger endowment will contribute a strictly larger number of tokens than poorer group members, as a consequence of having a greater number of tokens to contribute (Buckley and Croson, 2006).

Comparing the effects of inequality aversion and altruism on contributions is not easily done, especially with heterogeneity in endowments. It is also challenging to evaluate wealth effects on relative contributions compared to absolute contributions, where wealthier participants contribute more absolute number of tokens (Hofmeyr et al., 2007; Buckley and Croson, 2006; Cherry et al., 2005; Fellner et al., 2011; Fisher, Isaac, Schatzberg and Walker, 1995; Anderson et al., 2008; Cardenas, 2003). In part this may be the result of the differences in token contributions required to maintain an equal share of endowment contributions. In the simplest case, the nominal values of tokens, and the size of the differences in endowments between rich and poor, may result in a lower willingness to maintain a fair allocation, as the nominal tokens required to achieve fairness increases as endowment differences increase. Another possible outcome relates not only to initial endowments, but also to increases in token contributions relative to these endowments. As the share of endowment contributed by poorer players increases, the number of tokens required from richer players to adhere to equity-based contributions grows, often by large absolute amounts. In this case the mean share of endowment contribution is

crucially linked to token contributions⁶⁸. The higher tokens required to meet equitable contributions from poor players may simply be considered too high for richer players.

6.1.4 Endowment Origins

In the experimental literature, the perceived legitimacy of endowments (endowment origin) is seen to matter, and to potentially explain differences in contribution behaviours. Individuals who perceive themselves as having a stronger claim to their endowments (either due to earning their endowments or through the use of their own money in the experimental tasks) tend to be less generous, and more self-interested than they would be with weaker property rights. (Cherry et al., 2005; Kroll, Cherry and Shogren, 2007; Muehlbacher and Kirchler, 2009; Spraggon and Oxoby, 2009; Harrison, 2007; Clark, 2002; Kreft et al., 2019; Burns et al., 2019).

A common form of differences in endowment observed in the literature is that originating from the use of house money⁶⁹, versus the participant's own money. In the vast majority of experiments in economics, the experimenter provides the cash rewards from the outcome of the experiment. As a result, individuals have weaker claims to the earning of the experimental tasks (Thaler and Johnson, 1990; Harrison, 2007; Clark, 2002). The house money effect refers to a greater propensity to spend the experimenter's money than the participant's own money⁷⁰, a type of artificial generosity (Thaler and Johnson, 1990). In the public goods game, house money reduces absolute free-riding, but does not affect the level of contribution once the decision to contribute a non-zero amount has been made (Harrison, 2007). Although house money effects suggest that the literature finding unselfish behaviour in the public goods game may actually be a consequence of generosity from free wealth (Harrison, 2007; Clark, 2002), this work more often represents

⁶⁸For instance, with inequality in endowments of fifty and one hundred tokens, if the poorer players contribute ten percent of their endowment (five tokens), the richer players must contribute ten tokens. However, if the share of endowment contributed by poor players is eighty percent (forty tokens), richer players must contribute eighty tokens to contribute an equivalent relative endowment share. This of course arises from the earlier description of equity based contributions in that rich players must contribute, again using the fifty and one hundred token inequality, twice as many tokens as poorer players.

⁶⁹House money refers to endowments given to participants by the experimenter (Thaler and Johnson, 1990).

⁷⁰The common means of testing house money effects is to require participants to experiment either with money which they bring to the session themselves, or by requiring participants to engage in an effort task to earn their endowments from the experimenter.

a methodological criticism of experimental games, rather than an attempt to investigate real world wealth origins.

Another common method of creating inequality perceived as legitimate is through random allocation to treatments with endowments either received, or earned from an effort task⁷¹ (Cherry et al., 2005; Kroll et al., 2007; Spraggon and Oxoby, 2009)⁷². A less common version is to vary the effort required to earn a relatively higher endowment (Muehlbacher and Kirchler, 2009). The conclusions from these games are somewhat mixed. Unlike expectations based on theory and other experimental games, of reduced pro-sociality and more conservative use of earned wealth, there is either no effect (Kroll et al., 2007; Cherry et al., 2005) or in some cases increased contributions are observed (Spraggon and Oxoby, 2009). There is evidence of some interactions between earned wealth treatments and the size of the endowment earned, with players who earn a low endowment contributing less (Kroll et al., 2007).

The increase in contributions from earned wealth is unexpected. Some argue that unlike the dictator games in which windfall endowments substantially affect generosity (Engel, 2011), the nature of the public goods game creates anticipated reciprocity that overshadows the endowment origins effect (Kroll et al., 2007; Cherry et al., 2005). That is, with earned endowments, participants expect others to contribute less and therefore contributions are lower. With unearned wealth, participants expect others to contribute at higher levels since they have no valid claim to their wealth. Examining earned and unearned wealth together, in a one-shot two-player public goods game, participants who earned their endowment and were then matched with a partner who received a windfall endowment contributed relatively more to the public account (Spraggon and Oxoby, 2009). This “inverse house money effect” is argued to be a result of anticipated reciprocity⁷³, and is evidence of effects arising from differences in endowment origin (Spraggon and Oxoby, 2009).

⁷¹This basic formulation is followed by some variation of the public goods games with two-player one-shot games (Spraggon and Oxoby, 2009), a best-shot game (Kroll et al., 2007), or a linear voluntary contribution mechanism (Cherry et al., 2005).

⁷²In other experiments such as dictator games, earned wealth substantially reduces transfers (Cherry, Frykblom and Shogren, 2002; Oxoby and Spraggon, 2008) lending credence to the idea that the legitimacy of wealth materially affects other-regarding preferences (see Engel (2011) for a review).

⁷³Participants who earned their endowment expected those who do not to contribute more, and thus themselves contribute more. Conversely, participants who received rather than earned their endowments contributed less, anticipating those who endowment earners to contribute less.

Other studies have explored the effects of procedural fairness as an inequality generating process in a variety of settings, using variations in the probabilities of *ex post* income distribution (Akbaş, Ariely and Yuksel, 2019; Linde and Sonnemans, 2015; Kurz, Orland and Posadzy, 2018; Bolton, Brandts and Ockenfels, 2005). These games are largely based on redistributive choices made by uninvolved parties determining the actual income of the two interacting players. Agency in the ability to determine one's own wealth leads to lower redistribution than procedurally unfair inequality of opportunity (Akbaş et al., 2019).

In other settings, endowments and inequality have been based on real-world attributes such as absolute or relative income, with earnings and windfall endowments designed to reflect true country inequality (Hauser, Kraft-Todd, Rand, Nowak and Norton, 2021). When inequalities were allocated at random or on merit, based on an effort task in a laboratory, in both cases higher relative contributions were rewarded more and punished less than lower relative contributions (Hauser et al., 2021).

Two closely related studies explore the effects of intergenerational mobility as an inequality generating process (Kreft et al., 2019; Burns et al., 2019). In both studies, a series of public goods games are conducted, with inequality induced by inherited status (from parents or grandparents) using a similar Economic Ladder Question to that used in this thesis⁷⁴ (Kreft et al., 2019; Burns et al., 2019). Inherited wealth is not shown to affect contributions, although various heterogeneous inherited wealth effects (from grandparents) are observed (Kreft et al., 2019; Burns et al., 2019). High endowments tend to reduce cooperative behaviour, with group inequality and the inheritance framing moderating this effect. These results suggest inequality aversion amongst wealthier participants, particularly when inequality results from unfairly acquired wealth.

Given the preceding discussion, it is expected that in the experiments which follow, inequality aversion will result in higher contributions in the inheritance treatments, compared to those where participants have randomly allocated endowments. The literature suggests this may arise from higher contributions among richer players, due to either in-

⁷⁴Both Kreft et al. (2019) and Burns et al. (2019) conducted their experiments at the University of Cape Town using a student subject pool. There are two key design differences between these two studies and the game employed in this chapter. The first is that inherited status does not perfectly predict endowment, rather status in this experiment is associated with advantages and not directly with endowments. Secondly, the two studies compare either parental inheritance or grandparental inheritance and not both.

equality aversion or altruism (observed through larger absolute or relative contributions). However, the perception of an unfair income generating process may reduce contributions overall. Heterogeneous effects from high endowment and advantaged participants may be expected, given the results of Kreft et al. (2019) and Burns et al. (2019), with these effects apparent in either absolute and relative differences (the results of which will be presented separately).

6.2 Design: Public Goods Game

The experiment uses a standard Linear Voluntary Contribution Mechanism for the public goods game for Treatments One, Two, and Three. The payoff structure of the game is shown in Equation 3.

$$\pi_i = x_i - c_i + 0.5 \sum_{j=1}^4 c_j \quad (3)$$

Payoffs, π_i , to participant i are determined by the difference ($x_i - c_i$) between player i 's token endowment, x_i , the tokens they contribute to the provision of the public good, c_i , in addition to the token returns from the public good $0.5 \sum_{j=1}^4 c_j$. Returns are determined by the sum of the tokens contributed to the public good by all four members of player i 's group, $\sum_{j=1}^4 c_j$, with the marginal per capita return from the public good equal to 0.5 tokens for every token contributed.

Recall that the experiment consists of three treatments which differ on the basis from which high or low status is determined for the participants. Treatment One is the control in which status is randomly assigned as high or low. Treatment Two is the parental treatment in which status is based on the participants' reported position of their parents on the economic ladder question. Treatment Three also assigns status on the basis of the participants' responses to the economic ladder question but for grandparents instead of parents. Allocated status in Treatment Two and Three, as either high or low status, is based on whether the participant's response to the economic ladder question for their parents or grandparents places them above or below the median income step reported by all other participants. Participants who are below the median are allocated low status, those who are above the median are allocated high status, and those at the median are randomly allocated to either high or low status. These are the same treatment conditions

used in the trust game in Chapter 5, and apply to the public goods game as well.

In order to study the behavioural responses to unfairness or perceived illegitimacy of intergenerationally transmitted socio-economic position, the experimental design of the public goods game attempts to mimic as closely as possible the real-world dynamics of inequality and intergenerational mobility. Advantageous family circumstances are reflected by the participant's initially allocated status in the experiment, which participants carry through from the trust game. Individual outcomes, allowing for some prospects of mobility, are represented by a high endowment of one hundred tokens, or a low endowment of fifty tokens. The participant's final allocation arises from two stages. In the first stage, status is determined. Conditional on this first stage, in the second stage endowment is determined. The second stage is identical in all three treatments.

The determination of status in the first stage is through the same mechanism used in the initial trust games, as per the experiment design described in Chapter 4. The initial status allocation does not directly translate into the participant's endowment in the public goods game. Rather, in the second stage, all participants are subjected to a lottery to determine their endowment. Importantly, participants do not in any way engage with the lottery. The lottery is exogenous and entirely controlled by the experimenter. Participants can win either a high endowment (one hundred tokens) or a low endowment (fifty tokens).

A technical description of the endowment allocation process is presented here first, following which the simplified set of instructions given to participants is also shown. It is important to note that the lottery and the values chosen for each set of probabilities are simply a means to an end. The probabilities of winning a high or low endowment are designed to ensure that initial status (carried through from the trust game and contingent on the ELQ) does not automatically translate into endowments, which is the real-world equivalent of intergenerational mobility that the experiment attempts to replicate. This complicates the design but the trade-off for a simpler alternative would require a greater abstraction from the real-world setting which underpins this chapter. In addition, the focus of the experiment is the effects of intergenerational status and endowment inequality, rather than the intricacies of the process which determines the strength of the relationship between status and endowment. As long as the process has some element of chance and conditionality on status, the mechanism itself is not of particular interest. A description

of how the probabilities of winning a high endowment are related for high and low status participants is described next.

A participant can either “win” a high endowment of one hundred tokens in the lottery, or a low endowment of fifty tokens⁷⁵. High status participants’ *lowest* chances of winning the high endowment is, at minimum, equal to the low status participants’ *highest* chances of winning the high endowment. This distinction creates asymmetries in the advantage conferred by an individual’s status, in that high status participants have a higher likelihood of receiving a high endowment in the experiment than low status participants. Thus, while all participants have a chance of being relatively wealthier in token endowments based on the outcome of the lottery, high status participants have a higher probability of receiving a high endowment of one hundred tokens than low status participants do.

The endowment allocation process has two components which determine the final probability. Each participant is subjected to the lottery with three separate probability distributions associated with winning the high endowment (one hundred tokens). To achieve the conditions described above, the probability distributions are different for high and low status players. High status participants could win the high endowment with a probability of either 0.5, 0.7, or 1. This set of probabilities is referred to as HS (for high status participants), and each of the probabilities which are elements of the set are referred to as p_{HS} , such that $p_{HS} \in HS$ where $HS = \{0.5, 0.7, 1\}$. For low status participants, these probabilities are either 0, 0.3, or 0.5. These probabilities for low status participants are referred to as p_{LS} from the set LS such that $p_{LS} \in LS$ where $LS = \{0, 0.3, 0.5\}$. Each participant is randomly assigned one of these status-based probabilities of winning a high endowment. That is, a random draw from HS occurs for high status participants, and a random draw from LS occurs for low status participants. This is a random draw from a set of three equally likely elements, with the probability of each element being drawn set equal to 0.33, for both high and low status participants.

A participant’s final probability of receiving a high endowment reflects the conditional probability of having a relatively higher chance of receiving a high endowment, and then actually receiving the high endowment. These are calculated. For high status participants this probability evaluates to either 0.33, 0.23, or 0.17. For low status participants this

⁷⁵There are no other alternative outcomes.

probability evaluates to either 0, 0.1, or 0.17. The expected value of these probabilities for high status participants is 0.75, and 0.25 for low status participants. Finally, having determined both status and endowment, the participants begin the public goods game.

To avoid terminology confusion of high versus low status with high versus low endowment, for the remainder of this chapter, high status participants will be referred to as advantaged, and low status as disadvantaged. The terms advantaged or disadvantaged are used to represent the benefit of being born into a relatively wealthier household, compared to those in households with income step below the median. An endowment of one hundred tokens will be referred to as a high endowment and an endowment of fifty tokens will be referred to as a low endowment.

Participant Instructions

For ease of participant comprehension, the probability of receiving a high endowment is represented by a deck of cards which are shown to the participant. To reflect the distribution of probabilities described above, there are three possible decks of cards for advantaged participants which are distinct from the three decks available to disadvantaged participants. Each deck of cards consists of ten cards, in which some cards are worth one hundred tokens and others are worth fifty tokens. The probability of receiving a high endowment corresponds to the number of one hundred token cards in the deck. For example, if a participant's probability of receiving a high endowment is zero, this is represented with a deck in which none of the ten cards are worth one hundred tokens, and instead all ten cards are worth fifty tokens. If a participant has a thirty percent chance of receiving a one hundred token endowment, they receive a deck in which three cards are worth one hundred tokens and the remaining seven cards are worth fifty tokens, and so on for the other probabilities and corresponding card decks⁷⁶.

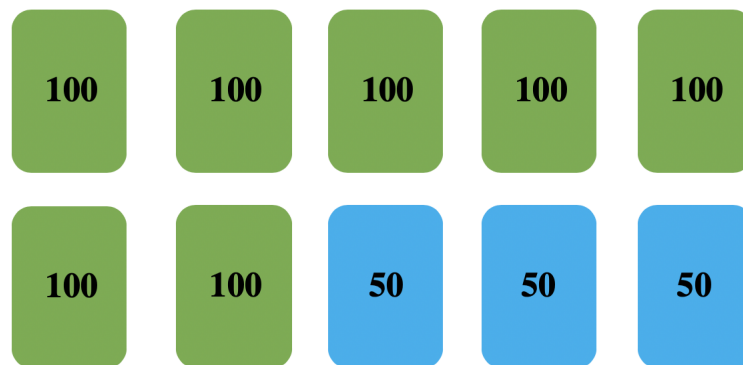
Remember that the probabilities of receiving a high or low endowment were as follows: $HS = \{0.5, 0.7, 1\}$ or $LS = \{0, 0.3, 0.5\}$. Translated to number of one hundred token cards in the ten card deck, the number of one hundred token cards for advantaged participants

⁷⁶The probabilities selected in this design do not increase in consistent units. An alternative distribution with equal increments such as 0, 0.25, 0.5, 0.75, and 1 was considered. This alternative would simplify analysis of a unit change. However, this alternative would have required non-integer values such as 2.5 decks of cards which would compromise the very purposes of simple illustration through a deck of cards.

can be any of $HS = \{5, 7, 10\}$, and any of $LS = \{0, 3, 5\}$ for disadvantaged participants. Therefore the possible number of one hundred token cards in a deck could be either zero, three, five, seven, or ten. Participants were made aware that they would randomly be allocated one out of three possible decks of cards

An example of a deck of cards shown to the participants is displayed in Figure 6, for an advantaged participant who has a seventy percent chance of receiving the one hundred token endowment. The seven cards in the figure labelled “100” correspond to receiving a one hundred token endowment and the three cards labelled “50” correspond to receiving a fifty token endowment.

Figure 6: Example Deck of Cards Shown to Participants



After the deck of cards illustration was explained to participants, each participant was randomly allocated a deck of cards analogous to the allocation of probabilities of winning a one hundred token endowment from the lottery. Thereafter, one card was selected randomly by computer from the deck and the value of tokens associated with this card became the participant’s endowment.

In the online survey prior to the sessions of the experiment, a simple and elementary probability comprehension test was conducted with four questions analogous to the deck of cards framework used in the actual experiment⁷⁷. For each question the participants had four opportunities to provide the correct answer with the survey proceeding only once

⁷⁷The questions are designed to be crude indicators of probability comprehension and not a substantive assessment of the depth of understanding. The four questions are as follows: “Please imagine 10 cards labelled either “A” or “B” . 1) If there is a 70% chance of randomly drawing a card labelled “A” from the 10 cards, how many of the 10 cards are labelled “A” and how many of the 10 cards are labelled “B”? 2) If there is a 30% chance of randomly drawing a card labelled “A” from the 10 cards, how many of the

a correct answer was provided⁷⁸. Only twenty-four participants (ten percent of sample) had incorrect answers to any of the four questions on their first attempt with a roughly equal proportion of incorrect answers in each of the treatments⁷⁹. It is reasonable to argue that the deck of cards structure of the experiment was well comprehended by the participants.

6.2.1 Group Characteristics

Apart from ensuring an equal number of advantaged and disadvantaged participants in each group, the design of the experiment makes it impossible to control the composition of groups in terms of final endowment and the probability of receiving a one hundred token endowment. The random assignment of endowments and associated probabilities results in variation in group inequality, the distribution of probabilities of winning one hundred tokens amongst the group members, and in the total endowments in the group. To ensure that the intended inequities arising from the design of the experiment were well understood, participants were informed of all these characteristics⁸⁰.

All group members were anonymously identifiable as Person 1, Person 2, and Person 3. Alongside each of these identifiers, the deck of cards received by the particular

10 cards are labelled “A” and how many of the 10 cards are labelled “B”? 3) If there is a 50% chance of randomly drawing a card labelled “A” from the 10 cards, how many of the 10 cards are labelled “A” and how many of the 10 cards are labelled “B”? 4) If you were asked to randomly draw a card from a deck of 10 cards in which 6 cards are labelled “A” and 4 cards are labelled “B”, what are the chances of you drawing a card labelled “A” from the deck? Please choose from the options below: 10%, 6%, 25%, 60%, 4%, 40%”. An additional pre-session survey question asked the respondents to indicate if they are currently or have ever been registered for a statistics course. Sixty four percent of participants indicated currently being enrolled in a statistics course at the time of the experiment, or had previously been enrolled in a statistics course. There are no significant differences in enrollment for statistics courses across the treatments.

⁷⁸To mitigate careless responses which may lead to incorrect answers despite the participant’s true understanding, the survey included the following preamble to these questions: “The following questions each have one correct answer. If your answers to any of the questions is incorrect, you will be given 3 chances to give the correct answer before you can move on with the questionnaire.” The three opportunities were intended to provide enough data to be able to identify minor errors in the response versus frequent and clear misunderstanding. In addition, having to repeat the question three times before continuing with the survey is arguably incentive-compatible in that the costs of inattention and repetition are greater than those of simply attempting to answer the questions correctly in the first instance.

⁷⁹In unreported regressions, neither enrollment in a statistics course nor incorrect answers to the probability tests affect contributions in the game.

⁸⁰See for instance Nishi, Shirado, Rand and Christakis (2015) for a discussion on the importance of the visibility of inequality for behaviour.

group member, their initial status based on the ELQ, their endowment, and contributions in every round of the game were shown to participants. One may be concerned that these group characteristics would confound the treatment effects. Although controls for these factors are included in the regression, the possibility that groups may develop unobservable contribution patterns is possible.

Overall, there are fifty-seven groups in the sample with nineteen in Treatment One, twenty in Treatment Two, and eighteen in Treatment Three. The key purpose of the following discussion is to establish whether there are systematic differences in group characteristics across treatments. This is done first by looking at the distribution of one hundred token cards in the group and thereafter the endowments in the group.

6.2.2 Potential Mobility

Recall that each player receives a deck of cards with an associated probability of receiving either one hundred or fifty tokens. This is the player's ex-ante likelihood of mobility. Since each player's deck of cards is revealed to all players, players are able to assess the ex-ante mobility prospects of their group members. Arguably, this knowledge could affect behaviour. Thus potential mobility in the group is controlled for by including a variable that is the sum of the number of one hundred token cards in the group, from each participant's card deck, calculated at the beginning of the public goods game⁸¹. As per the design, endowment and mobility are exogenous, conditional on status⁸².

The most important aspect of the total number of one hundred token cards in the group is the cut-off point which defines potential mobility of the group members. As the groups are stratified such that each group has two disadvantaged and two advantaged group members, a completely immobile group is one in which all disadvantaged participants receive zero one hundred token cards, and all advantaged participants receive ten

⁸¹The original values are kept as these are the values seen by participants during the experiment and there is a literature which finds that cognitive biases lead to differences in the perception of the same unit difference depending on the values of the numbers being compared (Dehaene, 2003; Urban, 1933)

⁸²The experimental sample yields no evidence to contradict this assumption, which indicates successful implementation of the experiment design. The Pearson correlation coefficient resulting from this lottery and definition of mobility between advantageous status and a high likelihood of mobility is 0.02 (p-value = 0.34), 0.04 (p-value = 0.04) for moderate likelihood of mobility, and -0.05 (p-value = 0.01) for no mobility. For high endowment and mobility these correlations are -0.12 (p-value = 0.00) for full mobility, 0.11 (p-value = 0.00) for some mobility, and 0.00 (p-values = 0.00), for no mobility. The correlation between status and endowment is 0.53 (p-values = 0.00).

one hundred token cards. Thus the group would have a total of twenty one hundred token cards. All groups where the total number of one hundred token cards in the group is below twenty are necessarily groups in which at least one of the advantaged participants has a probability of less than one of receiving a one hundred token endowment. This is due to the fact that even if both disadvantaged participants receive a deck with five one hundred token cards (their maximum), for the total number of one hundred token cards in the group to fall below twenty, at least one of the advantaged participants must receive a deck with less than ten one hundred token cards. Conversely, all groups with more than twenty one hundred token cards must have at least one of the disadvantaged participants receiving a deck with at least three one hundred token cards. All values greater than twenty therefore reflect some degree of favourable decks of cards for the disadvantaged participants, all values less than twenty reflect some degree of unfavourable decks of cards for the advantaged participants, and the value of twenty reflects group endowments determined with certainty based on status.

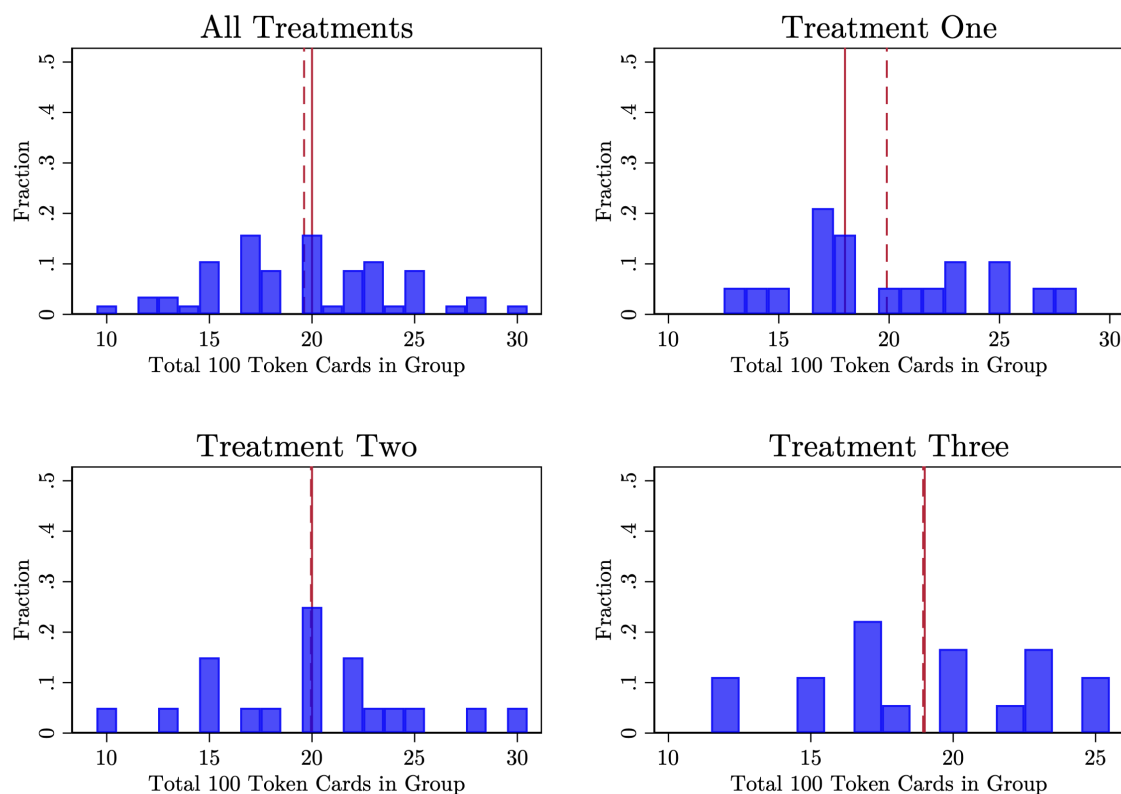
The lower bound number of one hundred token cards in the group is ten, which occurs when both disadvantaged participants receive a deck with zero one hundred token cards and both the advantaged participants receive a deck with five one hundred token cards (their minimum). The upper bound is a group total of thirty one hundred token cards. This occurs in instances in which both advantaged participants receive ten one hundred token cards and the two disadvantaged participants receive five. These dynamics lead to a complex combination of potential mobility in the group, particularly as the total number of one hundred tokens in the group does not uniquely identify distributions of one hundred token cards amongst the four group members. The main exceptions to this are values of twenty, ten, and thirty.

Figure 7 shows the distribution of one hundred token cards in the group by treatment⁸³. The median and mean total number of one hundred token cards in the group are indicated by the vertical lines. The solid line represents the median and the dashed line represents the mean. Pooled across all three treatments, the median number of one hundred token cards in the group is twenty, which falls to eighteen in Treatment One, remains at twenty in Treatment Two, and is nineteen in Treatment Three. The mean

⁸³Recall that income status is randomly allocated in Treatment One, allocated according to parental income in Treatment Two, and according to grandparent income in Treatment Three.

number of one hundred token cards is essentially the same as the median in all treatments except Treatment One, which has a mean of twenty (compared to the median of eighteen). There are no statistically significant differences in these distributions across the treatment⁸⁴. The distribution does not appear to differ systematically across groups, and thus should not confound the estimation of treatment effects.

Figure 7: Distribution of Total 100 Token Cards in Group



NOTES: This figure shows the distribution of the total 100 token cards received by each member of the group by treatment. The solid line represents the median and the dashed line represents the mean.

6.2.3 Group Pot Size and Inequality

In terms of group pot size, sixteen percent of all groups have equal endowments. Average group pot size is 292 tokens. The sample size of unique groups with an equal endowment is too small for meaningful significance testing, with only two equal groups in Treatment

⁸⁴Treatment One versus Treatment Two Mann-Whitney z statistic of 0.11 (p-value = 0.91), -0.60 (p-value = 0.55) for Treatment One versus Treatment Three, and -0.56 (p-value = 0.58) for Treatment Two versus Treatment Three.

One and Treatment Three, and five groups in Treatment Two. The distribution of one hundred token cards and group pot size does not differ significantly across all pairwise combinations of the three treatments⁸⁵.

Participants with a deck of cards containing either zero or ten one hundred token cards are characterised as immobile, with a likelihood of mobility equal to zero. Players with three or seven one hundred token cards are somewhat mobile. Lastly, players with five one hundred token cards are coded as a high likelihood of mobility. It is important to note that mobility in this case represents a departure from the disadvantages of advantages of (inherited) status. That is, a player is considered to face increasing mobility as their chances of receiving one hundred token card approaches fifty-fifty, which makes their status irrelevant for their endowment outcome. With this formalisation of mobility, there is no differentiation between advantageous mobility (an increasing likelihood of a receiving a high endowment for a low status participant) from disadvantageous mobility (a decreasing likelihood of a receiving a high endowment for a high status participant), a fact which is corroborated by the data.

6.3 Treatment Descriptive Statistics

Table 25 presents means of participant characteristics in the sample, and tests for significant differences in these means by treatment status⁸⁶.

⁸⁵Mann-Whitney z statistic = -0.95 (p-value = 0.34) for Treatment One versus Treatment Three, z statistic is -0.95 (p-value = 0.34) for Treatment One versus Treatment Two; and 0.32 (p-value = 0.75) for Treatment Two versus Treatment Three.

⁸⁶All variables in the table are as defined in Chapter 5. Table 25 presents significance tests similar to those in Table 12 in Chapter 5. However these differ with the addition of the variables directly associated with the public goods game (such as endowment, likelihood of mobility, etc), and the use of the sample of individuals who participated in the public goods game. The public goods game sample differs to that of the trust game, as explained in the experimental design, which is apparent in the differential sample sizes (228 in Table 25 versus 316 in Table 12). Recall that although the trust game and public goods game were conducted in the same session, the public goods game contained a fourth treatment which is not included in this analysis. However, the trust game for this omitted public goods game treatment is identical to Treatment Two (parental inheritance) of the trust game and thus, the trust game data for these participants is included in the trust game analysis. This accounts for the differences in sample size.

Table 25: Public Goods Game Mean Sample Characteristics

	All	Treatment One	Treatment Two	Treatment One	Treatment Three	Treatment Two	Treatment Three
Participated in Similar Experiments	0.21	0.18	0.25	0.18	0.21	0.25	0.21
No Likelihood of Mobility	0.39	0.37	0.36	0.37	0.46	0.36	0.46
Moderate Likelihood of Mobility	0.35	0.38	0.32	0.38	0.35	0.32	0.35
High Likelihood of Mobility	0.25	0.25	0.31	0.25	0.19	0.31	0.19
High Endowment	0.46	0.51	0.43	0.51	0.46	0.43	0.46
Financial Aid Receptient	0.37	0.39	0.38	0.39	0.35	0.38	0.35
South African Citizen	0.78	0.82	0.71	0.82	0.82	0.71	0.82
Black African	0.64	0.64	0.59	0.64	0.68	0.59	0.68
White	0.11	0.07	0.13	0.07	0.13	0.13	0.13
Coloured	0.17	0.18	0.21	0.18	0.11	0.21	0.11 *
Indian/Asian	0.07	0.08	0.06	0.08	0.07	0.06	0.07
Female	0.58	0.55	0.61	0.55	0.57	0.61	0.57
Enrolled in Economics	0.32	0.37	0.29	0.37	0.31	0.29	0.31
Enrolled in Social Science	0.66	0.67	0.66	0.67	0.64	0.66	0.64
Willing to Take Risks	0.81	0.79	0.82	0.79	0.81	0.82	0.81
Altruistic	0.48	0.46	0.47	0.46	0.51	0.47	0.51
Trusts Others in General	0.13	0.14	0.13	0.14	0.13	0.13	0.13
Parent's Step	4.91	4.74	5.07	4.74	4.90	5.07	4.90
Grandparent's Step	3.85	3.64	3.99	3.64	3.90	3.99	3.90
Number of Participants	228	76	80	76	72	80	72

NOTES: This table reports mean participant characteristics between treatments two and three both compared to Treatment One. All binary variable differences are based on two-sided proportion tests. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In the full sample of 228 participants, about twenty percent had prior experience of participating in experimental games. Turning to the demographic characteristics, sixty-four percent of the sample identifies as Black African, eleven percent as White, seventeen percent as Coloured, and seven percent as Indian or Asian. Nearly eighty percent of participants are South African citizens and fifty-eight percent are women. Socio-economic welfare measures show that thirty-seven percent of participants receive means tested government tuition aid; the average reported parent's step is step five and step four for grandparents. In terms of general characteristics, a third of participants are or have been previously enrolled in an economics course including behavioural or experimental economics in the curriculum, and sixty-six percent are enrolled in a social science faculty. Lastly, a large majority of participants (eighty percent) report a willingness to take risks. Trust on the other hand is low with fourteen percent reporting trusting others in general, and forty-six percent providing responses which are considered to reflect altruistic preferences⁸⁷.

Turning to the variables salient to the public goods game. The likelihood of mobility is close to evenly distributed across the sample, but not quite. As per the design, the portion of the sample who have a high likelihood of mobility is not large, at twenty-five percent. Thirty-nine percent have no chance of mobility, with thirty-five percent having a moderate likelihood of mobility. The differences in these distributions is as expected given the status and endowment allocation process described earlier in this chapter. Nearly half of the participants received a high endowment of one hundred tokens.

As in Chapter 5, there are meaningful differences across the treatments, with the descriptive statistics showing balance across the observable characteristics. There is only one marginally significant difference: a larger proportion of Coloured participants in Treatment Three than in Treatment Two. This is a practically trivial difference as only eight participants in Treatment Three are Coloured individuals. As in Chapter 5, treatment balance is also examined through regression analysis identical to that of Table 13, but with the addition of group characteristics. The results are similar, and again provide no evidence to suggest the presence of treatment effects. For brevity they are not reported here⁸⁸.

⁸⁷The distribution of these characteristics do not differ meaningfully to those observed in the larger sample in Chapter 5, and are reported for completeness.

⁸⁸See Table C.1 in Appendix Item C.

6.4 Specification

The basic model specification is as described in Equation 4.

$$\text{Contribution}_{it} = \beta_0 + \beta_1 T2_{it} + \beta_2 T3_{it} + \beta_3 HE_{it} + \beta_4 AS_{it} + \beta_5 M_{it} + \mathbf{X}_i + \epsilon \quad (4)$$

The dependent variable, Contribution_{it} is the share of player i 's endowment contributed to the public account in round t , or the absolute number of tokens contributed by player i in round t . The treatment dummies are represented as $T2$ (parental transmission) and $T3$ (grandparent transmission), with the base case of $T1$ (random allocation). A high endowment dummy variable for i 's endowment of either one hundred tokens (one) or fifty tokens (zero) is represented by HE . M is a set of mobility dummy variables for the final deck of cards the participant received, reflecting either no likelihood of mobility (base case), a moderate likelihood, or high likelihood. Status is represented by AS which is a dummy variable equal to one for advantageous status and zero for disadvantageous status.

The vector \mathbf{X} represents group and individual level controls. Individual controls in \mathbf{X} are gender; race dummies; reported parent and grandparent income step for subjective socio-economic well-being and inequality; financial aid receipt; past or current enrollment in an economics course with a curriculum which includes behavioural and experimental economics; enrollment in a social science faculty; phase of participation in the experiment; round of the game; previous participation in similar experiments; self-reported survey measures of risk attitudes, trust in others, and altruism⁸⁹; and South African citizenship. Group controls include the average probability of receiving a one hundred token card, the total token endowment of the participant's three other group members, and a binary variable for whether participants had equal endowments in the group⁹⁰.

All regressions are OLS estimates in order to facilitate cross-sample comparisons and ease of interpretation of interaction effects⁹¹. The standard errors are clustered at the individual level in all regressions. The results of these regressions are reported next.

⁸⁹Standardized to mean of zero and standard deviation of one.

⁹⁰Strictly speaking, the total token endowment of the participant's three other group members is not a group level variable. Nonetheless, this variable is discussed as a group variable since it relates to a group characteristic.

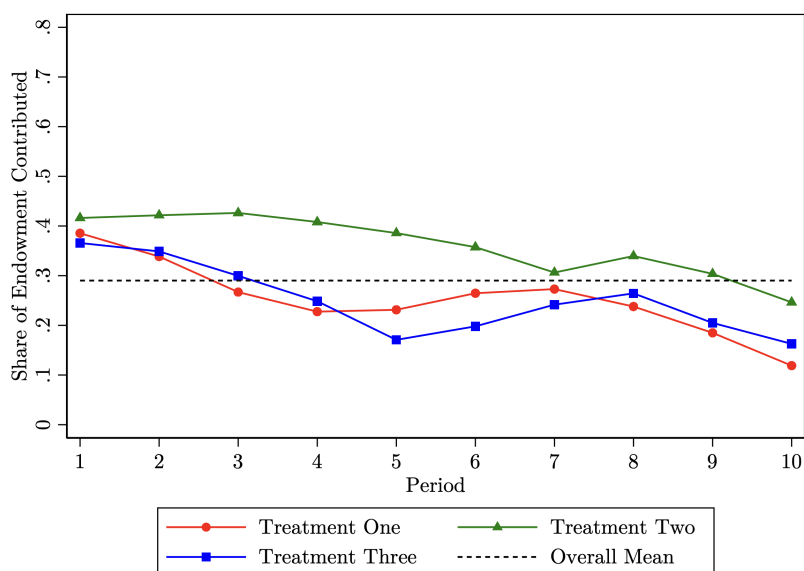
⁹¹Robustness checks for the main results using alternative estimators to account for the fractional nature of the share of endowment contributed (fractional logit regressions) and the panel nature of dataset (random effect panel regressions), are reported in Tables C.43 and C.44 of Appendix Item C. The main regression results are virtually identical using these alternative estimators.

6.5 Share of Endowment Contributed

This section reports the results from the public goods game experiment as follows. Firstly, main effects for shares of endowment contributed and absolute number of tokens contributed are reported alongside each other, with a focus on inequality averse behaviour. Thereafter various interaction effects are reported: treatment and status; treatment and endowment; treatment and mobility; and status and endowment. The main results are then reported, followed by an analysis of conditional cooperation.

Figure 8 plots mean shares of endowment contributed in each treatment for each period of the public goods game. The average share of endowment contributed across the three treatments is twenty-nine percent. Contributions begin at approximately forty percent for all treatments with a noticeable divergence thereafter between Treatment Two and the other treatments. Contributions in Treatment One and Three are largely similar through all ten rounds. In the last round of the game, contributions are at their lowest for each treatment, with eleven percent contributed in Treatment One, twenty-five percent in Treatment Two, and sixteen percent in Treatment Three.

Figure 8: Average Share of Endowment Contributed Over Rounds



NOTES: This figure shows the average share of endowment contributed in each treatment over the ten rounds of the game.

Regression analysis is presented in Table 26, using a pooled sample from all ten rounds of the game. The dependent variable is the share of endowment contributed. Different

sets of controls are included in each column.

Table 26: Main Regressions: Share of Endowment Contributed

Dependent Variable	(1)	(2)	(3)	(4)
	Share of Endowment Contributed			
Treatment Two	0.12*** (0.04)	0.10*** (0.04)	0.08** (0.04)	0.08** (0.04)
Treatment Three	-0.00 (0.04)	0.00 (0.03)	-0.00 (0.03)	-0.00 (0.03)
Advantaged	0.03 (0.03)	0.02 (0.04)	0.02 (0.04)	
High Endowment	-0.04 (0.03)	-0.08** (0.03)	-0.11*** (0.03)	
Disadvantaged with High Endowment				-0.12** (0.05)
Advantaged with Low Endowment				0.01 (0.06)
Advantaged with High Endowment				-0.10** (0.04)
Chance of High Endowment: 30% or 70%	-0.05 (0.04)	-0.04 (0.03)	-0.04 (0.03)	-0.04 (0.04)
Chance of High Endowment: 50%	-0.05 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.05 (0.04)
Group Controls	No	Yes	Yes	Yes
Full controls	No	No	Yes	Yes
Constant	0.47*** (0.06)	0.39*** (0.11)	0.43*** (0.13)	0.43*** (0.13)
Observations	2,280	2,280	2,280	2,280
R-squared	0.08	0.12	0.17	0.17

NOTES: This table reports OLS coefficients for the share of endowment contributed to the public account. Group and full controls are included in the regressions as indicated in the table. Robust standard errors clustered at the individual in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #1: Parental transmission significantly increases contributions while grandparents' transmission has no effects.

The only observed treatment effect is parental transmission (Treatment Two) in which contributions are twelve percentage points higher than Treatment One (Column 1, which

includes only a limited set of controls). Including group controls in Column 2, and the full set of controls in Column 3, reduces the parental effect to eight percentage points, and the coefficient remains statistically significant at the five percent level. This effect is large, representing a thirty percent increase in the share of endowment contributed. Unlike parentally inherited status, the grandparents treatment (Treatment Three) has no effect on participant contributions.

Result #2: High endowments reduce the share contributed for both advantaged and disadvantaged participants.

A key feature of the experiment is that in spite of inherited status, individuals have the opportunity to “escape” this through experiencing upward or downward mobility. This ultimately determines their endowment in the game. Individuals who receive one hundred tokens make significantly lower contributions irrespective of their initial inherited status. Inherited status, as advantaged or disadvantaged, does not have a significant independent effect on contributions. In contrast, contributions by players who receive high endowments are significantly lower. High endowment individuals contribute eight percentage points less (Column 2) than low endowment individuals, an effect which increases to eleven percentage points when full controls are added (Column 3). Both effects are significant at the five and ten percent level respectively.

The possible combinations of status and endowment may well differentially affect contributions. This possibility is addressed in Column 4, where binary indicators for each of the different combinations are included, with the base case set to disadvantaged status participants with a low endowment. Disadvantaged status participants with a low endowment are selected as the reference category due to the fact that these are the participants whose (inherited) status is the most unfavourable and arguably the most unfair. Although statistically insignificant, it is worth noting the positive sign of the advantaged participants’ contributions, in conjunction with the reduction in contributions by high endowment participants. From a qualitative perspective, the opposite sign of these coefficients suggests that status may moderate the negative effect of high endowments. The lower share of endowment contributed by participants with high endowments is evident for both advantaged and disadvantaged participants, with a slightly larger reduction observed for disadvantaged participants (twelve percentage points versus ten percentage

points for the advantaged).

Result #3: The likelihood of mobility does not affect ex-post relative contributions.

The likelihood of mobility in all the regression has no effect on contributions. It is clear that it is the outcome of that mobility (i.e., the endowment) that matters for contributions. Thus *realised* mobility matters rather than prospective mobility.

6.5.1 Heterogeneity in Treatment Analysis

The aggregate effects of endowment, status, and mobility reported, originate by design from different conditions as defined by treatment. This section reports heterogeneity in these effects across the three treatments, presented in Table 27.

The analysis is performed with sub-samples for each treatment. These results are reported in Column 1, 2, and 3 in Table 27. Columns 4 to 6 report estimates of the differences in coefficients between treatments. These cross-sample differences in coefficients are estimated with a full set of interaction terms between the treatment dummies and all the control variables. In the regressions used to estimate the differences in coefficients, the sample is restricted to participants allocated to the pair of treatments in which the comparison is being made. For instance, differences between Treatment Two and Treatment One are from interaction terms of the Treatment Two dummy variable with the full set of controls, estimated in a sample restricted to participants in Treatment Two or Treatment One⁹².

⁹²In unreported regressions, the results are tested for robustness using seemingly unrelated regressions. Both methods yield near identical results.

Table 27: Share of Endowment Contributed Treatment Heterogeneity

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Share of Endowment Contributed					
	Sample			Differences in Coefficient		
	T1	T2	T3	T2 - T1	T3 - T1	T2 - T3
Disadvantaged with High Endowment	-0.25*** (0.08)	-0.08 (0.09)	-0.05 (0.07)	0.18 (0.12)	0.21* (0.11)	-0.03 (0.11)
Advantaged with Low Endowment	0.05 (0.11)	0.04 (0.10)	-0.27** (0.13)	-0.01 (0.15)	-0.32* (0.17)	0.31* (0.16)
Advantaged with High Endowment	-0.17** (0.07)	-0.11 (0.09)	-0.13** (0.06)	0.07 (0.11)	0.04 (0.09)	0.03 (0.11)
Chance of High Endowment: 30% or 70%	0.04 (0.07)	-0.00 (0.07)	-0.03 (0.06)	-0.04 (0.09)	-0.07 (0.09)	0.03 (0.09)
Chance of High Endowment: 50%	0.02 (0.09)	-0.04 (0.06)	-0.01 (0.05)	-0.06 (0.11)	-0.04 (0.10)	-0.03 (0.08)
Observations	760	800	720			

NOTES: This table reports OLS coefficients for the share of endowment contributed to the public account by treatment samples and pairwise differences across the treatment samples. "T1" represents Treatment One. "T2" represents Treatment Two. "T3" represents Treatment Three. Differences reported in the table may not be the same as eyeball differences due to rounding off. Full set of controls included in all regressions. Robust standard errors clustered at the individual in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #4: High endowments reduce contributions regardless of advantageous status in the random allocation treatment.

Table 27 shows that in the Treatment One sample with random status allocation, the negative effect of high endowment remains and is again driven by both advantaged and disadvantaged participants (see Column 1). These effects are larger (in absolute terms) than those seen in Table 26, with disadvantaged high endowment participants again reducing contributions more than advantaged (twenty-five percentage points versus seventeen).

Result #5: Advantage and endowment do not significantly affect contributions in the parental inheritance treatment.

There is no evidence of differential contributions based on endowment or status in the parental inheritance treatment (Treatment Two) - see Column 2. Despite the now familiar pattern of both high endowment types contributing less, with larger reductions in disadvantaged high endowment participants, these differences are not significant. Statistically, high endowment participants contribute the same share of their endowment, regardless of their status, as disadvantaged low endowment participants. The absence of significant mobility effects is again confirmed. While contributing an equal share does not redistribute wealth, it is important to note that this necessarily means the high endowment participants in this treatment are contributing a greater number of tokens than those with a low endowment.

Result #6: Grandparental status inheritance reduces contributions by advantaged participants regardless of endowment.

Inheriting high status from grandparents substantially reduces contributions as a result of the status inherited, and not the endowments received (Column 3). Advantaged participants with a high endowment contribute thirteen percentage points less than the base case: disadvantaged participants with a low endowment. Similarly, advantaged participants with low endowment contribute twenty-seven percentage points less, a large effect, and the first time this effect is found to be significant.

Result #7: Disadvantaged participants, based on inherited grandparental status, with a high endowment in Treatment Three contribute significantly more than randomly allocated disadvantaged participants in Treatment One.

Comparing the coefficients of status and endowments across treatments (in Columns 4 to 6), shows differences that are only significant relative to Treatment Three, although these differences are only significant at the ten percent level. It is important to keep in mind that all differences reported are relative to disadvantaged participants with a low endowment. This delineation leads to cumbersome and complicated in-text reporting of the results when reporting cross-treatment differences in coefficients. Therefore the “relative to disadvantaged participants with a low endowment” part of the interpretation will not be mentioned in the interpretation of Columns 4 to 6.

Compared to Treatment One, disadvantaged participants with a high endowment contribute a greater share of their endowment in Treatment Three by twenty-one percentage points. In contrast, advantaged participants with a low endowment contribute thirty-two percentage less in Treatment Three than Treatment One.

Result #8: Disadvantaged participants, based on inherited grandparental status, with a high endowment contribute significantly more than disadvantaged participants with parental inheritance of status.

The only other significant difference across the treatments is that advantaged participants with a low endowment contribute thirty-one percentage points more in Treatment Two (parental inheritance) than in Treatment Three (grandparent inheritance).

That there are significant differences across the treatments compared to Treatment Three is a noteworthy result, especially as the advantaged participants with a low endowment within Treatment Three are under-contributing. Considering the reference category is disadvantaged participants with a low endowment, the under-contribution within Treatment Three suggests differences in responses to losing one’s social position. This is discussed in more detail in the concluding section (Section 6.8) of this chapter.

The last part of this section reports the regressions from the main specification for each of the treatments by each round of the game. These results are reported in Table 28.

Table 28: Share of Endowment Contributed Treatment Heterogeneity in Contributions by Round

Period	1	2	3	4	5	6	7	8	9	10
Sample	Panel A: Treatment One									
Disadvantaged with High Endowment	-0.23*	-0.23*	-0.25**	-0.30**	-0.12	-0.22	-0.29**	-0.38***	-0.28**	-0.24**
	(0.12)	(0.13)	(0.12)	(0.12)	(0.14)	(0.14)	(0.13)	(0.12)	(0.12)	(0.12)
Advantaged with Low Endowment	0.02	0.12	0.03	0.06	0.09	0.16	0.03	-0.03	0.08	-0.05
	(0.15)	(0.18)	(0.16)	(0.19)	(0.13)	(0.19)	(0.20)	(0.17)	(0.15)	(0.13)
Advantaged with High Endowment	-0.17	-0.18*	-0.17*	-0.16*	-0.16*	-0.13	-0.11	-0.26**	-0.20**	-0.17**
	(0.10)	(0.10)	(0.10)	(0.10)	(0.08)	(0.10)	(0.10)	(0.10)	(0.09)	(0.08)
Sample	Panel B: Treatment Two									
Disadvantaged with High Endowment	0.07	0.07	-0.12	-0.05	-0.01	0.00	-0.24*	-0.19	-0.15	-0.16
	(0.13)	(0.15)	(0.17)	(0.16)	(0.13)	(0.18)	(0.14)	(0.16)	(0.12)	(0.10)
Advantaged with Low Endowment	-0.11	0.14	0.06	-0.08	0.21	0.06	0.13	0.06	-0.01	-0.07
	(0.14)	(0.13)	(0.16)	(0.15)	(0.17)	(0.17)	(0.16)	(0.17)	(0.15)	(0.18)
Advantaged with High Endowment	-0.06	-0.03	-0.04	-0.26*	-0.07	-0.18	-0.10	-0.05	-0.11	-0.15
	(0.11)	(0.13)	(0.12)	(0.13)	(0.15)	(0.14)	(0.14)	(0.14)	(0.15)	(0.14)
Sample	Panel C: Treatment Three									
Disadvantaged with High Endowment	0.32**	-0.08	-0.04	0.04	-0.03	-0.07	-0.06	-0.36*	-0.13	-0.07
	(0.16)	(0.16)	(0.14)	(0.15)	(0.10)	(0.10)	(0.15)	(0.19)	(0.16)	(0.13)
Advantaged with Low Endowment	0.12	-0.38*	-0.19	-0.36*	-0.15	-0.42**	-0.42*	-0.21	-0.37*	-0.30
	(0.28)	(0.22)	(0.25)	(0.21)	(0.17)	(0.20)	(0.23)	(0.27)	(0.22)	(0.23)
Advantaged with High Endowment	0.11	-0.20	-0.10	-0.16	-0.01	-0.20	-0.30**	-0.14	-0.20	-0.13
	(0.14)	(0.15)	(0.13)	(0.14)	(0.11)	(0.12)	(0.13)	(0.18)	(0.13)	(0.09)

NOTES: This table reports OLS coefficients for the share of endowment contributed to the public account for each round of the game in each treatment. Full set of controls included in all regressions. Robust standard errors clustered at the individual in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Since the combination of rounds and treatments leads to thirty regressions, a full exposition of all the results across the rounds is not undertaken, rather only the key status and endowment effects are reported.

Result #9: Under-contribution by high endowment participants with randomly assigned status (Treatment One) is consistent in almost every round of the game.

Starting with Treatment One in Panel A, the main patterns are that disadvantaged participants with a high endowment consistently contribute a lower share of their endowment in virtually all rounds of the game. These effects are always large and on balance highly statistically significant. Similarly, advantaged participants with a high endowment contribute a lower share of their endowment in most rounds of the game with relatively consistent effects in terms of percentage point changes across the rounds.

Result #10: Equal share contributions in Treatment Two are consistent in every round of the game.

Panel B shows that in Treatment Two, the equal share of endowments contributed regardless of status or endowment are evident in every round of the game with a small number of exceptions.

Result #11: High endowment participants, regardless of status, contribute an equal share in almost all rounds of the game. Advantaged participants with a high endowment under-contribute in a “skip round” pattern.

In Treatment Three (Panel C), disadvantaged participants with a high endowment contribute the same share essentially across every round of the game. A similar result is evident for advantaged participants with a high endowment. However, advantaged participants with a low endowment appear to follow a “skip round” pattern in that under-contributions are evident sequentially in almost every second round. These effects are large and range from an under-contribution between thirty-six and forty-two percentage points in five of the ten rounds.

The main results from this analysis can be summarised as follows. In terms of main treatment effects, parentally inherited status substantially increases the share of endow-

ment contributed by participants with no effects evident for grandparental inheritance of status. In addition, there is substantial aggregate level under-contribution by high endowment participants regardless of status advantage or disadvantage. This result holds particularly in Treatment One with randomly allocated status. However, with parentally inherited status, these endowment effects are not evident as high endowment participants contribute an equal share of their endowment as low endowment participants. These results indicate some inequality averse behaviour related to the fairness of the origins of the inequality, which is related to the recency of the intergenerational transmission. Despite the absence of overall effects for the grandparental inheritance treatment, advantaged participants substantially under-contribute regardless of their endowment.

As mentioned earlier in this chapter, public goods game contributions may reflect elements of altruism in addition to the inequality aversion implied by share of endowment contributed. Altruism in the presence of inequality is indicated by a greater number of tokens contributed to the public account by relatively richer participants (Buckley and Croson, 2006). It is crucial to note the relationship between share of endowment and the number of tokens contributed. Results for the analysis of contributions based on the number of tokens allocated to the public account are presented in the next section.

6.6 Tokens Contributed

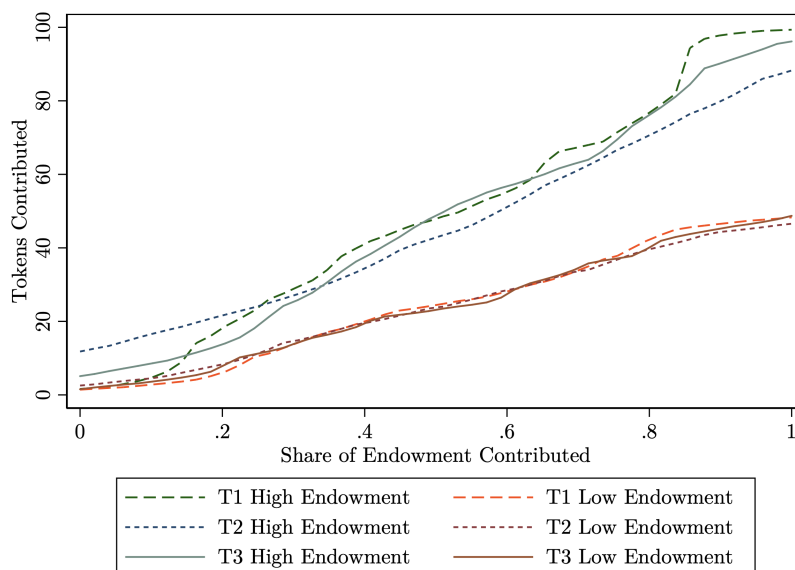
To illustrate the relationship between contributions as a share of endowment versus actual token contributions, Figure 9 shows non-parametric estimates for the number of tokens contributed as a function of the share of endowment contributed⁹³. The figure separates high and low endowment participants in each treatment. In interpreting the figure, it is important to note that the share of endowment contributed has discrete jumps in some cases and is not strictly continuous. The figure is therefore illustrative as in some cases differences may simply reflect no values at that level of share of endowment contributed.

As Figure 9 shows, the difference in tokens required to maintain an equal share of endowments contributed increases as the share of endowment increases. For instance, a sixty percent contribution by high and low endowment participants requires high endowment participants to contribute thirty tokens more than low endowment participants. Contrasting this to an equal share of twenty percent, high endowment participants must

⁹³Epanechnikov kernel densities with zero degree of smoothing are presented in the figure.

only contribute ten tokens more than low endowment participants. This illustrates the increasingly demanding contributions from high endowment participants to match the low endowment participants' relative contributions. An analysis of absolute tokens contributed is therefore a crucial exercise.

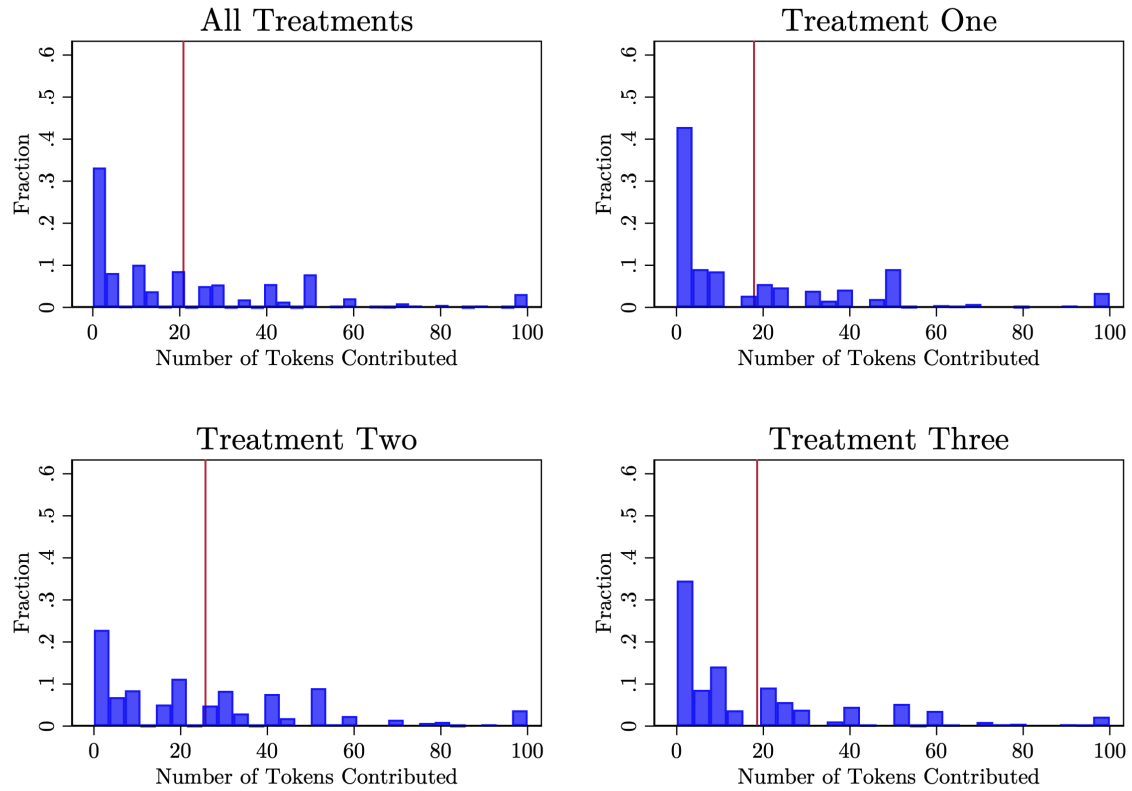
Figure 9: Relationship Between Share of Endowment and Tokens Contributed by Treatment and Endowment



NOTES: This figure shows non-parametric local polynomials for the number of tokens contributed as a function of the share of endowment contributed by endowment type in each treatment.

Figure 10 shows the total number of tokens contributed for the full sample and by treatment. The vertical lines in all four graphs represent the mean number of tokens contributed in the corresponding sample. On average twenty-one tokens were contributed in all three treatments. The only statistically significant differences in contributions are between Treatment Two compared to Treatment One and Treatment Three. The average number of tokens contributed in Treatment Two is twenty-six tokens. This is greater than tokens contributed in Treatment One ($p = 0.00$) and Treatment Three ($p = 0.00$) at eighteen and nineteen tokens respectively. Contributions of zero tokens are prevalent at approximately thirty percent in all treatments. These zero contributions are highest in Treatment One at forty percent in Treatment One and lowest in Treatment Two at twenty percent.

Figure 10: Tokens Contributed by Treatment



NOTES: This figure shows the distribution of tokens contributed in the overall sample, and across all three samples. The vertical line in all cases represents the mean number of tokens contributed.

In Table 29 the regression results are presented. The results in this section are based on the same specification as share of endowment contributed. The order and format in which the results are presented will also be the same as Section 6.5.

Table 29: Main Regressions: Tokens Contributed

Dependent Variable	(1)	(2)	(3)	(4)
	Tokens Contributed			
Treatment Two	9.83*** (2.86)	9.05*** (2.97)	7.47*** (2.78)	7.48*** (2.79)
Treatment Three	1.41 (2.85)	1.80 (2.67)	1.46 (2.63)	1.47 (2.65)
Advantaged	3.06 (2.37)	2.80 (2.72)	2.95 (2.92)	
High Endowment	10.95*** (2.38)	7.60*** (2.45)	5.17** (2.43)	
Disadvantaged with High Endowment				5.39 (3.82)
Advantaged with Low Endowment				3.17 (3.85)
Advantaged with High Endowment				8.12*** (2.92)
Chance of High Endowment: 30% or 70%	-5.15* (2.79)	-4.41 (2.69)	-4.13 (2.74)	-4.18 (2.87)
Chance of High Endowment: 50%	-5.25* (2.88)	-4.09 (2.86)	-4.97* (2.99)	-5.08 (3.15)
Group Controls	No	Yes	Yes	Yes
Full controls	No	No	Yes	Yes
Constant	26.92*** (3.89)	20.24** (7.91)	23.86** (9.23)	23.90** (9.29)
Observations	2,280	2,280	2,280	2,280
R-squared	0.14	0.17	0.22	0.22

NOTES: This table reports OLS coefficients for the number of tokens contributed to the public account. Group and full controls are included in the regressions as indicated in the table. Robust standard errors clustered at the individual in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #12: Token contributions are significantly higher with parental inheritance but not with grandparental inheritance.

In all of the regressions, parental inheritance of status (Treatment Two) increases contributions by between approximately eight and ten tokens. Grandparental inheritance

of status has no effect on the number of tokens contributed.

Result #13: High endowment participants contribute a larger number of tokens.

In Columns 1 to 3, high endowment participants contribute a substantially greater number of tokens than low endowment participants. This difference ranges from five tokens to eleven tokens. Recall that in terms of share of endowment contributed, high endowment participants under-contributed substantially⁹⁴.

Result #14: Mobility has weak negative effects on tokens contributed.

In Column 1, compared to immobile participants with either a zero or one hundred percent chance of receiving a high endowment, token contributions are lower as the degree of mobility increases. A seventy or thirty percent chance of one hundred tokens reduces contributions by five tokens, and by a similar magnitude for participants with a fifty-fifty chance of one hundred tokens. This result is not robust and changes in statistical significance depending on the controls added to the regressions. In the full specification, token contributions are lower only for participants with an equal chance of receiving a high or low endowment.

Result #15: The only status-endowment effects are a higher number of tokens contributed by advantaged participants with a high endowment.

In Column 4, relative to disadvantaged participants with a low endowment, the only significant difference in token contributions is by advantaged participants with a high endowment. These participants contribute eight tokens more which is both statistically and economically significant.

Finally, both disadvantaged and advantaged participants with a high endowment in Treatment Two contribute a greater number of tokens, while advantaged participants with a low endowment contribute fewer tokens. No differences are evident in Treatment One.

Turning to treatment sub-sample analysis in Table 30, differences in tokens contributed by treatment are investigated.

⁹⁴As reported in Table 26 in Section 6.5.

Table 30: Tokens Contributed Treatment Heterogeneity

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Tokens Contributed			Differences in Coefficient		
	Sample					
	T1	T2	T3	T2 - T1	T3 - T1	T2 - T3
Disadvantaged with High Endowment	-3.45 (5.33)	10.90* (6.27)	8.50 (6.61)	14.35* (8.21)	11.94 (8.46)	2.40 (9.08)
Advantaged with Low Endowment	5.35 (6.63)	2.94 (6.81)	-17.55* (9.98)	-2.41 (9.48)	-22.90* (11.94)	20.49* (12.04)
Advantaged with High Endowment	0.67 (4.72)	13.48** (6.10)	3.69 (5.15)	12.81* (7.69)	3.02 (6.96)	9.78 (7.96)
Chance of High Endowment: 30% or 70%	-1.40 (5.13)	0.45 (5.19)	-3.22 (4.83)	1.84 (7.28)	-1.82 (7.03)	3.66 (7.07)
Chance of High Endowment: 50%	-3.45 (6.30)	-2.08 (4.64)	-3.12 (4.15)	1.37 (7.80)	0.33 (7.52)	1.04 (6.20)
Observations	760	800	720			

NOTES: This table reports OLS coefficients for the number of tokens contributed to the public account by treatment samples and pairwise differences across the treatment samples. "T1" represents Treatment One. "T2" represents Treatment Two. "T3" represents Treatment Three. Differences reported in the table may not be the same as eyeball differences due to rounding off. Full set of controls included in all regressions. Robust standard errors clustered at the individual in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In Treatment One, there are no differences in token contributions for any of the key variables. In Treatment Two, high endowment participants, regardless of their status, contribute a greater number of tokens: disadvantaged participants with a high endowment contribute eleven tokens more, and advantaged participants with a high endowment contribute thirteen tokens more. In the grandparental inheritance treatment (Treatment Three), the only significant difference in contributions is by advantaged participants with a low endowment. These participants contribute eighteen tokens less than disadvantaged participants who also have a low endowment.

The across treatment differences in coefficients in Column 4 to 6 show that the higher tokens contributed by disadvantaged participants with a high endowment in Treatment Two is approximately fourteen tokens larger than the contributions by the same category of participants in Treatment One. Similarly, advantaged participants with a high endowment contribute about thirteen tokens more in Treatment Two than Treatment One. Compared to Treatment One, Treatment Three contributions by advantaged participants with a low endowment are twenty-three tokens lower than similar participants in Treatment One. Lastly, comparing parental inheritance (Treatment Two) and grandparent inheritance (Treatment Three) shows that advantaged participants in Treatment Two contribute twenty tokens more than in Treatment Three.

Lastly, contributions by round for each of the treatment samples are reported in Table 31.

Result #16: There are no differences in contributions for Treatment One across all rounds.

Across all ten rounds, contributions in Treatment One do not differ by endowment or advantage compared to disadvantaged participants with a low endowment.

Table 31: Treatment Heterogeneity in Token Contributions by Round

Period	1	2	3	4	5	6	7	8	9	10
Sample	Panel A: Treatment One									
Disadvantaged with High Endowment	2.01 (9.28)	1.35 (10.00)	-0.75 (8.26)	-8.54 (7.69)	7.99 (11.99)	0.44 (10.48)	-6.54 (8.99)	-12.06 (8.28)	-8.74 (7.84)	-9.62 (7.12)
Advantaged with Low Endowment	-3.32 (10.83)	5.74 (12.65)	3.96 (10.03)	8.64 (11.39)	10.46 (9.36)	12.12 (11.57)	5.12 (12.17)	2.50 (10.07)	8.63 (10.26)	-0.37 (7.78)
Advantaged with High Endowment	6.37 (7.84)	3.91 (7.65)	0.77 (6.87)	-0.26 (7.16)	-0.22 (6.67)	3.80 (7.84)	6.23 (7.68)	-4.88 (7.52)	-4.87 (6.06)	-4.17 (5.02)
Sample	Panel B: Treatment Two									
Disadvantaged with High Endowment	26.14** (11.56)	28.23** (12.49)	12.00 (12.57)	16.16 (13.69)	15.53* (9.00)	20.76 (14.14)	-5.08 (10.08)	-0.12 (12.95)	0.26 (9.19)	-4.90 (8.01)
Advantaged with Low Endowment	-11.44 (10.20)	8.52 (10.37)	4.66 (10.81)	-3.84 (10.74)	10.85 (11.27)	6.98 (11.41)	9.32 (10.29)	8.03 (11.85)	-1.42 (10.50)	-2.29 (11.14)
Advantaged with High Endowment	17.54** (8.21)	19.96** (9.55)	20.19** (8.79)	4.66 (9.17)	16.73* (10.02)	8.49 (8.75)	11.64 (9.22)	18.75* (10.49)	10.61 (10.44)	6.18 (10.22)
Sample	Panel C: Treatment Three									
Disadvantaged with High Endowment	41.76*** (11.96)	8.98 (14.77)	8.61 (11.81)	16.31 (11.88)	5.00 (9.13)	4.33 (8.72)	10.53 (11.68)	-15.71 (15.41)	1.88 (12.44)	3.29 (10.19)
Advantaged with Low Endowment	7.43 (18.30)	-21.05 (18.24)	-12.21 (17.14)	-23.80 (18.04)	-9.25 (13.17)	-26.42* (14.98)	-25.14 (17.05)	-5.77 (22.01)	-32.40* (17.51)	-26.93 (16.22)
Advantaged with High Endowment	26.15*** (9.85)	7.84 (12.41)	8.73 (8.98)	0.13 (11.68)	9.31 (8.28)	-3.52 (9.98)	-7.97 (10.07)	7.74 (15.20)	-7.67 (10.75)	-3.82 (7.74)

NOTES: This table reports OLS coefficients for the number of tokens contributed to the public account for each round of the game in each treatment. Full set of controls included in all regressions. Robust standard errors clustered at the individual in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Result #17: High endowment participants contribute a greater number of tokens in the first round of both inheritance treatments, with some persistence with parentally inherited status.

In both inheritance treatments, token contributions by both advantaged and disadvantaged high endowment participants are statistically and economically highly significant in the first round of the game. These effects range from eighteen tokens to forty-two tokens across the treatments.

In Treatment Two, the higher contributions by advantaged and disadvantaged high endowment participants are largely evident in the first three rounds of the game, ranging from eighteen tokens for advantaged participants with a high endowment to twenty-eight tokens by disadvantaged participants with a high endowment.

However, in Treatment Three, advantaged and disadvantaged high endowment participants revert to contributing the same number of tokens as disadvantaged participants with a low endowment, immediately after round one. Conversely, advantaged participants with a high endowment contribute an equal number of tokens from rounds one to five. Thereafter, in only two rounds do they contribute a lower number of tokens. The main effect reported in Table 30 which showed a lower number of tokens contributed by advantaged participants with a low endowment in Treatment Three is driven mainly by the large reduction in contributions (thirty-two and twenty-six tokens). As contributions in these later rounds are lower than earlier rounds, these large effects have a substantial effect on the pooled Treatment Three sample.

The results from this section indicate that tokens contributed in Treatment Two are significantly higher. This is expected as the shares of endowment contributions reported earlier were also larger for Treatment Two. However, the under-contribution by high endowment participants in terms of the share of their endowment does not in fact translate to under-contribution in terms of tokens. Instead, high endowment participants contribute a greater number of tokens to the public account which is indicative of altruistic behaviour. There is substantial heterogeneity with this result. Firstly, it is driven by high endowment participants in Treatment Two who, regardless of status, contribute more tokens. Conversely, Treatment Three contributions by high endowment participants do not differ, for both advantage and disadvantaged participants, from those of disadvantaged

participants with a low endowment. However, contributions are lower for advantaged participants with a low endowment.

Having discussed the differences in contributions in relation to inequality aversion and altruism, the next section analysis reciprocity and fairness.

6.7 Fair Share and Reciprocity

Conditional cooperation is commonly observed in public goods game literature (Ledyard, 1995; Hofmeyr et al., 2007; Buckley and Croson, 2006). Sugden (1984) argues that in the provision of public goods, a fair share rule will develop as a consequence of conditional cooperation as discussed in Section 6.1.2. Motivated by reciprocity, contributions to the public good approach a fair share threshold in which all members contribute an equal share of their endowment. An individual whose fair share contributions were not matched by their other group members reduces their contributions in the next round. Conversely, an individual whose group members contributed more than their fair share will adjust their contributions upwards in the next round. The analysis in this section is limited to treatment level effects as this is the key source of potential differences in the norms of fair contributions.

A deviation from group conditions variable is constructed to identify conditional cooperation (Hofmeyr et al., 2007).

$$D_{it} = \left(\frac{Contribution_{it}}{Endowment_i} \right) - \left(\frac{\sum_i^4 Contribution_{it} - Contribution_{it}}{\sum_i^4 Endowment_i - Endowment_i} \right)$$

The first term on the right-side of the equation represents the fraction of their endowment player i contributes to the public account in round t . The second term is the average fraction of endowments contributed by the other members of player i 's group j in round t . If the deviation, D , is positive, player i has contributed a greater share of their endowment to the public good than other players in the group. If the deviation is negative, player i has contributed less than the other group members. The deviation is bound between negative and positive one as a player can at most contribute everything while everyone else contributes nothing, and, at minimum, a player can contribute nothing while everyone else contributes everything.

Conditional cooperation is a dynamic process concerned with the *changes* in behaviour in time t based on the outcomes of previous round, $t - 1$. Changes in contributions are

measured as changes in the share of endowment contributed. The deviation from group contributions is lagged by one round in all regressions thus the regression sample is limited to rounds two to ten of the experiment. These regressions are reported in Table 32.

Table 32: Change in Contributions from Group Deviation

Dependent Variable	(1)	(2)
	Change in Share of Endowment Contributed	
Treatment Two	-0.00 (0.01)	-0.00 (0.01)
Treatment Three	-0.00 (0.01)	-0.00 (0.01)
Lagged Deviation from Group	-0.51*** (0.03)	-0.55*** (0.06)
Lagged Deviation from Group in T2		0.06 (0.09)
Lagged Deviation from Group in T3		0.03 (0.08)
Disadvantaged with High Endowment	-0.05** (0.02)	-0.05** (0.02)
Advantaged with Low Endowment	-0.02 (0.03)	-0.02 (0.03)
Advantaged with High Endowment	-0.03 (0.02)	-0.03 (0.02)
Chance of High Endowment: 30% or 70%	-0.00 (0.01)	-0.00 (0.02)
Chance of High Endowment: 50%	-0.00 (0.02)	-0.01 (0.02)
Observations	2,052	2,052
R-squared	0.29	0.29

NOTES: This table reports OLS coefficients for change in share of endowment contributed. All variables reported in the table are lagged by one period thus the table reports estimates for rounds two to ten of the game. Full set of controls in all regressions. Robust standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Result #18: Contributions adjust in all treatments towards maintaining a fair share.

The deviation from group contribution coefficient in Column 1 shows that there is indeed conditionally cooperative behaviour. Over contribution in one round leads to a

reduction in contributions in the next round.

In Column 2, interaction terms for treatment and group deviation are added to the regressions. All three variables are lagged by one period. As the mean deviations in all three treatments is essentially zero, the coefficients can be interpreted meaningfully at values of zero⁹⁵. Neither of the interaction effects are statistically significant ($p = 0.50$ and $p = 0.64$) which suggests that a reciprocity norm of equal contributions exists in all three treatments.

In Table 33 patterns of reciprocity per round are explored. The top panel reports the main effects and the bottom panel reports interaction terms. The treatment coefficients in the top panel without interaction terms are reported simply for completeness. In addition, the significant treatment effects in round seven for Treatment Two and round five for Treatment Three are uninformative as these are isolated effects.

There is a consistent pattern of reciprocity in the top panel of Table 33 : across all rounds, over contribution in the previous round results in reduced contributions in subsequent rounds. In the bottom panel of the table, the interaction terms are practically always insignificant. This suggest that norms of reciprocity as an equal share of endowment are present, despite potential differences in the fairness of the treatments.

The next section concludes this chapter with a discussion of the results.

⁹⁵Treatment Two mean deviation is 0.01, and 0.00 for both Treatment Two and Treatment Three. Similarly, mean deviations are practically zero across all ten rounds ranging from 0.01 to 0.00.

Table 33: Deviation from Group Contributions and Change in Share of Endowment Contributed by Period

Period	2	3	4	5	6	7	8	9	10
Dependent Variable	Change in Share of Endowment Contributed								
Main Effects									
Treatment Two	0.02 (0.04)	0.06 (0.04)	0.01 (0.04)	-0.04 (0.04)	-0.07 (0.04)	-0.09*** (0.03)	0.07 (0.05)	0.02 (0.04)	0.02 (0.04)
Treatment Three	0.01 (0.04)	0.01 (0.04)	-0.02 (0.04)	-0.09** (0.04)	-0.01 (0.04)	0.01 (0.03)	0.05 (0.04)	-0.01 (0.04)	0.02 (0.03)
Lagged Deviation from Group	-0.47*** (0.06)	-0.44*** (0.07)	-0.49*** (0.08)	-0.56*** (0.08)	-0.55*** (0.08)	-0.47*** (0.07)	-0.52*** (0.08)	-0.57*** (0.08)	-0.52*** (0.09)
Interaction Effects									
Treatment Two	0.02 (0.04)	0.06 (0.04)	0.01 (0.04)	-0.04 (0.04)	-0.07 (0.04)	-0.09*** (0.03)	0.07 (0.05)	0.02 (0.04)	0.02 (0.04)
Treatment Three	0.01 (0.04)	0.01 (0.04)	-0.03 (0.04)	-0.09** (0.04)	-0.00 (0.04)	0.01 (0.03)	0.05 (0.04)	-0.01 (0.04)	0.02 (0.03)
Lagged Deviation from Group	-0.41*** (0.08)	-0.65*** (0.12)	-0.49*** (0.12)	-0.52*** (0.12)	-0.64*** (0.16)	-0.34*** (0.11)	-0.60*** (0.14)	-0.51*** (0.15)	-0.68*** (0.16)
Lagged Deviation from Group in T2	-0.05 (0.13)	0.34** (0.15)	0.06 (0.16)	0.10 (0.17)	0.08 (0.18)	-0.24 (0.15)	0.12 (0.18)	-0.12 (0.20)	0.26 (0.21)
Lagged Deviation from Group in T3	-0.13 (0.13)	0.31** (0.15)	-0.08 (0.19)	-0.21 (0.15)	0.25 (0.21)	-0.03 (0.16)	0.11 (0.20)	-0.03 (0.20)	0.17 (0.20)

NOTES: This table reports OLS coefficients for change in share of endowment contributed by round of the game. All variables reported in the table are lagged by one period thus the table reports estimates for rounds two to ten of the game. Full set of controls in all regressions. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

6.8 Discussion

The potential negative effects of inequality and low intergenerational mobility are widely regarded as a key topic of concern. In addition, as the Great Gatsby Curve illustrates, high income inequality is associated with lower intergenerational mobility. As an unjust origin of inequality, this may negatively affect perceptions of fairness and the legitimacy of income inequality. This chapter builds on the literature on intergenerational mobility and social preferences. Using a public goods game, the experimental design can be used to further understanding of inequality aversion, fairness, and altruism in the context of intergenerational inequality. In addition, the treatment design assesses whether multigenerational persistence affects cooperation.

6.8.1 Inequality Aversion and Share of Endowment Contributed

The main results show that contributions are higher with parentally inherited status with no effects in the grandparents treatments. Overall, high endowment participants contribute a lower share of their endowment, regardless of their inherited status, relative to disadvantaged participants with a low endowment. The lower contributions by high endowment participants are substantial and economically meaningful.

In addition, there are no significant effects from the likelihood of mobility. Compared to disadvantaged participants with no chance of receiving a high endowment and advantaged participants receiving a high endowment with certainty (immobility participants), relative endowment contributions do not differ significantly both statistically and economically.

However, there is considerable treatment heterogeneity based on status and endowment. Under-contribution by advantaged and disadvantaged participants with a high endowment is evident only with randomly allocated status. With parentally inherited status (Treatment Two), participants contributed the same share of their endowment as disadvantaged participants with a low endowment. In the grandparental treatment, contributions are lower based on an advantageous status, regardless of endowment. The under-contribution by high endowment participants in Treatment One and Three indicate a lack of inequality aversion. In contrast, while not strictly indicative of inequality aversion as equal contributions are not redistributive, the result from Treatment Two suggests at least moderate concern for the distribution of endowment wealth in the group.

It is worth exploring in more detail the lower contributions by advantaged participants with a low endowment in Treatment Three. As the base case is disadvantaged participants with a lower endowment, the under-contribution by these advantaged participants whose favourable inherited status did not translate into a high endowment, suggests that downwards mobility has a negative effect on contributions.

The main results described above are consistent throughout the game. High endowment participants, irrespective of status, contribute a lower share of their endowment in every round of Treatment One. Similarly consistent across the rounds is the equal share of endowments contributed for all combinations of endowment and status. However, contributions in Treatment Three are somewhat different. While across the rounds, high endowment contributors are of the same share as disadvantaged participants with a low endowment, advantaged participants with a low endowment differ in their contributions in a “skip round” pattern. That is, under-contribution in one round is followed by equal relative contributions in the next round, which is followed again by under-contributions. This pattern is relatively consistent throughout the game. This is a particularly unusual trend. Speculatively, it appears as though these participants have expectations about future rounds which they test routinely and respond by contributing lower tokens depending on the realised outcome of these expectations. However, if this expectations based hypothesis is true, it raises clear questions of what those expectations are, and why they are tested repeatedly.

6.8.2 Altruism and Tokens Contributed

The results from the share of endowment contributed indicate no inequality averse preferences in the random status treatment, weak inequality aversion with parentally inherited advantages, and advantage based aversions to inequality with grandparental inheritance of status. However, the overall absence of inequality aversion does not preclude an association between inherited status advantage and endowment inequality. This becomes clear in the analysis of tokens contributed.

The main result from the comparison of contributions as a share of endowment versus contributions as the number of tokens, is that while (advantaged) high endowment participants under-contribute relative to their endowment, they contribute a greater number of tokens. This difference provides evidence of preferences associated with altruism. In

the treatment sub-samples, the under-contribution by high endowment participants in terms of a share of their endowment results in an equal number of tokens contributed. However, with parentally inherited status, there is a substantial increase in tokens contributed by high endowment participants. Lastly, in the grandparents' treatment, advantaged participants with a low endowment, in addition to contributing a lower share of their endowment, contribute fewer tokens.

Additional analysis across all ten rounds shows that in both inheritance treatments, contributions are significantly larger, in both economic and statistical terms, in the first round of the game. While this effect remains substantial and significant for approximately the first three rounds in the parental inheritance treatment, contributions by advantaged and disadvantaged participants revert to an equal number of tokens immediately following the first round. This initial and temporary altruistic behaviour arguably reflects differences in expectations of appropriate contributions between high and low endowment participants within each inheritance treatment, which are shared across the inheritance treatments. That is, low endowment participants in the inheritance treatments have a common expectation of the appropriate contribution norms. Similarly, high endowment participants share expectations regarding contribution norms in both inheritance treatments. However, the expectations between high and low endowment participants are incongruent. This deviation in expectations is not tolerated by high endowment participants in Treatment Three. This argument is analogous to anticipated reciprocity (Kroll et al., 2007; Cherry et al., 2005).

Lastly, despite the potential heterogeneity in fairness norms (particularly at the onset of the game) conditional cooperation is evident in all treatments with no treatment related differences. In all cases, the contributive norm appears to be an equal share of the endowment. Note however that this is a high level treatment result.

In summary, the results show that cooperation is higher with parentally inherited status but not with status inherited from grandparents. In addition, while inequality aversion is at best weak, there is considerable altruism with parentally inherited status. Grandparental inheritance shows no evidence of altruism although there is evidence of downwards mobility reducing relative and absolute contributions.

Chapter 7 concludes this thesis with a discussion of the results, limitations, avenues for further research, and policy recommendations.

7 Blood, Sweat, and Privilege

“If I had been a person of faith, I could have taken solace in the belief that there is indeed a life after death, a life in which Rohith would certainly travel to the stars, and find a world unlike this one – a world in which birth is not a fatal accident for some people, [and] where life is not a curse...” - Harsh Mander⁹⁶.

The often binding nature of accidents of birth is of considerable policy relevance and social concern. As an unjust source of inequality and class divisions, it may exacerbate the negative consequences of socio-economic immobility and undermine the legitimacy of institutions. While this has been a long-standing topic of concern, rising global inequality makes this a particularly salient concern (United Nations Development Programme, 2020*b*). Despite a large literature relating intergenerational mobility, there are several limitations with cross-country measures of intergenerational mobility and inequality of opportunity. The consequences of accidents of birth are context specific and often require a localised focus for meaningful analysis. In light of this, this thesis adds to the literature on accidents of birth in the South African context - a country with high inequality, social and racial divisions, as well as low intergenerational mobility.

7.1 Racialised Trust Across the Generations

7.1.1 Contribution and Findings

A large literature documents the existence of racial and socio-economic class based discrimination. The consequences of unfavourable discrimination can perpetuate inequality based solely on circumstances of birth. Two areas of focus can be observed in the existing literature investigating this topic. The first is understanding the origins of discriminatory attitudes as ingroup favouritism. The second has been to understand differences in attitudes associated with socio-economic class.

The evidence suggests that group-based attitudes form early in life and are often correlated between parents and children. However, this literature is limited in several methodological ways, and in understanding intergenerational correlations after childhood

⁹⁶In “Fatal Accidents of Birth: Stories of Suffering, Oppression and Resistance”

or adolescence. Chapter 3 added to this literature by estimating intergenerational correlations in racial trust attitudes for a sample of “adult children” from adolescence to middle age and above, examining the persistence of these correlations even when parents and children are no longer residents of the same household.

Three main results are observed. Firstly, while there are strong intergenerational correlations in racial trust attitudes towards one’s own race and other race groups, these are almost entirely absent amongst children who do not live with their mothers. However, correlations are found, regardless of residence status, for individuals who do not trust their own race or other races at all. This finding is particularly noteworthy in that it suggests persistent transmission of attitudes of very low trust. Secondly, unlike racialised trust, trust in others the individual knows is consistently correlated across generations. This suggests that there is a context specific domain in which trust is transmitted. Lastly, estimates of ingroup favouritism are presented and investigated for intergenerational correlations. In the sample used for the analysis, there is substantially lower outgroup trust compared to ingroup trust. In terms of intergenerational correlations, the results are consistent with those of race based trust and find correlations only between resident mothers and children.

There are at least three ways of explaining this result. The first is that there is considerable bias in intergenerational transmission when mothers and children live in the same household. In this case, the differences in transmission by resident and non-resident mothers may not reflect persistence, and instead simply may indicate a substantial reduction in the upward bias of a shared environment. Secondly, the persistent transmission of trust in others the individual knows may reflect either transmission of relationship specific trust attitudes, or reflect some overlap in the social network of mothers and children. Thirdly, with the pervasive racialised and income related spatial segregation in South Africa, it may be that mothers and children who are not co-resident tend to live in areas with drastically different community characteristics (reflecting migration from rural areas to informal or township urban areas, as one example).

7.1.2 Limitations and Avenues for Further Research

The analysis presented in this chapter focuses mainly on mothers and children, with some analysis of paternal transmission which yielded similar results. The low rates of

paternal residence limit the range of possible analysis across various child and paternal characteristics, as the samples of households with a father present differ markedly from households with no fathers. Examining the differences in these samples is a possibility for future research, but did not form part of the scope of this thesis.

As is widely recognised, evidence of intergenerational correlations does not indicate causality in transmission from parents to children, although the consistency of these results and their logical patterns in sub-sample analysis do provide policy relevant results, no matter their specific statistical interpretation. The analysis is unfortunately restricted to a cross-section of data, as data on racialised trust is not available in previous waves of the NIDS. The panel nature of the NIDS provides a wide range of possibilities for further research, particularly in the event of a sixth wave of data being collected. These include assessing the stability of an individual's racialised trust attitudes, as well as the use of methodological techniques to account for individual level time-invariant confounds. Lastly, the multigenerational and extended family structure of South African households provides an appealing opportunity to explore transmission across a variety of familial relationships and generations. For brevity, this analysis was not conducted in this thesis.

7.2 Fairness, Inheritance, and Cooperation

7.2.1 Contribution and Findings

The effects of socio-economics status on trust attitudes are well documented. Much of the literature finds lower trust and trustworthiness amongst low status individuals. Individuals with a high group status, socio-economically and otherwise, are trusted more than individuals with low status. A relatively smaller literature has explored the effects of intergenerationally inherited status. An individual's current status is in part a consequence of the individual's own decisions and factors. On the other hand, intergenerationally inherited status is beyond the individual's control and purely an accident of birth. Given the broad consensus that accidents of birth are unfair, and that fairness matters for social and individual welfare, it is important to understand how this distinct form of socio-economic status affects trust attitudes. This was the focus of this chapter, with three main areas of interest. The first is the consequences on overall trust and trustworthiness in treatments with unfair inequality. The second is the effects of multi-

generational persistence in inherited status, and the third is inherited status-based effects on trust related behaviour.

Using a trust game with exogenously determined status based on real-world intergenerational socio-economic status shows that even with the absence of endowment inequality, there are favourable transfers and reciprocation towards low status individuals. While there are only weak overall treatment effects across randomly allocated status or inherited status, all differences in status-based behaviour occurred in the inheritance treatments. Regardless of status, proposers (determined by inheritance) consistently send less to high status responders. In low status responders (as determined by grandparent status) return less to high status proposers.

In addition, the effects differ across the inheritance treatments. Compared to low status proposers who are matched with a low status responder, transfers to high status responders by low status proposers are significantly lower in both inheritance treatments and of a comparable magnitude. Low status responders on the other hand, also compared to a pair of two low status participants, return a lower share of their endowment to low status proposers only in the grandparents treatment.

The results are quite remarkable in that despite no endowment inequality in the game, transfers are almost always in favour of low status participants - although only in the case of inherited status. Similar effects are not seen under random allocation of status. In addition, this result conflicts with much of the literature which finds higher trust and trustworthiness towards and by high status individuals. This suggests that individuals respond to the unfairness of inherited status, even in the absence of wealth inequality.

7.3 Inequality and Intergenerational Mobility

7.3.1 Contribution and Findings

Several studies have examined the effects of inequality on social attitudes, as well as intergenerational mobility effects on redistributive preferences and trust attitudes. However, there is a dearth of literature on the effects of inequality arising from intergenerational (im)mobility. Given the widely evidenced negative effects of inequality and the commonly recognised unfairness of accidents of birth, this is an important gap in the literature. In this thesis, a public goods game of a specific design is used to bridge this gap in the

literature, based on the same treatment structure as the trust game in Chapter 6.

The design of the game uses a lottery mechanism to determine endowments for the participants. The lottery favours advantaged (high status) participants in the likelihood of receiving a high endowment. This creates variation in the material benefits of inherited socio-economic status, as well as introducing endowment inequality into the analysis. This design attempts to mimic real world conditions of inequality being highly determinant of future status, due to the presence of immobility, yet not completely determinant.

The results show higher rates of cooperation with parentally inherited status, however, there are no effects for grandparent status inheritance. There is substantial under-contribution by high endowment participants with randomly allocated status, as well as that inherited from grandparents. However, with parentally inherited status, contributions are of an equal share of endowment regardless of status or endowment. This suggests weak evidence of inequality aversion with parentally inherited status. There is however evidence of altruism in the parental inheritance treatment, as high endowment individuals with parentally inherited status contribute a greater number of tokens.

Another noteworthy finding is lower contributions, as a share of endowment and of absolute tokens, by high status participants with a low endowment in the grandparental inheritance treatment. In none of the other treatments is a similar effect observed. The fact that these participants under-contribute relative to low status participants with a low endowment suggests that the effect is a consequence of downwards mobility.

7.4 Experiment Limitations and Avenues for Further Research

The experimental design has four main potential limitations. The first is that the grandparents treatment is a skip generation design. It may be the case that multigenerational transmission is considered binding if it carries over from grandparents to parents and then to grandchild, as opposed to the skip generation design of the experiments. However, given the high prevalence of multigenerational households in South Africa, skip generation households are a useful comparison group. In addition, treatment comparisons between grandparents and parents, without the direct three generation link, provides for a clearer comparison. There is scope for future research which directly links the transmission of status from multiple generations to each of the subsequent generations.

Secondly, while student populations are common in experimental samples, with real-

world orientated characteristics as fundamental aspects of the design, it is possible that the behaviour is particularly associated with their relatively higher levels of education. This is especially true in a university environment which foregrounds issues of redress and social justice⁹⁷. Participants in this sample may be particularly sensitive to real-world injustices. In addition, the relatively higher levels of educational attainment in the sample may affect participants' perceptions of their own future mobility and that of their children. It may be interesting for further research to explore how expectations of future mobility affect the experimental results.

Thirdly, further research may benefit from more homogeneous groups in the public goods game. The experimental design possibly resulted in group specific unobservable dynamics related to subjective evaluations of the characteristics of the group. Although there are no systematic differences in group characteristics by treatments, individual behaviour may be associated with the distributional aspects of their group.

Lastly, a concern is that the status orientated effects may represent the individual's current socio-economic conditions and not intergenerational status. However, assessment of the individual's current socio-economic conditions finds no effect of various objective measures of socio-economic status, conditional on reported income steps for parents and grandparents. As all regression analysis includes controls for reported income steps, in addition to race variables (which are highly significant determinants of socio-economic status in South Africa), and indicators of means-tested financial aid receipt, makes it unlikely that the observed status effects capture the individual's current socio-economic status.

The results from the trust game raise several questions on the motives driving the behaviour. Further research avenues could include games more directly situated to test for motivations such as dictator games, ultimatum games, or the various other experimental alternatives. The observations from the trust game are an important first step in understanding these effects but avenues for further research into these behavioural motives remain.

⁹⁷The University of Cape Town states its transformation purposes as to "Unleash human potential to create a fair and just society".

7.5 Policy Implications

Firstly, the apparent domain specific transmission of trust raises important policy questions. Policies targeted at improving trust are often broad and refer to trust as an overarching homogeneous concept. While there is evidence of some common underlying threads in trust attitudes across contexts, trust is clearly not a homogeneous concept. In addition, as the transmission of trust appears to persist at the lowest levels, indiscriminate policies may be ineffective in promoting trust attitudes. It may be useful firstly to investigate why differences in the transmission of racial trust exist, in particular whether the racial component is deliberate or incidental (Smith, 2010). Some of these policies could aim specifically to promote (positive) interracial contact in schooling or educational environments such as random roommate allocation in residential universities (Corno et al., 2019), and addressing (perceived) discrimination through specific and clearly defined anti-discrimination policies and effective enforcement mechanisms for transgressions (Kislev, 2018).

Similarly, the results show that intergenerational persistence has effects, independent of material inequality. In a country like South Africa in which socio-economic status is transmitted alongside inequality, differentiated policies interventions may be necessary. Policies designed purely at reducing inherited inequality may not be effective for addressing the underlying class divisions which characterise South African society.

Lastly, the weak evidence of inequality aversion yet substantial altruism is important for policies attempting to abate high inequality. The relatively large absolute monetary burden of progressively proportional taxation may be unpopular and face resistance. It may be necessary, in conjunction with progressive proportional taxation, to develop stronger policies that leverage altruistic concerns such as voluntary donation mechanisms to address persistent inequality.

7.6 Conclusion

Inequality remains one of the greatest challenges of the 21st century. Despite substantial gains in personal outcomes such as health, education, and general well-being, many individuals are still left behind. Suffering and abject poverty still exist, even in countries with high average incomes. Statistics showing global reductions in poverty mask the continued

presence of unjust circumstances of birth, particularly in countries with high inequality. These accidents of birth relate specifically to individuals born of specific races, genders, or different levels of parental wealth. Given low mobility, the effects of an unfortunate birth may not fade away without targeted effort. A key policy goal should be in designing institutions which support both general economic prosperity, and just opportunities for those born into circumstances beyond their control.

How we feel about these injustices of birth matters. Using data from South Africa, this thesis has shown that the will to effect redress is present. Evidence of altruism is found, in particular when status is recognised as conferred by one's parents. However as the trust game shows, reciprocity and the desire for fairness is important to individuals, particularly when status is allocated in a manner perceived as unfair. Growing populist movements around the world reflect this desire, and show the urgent need for policies which address the effects of inequality.

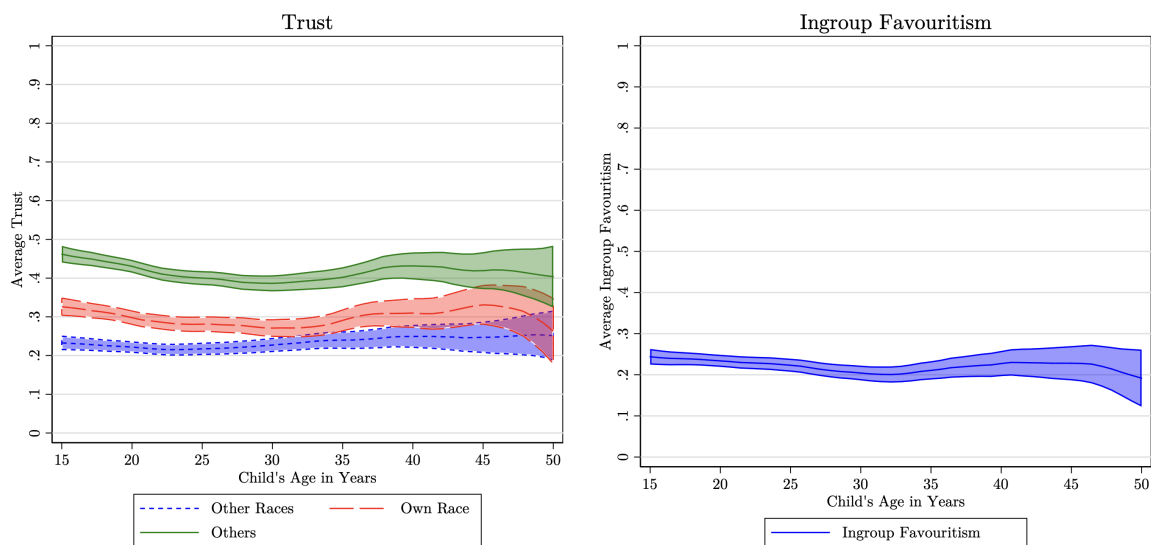
Altruism and reciprocity are known to be correlated with trust in others. South Africa is characterised both by low trust, especially towards other races, and this thesis shows that attitudes of trust are highly persistent across generations, with high intergenerational mistrust enduring even across different households. Without directed policies to improve trust, the desire for the necessary reparations to remove inequality and improve mobility will not manifest in our post-Apartheid society. This is not an easy task. As Atkinson said: "Today's ex-post outcomes shape tomorrow's ex-ante playing field". But in the face of human creativity and will, no battle is unwinnable.

Appendices

Appendix A Intergenerational Transmission of Trust Attitudes

A.1 Age, Trust, and Ingroup Favouritism

Figure 11: Racial Trust and Ingroup Favouritism by Child's Age



NOTES: This figure shows non-parametric estimates of the relationship between child's age in years, average trust, and ingroup favouritism. For readability, the sample is limited to children younger than fifty years of age which represents ninety-eight percent of children. Shaded region reflects 95% confidence intervals.

Table A.34: Intergenerational Transmission: Full Trusts Own Race Regressions

Dependent Variable	Trust Own Race		
Mother Trusts Own Race	0.01 (0.02)	Perceived Current Income Step	0.02*** (0.01)
Trusting HH Members	0.11*** (0.01)	Perceived Income Position	-0.00 (0.01)
Co-Resident Mother Trusts Own Race	0.20*** (0.03)	Satisfied with Life	0.03*** (0.01)
Co-Resident Mother	-0.05** (0.02)	Religious	0.07*** (0.02)
Co-Resident Father	0.01 (0.02)	Mother Satisfied with Life	-0.02 (0.01)
Present Father	-0.00 (0.01)	Mother Religious	-0.02 (0.02)
Household Head	0.02 (0.02)	Mother Perceived Current Income Step	-0.01** (0.01)
Coloured	0.03 (0.02)	Mother Perceived Income Position	0.00 (0.01)
Indian/Asian	0.12** (0.05)	Interviewer Coloured	0.06** (0.03)
White	0.18*** (0.05)	Interviewer White	-0.01 (0.06)
Female	0.01 (0.01)	Interviewer Female	-0.02 (0.01)
Log Age Years	-0.04 (0.03)	Interviewer Years of Experience	0.00 (0.00)
Years of Education	-0.00 (0.00)	Log Household Income	-0.01 (0.01)
Married	0.00 (0.02)	Household Size	-0.02*** (0.00)
Employed	0.00 (0.01)	Neighbourhood Disorder	0.00 (0.01)
Height (cm)	0.00 (0.00)	Access to Basic Services	0.00 (0.01)
Mother Log Age Years	0.03 (0.04)	Rural Area	0.05*** (0.02)
Mother Years of Education	0.00 (0.00)		
Mother Married	0.01 (0.01)		
Mother Employed	0.01 (0.01)		
Mother Height (cm)	-0.00 (0.00)		
R-squared	0.14		

NOTES: This table reports Linear Probability Model estimates for trust attitudes for the full sample. The table represents one regression. "Trusting HH Members" is the number of household members who trust their own race. The full set of controls are reported in the table. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.35: Intergenerational Transmission: Full Trusts Other Races Regressions

Dependent Variable	Trusts Other Races		
Mother Trusts Other Race	0.05*	Perceived Current Income Step	0.01
	(0.03)		(0.01)
Trusting HH Members	0.11***	Perceived Income Position	-0.01
	(0.01)		(0.01)
Co-Resident Mother Trusts Other Races	0.17***	Satisfied with Life	0.01
	(0.03)		(0.01)
Co-Resident Mother	-0.05***	Religious	0.06***
	(0.02)		(0.01)
Co-Resident Father	0.01	Mother Satisfied with Life	-0.01
	(0.02)		(0.01)
Present Father	0.02	Mother Religious	0.00
	(0.01)		(0.02)
Household Head	0.01	Mother Perceived Current Income Step	-0.01*
	(0.02)		(0.01)
Coloured	0.08***	Mother Perceived Income Position	0.00
	(0.02)		(0.01)
Indian/Asian	0.12**	Interviewer Coloured	-0.03
	(0.05)		(0.03)
White	0.23***	Interviewer White	-0.05
	(0.05)		(0.06)
Female	0.00	Interviewer Female	-0.02*
	(0.01)		(0.01)
Log Age Years	0.00	Interviewer Years of Experience	0.00
	(0.02)		(0.00)
Years of Education	0.00	Log Household Income	-0.01
	(0.00)		(0.01)
Married	-0.00	Household Size	-0.01***
	(0.02)		(0.00)
Employed	0.02**	Neighbourhood Disorder	-0.00
	(0.01)		(0.00)
Height (cm)	0.00	Access to Basic Services	0.01
	(0.00)		(0.01)
Mother Log Age Years	-0.03	Rural Area	0.03**
	(0.04)		(0.01)
Mother Years of Education	0.00		
	(0.00)		
Mother Married	-0.02		
	(0.01)		
Mother Employed	0.00		
	(0.01)		
Mother Height (cm)	-0.00		
	(0.00)		
R-squared	0.16		

NOTES: This table reports Linear Probability Model estimates for trust attitudes for the full sample. The table represents one regression. "Trusting HH Members" is the number of household members who trust other races. The full set of controls are reported in the table. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.36: Intergenerational Transmission: Full Trusts Others Regressions

Dependent Variable	Trusts Others		
Mother Trusts Others	0.07*** (0.02)	Perceived Current Income Step	0.02** (0.01)
Trusting HH Members	0.10*** (0.01)	Perceived Income Position	-0.02** (0.01)
Co-Resident Mother Trusts Others	0.14*** (0.03)	Satisfied with Life	0.07*** (0.01)
Co-Resident Mother	-0.02 (0.02)	Religious	0.08*** (0.02)
Co-Resident Father	0.00 (0.02)	Mother Satisfied with Life	-0.02 (0.01)
Present Father	0.01 (0.02)	Mother Religious	-0.01 (0.03)
Household Head	0.01 (0.02)	Mother Perceived Current Income Step	-0.00 (0.01)
Coloured	0.03 (0.02)	Mother Perceived Income Position	0.00 (0.01)
Indian/Asian	0.16*** (0.05)	Interviewer Coloured	0.04 (0.03)
White	0.19*** (0.05)	Interviewer White	-0.00 (0.06)
Female	-0.01 (0.02)	Interviewer Female	-0.04*** (0.01)
Log Age Years	-0.03 (0.03)	Interviewer Years of Experience	0.01** (0.00)
Years of Education	0.00 (0.00)	Log Household Income	-0.02** (0.01)
Married	0.03 (0.02)	Household Size	-0.02*** (0.00)
Employed	-0.02 (0.01)	Neighbourhood Disorder	-0.00 (0.01)
Height (cm)	-0.00 (0.00)	Access to Basic Services	-0.02* (0.01)
Mother Log Age Years	0.02 (0.04)	Rural Area	0.03** (0.02)
Mother Years of Education	0.00** (0.00)		
Mother Married	-0.00 (0.01)		
Mother Employed	-0.01 (0.01)		
Mother Height (cm)	0.00 (0.00)		
R-squared			0.16

NOTES: This table reports Linear Probability Model estimates for trust attitudes for the full sample. The table represents one regression. "Trusting HH Members" is the number of household members who trust others. The full set of controls are reported in the 170. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.37: Intergenerational Transmission: Ordered Logit Odds Ratios Robustness Check

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Child's Ordinal Own Race Trust		Child's Ordinal Trust in Other Races		Child's Ordinal Trust in Others	
Sample	Resident Mother	Non-Resident Mother	Resident Mother	Non-Resident Mother	Resident Mother	Non-Resident Mother
Mother's Ordinal Own Race Trust	2.21*** (0.10)	1.12* (0.07)				
Mother's Ordinal Trust in Other Races			2.25*** (0.10)	1.18*** (0.07)		
Mother's Ordinal Trust in Others					1.99*** (0.09)	1.25*** (0.07)
Observations	5,232	1,686	5,225	1,682	5,240	1,687

NOTE: This table reports odds ratios from ordered logit regressions of child's ordinal trust on mother's ordinal trust. In all case, the ordering ranges from 1 to 4 with higher values indicating increasing trust (becoming more trusting). Values are ordered as follows: 1 is "not at all"; 2 is "just a little"; 3 is "I trust them somewhat"; and 4 is "I trust them a lot". Each column represents a separate regression with maternal residence sub-samples for each of the trust questions. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.38: Intergenerational Transmission: Probit Marginal Effects Robustness Check

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trusts Own Race			Trusts Other Races			Trusts Others		
Sample	Full Sample	Resident	Non-Resident	Full Sample	Resident	Non-Resident	Full Sample	Resident	Non-Resident
Mother Trusts Own Race	0.16*** (0.01)	0.24*** (0.02)	-0.01 (0.04)						
Mother Trusts Other Race				0.18*** (0.01)	0.23*** (0.02)	0.03 (0.04)			
Mother Trusts Others							0.19*** (0.01)	0.23*** (0.02)	0.07* (0.04)
Observations	6,918	2,799	866	6,907	2,794	860	6,927	2,803	870

NOTES: This table reports Probit Marginal Effects robustness check for the main results. The table includes the full sample and sub-samples by maternal residence status. The full set of controls are included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.39: Intergenerational Transmission of Ingroup Favouritism: Ordered Logit
Odds Ratios Robustness Check

Dependent Variable	(1) Child's Ordinal Ingroup Favouritism	(2) Resident Mother	(3) Non-Resident Mother
Sample	All		
Mother's Ordinal Ingroup Favouritism	1.36*** (0.07)	1.47*** (0.09)	1.04 (0.09)
Observations	6,901	5,219	1,682

NOTES: This table reports odds ratios from an ordered logit regression. The dependent variable is the child's ingroup favouritism which is coded as the child's ordinal trust in their own race less their ordinal trust in other race groups. "Mother's Ordinal Ingroup Favouritism" is coded in the same way as child's ingroup favouritism. For both child's and mother's ingroup favouritism, higher values indicate an increase in ingroup favouritism. Sample restrictions are as follows: Column (1) is the full sample, Column (2) is limited to co-resident mother-child pairs, and Column (3) is limited to non-coresident mother-child pairs. Full set of controls are included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.40: Intergenerational Transmission: Children with No Fathers in the Data

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Trusts Own Race			Trusts Other Races			Trusts Others		
Sample	All	Resident	Non-Resident	All	Resident	Non-Resident	All	Resident	Non-Resident
Mother Trusts Own Race	0.17*** (0.02)	0.24*** (0.02)	-0.01 (0.03)						
Mother Trusts Other Race				0.19*** (0.02)	0.24*** (0.02)	0.03 (0.04)			
Mother Trusts Others							0.17*** (0.02)	0.22*** (0.02)	0.06* (0.03)
Constant	0.11 (0.28)	0.24 (0.32)	-0.65 (0.65)	-0.04 (0.25)	0.08 (0.27)	-0.39 (0.62)	0.35 (0.31)	0.60* (0.35)	-0.26 (0.68)
Observations	3,669	2,799	870	3,660	2,794	866	3,673	2,803	870
R-squared	0.15	0.19	0.12	0.16	0.20	0.10	0.17	0.19	0.15

NOTES: This table reports Linear Probability Model estimates for trust attitudes for children without fathers in the data. Full set of controls included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.41: Intergenerational Transmission: Mothers and Fathers

Dependent Variable	Panel A Trusts Own Race
Mother Trusts Own Race	0.12*** (0.02)
Father Trusts Own Race	0.11*** (0.02)
Observations	1,981
R-squared	0.21
Dependent Variable	Panel B Trusts Other Race
Mother Trusts Other Race	0.14*** (0.02)
Father Trusts Other Race	0.08*** (0.02)
Observations	1,973
R-squared	0.25
Dependent Variable	Panel C Trusts Others
Mother Trusts Others	0.13*** (0.02)
Father Trusts Others	0.12*** (0.02)
Observations	1,983
R-squared	0.22
<p>NOTES: This table reports Linear Probability Model estimates for trust attitudes for all children with fathers and mothers in the data. The full set of controls are included in all regressions. Robust standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1</p>	

Appendix B Experiment Instructions and Visuals

B.1 Experiment Instructions for Treatment Three

DECISION-MAKING TASK

1

RULES

- **NO** talking at all is allowed for entire session
- Switch cellphones **OFF** and put away in bag
- **NO** materials are allowed on your desk
- Raise your hand if you have any questions. **DO NOT** ask them out loud to the room

2

CONSENT

- Your participation in today's session is completely voluntary.
- You may leave whenever you want to if you wish to no longer participate.
- All your information will be anonymised and you will not be identified in any way in all presentations of this research
- Signing the consent form means you understand and agree that you are participating completely voluntarily.

3

CONSENT

- Please sign the consent form and then raise your hands and I will come collect the form from you.

4

SESSION OUTLINE AND DESCRIPTION

- This session consists of 3 tasks followed by a questionnaire.
- Each task will be described to you separately as the session progresses and after the other tasks have been completed.
- In all 3 tasks, you will be asked to make decisions which will earn you **REAL MONEY**.
- You can spend the money you earn in this session on whatever you like.
- Your earnings from this task are taken from a research grant specifically designed for this research.

5

SESSION OUTLINE AND DESCRIPTION

- During the session, you will be making anonymous decisions using what we will call tokens.
- Your decisions from the tasks will be kept confidentially and no one will be able to identify what decisions you have made.

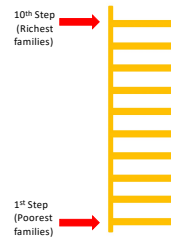
6

SESSION OUTLINE AND DESCRIPTION

- In making your decisions you will use tokens which are associated with a rand value.
- At the end of the session, your total earnings in tokens will be converted into rands.
- Please do not worry about the conversion, this will be done for you at the end of the session.
- All you need to remember is that **more tokens equals more money**.

7

DETERMINING "TYPES"



Based on your responses to the question:

Please imagine a 10 step income ladder where the top step (10th step) represents the richest families in South Africa and the bottom step (1st step) represents the poorest. On which step of the 10 step income ladder would you say the head of your family was on when they were 15 years old?

8

DETERMINING “TYPES”

- We collected the responses to the income ladder question from all participants in this study.
- Then we arranged all the responses from the lowest step to the highest step.
- We then selected the income step that was at the middle of all the steps participants said the head of their family was on when they were growing up. This is the median.
- All participants above the median are “Above Median Participants”
- All participants below the median are “Below Median Participants”

9

DETERMINING “TYPES”

- We will use your grandparents to represent the head of your family's income step for the duration of this task.
- We use grandparents because;
 - When the head of your family was growing up, their parents'/guardians' income step represents their family's income step.
 - That is, when the head of your family was 15 years old their family's income step corresponds with their parents'/guardians' income step.
- We assume that the head of your family's parents are your grandparents

10

DETERMINING “TYPES”

- If you reported the head of your family was relatively **poorer** than other participants in this study when they were growing up, you will be classified as a “**Below Median Participant**”.
- That is, **your grandparents** were relatively **poorer**.
- If you reported the head of your family was relatively **richer** than other participants in this study when they were growing up, you will be an “**Above Median Participant**”.
- That is, **your grandparents** were relatively **richer**.

11

TASK 1

12

TASK 1

- In this task, everyone here today will be allocated to either Person A or Person B.
- Both Person A and Person B are given 50 tokens to begin with.
- These 50 tokens are called your endowment for this task.

13

TASK 1

- In a 2 step process, Person A and Person B must decide how many tokens to transfer to each other.
- In the first step, **Person A** must decide how many of their 50 token endowment to transfer to Person B.
- In the second step, **Person B** must decide how many tokens to transfer to Person A.

14

TASK 1: STEP 1

- In this step, **Person A** must decide how many tokens to transfer to Person B.
- Person A can transfer as many tokens as they want in **multiples of 5** tokens ranging from 0 tokens to 50 tokens.
- That is: 0 tokens, 5 tokens, 10 tokens, 15 tokens, 20 tokens, 25 tokens, 30 tokens, 35 tokens, 40 tokens, 45 tokens, 50 tokens.

15

TASK 1: STEP 1

- After deciding how many tokens to transfer to Person B, Person A will have 50 tokens minus the number of tokens they transferred to Person B.
- All the tokens transferred by Person A to Person B are **multiplied by 3** and then added to Person B's endowment of 50 tokens.
- This ends the first step.

16

TASK 1: STEP 2

- In the second step **Person B** must decide how many tokens to transfer to Person A.
- Person B can transfer as many tokens as they want to Person A
- The minimum tokens Person B can transfer is 0 tokens.
- The maximum tokens Person B can transfer is Person B's endowment **plus** the total tokens received by Person B from Person A's transfer.
- That is, Person B can transfer a maximum of 50 tokens plus the tripled tokens transferred by Person A.
- Person B can transfer any number of tokens in **multiples of 1**

17

POSSIBLE TRANSFER TO PERSON B

NUMBER OF TOKENS YOU WANT TO KEEP	NUMBER OF TOKENS TRANSFERRED TO PERSON B	TRIPLED NUMBER OF TOKENS TRANSFERRED TO PERSON B	PERSON B'S TOKENS
50	0	0	50 + 0 = 50
45	5	15	50 + 15 = 65
40	10	30	50 + 30 = 80
35	15	45	50 + 45 = 95
30	20	60	50 + 60 = 110
25	25	75	50 + 75 = 125
20	30	90	50 + 90 = 140
15	35	105	50 + 105 = 155
10	40	120	50 + 120 = 170
5	45	135	50 + 135 = 185
0	50	150	50 + 150 = 200

18

POSSIBLE TRANSFER TO PERSON A

- Person B can transfer tokens to Person A even if they do not receive a transfer from Person A
- Maximum tokens transferrable to Person A are the tripled number of tokens transferred by Person A plus Person B's endowment.
- Person B must make a decision on how many tokens to transfer to Person A for all possible transfers by Person A.
- That is, how many tokens would you transfer to Person A for all possible transfers from Person A.

19

EXAMPLE: STEP 1

- Step 1:
- Person A had 50 tokens.
- Person A kept 40 tokens and transferred 10 tokens to Person B
- 50 tokens – 10 tokens = 40 tokens
- Person B received 10 tokens multiplied by 3
- 10 tokens x 3 tokens = 30 tokens
- Tokens received by Person B are added to their 50 token endowment.
- 30 tokens + 50 tokens = 80 tokens

20

EXAMPLE: STEP 2

- Person B transferred 30 tokens to Person A
- Person B left with 50 tokens
- 80 tokens – 30 tokens = 50 tokens.
- Person A received 30 tokens from Person B which are added to the tokens Person A did not transfer to Person B
- 40 tokens + 30 tokens = 70 tokens.

21

EXAMPLE: EARNINGS

- Both Person A and Person B began with 50 tokens.
- At the end of the task:
 - Person A has a final earnings of 70 tokens.
 - Person B has a final earning of 50 tokens.

22

EXAMPLE

STEP 1: PERSON A

KEPT BY PERSON A	TRANSFERED TO PERSON B	TRIPLED TRANSFER TO PERSON B	PERSON B'S TOKENS
40	10	30	50 + 30 = 80

23

EXAMPLE

STEP 2: PERSON B

TRANSFER TO PERSON B	KEPT BY PERSON A	TRIPLED TRANSFER TO PERSON B	MAX TRANSFER TO PERSON A	TRANSFER TO PERSON A
10	40	30	80	30

24

PERSON A				
INITIAL ENDOWMENT	TOKENS KEPT BY PERSON A	TOKENS TRANSFERED TO PERSON B	TOKENS RECEIVED FROM PERSON B	FINAL EARNINGS
50	40	10	30	70

PERSON B				
INITIAL ENDOWMENT	TRIPLED TOKENS RECEIVED	MAXIMUM TRANSFER TO PERSON A	TRANSFER TO PERSON A	FINAL EARNINGS
50	30	80	30	50

25

TOKENS YOU WANT TO KEEP	TOKENS TRANSFERED TO PERSON B	TRIPLED TRANSFER TO PERSON B
50	0	0
45	5	15
40	10	30
35	15	45
30	20	60
25	25	75
20	30	90
15	35	105
10	40	120
5	45	135
0	50	150

26

PERSON B

- **Person A** makes **only one** decision of how many tokens to transfer to Person B.
- **Person B** will enter the number of tokens they would transfer to Person A **for all 11 possible** transfers from Person A.
- Person B will decide how many tokens to transfer to Person A if Person A transferred that number of tokens.
- E.G. How many tokens to transfer if Person A transfers 0 tokens, 5 tokens, 10 tokens, 15 tokens, 20 tokens, 25 tokens, 30 tokens, 35 tokens, 40 tokens, 45 tokens, and 50 tokens.

27

PERSON B

- **Only one** of Person B's 11 choices will be used for payment.
- The choice which is used for payment will depend on the actual choice made by Person A in this session.
- Although only one choice from Person B will be used for payment, you do not know which one is used until all participants have made their decisions.
- It's important to make each choice carefully because any of your choices could be used for payment.

28

NUMBER OF TOKENS TRANSFERRED TO YOU	NUMBER OF TOKENS KEPT BY PERSON A	TRIPLED NUMBER OF TOKENS TRANSFERRED TO YOU	TOTAL NUMBER OF TRANSFERABLE TOKENS TO PERSON A
0	50	0	50
5	45	15	65
10	40	30	80
15	35	45	95
20	30	60	110
25	25	75	125
30	20	90	140
35	15	105	155
40	10	120	170
45	5	135	185
50	0	150	200

29

SUMMARY

- Person A and Person B have the same endowment: 50 tokens.
- In Step 1, Person A must decide how many tokens, in multiples of 5, to transfer to Person B.
- Tokens transferred by Person A are subtracted from Person A's endowment.
- Transfers to Person B by Person A are multiplied by 3 and added to Person B's endowment.

30

SUMMARY

- Person B then decides how many tokens to transfer to Person A.
- Tokens not transferred to Person A by Person B are Person B's final earnings.
- Tokens transferred to Person A are added to the tokens Person A did not transfer. This is Person A's final earnings.

31

TASK 1

- The computer will randomly determine if you are Person A or Person B.
- The computer will randomly determine if you are to transfer to an Above Median Participant or a Below Median Participant.

32

TASK 1

- Some Person A's will be making transfers to participants who reported their grandparents to be relatively **richer (Above Median)**.
- Some Person A's will be making transfers to participants who reported their grandparents to be relatively **poorer (Below Median)**.

33

TASK 1

- Some Person B's will be making transfers to participants who reported their grandparents to be relatively **richer (Above Median)**.
- Some Person B's will be making transfers to participants who reported their grandparents to be relatively **poorer (Below Median)**.

34

TASK 1

- No one will know the decisions made by other participants until all decisions have been made.
- That is, you will make your decisions without any knowledge of the decisions made by other participants.

35

TASK 1

If you have a question, please raise your hand and I will come to you.

Does anyone have any questions?

36

YOU MAY BEGIN TASK 1

37

TASK 2

38

TASK 2

- Task 2 is identical to Task 1.
- The decisions Person A and Person B must make are the same as Task 1.
- The way in which earnings are determined for Person A and Person B is also the same as in Task 1.
- Each person will receive an initial endowment of 50 tokens just like they did in Task 1.
- You will be Person A in this task if you were Person A in Task 1.
- You will be Person B in this task if you were Person B in Task 1.

39

TASK 2

- However, if you made a transfer to a participant who reported their grandparents' to be **relatively poorer (Below Median Participant)** in Task 1, you will make a transfer to a participant who reported their grandparents' to be **relatively richer (Above Median Participant)** in this task.
- If you made a transfer to a participant who reported their grandparents' to be **relatively richer (Above Median Participant)** in Task 1, you will make a transfer to a participant who reported their grandparents' to be **relatively poorer (Below Median Participant)** in this task.

40

TASK 2

- The only difference between Task 1 and Task 2 is the relative income step of the participant's grandparents who you are transferring to.

41

TASK 2

- No one will know the decisions made by other participants until all decisions have been made.
- That is, you will make your decisions without any knowledge of the decisions made by other participants.

42

TASK 2

If you have a question, please raise your hand and I will come to you.

Does anyone have any questions?

43

YOU MAY BEGIN TASK 2

44

We have now completed Task 2. You will be informed of your earnings from Task 1 and Task 2 at the end of the next task (Task 3).

45

TASK 3

46

TASK 3

- In this task, we will again use your responses to the question:
 - Please imagine a 10 step income ladder where the top step (10th step) represents the richest families in South Africa and the bottom step (1st step) represents the poorest. On which step of the 10 step income ladder would you say the head of your family was on when they were 15 years old?

47

TASK 3

- As with the other tasks, if you reported that your grandparents were relatively **poorer** than other participants in this study, you will be a **Below Median Participant**.
- If you reported that your grandparents were relatively **richer** than other participants in this study, you will be a **Above Median Participant**.

48

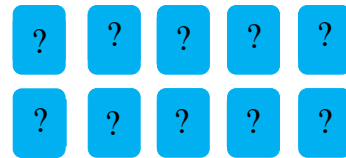
TASK 3: ENDOWMENTS

- In this task, your grandparents' relative position on the income ladder will be used to determine how many tokens you have as an endowment.
- This is done in a two step process.

49

ENDOWMENTS: STEP 1

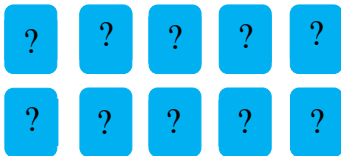
- There are 5 decks of cards, each with 10 cards like this image.



50

ENDOWMENTS: STEP 1

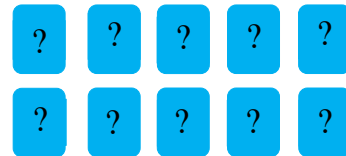
- Each of the cards is associated with a token value: either 100 tokens or 50 tokens.



51

ENDOWMENTS: STEP 1

- The number of 50 token cards and 100 token cards in each of the 5 decks varies.



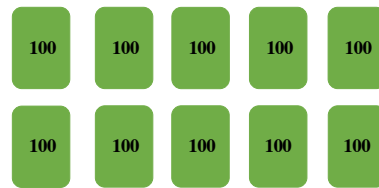
52

ENDOWMENTS: STEP 1

- The number of 100 token cards and 50 token cards will be based on the relative position of your grandparents on the income step that you reported.
- Based on your possible decks of cards, one deck will be randomly selected by the computer.

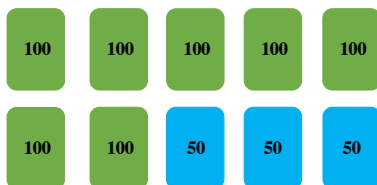
53

ABOVE MEDIAN CARDS: DECK 1



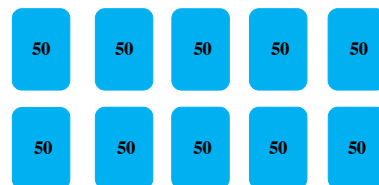
54

ABOVE MEDIAN CARDS: DECK 2

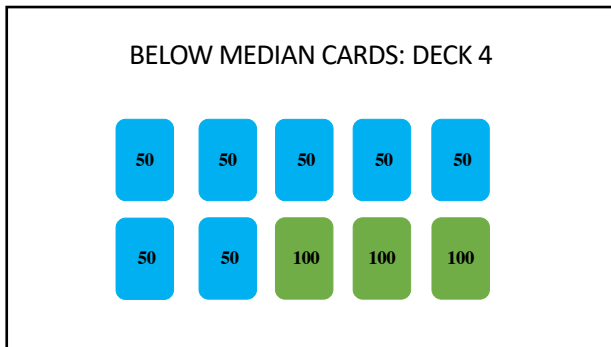


55

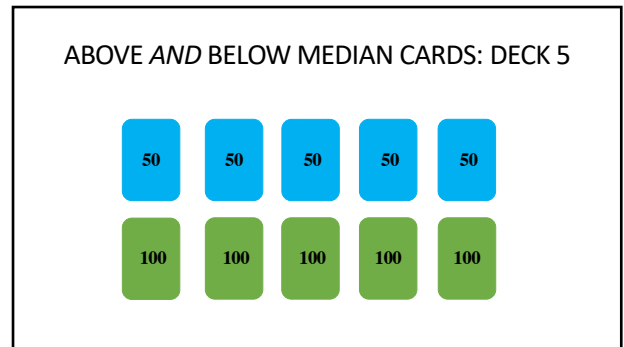
BELOW MEDIAN CARDS: DECK 3



56



57



58

ENDOWMENTS: DECKS OF CARDS

<u>BELOW MEDIAN</u>	<u>ABOVE MEDIAN</u>
<ul style="list-style-type: none"> • DECK 3 <ul style="list-style-type: none"> • 10 cards have 50 tokens • 0 cards have 100 tokens • DECK 4 <ul style="list-style-type: none"> • 7 cards have 50 tokens • 3 cards have 100 tokens 	<ul style="list-style-type: none"> • DECK 1 <ul style="list-style-type: none"> • 10 cards have 100 tokens • 0 cards have 50 tokens • DECK 2 <ul style="list-style-type: none"> • 7 cards have 100 tokens • 3 cards have 50 tokens

59

ENDOWMENTS: DECKS OF CARDS

<u>BELOW AND ABOVE MEDIAN</u>
<ul style="list-style-type: none"> • DECK 5 <ul style="list-style-type: none"> • 5 cards have 50 tokens • 5 cards have 100 tokens

60

ENDOWMENTS: DECKS OF CARDS

- In 4 of the 5 decks of cards, participants who reported their grandparents to be relatively richer (Above Median), have more 100 token cards than participants who reported their grandparents to be relatively poorer (Below Median).
- In only 1 of the 5 decks of cards do relatively richer and relatively poorer participants have the same number of 100 token and 50 token cards.

61

ENDOWMENTS: DECKS OF CARDS

- Based on whether you are an Above Median or a Below Median participant, you will be randomly allocated one of the decks of cards.
- The deck will be chosen by the computer.
- You can only receive one deck of cards.

62

ENDOWMENTS: STEP 2

- Once you have been allocated a deck of cards by the computer, one card will be randomly drawn from your deck.
- The value of this card will be your endowment for this task.
- That is, if a 100 token card is chosen, your endowment is 100 tokens.
- If a 50 token card is chosen, your endowment is 50 tokens.

63

DETERMINING ENDOWMENTS

- Your deck is randomly drawn by computer based on your grandparents' position on ladder i.e. above or below the median.
- ABOVE MEDIAN PARTICIPANTS have 3 possible decks of cards
- BELOW MEDIAN PARTICIPANTS have 3 possible decks of cards
- Computer randomly allocates one of the 3 decks of cards based on your grandparents' position on ladder i.e. above or below the median.
- Random card drawn from the deck you have been allocated to determine endowment.

64

TASK 3

- 4 people in each group.
- Everyone is randomly allocated to a group by the computer.
- 2 Above Median and 2 Below Median in each group.
- Each person in the group must decide how many tokens from their endowment to allocate to either Account A or Account B.
- Tokens allocated to Account A are yours to keep.
- Tokens allocated to Account B can earn you more tokens, depending on the allocations to Account B made by other people in your group.

65

TASK 3

- Total tokens allocated to Account B by everyone in your group are double.
- Doubled tokens are divided equally and returned to all group members regardless of how many tokens each group member allocated to Account B.
- That is, all group members receive the same number of tokens from Account B regardless of how many tokens they allocated to Account B.
- Total earnings from the task are the number of tokens in your Account A plus the number of tokens received from Account B.

66

TASK 3

- All group members receive the same number of tokens from Account B.
- But each group members total earnings may differ depending on how many tokens they allocated to Account A.
- There are 10 rounds in Task 3.
- All rounds are identical to each other and independent of allocations made in other rounds.
- Total earnings from the task are the earnings from Account B plus the tokens Account A in each of the 10 rounds.

67

TASK 3

- You must allocate your entire endowment between the two accounts.
- How much you allocate to each account is completely up to you.
- On your computers you will be asked to allocate tokens to **Account B**.
- Since you must allocate your entire endowment to the the two accounts, by default whatever you don't allocate to Account B is automatically allocated to Account A.

68

EXAMPLE: ROUND 1



ENDOWMENT: 100 tokens 100 tokens 100 tokens 100 tokens

ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 60 tokens 60 tokens 60 tokens 60 tokens

69

EXAMPLE: ROUND 1



ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 60 tokens 60 tokens 60 tokens 60 tokens

70

EXAMPLE: ROUND 1



ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 60 tokens 60 tokens 60 tokens 60 tokens

71

EXAMPLE: ROUND 1



ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 60 tokens + 60 tokens + 60 tokens + 60 tokens = 240 tokens

72

EXAMPLE: ROUND 1



ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 240 tokens x 2 = 480 tokens

73

EXAMPLE: ROUND 1

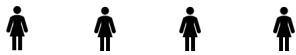


ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 120 tokens 120 tokens 120 tokens 120 tokens

74

EXAMPLE: ROUND 1



ACCOUNT A: 40 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 120 tokens 120 tokens 120 tokens 120 tokens

EARNINGS 160 tokens 160 tokens 160 tokens 160 tokens

75

EXAMPLE: ROUND 2



ENDOWMENT: 100 tokens 100 tokens 100 tokens 100 tokens

ACCOUNT A:

ACCOUNT B:

76

EXAMPLE: ROUND 2



ACCOUNT A: 100 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 0 tokens + 60 token + 60 tokens + 60 tokens = 180 tokens

77

EXAMPLE: ROUND 2



ACCOUNT A: 100 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 180 tokens x 2 = 360 tokens

78

EXAMPLE: ROUND 2



ACCOUNT A: 100 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 90 tokens 90 tokens 90 tokens 90 tokens

79

EXAMPLE: ROUND 2



ACCOUNT A: 100 tokens 40 tokens 40 tokens 40 tokens

ACCOUNT B: 90 tokens 90 tokens 90 tokens 90 tokens

EARNINGS 190 tokens 130 tokens 130 tokens 130 tokens

80

TASK 3

- All group members make their decisions at the same time.
- This means you will not know how many tokens your other group members have allocated Account B until all allocations to the accounts have been made.
- After each round you will be shown:
 - Each group members allocation to Account B.
 - The total group allocations to Account B.
 - Earnings from Account B.

81

SUMMARY

- Computer randomly allocates group members
- 4 group members (2 Above Median and 2 Below Median)
- Endowment in Round 1 determined by computer based on grandparents' position on the income ladder.
- Each group member must allocate endowment to either Account A or Account B in every round.
- Total tokens allocated to Account B are double and divided equally to all group members, regardless of their individual allocation.

82

SUMMARY

- Your decisions in any one round do not affect your decisions in the other rounds.
- Your endowment is the same in each round and based on the deck of cards you received as either Below Median or Above Median.
- Same group members in each of the 10 rounds.
- Total earnings from the task are the total tokens in Account A and Account B in each of the rounds.

83

SCREENS

- You will be shown on your screens:
 - The relative income step of all your group members (Above or Below Median).
 - The deck of cards received by each group member.
 - Each group member's endowments in every round.

84

COMPUTER INTERFACE

- To make sure you understand the task, you will be shown the same screen describing your group, their deck of cards and their endowment for multiple rounds of the task.
- It is important to know that the information is repeated and not new since your group members do not change, everyone's deck of cards does not change, and everyone's endowment does not change.

85

- At the end of the last round, you will be shown your total earnings in tokens from Task 1 and Task 2. Your total earnings in rands from all the tasks will be shown to you at the end of the session.

86

YOU MAY BEGIN TASK 3

87

88

B.2 Z-Tree Screens Seen by Participant

Figure 12: Example Status Allocation Screen

Periode

1 von 10

Based on your grandparents' income step, you are a **Above Median Participant**.

For this task, you have been randomly allocated to be **Person A**.

OK

This screenshot shows a status allocation screen. At the top left, it says "Periode" and "1 von 10". The main text informs the participant that based on their grandparents' income step, they are an "Above Median Participant" and have been randomly allocated to be "Person A". An "OK" button is located in the bottom right corner.

Figure 13: Example Trust Game Proposers Screen

Periode

1 von 10

Please select the number of tokens you want to transfer to an **Below Median Participant**.

You can only select **one** option.

0 tokens 5 tokens 10 tokens 15 tokens 20 tokens 25 tokens 30 tokens 35 tokens 40 tokens 45 tokens 50 tokens

OK

This screenshot shows a trust game proposer's screen. At the top left, it says "Periode" and "1 von 10". The main text asks the participant to select the number of tokens they want to transfer to a "Below Median Participant", noting that only one option can be selected. Below the text, there are radio buttons for each token amount from 0 to 50 in increments of 5. An "OK" button is located in the bottom right corner.

Figure 14: Example Trust Game Responder Screen

Periode 1 von 10

Please enter the number of tokens you would want to transfer to an **Above Median Participant** for all the possible transfers from an **Above Median Participant**.

Tokens transferred from Above Median Participant .	Tokens kept by Above Median Participant .	Tripled transfer from Above Median Participant .	Maximum tokens transferrable to Above Median Participant .	Tokens you want to transfer to Above Median Participant .
0 tokens	50 tokens	0 tokens	50 tokens	<input type="text"/>
5 tokens	45 tokens	15 tokens	65 tokens	<input type="text"/>
10 tokens	40 tokens	30 tokens	80 tokens	<input type="text"/>
15 tokens	35 tokens	45 tokens	95 tokens	<input type="text"/>
20 tokens	30 tokens	60 tokens	110 tokens	<input type="text"/>
25 tokens	25 tokens	75 tokens	125 tokens	<input type="text"/>
30 tokens	20 tokens	90 tokens	140 tokens	<input type="text"/>
35 tokens	15 tokens	105 tokens	155 tokens	<input type="text"/>
40 tokens	10 tokens	120 tokens	170 tokens	<input type="text"/>
45 tokens	5 tokens	135 tokens	185 tokens	<input type="text"/>
50 tokens	0 tokens	150 tokens	200 tokens	<input type="text"/>

Figure 15: Example Public Goods Game Endowment Allocation Screen

Periode 1 von 10

Remember that based on your grandparents' reported income step, you are a **Above Median Participant**.

Your deck of cards has 10 cards worth 100 tokens and 0 cards worth 50 tokens.

Based on your deck of cards, your endowment is **100 tokens**.

Figure 16: Example Public Goods Game Task Information Screen

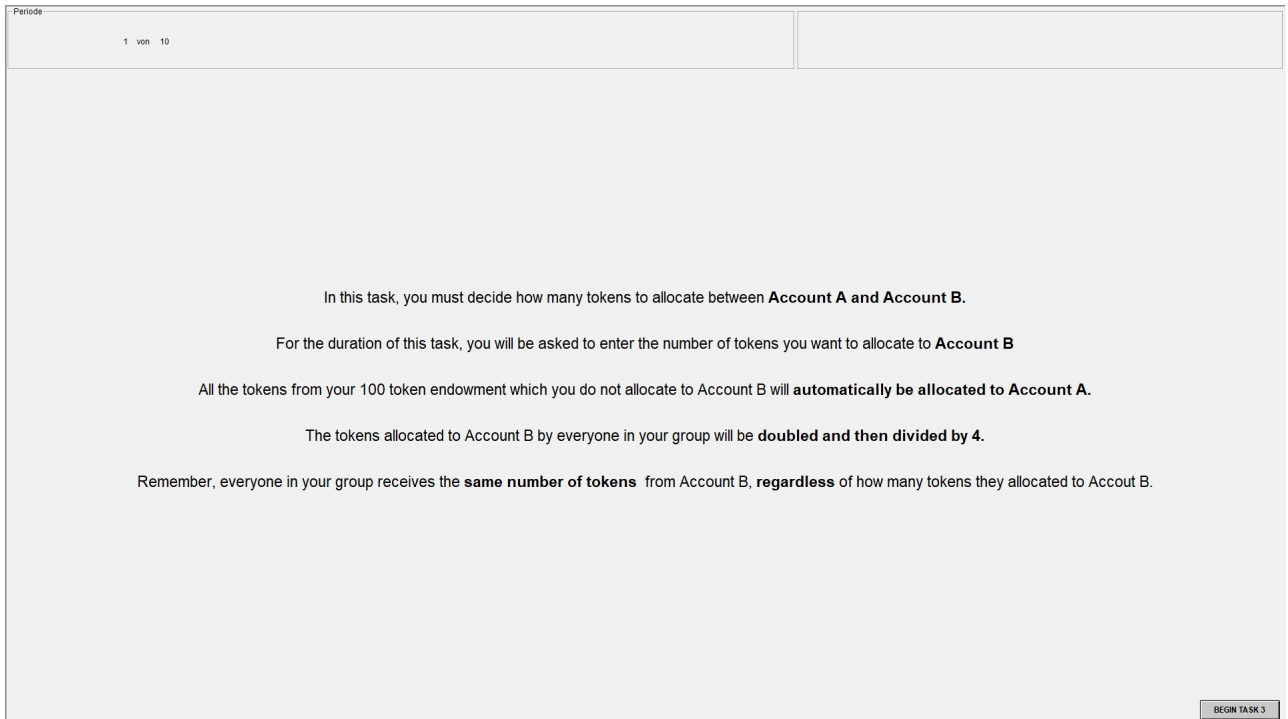


Figure 17: Example Public Goods Game Group Text Information Screen

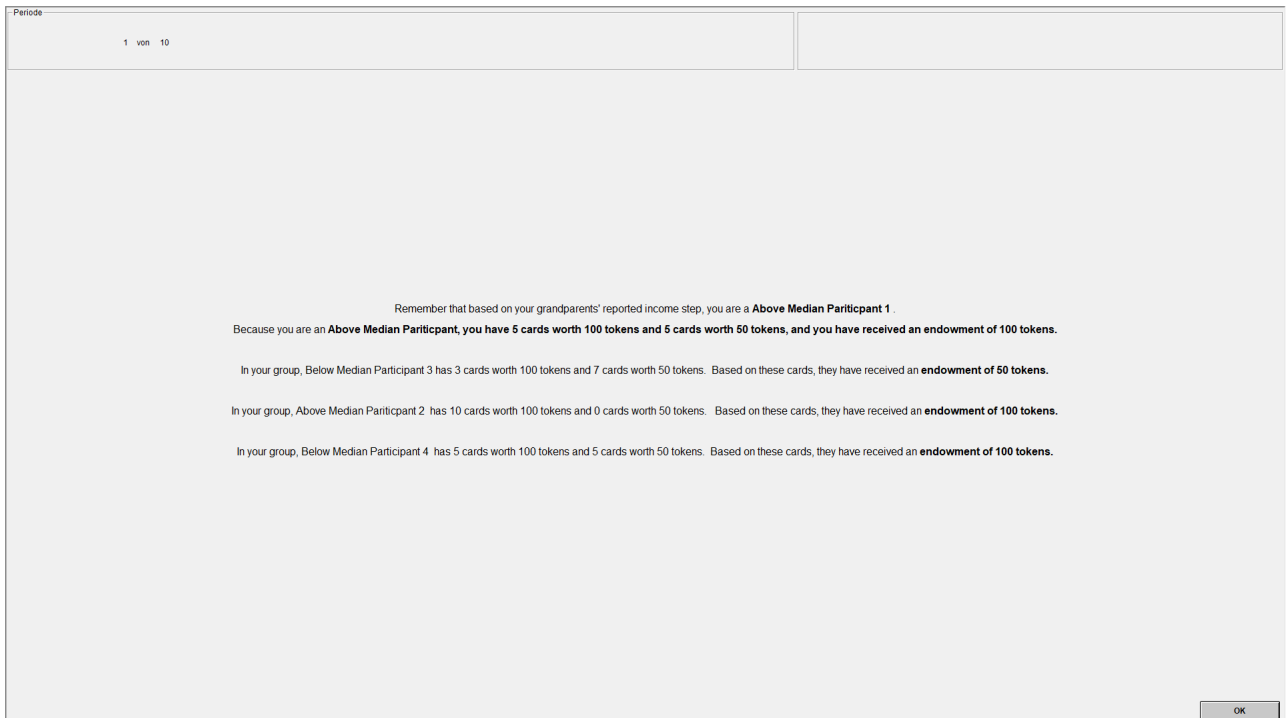


Figure 18: Example Public Goods Game Group Table Information Screen

Periode 1 von 10

Description of your group members.

	Below Median Participant 3	Above Median Participant 2	Below Median Participant 4	Above Median Participant 1 (You).
Number of 100 token cards:	3	10	5	5
Number of 50 token cards:	7	0	5	5
Endowment:	50	100	100	100

Figure 19: Example Public Goods Game Contribution Screen

Periode 1 von 10

Please enter the number of tokens you want to allocate to Account B:

Your endowment is 100 tokens

	Below Median Participant 4	Above Median Participant 1	Below Median Participant 3	Above Median Participant 2(You).
Number of 100 token cards:	5	5	3	10
Number of 50 token cards:	5	5	7	0
Endowment:	100	100	50	100

Figure 20: Example Public Goods Game Earnings Screen

1 von 10

Your group has allocated a total of **7 tokens** to Account B.
 These 7 have been double so that the total number of tokens in Account B is **14 tokens** .
 From these 14 tokens, each person in your group has earned **4 tokens** from Account B.

	Above Median Participant 1	Above Median Participant 2	Below Median Participant 4	Below Median Participant 3(You).
Number of 100 token cards:	5	10	5	3
Number of 50 token cards:	5	0	5	7
Endowment:	100	100	100	50
Tokens allocated to Account B:	2	2	2	1
Tokens allocated to Account A:	98	98	98	49
Total earnings from this round:	102	102	102	53

CONTINUE

Appendix C Public Goods Game

C.1 Orthogonality in Treatment

As an addition test of treatment differences, probit regressions of the determinants of allocation to each treatment are presented. The primary purpose of these regressions is to test for joint orthogonality of the participant characteristics and to determine which, if any, variables are conditionally more significant. Table C.42 reports these results only for variables which are significant determinants of allocation to at least one of the treatment pairs. The dependent variables are binary indicators of allocation to Treatment One or Treatment Two, Treatment Two or Treatment Three, and Treatment One or Treatment Three.

As indicated in the descriptive statistics, phase is a significant determinant of treatment allocation particularly for Treatment Two, and the likelihood of being in an equal group and in Treatment Two is greater than the other two treatments. Race is also significant: White individuals are less likely to be allocated to Treatment One compared to being allocated to Treatment Two, and Coloured individuals are more likely to be allocated to Treatment Three than Treatment Three. Despite these differences, in all

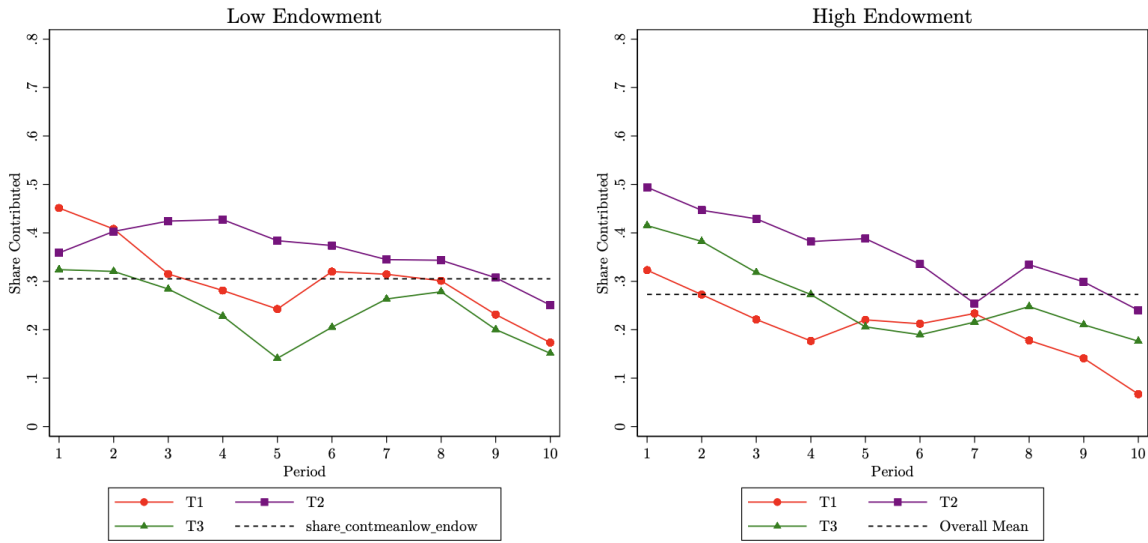
cases the Wald Chi-squared statistics are insignificant with p-values of 0.16, 0.15, and 0.92. From these results, the allocation to treatment is in substance unrelated to the main observable characteristics which are likely to affect contributive behaviour. These variables are controlled for in the regressions.

Table C.42: Public Goods Game Treatment Allocation Regressions

	(1)	(2)	(3)
Dependent Variables	T1 AND T2	T2 AND T3	T1 AND T3
Phase One	-0.36*** (0.11)	0.25** (0.13)	-0.20* (0.11)
Group Average Deck of Cards	-0.06 (0.05)	0.12** (0.05)	0.04 (0.05)
Equal Endowments in Group	-0.24** (0.12)	0.23** (0.11)	-0.03 (0.14)
White	-0.28** (0.13)	0.20 (0.14)	-0.17 (0.17)
Coloured	-0.12 (0.11)	0.25** (0.11)	0.08 (0.14)
South African Citizen	0.16 (0.11)	-0.20* (0.11)	-0.02 (0.13)
Observations	156	152	148
Wald Chi2	26.25	26.65	11.84
Prob > Chi2	0.158	0.145	0.921

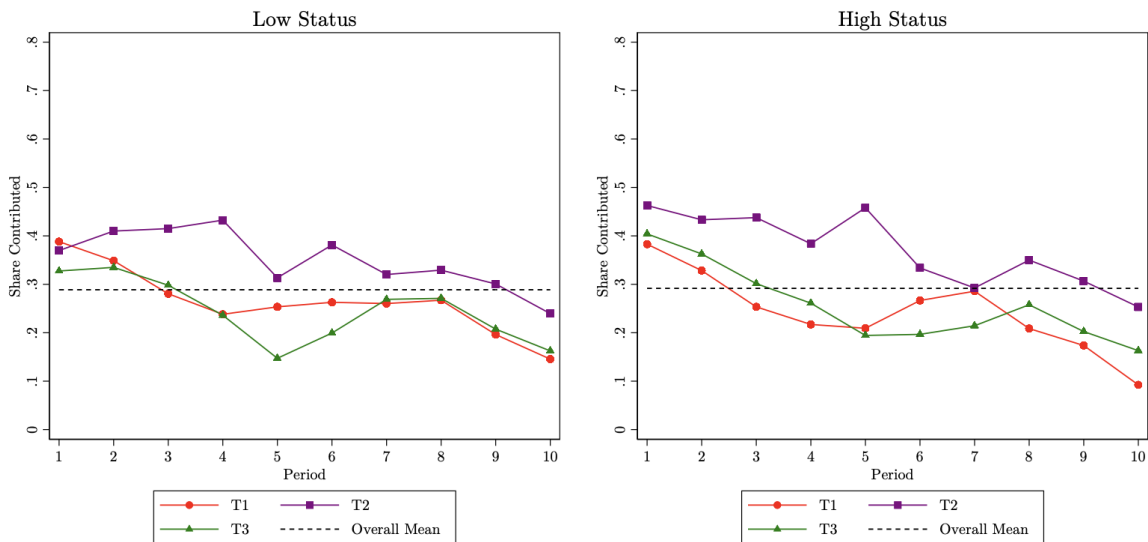
NOTES: This table reports probit marginal effects of the likelihood of being allocated to each of the three treatment pairs: treatment one or two; treatment one or three; and treatment two or three as indicated in the column titles of the table. Each column represents a separate regression. Only variables which are statistically significant (at the ten percent level) for at least one of the regressions are reported. Full set of addition controls (reported in the appendices) include group endowment excluding the participant themselves; gender; full set of race dummies; reported parent and grandparent income step; deck of cards received; receipt of a high endowment; financial aid receipt; past or current enrollment in an economics course with a curriculum which includes behavioural and experimental economics; enrollment in a social science faculty; previous participation in similar experiments; self-reported survey measures of risk attitudes, trust in others, and altruism. Wald Chi-Squared statistics and accompanying p-values for joint significance of the full regressions are provided at the bottom of the table. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 21: Average Share of Endowment Contributed by Endowment and Treatment



NOTES: This figure shows the average share of endowment contributed by round for participants with a low endowment in left-hand panel and participants with a high endowment in the right-hand panel.

Figure 22: Average Share of Endowment Contributed by Advantage and Treatment



NOTES: This figure shows the average share of endowment contributed by round for disadvantaged participants in left-hand panel and advantaged participants in the right-hand panel.

Table C.43: Alternative Estimators: Share of Endowment

	(1)	(2)	(3)
VARIABLES	OLS	Random Effects	Fractional Logit Marginal Effects
Treatment Two	0.08** (0.04)	0.08** (0.04)	0.09** (0.04)
Treatment Three	-0.00 (0.03)	-0.00 (0.03)	-0.01 (0.04)
Disadvantaged with High Endowment	-0.12** (0.05)	-0.12** (0.05)	-0.11*** (0.04)
Advantaged with Low Endowment	0.01 (0.06)	0.01 (0.06)	0.01 (0.06)
Advantaged with High Endowment	-0.10** (0.04)	-0.10** (0.04)	-0.10*** (0.04)
Chance of High Endowment: 30% or 70%	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)
Chance of High Endowment: 50%	-0.05 (0.04)	-0.05 (0.04)	-0.05 (0.04)
Observations	2,280	2,280	2,280

NOTES: This table reports robustness checks with alternative estimators for the share of endowment contributed. Full set of controls in all regression. Column 1 replicates the main in-text results for ease of reference. Robust standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table C.44: Alternative Estimators: Tokens Contributed

	(1)	(2)
VARIABLES	OLS	Random Effects
Treatment Two	7.48*** (2.79)	7.48*** (2.79)
Treatment Three	1.47 (2.65)	1.47 (2.65)
Disadvantaged with High Endowment	5.39 (3.82)	5.39 (3.82)
Advantaged with Low Endowment	3.17 (3.85)	3.17 (3.85)
Advantaged with High Endowment	8.12*** (2.92)	8.12*** (2.92)
Chance of High Endowment: 30% or 70%	-4.18 (2.87)	-4.18 (2.87)
Chance of High Endowment: 50%	-5.08 (3.15)	-5.08 (3.15)
Observations	2,280	2,280

NOTES: This table reports robustness checks with alternative estimators for the number of tokens contributed. Full set of controls in all regression. Column 1 replicates the main in-text results for ease of reference. Robust standard errors clustered at the individual level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

References

- Abel, M. (2019), ‘Long-run effects of forced resettlement: evidence from apartheid south africa’, *The Journal of Economic History* **79**(4), 915–953.
- About, F. E. and Doyle, A.-B. (1996), ‘Parental and peer influences on children’s racial attitudes’, *International Journal of Intercultural Relations* **20**(3-4), 371–383.
- Acemoglu, D., Egorov, G. and Sonin, K. (2018), ‘Social mobility and stability of democracy: Reevaluating de toqueville’, *The Quarterly Journal of Economics* **133**(2), 1041–1105.
- Adermon, A., Lindahl, M. and Waldenström, D. (2018), ‘Intergenerational wealth mobility and the role of inheritance: Evidence from multiple generations’, *The Economic Journal* **128**(612), F482–F513.
- Ai, C. and Norton, E. C. (2003), ‘Interaction terms in logit and probit models’, *Economics letters* **80**(1), 123–129.
- Aiyar, S. and Ebeke, C. (2020), ‘Inequality of opportunity, inequality of income and economic growth’, *World Development* **136**, 105115.
- Akbaş, M., Ariely, D. and Yuksel, S. (2019), ‘When is inequality fair? an experiment on the effect of procedural justice and agency’, *Journal of Economic Behavior & Organization* **161**, 114–127.
- Alan, S., Baydar, N., Boneva, T., Crossley, T. F. and Ertac, S. (2017), ‘Transmission of risk preferences from mothers to daughters’, *Journal of Economic Behavior & Organization* **134**, 60–77.
- Alesina, A. and Angeletos, G.-M. (2005), ‘Fairness and redistribution’, *American economic review* **95**(4), 960–980.
- Alesina, A., Angeletos, M. et al. (2002), *Fairness and redistribution: US versus Europe*, Harvard Institute of Economic Research, Harvard University Cambridge, MA.
- Alesina, A. and Giuliano, P. (2011), Preferences for redistribution, *in* ‘Handbook of social economics’, Vol. 1, Elsevier, pp. 93–131.

- Alesina, A. and La Ferrara, E. (2002), ‘Who trusts others?’, *Journal of public economics* **85**(2), 207–234.
- Alesina, A., Stantcheva, S. and Teso, E. (2018), ‘Intergenerational mobility and preferences for redistribution’, *American Economic Review* **108**(2), 521–54.
- Allison, P. D. (1999), ‘Comparing logit and probit coefficients across groups’, *Sociological methods & research* **28**(2), 186–208.
- Allport, G. W., Clark, K. and Pettigrew, T. (1954), ‘The nature of prejudice’.
- Almås, I., Cappelen, A. W., Salvanes, K. G., Sørensen, E. Ø. and Tungodden, B. (2015), ‘Willingness to compete: Family matters’, *Management Science* **62**(8), 2149–2162.
- Amoateng, A. Y., Heaton, T. B. and Kalule-Sabiti, I. (2007), ‘Living arrangements in south africa’, *Families and households in post-apartheid South Africa: Socio-demographic perspectives* pp. 43–59.
- Amodio, F. and Chiovelli, G. (2018), ‘Ethnicity and violence during democratic transitions: Evidence from south africa’, *Journal of the European Economic Association* **16**(4), 1234–1280.
- Anderson, L. R., Mellor, J. M. and Milyo, J. (2008), ‘Inequality and public good provision: An experimental analysis’, *The Journal of Socio-Economics* **37**(3), 1010–1028.
- Arneson, R. J. (1989), ‘Equality and equal opportunity for welfare’, *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* **56**(1), 77–93.
- Arrow, K. J. (1998), ‘What has economics to say about racial discrimination?’, *Journal of economic perspectives* **12**(2), 91–100.
- Ashraf, N., Bohnet, I. and Piankov, N. (2006), ‘Decomposing trust and trustworthiness’, *Experimental economics* **9**(3), 193–208.
- Banfield, E. C. (1958), *The moral basis of a backward society*, New York, NY: Free Press.
- Baran, N. M., Sapienza, P. and Zingales, L. (2010), Can we infer social preferences from the lab? evidence from the trust game, Technical report, National Bureau of Economic Research.

- Barone, G. and Mocetti, S. (2016), ‘Inequality and trust: new evidence from panel data’, *Economic Inquiry* **54**(2), 794–809.
- Bauer, M., Chytilová, J. and Pertold-Gebicka, B. (2014), ‘Parental background and other-regarding preferences in children’, *Experimental Economics* **17**(1), 24–46.
- Becker, G. S. (1974), ‘A Theory of Social Interactions’, *Source Journal of Political Economy* *Journal of Political Economy* **82**(6), 1063–1093.
- Becker, G. S. (1976), ‘Altruism, egoism, and genetic fitness: Economics and sociobiology’, *Journal of economic Literature* **14**(3), 817–826.
- Becker, G. S. and Tomes, N. (1979), ‘An equilibrium theory of the distribution of income and intergenerational mobility’, *Journal of political Economy* **87**(6), 1153–1189.
- Behrman, J. and Taubman, P. (1985), ‘Intergenerational earnings mobility in the united states: some estimates and a test of becker’s intergenerational endowments model’, *The Review of Economics and Statistics* pp. 144–151.
- Belhaj Hassine, N. (2012), ‘Inequality of opportunity in egypt’, *The World Bank Economic Review* **26**(2), 265–295.
- Ben-Ner, A., List, J. A., Putterman, L. and Samek, A. (2017), ‘Learned generosity? an artefactual field experiment with parents and their children’, *Journal of Economic Behavior & Organization* **143**, 28–44.
- Benabou, R. and Ok, E. A. (2001), ‘Social mobility and the demand for redistribution: the poum hypothesis’, *The Quarterly Journal of Economics* **116**(2), 447–487.
- Benabou, R. and Tirole, J. (2006), ‘Belief in a just world and redistributive politics’, *The Quarterly journal of economics* **121**(2), 699–746.
- Berg, J., Dickhaut, J. and McCabe, K. (1995), ‘Trust, reciprocity, and social history’, *Games and economic behavior* **10**(1), 122–142.
- Bertrand, M. and Mullainathan, S. (2004), ‘Are emily and greg more employable than lakisha and jamal? a field experiment on labor market discrimination’, *American economic review* **94**(4), 991–1013.

- Bettencourt, B., Charlton, K., Dorr, N. and Hume, D. L. (2001), ‘Status differences and in-group bias: a meta-analytic examination of the effects of status stability, status legitimacy, and group permeability.’, *Psychological bulletin* **127**(4), 520.
- Bettinger, E. and Slonim, R. (2006), ‘Using experimental economics to measure the effects of a natural educational experiment on altruism’, *Journal of Public Economics* **90**(8-9), 1625–1648.
- Bisin, A., Topa, G. and Verdier, T. (2004), ‘Cooperation as a transmitted cultural trait’, *Rationality and Society* **16**(4), 477–507.
- Bisin, A. and Verdier, T. (2000), ‘Beyond the melting pot: Cultural transmission, marriage, and the evolution of ethnic and religious traits’, *Quarterly Journal of Economics* **115**(3), 955–988.
- Bisin, A. and Verdier, T. (2001), ‘The economics of cultural transmission and the dynamics of preferences’, *Journal of Economic theory* **97**(2), 298–319.
- Bisin, A. and Verdier, T. (2011), The economics of cultural transmission and socialization, in ‘Handbook of social economics’, Vol. 1, chapter 9, pp. 339–416.
- Black, S. E., Devereux, P. J. et al. (2011), ‘Recent developments in intergenerational mobility’, *Handbook of Labor Economics* **4**, 1487–1541.
- Blanden, J., Gregg, P. and Macmillan, L. (2007), ‘Accounting for intergenerational income persistence: noncognitive skills, ability and education’, *The Economic Journal* **117**(519), C43–C60.
- Bolton, G. E., Brandts, J. and Ockenfels, A. (2005), ‘Fair procedures: Evidence from games involving lotteries’, *The Economic Journal* **115**(506), 1054–1076.
- Bouchard, T. J. and Loehlin, J. C. (2001), ‘Genes, evolution, and personality’, *Behavior genetics* **31**(3), 243–273.
- Bowles, S. and Gintis, H. (2002), ‘The inheritance of inequality’, *Journal of economic Perspectives* **16**(3), 3–30.
- Boyd, R. and Richerson, P. J. (1988), *Culture and the evolutionary process*, University of Chicago press.

- Bradburn, N. M., Sudman, S. and Wansink, B. (2004), *Asking questions: the definitive guide to questionnaire design—for market research, political polls, and social and health questionnaires*, John Wiley & Sons.
- Brandt, M. J., Wetherell, G. and Henry, P. (2015), ‘Changes in income predict change in social trust: A longitudinal analysis’, *Political Psychology* **36**(6), 761–768.
- Brandts, J. and Charness, G. (2011), ‘The strategy versus the direct-response method: a first survey of experimental comparisons’, *Experimental Economics* **14**(3), 375–398.
- Braun, S. T. and Stuhler, J. (2018), ‘The transmission of inequality across multiple generations: testing recent theories with evidence from germany’, *The Economic Journal* **128**(609), 576–611.
- Brophy, T., Branson, N., Daniels, R. C., Leibbrandt, M., Mlatsheni, C. and Woolard, I. (2018), ‘National income dynamics study panel user manual’, *Technical Note Release* .
- Brühlhart, M. and Usunier, J.-C. (2012), ‘Does the trust game measure trust?’, *Economics Letters* **115**(1), 20–23.
- Brunori, P., Ferreira, F. H. and Peragine, V. (2013), Inequality of opportunity, income inequality, and economic mobility: Some international comparisons, in ‘Getting development right’, Springer, pp. 85–115.
- Buckley, E. and Croson, R. (2006), ‘Income and wealth heterogeneity in the voluntary provision of linear public goods’, *Journal of Public Economics* **90**(4-5), 935–955.
- Burns, J. (2006), ‘Racial stereotypes, stigma and trust in post-apartheid south africa’, *Economic Modelling* **23**(5), 805–821.
- Burns, J. (2012), ‘Race, diversity and pro-social behavior in a segmented society’, *Journal of Economic Behavior & Organization* **81**(2), 366–378.
- Burns, J. and Keswell, M. (2012), ‘Inheriting the future: intergenerational persistence of educational status in kwazulu-natal, south africa’, *Economic History of Developing Regions* **27**(1), 150–175.

- Burns, J., Langer, A. and Rusch, O. (2019), ‘Inequality, redistribution, and inherited status’.
- Bussolo, M., Ferrer-i Carbonell, A., Giolbas, A. and Torre, I. (2021), ‘I perceive therefore i demand: The formation of inequality perceptions and demand for redistribution’, *Review of Income and Wealth* **67**(4), 835–871.
- Butler, J. V. (2014), ‘Trust, truth, status and identity: an experimental inquiry’, *The BE Journal of Theoretical Economics* **14**(1), 293–338.
- Cadsby, C. B. and Maynes, E. (1998), ‘Gender and free riding in a threshold public goods game: Experimental evidence’, *Journal of economic behavior & organization* **34**(4), 603–620.
- Camerer, C. F. (2011), *Behavioral game theory: Experiments in strategic interaction*, Princeton university press.
- Cantril, H. (1965), *The pattern of human concerns.*, NJ: Rutgers University Press.
- Cappelen, A. W., List, J. A., Samek, A. and Tungodden, B. (2016), The effect of early education on social preferences, Technical report, National Bureau of Economic Research.
- Cardenas, J.-C. (2003), ‘Real wealth and experimental cooperation: experiments in the field lab’, *Journal of Development Economics* **70**(2), 263–289.
- Carl, N. and Billari, F. C. (2014), ‘Generalized trust and intelligence in the united states’, *PloS one* **9**(3), e91786.
- Carman, C. (2010), ‘The process is the reality: Perceptions of procedural fairness and participatory democracy’, *Political Studies* **58**(4), 731–751.
- Cavalli-Sforza, L. L. and Feldman, M. W. (1981), *Cultural transmission and evolution: a quantitative approach*, number 16, Princeton University Press.
- Chatterjee, A., Czajka, L. and Gethin, A. (2020), *Estimating the distribution of household wealth in South Africa*, number 2020/45, WIDER Working Paper.
- Chaudhuri, A. (2008), *Experiments in economics: playing fair with money*, Routledge.

- Chaudhuri, A. (2011), ‘Sustaining cooperation in laboratory public goods experiments: a selective survey of the literature’, *Experimental economics* **14**(1), 47–83.
- Checchi, D., Peragine, V. and Serlenga, L. (2010), ‘Fair and unfair income inequalities in europe’.
- Cherry, T. L., Frykblom, P. and Shogren, J. F. (2002), ‘Hardnose the dictator’, *American Economic Review* **92**(4), 1218–1221.
- Cherry, T. L., Kroll, S. and Shogren, J. F. (2005), ‘The Impact of Endowment Heterogeneity and Origin on Public Good Contributions: Evidence From the Lab’, *Journal of Economic Behavior & Organization* **57**(3), 357–365.
- Chowdhury, S., Sutter, M. and Zimmermann, K. (2018), ‘Evaluating intergenerational persistence of economic preferences: A large scale experiment with families in bangladesh’.
- Cipriani, M., Giuliano, P. and Jeanne, O. (2013), ‘Like mother like son? experimental evidence on the transmission of values from parents to children’, *Journal of Economic Behavior & Organization* **90**, 100–111.
- Clark, G. (2014), *The son also rises*, Princeton University Press.
- Clark, J. (2002), ‘House Money Effects in Public Good Experiments’, *Experimental Economics* **5**, 223–231.
- Cogneau, D. and Mesplé-Somps, S. (2008), Inequality of opportunity for income in five countries of africa, in ‘Inequality and opportunity: Papers from the second ecineq society meeting’, Emerald Group Publishing Limited.
- Cohen, G. A. (1989), ‘On the currency of egalitarian justice’, *Ethics* **99**(4), 906–944.
- 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.
- Corak, M. (2006), *Do poor children become poor adults? Lessons from a cross-country comparison of generational earnings mobility*, Emerald Group Publishing Limited.

- Corak, M. (2013), ‘Income inequality, equality of opportunity, and intergenerational mobility’, *Journal of Economic Perspectives* **27**(3), 79–102.
- Corneo, G. and Grüner, H. P. (2002), ‘Individual preferences for political redistribution’, *Journal of public Economics* **83**(1), 83–107.
- Corno, L., La Ferrara, E. and Burns, J. (2019), Interaction, stereotypes and performance: Evidence from south africa, Technical report, IFS Working Papers.
- Cox, J. C. (2004), ‘How to identify trust and reciprocity’, *Games and economic behavior* **46**(2), 260–281.
- Currie, J. (2011), ‘Inequality at birth: Some causes and consequences’, *American Economic Review* **101**(3), 1–22.
- Dannefer, D. (2020), ‘Systemic and reflexive: Foundations of cumulative dis/advantage and life-course processes’, *The Journals of Gerontology: Series B* **75**(6), 1249–1263.
- Deaton, A. (2008), ‘Income, health, and well-being around the world: Evidence from the gallup world poll’, *Journal of Economic perspectives* **22**(2), 53–72.
- Degner, J. and Dalege, J. (2013), ‘The apple does not fall far from the tree, or does it? a meta-analysis of parent–child similarity in intergroup attitudes.’, *Psychological bulletin* **139**(6), 1270.
- Dehaene, S. (2003), ‘The neural basis of the weber–fechner law: a logarithmic mental number line’, *Trends in cognitive sciences* **7**(4), 145–147.
- Delhey, J. and Newton, K. (2003), ‘Who trusts?: The origins of social trust in seven societies’, *European Societies* **5**(2), 93–137.
- Delhey, J., Newton, K. and Welzel, C. (2011), ‘How general is trust in “most people”? solving the radius of trust problem’, *American Sociological Review* **76**(5), 786–807.
- Dixit, A. (2003), ‘Trade expansion and contract enforcement’, *Journal of Political Economy* **111**(6), 1293–1317.
- Dixon, J., Durrheim, K. and Thomae, M. (2017), ‘The principle-implementation gap in attitudes towards racial equality (and how to close it)’, *Political Psychology* **38**, 91–126.

- Dixon, J., Durrheim, K. and Tredoux, C. (2007), ‘Intergroup contact and attitudes toward the principle and practice of racial equality’, *Psychological science* **18**(10), 867–872.
- Doepke, M. and Zilibotti, F. (2008), ‘Occupational choice and the spirit of capitalism’, *The Quarterly Journal of Economics* **123**(2), 747–793.
- Doepke, M. and Zilibotti, F. (2017), ‘Parenting with style: Altruism and paternalism in intergenerational preference transmission’, *Econometrica* **85**(5), 1331–1371.
- Dohmen, T., Falk, A., Huffman, D. and Sunde, U. W. E. (2012), ‘The intergenerational transmission of risk and trust attitudes’, *The Review of Economics Studies* **79**(2), 645–677.
- Dworkin, R. (1981a), ‘What is equality? part 2: Equality of resources’, *Philosophy & public affairs* pp. 283–345.
- Dworkin, R. (1981b), ‘What is equality? part 2: equality of resources’, *Philosophy & public affairs* **10**(4), 283–345.
- Edmonds, E. V., Mammen, K. and Miller, D. L. (2005), ‘Rearranging the family? income support and elderly living arrangements in a low-income country’, *Journal of Human resources* **40**(1), 186–207.
- Emran, M. S. and Shilpi, F. J. (2019), *Economic approach to intergenerational mobility: Measures, methods, and challenges in developing countries*, number 2019/98, WIDER Working Paper.
- Engel, C. (2011), ‘Dictator games: A meta study’, *Experimental economics* **14**(4), 583–610.
- Erikson, E. H. (1950), ‘Child and society’, *2nd éd* pp. 53–54.
- Eyal, K. and Burns, J. (2019), ‘The parent trap: Cash transfers and the intergenerational transmission of depressive symptoms in south africa’, *World Development* **117**, 211–229.
- Falk, A. and Zehnder, C. (2007), ‘Discrimination and in-group favoritism in a citywide trust experiment’.

- Fehr, D., Rau, H., Trautmann, S. T. and Xu, Y. (2020), ‘Inequality, fairness and social capital’, *European Economic Review* **129**, 103566.
- Fehr, E., Bernhard, H. and Rockenbach, B. (2008), ‘Egalitarianism in young children’, *Nature* **454**(7208), 1079.
- Fehr, E., Glätzle-Rützler, D. and Sutter, M. (2013), ‘The development of egalitarianism, altruism, spite and parochialism in childhood and adolescence’, *European Economic Review* **64**, 369–383.
- Fehr, E. and Schmidt, K. M. (1999), ‘A theory of fairness, competition, and cooperation’, *The quarterly journal of economics* **114**(3), 817–868.
- Fehr, E. and Schmidt, K. M. (2001), ‘Theories of fairness and reciprocity-evidence and economic applications’, *Available at SSRN 264344* .
- Fehr, E. and Schmidt, K. M. (2006), ‘The economics of fairness, reciprocity and altruism—experimental evidence and new theories’, *Handbook of the economics of giving, altruism and reciprocity* **1**, 615–691.
- Fellner, G., Iida, Y., Kröger, S. and Seki, E. (2011), Heterogeneous Productivity in Voluntary Public Good Provision: An Experimental Analysis.
- Fernández, R. (2011), Does culture matter?, in ‘Handbook of social economics’, Vol. 1, Elsevier, pp. 481–510.
- Ferreira, F. H. and Gignoux, J. (2011), ‘The measurement of inequality of opportunity: Theory and an application to latin america’, *Review of Income and Wealth* **57**(4), 622–657.
- Fershtman, C. and Gneezy, U. (2001), ‘Discrimination in a segmented society: An experimental approach’, *The Quarterly Journal of Economics* **116**(1), 351–377.
- Finn, A., Leibbrandt, M. and Ranchhod, V. (2016), ‘Patterns of persistence: Intergenerational mobility and education in south africa’.
- Fischbacher, U. (2007), ‘z-tree: Zurich toolbox for ready-made economic experiments’, *Experimental economics* **10**(2), 171–178.

- Fischbacher, U., Schudy, S. and Teyssier, S. (2012), ‘Heterogeneous reactions to heterogeneity in returns from public goods’.
- Fisher, J., Isaac, R. M., Schatzberg, J. W. and Walker, J. M. (1995), ‘Heterogenous demand for public goods: Behavior in the voluntary contributions mechanism’, *Public Choice* **85**(3-4), 249–266.
URL: <http://link.springer.com/10.1007/BF01048198>
- Fowler Jr, F. J. (2013), *Survey research methods*, Sage publications.
- Franklin, K. M., Janoff-Bulman, R. and Roberts, J. E. (1990), ‘Long-term impact of parental divorce on optimism and trust: Changes in general assumptions or narrow beliefs?’, *Journal of Personality and Social Psychology* **59**(4), 743.
- Freitag, M. and Traunmüller, R. (2009), ‘Spheres of trust: An empirical analysis of the foundations of particularised and generalised trust’, *European Journal of Political Research* **48**(6), 782–803.
- Fukuyama, F. (1995), *Trust: The social virtues and the creation of prosperity*, number D10 301 c. 1/c. 2, Free Press Paperbacks.
- Fung, J. M. and Au, W.-t. (2014), ‘Effect of inequality on cooperation: Heterogeneity and hegemony in public goods dilemma’, *Organizational Behavior and Human Decision Processes* **123**(1), 9–22.
- Furnham, A. and Gunter, B. (1984), ‘Just world beliefs and attitudes towards the poor’, *British journal of social psychology* **23**(3), 265–269.
- Furnham, A. and Procter, E. (1989), ‘Belief in a just world: Review and critique of the individual difference literature’, *British journal of social psychology* **28**(4), 365–384.
- Gächter, S., Herrmann, B. and Thöni, C. (2004), ‘Trust, voluntary cooperation, and socio-economic background: survey and experimental evidence’, *Journal of Economic Behavior & Organization* **55**(4), 505–531.
- Gangadharan, L., Nikiforakis, N. and Villeval, M. C. (2017), ‘Normative conflict and the limits of self-governance in heterogeneous populations’, *European Economic Review* **100**, 143–156.

- Gehlbach, H. and Barge, S. (2012), ‘Anchoring and adjusting in questionnaire responses’, *Basic and Applied Social Psychology* **34**(5), 417–433.
- Gittleman, M. and Wolff, E. N. (2004), ‘Racial differences in patterns of wealth accumulation’, *Journal of Human Resources* **39**(1), 193–227.
- Giulietti, C., Rettore, E. and Tonini, S. (2016a), ‘The chips are down: The influence of family on children’s trust formation’, *SOEPpapers* (856).
- Giulietti, C., Rettore, E. and Tonini, S. (2016b), ‘The transmission of trust through generations’.
- Glanville, J. L. and Paxton, P. (2007), ‘How do we learn to trust? a confirmatory tetrad analysis of the sources of generalized trust’, *Social Psychology Quarterly* **70**(3), 230–242.
- Gniewosz, B. and Noack, P. (2006), ‘Intergenerational transmission and projection processes of intolerant familial attitudes towards foreigners’, *Zeitschrift fur Entwicklungspsychologie und Padagogische Psychologie* **38**(1), 33–42.
- Greenberg, J. (2011), ‘Organizational justice: The dynamics of fairness in the workplace.’.
- Grossman, G., Manekin, D. and Miodownik, D. (2015), ‘The political legacies of combat: Attitudes toward war and peace among israeli ex-combatants’, *International Organization* **69**(4), 981–1009.
- Gugushvili, A. (2016), ‘Intergenerational social mobility and popular explanations of poverty: A comparative perspective’, *Social Justice Research* **29**(4), 402–428.
- Gugushvili, A. (2020), ‘Social origins of support for democracy: a study of intergenerational mobility’, *International Review of Sociology* **30**(2), 376–396.
- Guillou, L., Grandin, A. and Chevallier, C. (2021), ‘Temporal discounting mediates the relationship between socio-economic status and social trust’, *Royal Society Open Science* **8**(6), 202104.
- Guiso, L. (2008), ‘Alfred Marshall Lecture’, **6**(May 2008), 295–320.

- Gummerum, M., Hanoch, Y., Keller, M., Parsons, K. and Hummel, A. (2010), ‘Preschoolers’ allocations in the dictator game: The role of moral emotions’, *Journal of Economic Psychology* **31**(1), 25–34.
- Guttman, J. M. (2000), ‘On the evolutionary stability of preferences for reciprocity’, *European Journal of Political Economy* **16**(1), 31–50.
- Hall, K. and Posel, D. (2019), ‘Fragmenting the family? the complexity of household migration strategies in post-apartheid south africa’, *IZA Journal of Development and Migration* **10**(2), 1–20.
- Harrison, G. W. (2007), ‘House money effects in public good experiments: Comment’, *Experimental Economics* **10**(4), 429–437.
- Hassler, J. and Rodriguez Mora, J. V. (2000), ‘Intelligence, social mobility, and growth’, *American Economic Review* **90**(4), 888–908.
- Hauser, O. P., Kraft-Todd, G. T., Rand, D. G., Nowak, M. A. and Norton, M. I. (2021), ‘Invisible inequality leads to punishing the poor and rewarding the rich’, *Behavioural Public Policy* **5**(3), 333–353.
- Heap, S. P. H., Ramalingam, A. and Stoddard, B. V. (2016), ‘Endowment inequality in public goods games: A re-examination’, *Economics Letters* **146**, 4–7.
- Heckman, J. J. and Landersø, R. (2021), Lessons from denmark about inequality and social mobility, Technical report, National Bureau of Economic Research.
- Heiserman, N., Simpson, B. and Willer, R. (2020), ‘Judgments of economic fairness are based more on perceived economic mobility than perceived inequality’, *Socius* **6**, 2378023120959547.
- Hertz, T., Jayasundera, T., Piraino, P., Selcuk, S., Smith, N. and Verashchagina, A. (2008), ‘The inheritance of educational inequality: International comparisons and fifty-year trends’, *The BE Journal of Economic Analysis & Policy* **7**(2).
- Hewstone, M., Rubin, M. and Willis, H. (2002), ‘Intergroup bias’, *Annual review of psychology* **53**(1), 575–604.

- Hiller, V. (2008), Corporate culture, labor contracts and the evolution of cooperation, Technical report, mimeo, Paris School of Economics-Universit  Paris I-Panth on Sorbonne.
- Hodge, R. W. (1966), ‘Occupational mobility as a probability process’, *Demography* **3**(1), 19–34.
- Hofmeyr, A., Burns, J. and Visser, M. (2007), ‘Income inequality, reciprocity and public good provision: An experimental analysis’, *South African Journal of Economics* **75**(3), 508–520.
- Houle, C. (2019), ‘Social mobility and political instability’, *Journal of Conflict Resolution* **63**(1), 85–111.
- Ichino, A., Karabarbounis, L., Moretti, E. and Salvanes, K. (2008), ‘Optimal intergenerational mobility of income and the allocation of talent’.
- Jahedi, S. and M endez, F. (2014), ‘On the advantages and disadvantages of subjective measures’, *Journal of Economic Behavior & Organization* **98**, 97–114.
- Jantti, M., Bratsberg, B., Roed, K., Raaum, O., Naylor, R., Osterbacka, E., Bjorklund, A. and Eriksson, T. (2006), ‘American exceptionalism in a new light: a comparison of intergenerational earnings mobility in the nordic countries, the united kingdom and the united states’.
- Jennings, M. K., Stoker, L. and Bowers, J. (2009), ‘Politics across generations: Family transmission reexamined’, *The Journal of Politics* **71**(3), 782–799.
- Johnson, N. D. and Mislin, A. A. (2011), ‘Trust games: A meta-analysis’, *Journal of Economic Psychology* **32**(5), 865–889.
- Jones, K. (1996), ‘Trust as an affective attitude’, *Ethics* **107**(1), 4–25.
- Jugert, P., Eckstein, K., Beelmann, A. and Noack, P. (2016), ‘Parents’ influence on the development of their children’s ethnic intergroup attitudes: A longitudinal analysis from middle childhood to early adolescence’, *European Journal of Developmental Psychology* **13**(2), 213–230.

- Kim, Y., Sommet, N., Na, J. and Spini, D. (2022), ‘Social class—not income inequality—predicts social and institutional trust’, *Social Psychological and Personality Science* **13**(1), 186–198.
- Kislev, E. (2018), ‘The effect of anti-discrimination policies on middle eastern and north african immigrants in 24 european countries’, *International Migration* **56**(3), 88–104.
- Klasen, S. and Woolard, I. (2009), ‘Surviving unemployment without state support: Unemployment and household formation in south africa’, *Journal of African economies* **18**(1), 1–51.
- Konow, J. (2003), ‘Which is the fairest one of all? a positive analysis of justice theories’, *Journal of economic literature* **41**(4), 1188–1239.
- Kosse, F., Deckers, T., Pinger, P. R., Schildberg-Hörisch, H. and Armin, F. (2018), ‘The formation of prosociality: causal evidence on the role of social environment’.
- Kosse, F. and Pfeiffer, F. (2012), ‘Impatience among preschool children and their mothers’, *Economics Letters* **115**(3), 493–495.
- Kraus, M. W., Park, J. W. and Tan, J. J. (2017), ‘Signs of social class: The experience of economic inequality in everyday life’, *Perspectives on Psychological Science* **12**(3), 422–435.
- Kreft, B., Burns, J. and Langer, A. (2019), *The Heritability of History: How inherited status affects cooperative behaviour in public goods games*, PhD thesis, University of Cape Town.
- Kroll, S., Cherry, T. L. and Shogren, J. F. (2007), ‘The impact of endowment heterogeneity and origin on contributions in best-shot public good games’, *Experimental Economics* **10**(4), 411–428.
- Krumpal, I. (2013), ‘Determinants of social desirability bias in sensitive surveys: a literature review’, *Quality & Quantity* **47**(4), 2025–2047.
- Kumru, C. S. and Vesterlund, L. (2008), ‘The effect of status on voluntary contribution’, *UNSW Australian School of Business Research Paper* (2008).

- Kurz, V., Orland, A. and Posadzy, K. (2018), ‘Fairness versus efficiency: how procedural fairness concerns affect coordination’, *Experimental economics* **21**(3), 601–626.
- Ledyard, J. (1995), *Public Goods: A Survey of Experimental Research*, Academic Press, New York.
- Leibbrandt, M., Woolard, I. and Ebrahim, A. (2016), ‘Strategies of the unemployed in south africa: does moving allow the unemployed to get ahead?’, *Africanus* **46**(1), 52–75.
- Lerner, M. J. (1980), The belief in a just world, in ‘The Belief in a just World’, Springer, pp. 9–30.
- Levin, I. P. and Hart, S. S. (2003), ‘Risk preferences in young children: Early evidence of individual differences in reaction to potential gains and losses’, *Journal of Behavioral Decision Making* **16**(5), 397–413.
- Lindahl, M., Palme, M., Massih, S. S. and Sjögren, A. (2015), ‘Long-term intergenerational persistence of human capital an empirical analysis of four generations’, *Journal of Human Resources* **50**(1), 1–33.
- Linde, J. and Sonnemans, J. (2015), ‘Decisions under risk in a social and individual context: The limits of social preferences?’, *Journal of Behavioral and Experimental Economics* **56**, 62–71.
- Ljunge, M. (2014), ‘Trust issues: Evidence on the intergenerational trust transmission among children of immigrants’, *Journal of Economic Behavior & Organization* **106**, 175–196.
- Lount Jr, R. B. and Pettit, N. C. (2012), ‘The social context of trust: The role of status’, *Organizational Behavior and Human Decision Processes* **117**(1), 15–23.
- Louw, M., van Der Berg, S., Yu, D. et al. (2006), ‘Educational attainment and intergenerational social mobility in south africa’, *University of Stellenbosch, Stellenbosch Economic Working Paper* **9**(06), 1–43.

- Lucas, R. E. and Kerr, S. P. (2013), ‘Intergenerational income immobility in finland: contrasting roles for parental earnings and family income’, *Journal of Population Economics* **26**(3), 1057–1094.
- Lupu, N. and Peisakhin, L. (2017), ‘The legacy of political violence across generations’, *American Journal of Political Science* **61**(4), 836–851.
- Maoz, Y. D. and Moav, O. (1999), ‘Intergenerational mobility and the process of development’, *The Economic Journal* **109**(458), 677–697.
- Mare, R. D. (2011), ‘A multigenerational view of inequality’, *Demography* **48**(1), 1–23.
- Mariotti, M. and Fourie, J. (2014), ‘The economics of apartheid: An introduction’, *Economic history of developing regions* **29**(2), 113–125.
- Marques, J. M. and Yzerbyt, V. Y. (1988), ‘The black sheep effect: Judgmental extremity towards ingroup members in inter-and intra-group situations’, *European Journal of Social Psychology* **18**(3), 287–292.
- Marrero, G. A. and Rodríguez, J. G. (2013), ‘Inequality of opportunity and growth’, *Journal of development Economics* **104**, 107–122.
- Martinangeli, A. F. (2021), ‘Do what (you think) the rich will do: Inequality and belief heterogeneity in public good provision’, *Journal of Economic Psychology* **83**, 102364.
- Marwell, G. and Ames, R. (1979), ‘Experiments on the Provision of Public Goods. I. Resources, Interest, Group Size, and the Free-Rider Problem’, *American Journal of Sociology* **84**(6), 1135 – 1360.
- McElroy, M. B. (1985), ‘The joint determination of household membership and market work: The case of young men’, *Journal of labor Economics* **3**(3), 293–316.
- Meltzer, A. H. and Richard, S. F. (1981), ‘A rational theory of the size of government’, *Journal of political Economy* **89**(5), 914–927.
- Moschion, J. and Tabasso, D. (2014), ‘Trust of second-generation immigrants: intergenerational transmission or cultural assimilation?’, *IZA Journal of Migration* **3**(1), 10.

- Muehlbacher, S. and Kirchler, E. (2009), ‘Origin of endowments in public good games: The impact of effort on contributions.’, *Journal of Neuroscience, Psychology, and Economics* **2**(1), 59–67.
- Mullen, B., Brown, R. and Smith, C. (1992), ‘Ingroup bias as a function of salience, relevance, and status: An integration’, *European journal of social psychology* **22**(2), 103–122.
- Narayan, A., Van der Weide, R., Cojocaru, A., Lakner, C., Redaelli, S., Mahler, D. G., Ramasubbaiah, R. G. N. and Thewissen, S. (2018), *Fair progress?: Economic mobility across generations around the world*, World Bank Publications.
- Nishi, A., Shirado, H., Rand, D. G. and Christakis, N. A. (2015), ‘Inequality and visibility of wealth in experimental social networks’, *Nature* **526**(7573), 426–429.
- Nudelman, G. (2013), ‘The belief in a just world and personality: A meta-analysis’, *Social Justice Research* **26**(2), 105–119.
- Nybom, M. (2018), ‘Intergenerational mobility: a dream deferred?’, *ILO Future of Work research paper series* (7).
- Oishi, S., Kesebir, S. and Diener, E. (2011), ‘Income inequality and happiness’, *Psychological science* **22**(9), 1095–1100.
- Organisation for Economic Co-operation and Development (2017), *Trust and public policy: How better governance can help rebuild public trust*, OECD.
- Ostrom, E. (2002), ‘Reformulating the commons’, *Ambiente & sociedade* pp. 5–25.
- Ostrom, E. and Hess, C. (2000), Private and common property rights, in ‘Encyclopedia of law and economics’, Edward Elgar Publishing Limited.
- Otten, K., Buskens, V., Przepiorka, W. and Ellemers, N. (2020), ‘Heterogeneous groups cooperate in public good problems despite normative disagreements about individual contribution levels’, *Scientific reports* **10**(1), 1–12.
- Oxoby, R. J. and Spraggon, J. (2008), ‘Mine and yours: Property rights in dictator games’, *Journal of Economic Behavior & Organization* **65**(3-4), 703–713.

- Papke, L. E. and Wooldridge, J. M. (1996), ‘Econometric methods for fractional response variables with an application to 401 (k) plan participation rates’, *Journal of applied econometrics* **11**(6), 619–632.
- Patacchini, E. and Zenou, Y. (2016), ‘Social networks and parental behavior in the intergenerational transmission of religion’, *Quantitative Economics* **7**(3), 969–995.
- Paxton, P. and Glanville, J. L. (2015), ‘Is trust rigid or malleable? a laboratory experiment’, *Social Psychology Quarterly* **78**(2), 194–204.
- Peters, H. E. (1992), ‘Patterns of intergenerational mobility in income and earnings’, *The review of Economics and Statistics* pp. 456–466.
- Pettigrew, T. F. and Tropp, L. R. (2006), ‘A meta-analytic test of intergroup contact theory.’, *Journal of personality and social psychology* **90**(5), 751.
- Pew Research Center (2019), ‘Religion and living arrangements around the world’.
- Pignataro, G. (2012), ‘Equality of opportunity: Policy and measurement paradigms’, *Journal of Economic Surveys* **26**(5), 800–834.
- Piketty, T. (1995), ‘Social mobility and redistributive politics’, *The Quarterly journal of economics* **110**(3), 551–584.
- Piraino, P. (2015), ‘Intergenerational earnings mobility and equality of opportunity in south africa’, *World Development* **67**, 396–405.
- Pistolesi, N. (2009), ‘Inequality of opportunity in the land of opportunities, 1968–2001’, *The Journal of Economic Inequality* **7**(4), 411–433.
- Plus4 Research (2021), ‘Summary of results: Afrobarometer Round 8 survey in South Africa, 2021’.
- Potgieter, E. (2017), ‘Sa reconciliation barometer survey: 2017 report’, *Institute for Justice and Reconciliation. Cape Town: Institute for Justice and Reconciliation* .
- Potgieter, E. (2019), *SA Reconciliation Barometer survey: 2019 report*, Institute for Justice and Reconciliation.

- Putnam, R. D. et al. (2000), *Bowling alone: The collapse and revival of American community*, Simon and schuster.
- Qi, Y., Li, Q. and Du, F. (2018), ‘Are rich people perceived as more trustworthy? perceived socioeconomic status modulates judgments of trustworthiness and trust behavior based on facial appearance’, *Frontiers in Psychology* **9**, 512.
- Quillian, L., Pager, D., Hexel, O. and Midtbøen, A. H. (2017), ‘Meta-analysis of field experiments shows no change in racial discrimination in hiring over time’, *Proceedings of the National Academy of Sciences* **114**(41), 10870–10875.
- Rabin, M. (1993), ‘Incorporating fairness into game theory and economics’, *The American economic review* pp. 1281–1302.
- Ramalingam, A. and Stoddard, B. V. (2021), ‘Does reducing inequality increase cooperation?’.
- Ramos, X. and Van de Gaer, D. (2016), ‘Approaches to inequality of opportunity: Principles, measures and evidence’, *Journal of Economic Surveys* **30**(5), 855–883.
- Ravallion, M. and Lokshin, M. (1999), *Subjective economic welfare*, The World Bank.
- Rawls, J. (1958), ‘Justice as fairness’, *The philosophical review* **67**(2), 164–194.
- Rawls, J. (1971), *A theory of justice*, Harvard university press.
- Rees, A. (1993), ‘The role of fairness in wage determination’, *Journal of labor economics* **11**(1, Part 1), 243–252.
- Reuben, E. and Riedl, A. (2013), ‘Enforcement of contribution norms in public good games with heterogeneous populations’, *Games and Economic Behavior* **77**(1), 122–137.
- Ricci, C. A. (2016), ‘Perceived social position and objective inequality: Do they move together? evidence from europe and the united states’, *Italian Economic Journal* **2**(3), 281–303.
- Rushton, J. P., Chrisjohn, R. D. and Fekken, G. C. (1981), ‘The altruistic personality and the self-report altruism scale’, *Personality and individual differences* **2**(4), 293–302.

- Savage, M. (1986), *The cost of apartheid*, number 121, University of Cape Town Cape Town, South Africa.
- Schuck, B. and Shore, J. (2019), ‘How intergenerational mobility shapes attitudes toward work and welfare’, *The ANNALS of the American Academy of Political and Social Science* **682**(1), 139–154.
- Shaleva, A. E. (2015), ‘Uncovering the impact of intergenerational income mobility on interpersonal trust’, *IZA Journal of Labor & Development* **4**(1), 15.
- Slonim, R. and Guillen, P. (2010), ‘Gender selection discrimination: Evidence from a trust game’, *Journal of Economic Behavior & Organization* **76**(2), 385–405.
- Smith, S. S. (2010), ‘Race and trust’, *Annual Review of Sociology* **36**, 453–475.
- Socha, T. J. and Diggs, R. C. (1999), *Communication, race, and family: Exploring communication in black, white, and biracial families*, Routledge.
- Solon, G. (1999), Intergenerational mobility in the labor market, in ‘Handbook of labor economics’, Vol. 3, Elsevier, pp. 1761–1800.
- Solon, G. (2002), ‘Cross-country differences in intergenerational earnings mobility’, *Journal of Economic Perspectives* **16**(3), 59–66.
- Solon, G. (2018), ‘What do we know so far about multigenerational mobility?’, *The Economic Journal* **128**(612), F340–F352.
- Solow, J. L. and Kirkwood, N. (2002), ‘Group identity and gender in public goods experiments’, *Journal of Economic Behavior & Organization* **48**(4), 403–412.
- Spiegelberg, H. (1961), ‘Accident of birth’: A non-utilitarian motif in mill’s philosophy’, *Journal of the History of Ideas* **22**(4), 475–492.
- Spraggon, J. and Oxoby, R. J. (2009), ‘An experimental investigation of endowment source heterogeneity in two-person public good games’, *Economics letters* **104**(2), 102–105.
- Stamos, A., Altsitsiadis, E. and Dewitte, S. (2019), ‘Investigating the effect of childhood socioeconomic background on interpersonal trust: Lower childhood socioeconomic

- status predicts lower levels of trust', *Personality and Individual Differences* **145**, 19–25.
- Statistics, S. (2016), 'Ghs series volume vii, housing from a human settlement perspective', *Pretoria: Statistics South Africa* .
- StatsSA (2015), Living conditions of households in south africa: An analysis of household expenditure and income data using the lcs 2014/2015, Technical report, Report.
- StatsSA (2018), General household survey, Technical report, Report 03-00-12. Pretoria: Statistics South Africa.
- StatsSA (2019), Inequality trends in south africa: A multidimensional diagnostic of inequality, Technical report, Report.
- Sugden, R. (1984), 'Is Fairness Good? A Critique of Varian's Theory of Fairness', *Source: Noûs* **18**(3), 505–511.
- Sutter, M., Zoller, C. and Glätzle-Rützler, D. (2019), 'Economic behavior of children and adolescents—a first survey of experimental economics results', *European Economic Review* **111**, 98–121.
- Swift, A. (2004), 'Would perfect mobility be perfect?', *European sociological review* **20**(1), 1–11.
- Tabellini, G. (2008), 'The scope of cooperation: Values and incentives', *The Quarterly Journal of Economics* **123**(3), 905–950.
- Tajfel, H., Billig, M. G., Bundy, R. P. and Flament, C. (1971), 'Social categorization and intergroup behaviour', *European journal of social psychology* **1**(2), 149–178.
- Tan, F. (2008), 'Punishment in a linear public good game with productivity heterogeneity', *De Economist* **156**(3), 269–293.
- Thaler, R. H. and Johnson, E. J. (1990), 'Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice', *Management science* **36**(6), 643–660.
- Thibaut, J. and Walker, L. (1978), 'A theory of procedure', *Calif. L. Rev.* **66**, 541.

- Tinghög, G., Andersson, D. and Västfjäll, D. (2017), ‘Are individuals luck egalitarians?—an experiment on the influence of brute and option luck on social preferences’, *Frontiers in psychology* **8**, 460.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D. and Wetherell, M. S. (1987), *Rediscovering the social group: A self-categorization theory.*, basil Blackwell.
- Tyler, T. R. (2003), ‘Procedural justice, legitimacy, and the effective rule of law’, *Crime and justice* **30**, 283–357.
- United Nations Development Programme (2020a), Human development report 2020: The next frontier human development and the anthropocene, Technical report, Report 03-00-12. Pretoria: Statistics South Africa.
- United Nations Development Programme (2020b), World inequality report 2020, Technical report, Report.
- United Nations Development Programme (2021), Global Multidimensional Poverty Index 2021, Technical report, Report.
- United Nations General Assembly (2015), Resolution adopted by the general assembly on 11 september 2015, Technical report, A/RES/69/315 15 September 2015. New York: United Nations. Retrieved March 25
- Urban, F. (1933), ‘The weber-fechner law and mental measurement.’, *Journal of Experimental Psychology* **16**(2), 221.
- Uslaner, E. M. (1999), ‘Democracy and social capital’, *Democracy and trust* pp. 121–150.
- Uslaner, E. M. (2000), ‘Producing and consuming trust’, *Political Science Quarterly* **115**(4), 569–590.
- Uslaner, E. M. (2002), *The moral foundations of trust*, Cambridge University Press.
- Uslaner, E. M. (2008), ‘Where you stand depends upon where your grandparents sat: The inheritability of generalized trust’, *Public opinion quarterly* **72**(4), 725–740.
- Warren, J. R. and Hauser, R. M. (1997), ‘Social stratification across three generations: New evidence from the wisconsin longitudinal study’, *American Sociological Review* pp. 561–572.

- Whiteley, P. F., Van Deth, J., Maraffi, M., Newton, K. and Whiteley, P. (1999), 'The origins of social capital', *Social capital and European democracy* pp. 25–44.
- Wiemers, E. E. (2014), 'The effect of unemployment on household composition and doubling up', *Demography* **51**(6), 2155–2178.
- Wilhelm, M. O., Brown, E., Rooney, P. M. and Steinberg, R. (2008), 'The intergenerational transmission of generosity', *Journal of Public Economics* **92**(10-11), 2146–2156.
- Wilson, R. K. and Eckel, C. C. (2006), 'Judging a book by its cover: Beauty and expectations in the trust game', *Political Research Quarterly* **59**(2), 189–202.
- Woolard, I. and Klasen, S. (2005), 'Determinants of income mobility and household poverty dynamics in south africa', *Journal of Development Studies* **41**(5), 865–897.
- Yagman, E. and Keswell, M. (2015), *Accents, race and discrimination: evidence from a trust game*.
- Yamagishi, T. (2001), 'Trust as a form of social intelligence.'
- Yamagishi, T. and Yamagishi, M. (1994), 'Trust and commitment in the united states and japan', *Motivation and emotion* **18**(2), 129–166.
- Zelmer, J. (2003), 'Linear Public Goods Experiments: A Meta-Analysis', *Experimental Economics* **6**, 299–310.
- Zeng, Z. and Xie, Y. (2014), 'The effects of grandparents on children's schooling: Evidence from rural china', *Demography* **51**(2), 599–617.