



Institutions as Inferential Spaces: How People Learn About Inequality

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Institutions as Inferential Spaces: How People Learn About Inequality

A dissertation presented

by

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to

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in partial fulfillment of the requirements

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Institutions as Inferential Spaces: How People Learn About Inequality

ABSTRACT

Income inequality is on the rise across the Western world. The reality of increasing inequalities has however not been accompanied by growing popular concern. Despite overwhelming evidence to the contrary, people increasingly believe their society functions meritocratically. Paradoxically, citizens of some of the world's most unequal societies think of their country as the paragon of meritocracy. This dissertation is an attempt to resolve this puzzle by describing a link between people's changing social environments and the ways in which they learn about inequality. I argue that what explains citizens' meritocratic beliefs is the fact that the lives of the rich and poor are organized in relatively homogeneous institutions: people live in neighborhoods, go to schools, and pick romantic partners and friends that fit their education and income level. As a result, people on either side of the income divide are unable to see the breadth of the gap that separates their lives from those of others: as the gap grows larger, other people's lives fade out of view. Hence, rising inequality paradoxically insulates people from seeing the full extent of it.

In Chapter 1, I present a sociological framework for investigating the formation of people's beliefs about inequality, which I suggest originate in their experiences growing up in relatively homogeneous or heterogeneous institutions. I argue that (young) people make sense of their world by constructing a causal model of success and failure, by including in it those

variables they have understood to be important in determining life outcomes. Institutions that are socioeconomically and ethnoracially heterogeneous expose people to the role of structural factors that remain hidden from sight in homogeneous settings. The implication is that people's causal explanations of success and failure—and, consequently, their beliefs about inequality—are informed to a great extent by the type of institutional environments (e.g. neighborhoods and schools) they have been durably exposed to.

In Chapters 2 and 3, I test expectations derived from this inferential model of belief formation; I describe the relationship between people's childhood exposure to heterogeneity and their inequality beliefs in adulthood by means of a series of survey-experiments. Whether explaining college admission outcomes or evaluating a range of life outcomes in the realm of education, work and crime, I find that people's beliefs varied with the ethnoracial heterogeneity of their childhood environment: the more ethnically homogeneous their childhood neighborhood and peer group, the more likely they were to explain outcomes in meritocratic terms. Conversely, the more ethnoracially heterogeneous the setting in which a person grew up, the more likely that person is to attribute outcomes to structural factors beyond a person's control—i.e. the result of a non-meritocratic process.

In Chapter 4, I study how US college students understand inequality. I show that over their college years, about half of all students change their mind about meritocracy and racial inequality in America. The more ethnoracially homogeneous and exclusive the college setting, the more likely a student is to develop a more meritocratic view of inequality in America. Conversely, the more heterogeneous the college, the more likely a student is to develop a critical stance toward meritocracy. On the interactional level, I find that students who are in frequent contact with students from another racial group come to be more concerned with racial and

income inequality in America, and more critical of meritocracy. Similarly, students paired with a different-race roommate, net of student background factors, outgroup interactions and college characteristics, developed a better understanding of the structural sources of inequality.

In Chapter 5, I study middle school students to see if their classroom and school environment impacts their beliefs about inequality. Turning the focus on these students, I ask how they understand their own school performances, when confronted with poor test results. Students' explanations of poor test results took a variety of forms: from internalizing their failure and blaming themselves, to blaming their teachers or attributing their results to bad luck. I find that the way students explain their school performance is only loosely connected to the particular country a student lives in, the resources of the school he or she attends, the quality of its teacher corps, or students' social background. Instead, students' explanations of their test results are informed more than anything else by the way their school is organized. I identified two features of the school's organization, namely the extent to which students are stratified, hierarchically, into different ability tracks within the school (e.g., AP classes, honor's courses for high-performers and vocational tracks for low-performers) and the extent to which the student body is segregated, socioeconomically. Regardless of their factual school performance, students in schools characterized by a low degree of stratification and segregation are more likely to attribute their academic performance to their teachers and to (bad) luck, whereas students in highly stratified and/or segregated schools tend to blame only themselves for their poor test results.

Together, the chapters of this dissertation outline a research agenda on the forms, causes and consequences of (young) citizens' inequality beliefs.

Table of Contents

List of Tables	vii
List of Figures	viii
Acknowledgements	ix
Chapter 1: <i>Introduction</i>	1
Chapter 2: <i>Making Sense of Merit and Responsibility in College Admission</i>	20
Chapter 3: <i>Explaining (Mis)fortune in Education, Work and Crime</i>	41
Chapter 4: <i>How College Students Learn About Inequality</i>	62
Chapter 5: <i>When Middle Schoolers Internalize Academic Failure</i>	99
Chapter 6: <i>Conclusion</i>	127
Appendices	139
References	150

List of Tables

2.1 <i>Responsibility attributions by participants' background and politics</i>	36
3.1 <i>Descriptive sample statistics</i>	47
3.2 <i>Differences in average structuralist attributions by childhood exposure to heterogeneity</i>	50
3.3 <i>Ordinary least squares (OLS) regression results predicting structuralist attributions</i>	52
3.4 <i>A typology of the reasoning behind participants' responses</i>	58
4.1 <i>Number, type and typical schools sampled</i>	76
4.2 <i>Conceptual framework and measurement of inequality beliefs</i>	77
4.3 <i>Stability and change in inequality beliefs over the college years</i>	78
4.4 <i>Descriptive sample statistics</i>	79-80
4.5 <i>Treatment effect of different-race roommate assignment on development of inequality beliefs</i>	86
4.6 <i>Two-way ordinal logistic fixed-effects regression of within-student change in inequality beliefs</i>	87
4.7 <i>Multilevel ordinal logistic regression of students' inequality beliefs with student random-effects</i>	90
5.1 <i>PISA's scale of students' attributions of failure in mathematics</i>	109
5.2 <i>Descriptive sample statistics</i>	113
5.3 <i>Multilevel linear regression model of students' externalization of failure in mathematics</i>	116
6.1 <i>Two-dimensional conceptualization of inequality beliefs</i>	135

List of Figures

1.1 <i>Beliefs about meritocracy in 18 countries, 1987-2009</i>	2
1.2 <i>Beliefs about meritocracy by actual income inequality in 42 countries, 2009</i>	4
1.3 <i>An inferential model of belief formation</i>	12
1.4 <i>Composition of a person's causal model of inequality by exposure to heterogeneity</i>	13
2.1 <i>Graphical description of the college scenarios</i>	26
2.2 <i>Responsibility attributions by scenario and outcome, Study 1</i>	27
2.3 <i>Response patterns for all research participants, Study 1</i>	28
2.4 <i>Responsibility attributions by scenario and outcome, Study 2</i>	32
2.5 <i>Attributions by exposure to heterogeneity</i>	34
2.6 <i>Estimation of an applicant's chances to get into a top-tier college</i>	37
2.7 <i>Estimation of an applicant's chances by participants' exposure to heterogeneity</i>	38
3.1 <i>Average individualist and structuralist attributions by sphere of life</i>	48
3.2 <i>Loading plot of all response categories by individual and structural dimension</i>	54
3.3 <i>Binned scatter plots of inductive attributions by ethnoracial heterogeneity</i>	56
3.4 <i>Binned scatter plots of inductive attributions by socioeconomic heterogeneity</i>	57
3.5 <i>Pie diagram of participants' responses by heterogeneity of childhood environment</i>	59
4.1 <i>Institutions as Inferential Spaces</i>	72
4.2 <i>Predicted probabilities for students' inequality beliefs by roommate assignment</i>	88
4.3 <i>Predictive margins for students' inequality beliefs by proportion of black and Hispanic students enrolled at their college</i>	92
4.4 <i>Predictive margins for students' inequality beliefs by college exclusivity</i>	93
5.1 <i>Attributions of failure by track placement and educational stratification</i>	121
5.2 <i>Estimated country effects on students' attributions by educational stratification</i>	122

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“Sociology is a science concerning itself with the interpretative understanding of social action and thereby with a causal explanation of its course and consequences.”

— Max Weber, *Economy and Society*

“When their own vulnerabilities become real—when the police decide that tactics intended for the ghetto should enjoy wider usage, when their armed society shoots down their own children, when nature sends hurricanes against their cities—they are shocked in a way that those of us who were born and bred to understand cause and effect can never be.” — Ta-Nehisi Coates, *Between the World and Me*

Chapter 1

Introduction

INEQUALITY IS ON THE RISE. Research describes the dramatic increase in income inequality in the West, in historical and comparative perspective, and offers explanations for this trend (Atkinson, Piketty, and Saez 2011; Keister and Moller 2000; McCall and Percheski 2010; Milanovic 2016; Morris and Western 1999; Neckerman and Torche 2007; Piketty 2014; Piketty and Saez 2003; Saez and Zucman 2016). Despite the reality of increasing inequalities, the trend has not been accompanied by growing popular concern with inequality (Alesina and Glaeser 2004; Bartels 2010; Kenworthy and McCall 2008; Kuziemko et al. 2015; McCall 2013). The US is the embodiment of this phenomenon: while it is the least socially mobile society in the West (Breen and Jonsson 2005; Corak 2004; Smeeding 2005), a full 95 percent of its citizens believe hard work is what drives success. America however is not an outlier; despite overwhelming evidence to the contrary, people across the developed world increasingly believe their society functions meritocratically (Figure 1.1). How to make sense of this paradox?

In this dissertation I attempt to resolve this puzzle by describing a link between people's changing social environments and the ways in which they learn about social inequality. To this end, I offer a sociological framework for investigating the formation of people's beliefs about inequality. I suggest that people's inequality beliefs originate in their experiences growing up, in relatively homogeneous or heterogeneous environments.

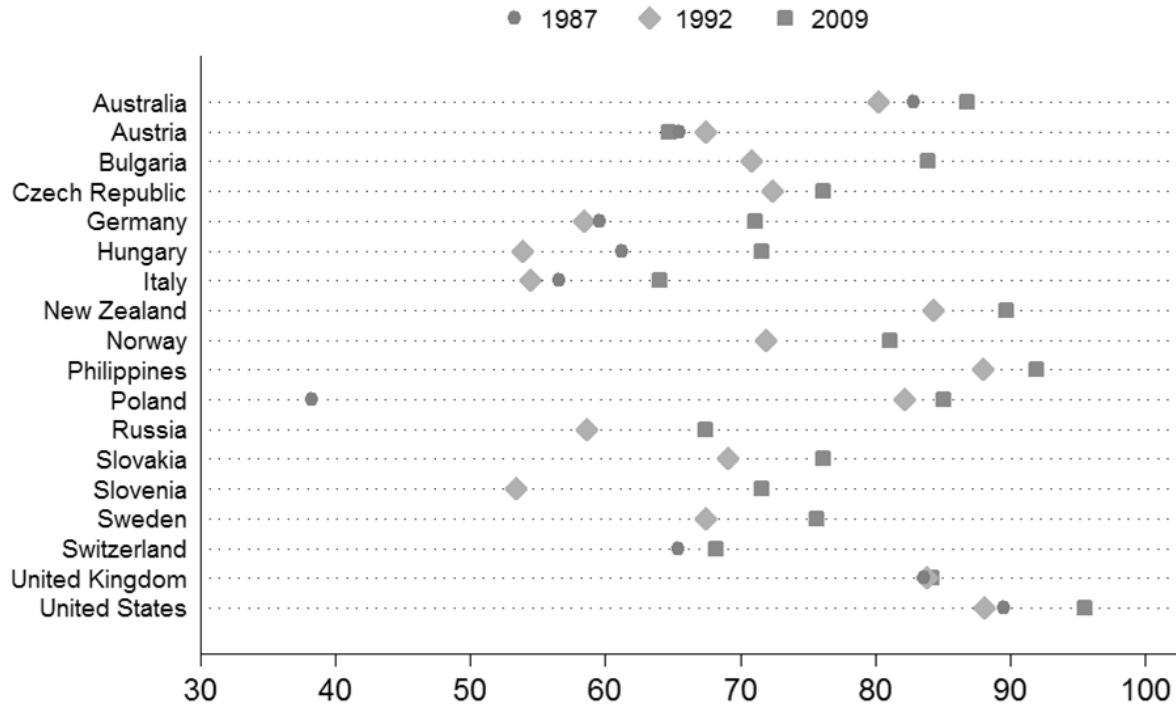


Figure 1.1 Beliefs about meritocracy in 18 countries, 1987-2009

Note. Displayed on the horizontal axis is the percentage of citizens of each country who indicated hard work is “very important” or “essential” for getting ahead in life (on a 5-point scale ranging from “not important” to “essential”) in 1987 (N = 13,154), 1992 (N = 23,401) and in 2009 (N = 32,456). Source: International Social Survey Programme.

The more socioeconomically and ethn racially heterogeneous a person’s childhood environment, the more likely a person is to experience and observe how life outcomes are shaped by structural factors such as race and wealth. Increasing levels of income inequality and segregation however mean that modern day Americans are growing up in more homogeneous environments. As a result, people on either side of the income divide are increasingly unable to see the breadth of the gap that separates their lives from those of others: as the gap grows larger, other people’s lives fade out of view. Hence, rising inequalities can paradoxically lead to insulate people from seeing the full extent of it. Consequently, citizens in some of the most unequal societies have come to think of their countries as the paragon of meritocracy (Alesina,

Stantcheva, and Teso 2017; Bartels 2010; Bénabou and Tirole 2006; Bucca 2016; and see Figure 1.2 on the next page).

In the next section, I discuss the literature on inequality beliefs, before introducing an inferential model of belief formation that I suggest is at the basis of how people learn to make sense of inequality. I conclude this introductory chapter by outlining the plan of this dissertation.

BACKGROUND

Why do some people graduate from Ivy League colleges, find great jobs and amass large fortunes, while others drop out of school, get in trouble with the law, and end up poor, unemployed or incarcerated? While exaggerated here for illustrative purposes, these are the kinds of questions that confront us on a regular basis, when we turn on the news or learn of a colleague getting promoted instead of us, hear of how well our friends' daughter is doing or are reminded of our cousin's seemingly endless spell of unemployment. Possible explanations for social inequality are myriad, but people's answers to these questions tend to take the form of what in the literature is referred to as an *individualist* explanation of inequality, emphasizing the things people do or fail to do, or a *structuralist* stance, the focus of which is on conditions beyond the individual's control (Kluegel and Smith 1981, 1986). In other words, people's beliefs about inequality find a place somewhere on a continuum ranging from a meritocratic view of inequalities as the result of a fair race that was decided by individual hard work alone, to the conviction that the race is rigged: some citizens have a much better shot at winning than do others, because of the color of their skin, their gender, or their parents' resources, among other structural conditions beyond their control.

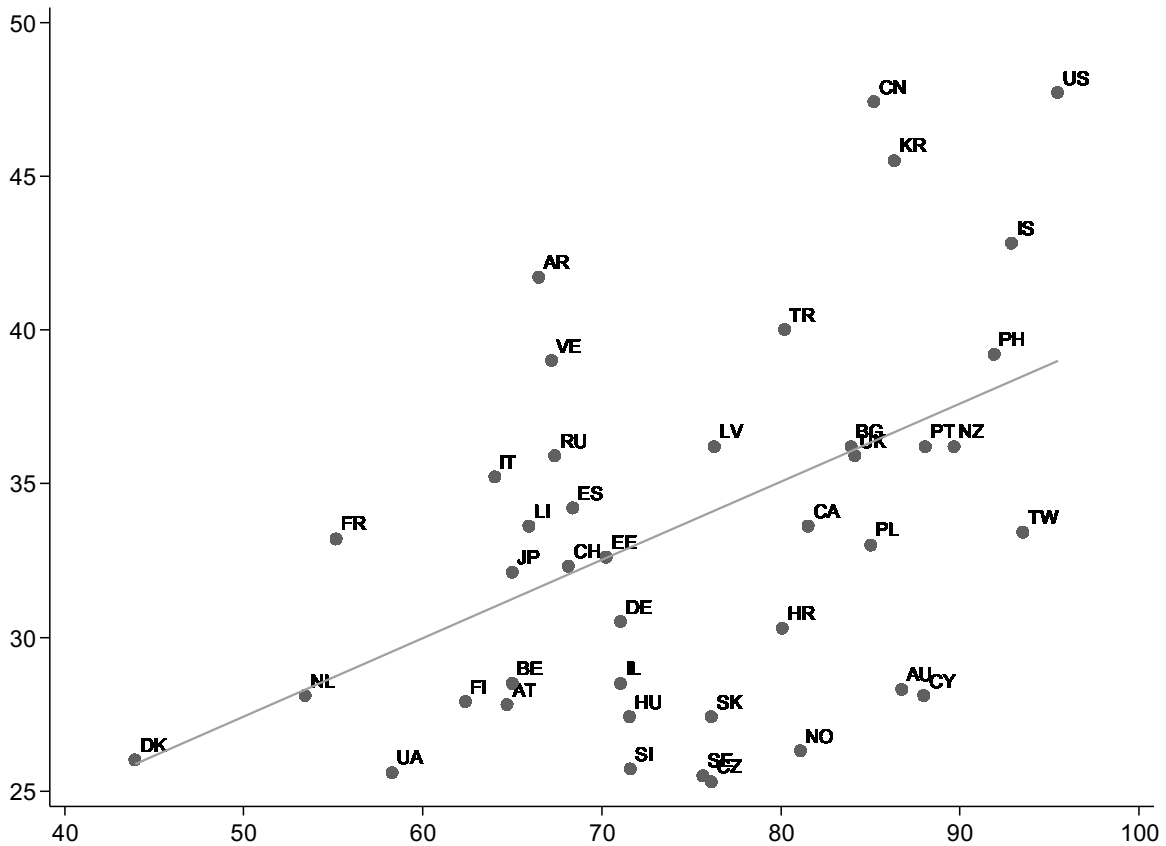


Figure 1.2 Beliefs about meritocracy by actual income inequality in 42 countries, 2009

Note. $R = .49$ ($p < 0.01$); R -squared = .24. Displayed is the percentage of citizens of each country who indicated hard work is “very important” or “essential” for getting ahead in life (on a 5-point scale ranging from “not important” to “essential”) ($N = 53,187$). The vertical axis gives each country’s most current Gini coefficient of post-tax income inequality, taken from Milanovic (2013). Source: International Social Survey Programme and All the Ginis Dataset.

- | | | | | |
|------------------|---------------------|------------------|------------------|---------------------|
| AR = Argentina | CN = China | FR = France | LI = Lithuania | SE = Sweden |
| AU = Australia | CY = Cyprus | HU = Hungary | LV = Latvia | SI = Slovenia |
| AT = Austria | CZ = Czech Republic | HR = Croatia | NL = Netherlands | SK = Slovakia |
| BE = Belgium | DE = Germany | IL = Iceland | NO = Norway | TR = Turkey |
| BG = Bulgaria | DK = Denmark | IS = Israel | NZ = New Zealand | TW = Taiwan |
| CA = Canada | EE = Estonia | IT = Italy | PH = Philippines | UA = Ukraine |
| CH = Switzerland | ES = Spain | JP = Japan | PL = Poland | UK = United Kingdom |
| CL = Chile | FI = Finland | KR = South Korea | PT = Portugal | US = United States |
| | | | RU = Russia | VE = Venezuela |

How people see and explain inequality in turn drives their empathy and solidarity with others (Alesina and Glaeser 2004; Lepianka, Gelissen, and Van Oorschot 2010; Mijs 2016). Simply put, we feel for people who we think are facing hardship by no fault of their own, whereas we have less sympathy for those whose situation, we think, is caused by poor choices or a lack of effort. Beyond sentiments and judgments, inequality beliefs are often the starting point for people's politics and policy views on issues such as criminal justice, the welfare state, and income redistribution (Alesina and Angeletos 2005; Bobo 1991; Gilens 2009; Kwate and Meyer 2010; Lepianka et al. 2010; Thompson and Bobo 2011).

Given their social and political relevance, social scientists have long had an interest in explaining citizens' inequality beliefs. Studies suggest that inequality beliefs vary with a person's wealth and income (Bullock 1999; Hochschild 1996; Newman 1999), and status position, more generally (Lamont 1992, 2009); as well as by race or ethnicity (Bobo et al. 2012; Croll 2013; Feagin 1975; Hunt 1996, 2000), gender (Reynolds and Xian 2014), and religion (Hunt 2000, 2002; Taylor and Merino 2011). Scholars have however been less successful in explaining these patterns in a general theoretical framework, which greatly complicates accounting for the sometimes conflicting conclusions that these studies support (cf. Hunt and Bullock 2016).

Extant explanations for why people hold the beliefs they do, principally rely on self-interest. The 'belief in a just world' perspective in social psychology describes a universal tendency to believe that inequalities reflect a meritocratic process, for this allows people to maintain their belief that they live in a fair world rather than having to address inequities (Bénabou and Tirole 2006; Jost, Banaji, and Nosek 2004; Lerner 1980). Along similar lines, scholars posit that meritocratic beliefs serve individual or group interests, i.e. those of successful

societal elites or groups that have an interest in maintaining their advantages more generally, through psychological self-justification (Kluegel and Smith 1986) or a more dynamic cultural process of boundary making, whereby people in positions of advantage develop beliefs that support legitimate closure between them and those below (Lamont 1992, 2009; Lamont, Beljean, and Clair 2014).

Self-interest however cannot account for the observation that, first, many people in advantaged societal positions in fact do not think they live in a just world (Delhey and Dragolov 2014; McCall 2013), and, second, oftentimes, inequality beliefs go against a person's interests, as when underprivileged societal groups blame themselves for their disadvantages (Crosby 1984; Jost and Banaji 1994; Jost and Hunyady 2005; Kay et al. 2009; McCoy et al. 2013) or when advantaged societal groups acknowledge their own privilege (Croll 2013). Moreover, reference to a general psychological process does not help us make sense of changes in inequality beliefs over time, nor does it explain differences between individuals' and groups of individuals' beliefs like those reported above.

I argue that explaining differences in citizens' inequality beliefs, and the trend toward more meritocratic beliefs in particular, requires an understanding of how people learn about inequality. In fact, there is a growing realization in the social science literature that beliefs about inequality, and related policy views, are not fixed, but shaped instead by context. One strand of research looks at the role of information in shaping people's beliefs about inequality (see below). The paradox of growing inequalities and increasing meritocratic beliefs may be due to the simple fact that people are not well-informed; they just do not know about the full extent of inequality. There is considerable evidence to suggest that people indeed underestimate the degree of inequality in their society—something that is true for Americans as well as citizens of European

and Latin American societies (Bucca 2016; Cruces, Perez-Truglia, and Tetaz 2013; Norton and Ariely 2011; Osberg and Smeeding 2006). News media may play a part here: McCall (2013) shows that print media in the United States devoted considerable attention to inequality and related themes such as poverty and job insecurity, but that the trend in reporting between 1980 and 2010 did not in any way correspond to actual trends in inequality; if anything, reporting declined since the 1980s, while inequality went up.

The importance of information is underlined by survey experiments indicating that presenting people with facts about the actual state of inequality generally leads them to update their beliefs, although exactly how they do is contested. Kuziemko et al. (2015) find that providing American citizens with information about real levels of inequality in their society increases their concern about inequality, but leaves their policy preferences largely unaffected. Alesina, Stantcheva and Teso (2017) replicate the first finding for representative samples of US, British, French, Italian and Swedish citizens. In line with the second finding, Kuklinksi et al. (2000) similarly find that correcting people's misperceptions about the number of people on welfare and the size of government spending does not change people's preferences. In contrast, Cruces, Perez-Truglia and Tetaz (2013) find that poor people underestimate how much other people make, and learning about their actual place in the income distribution increases their support for income redistribution. Last, Trump (2017) finds that information about inequality may change people's beliefs about the legitimacy of inequality, but in a counterintuitive direction: when inequality is exaggerated, in the survey-experimental treatment, people report a higher preference for the ratio of low-to-high income differences.

Underlying these disparate findings may be the fact that hearing about something is not the same as accepting it for the truth; despite all the news on inequality, for many people the

world as reported may not correspond to their lived experiences. A second strand of scholarship speaks to this point by situating beliefs about inequality in people's social and spatial context. Two studies, based on surveys in Los Angeles county (Merolla, Hunt, and Serpe 2011) and nationally representative data (Newman, Johnston, and Lown 2015), respectively, find that the composition of a person's neighborhood is associated with that person's inequality beliefs: people in areas with low levels of income inequality are more likely to hold meritocratic (individualist) beliefs, while those living in more economically heterogeneous areas are more likely to think that success in life is determined by forces outside their control (structuralist belief). Scholars report similar findings for the relationship between ethnic heterogeneity and beliefs about the causes of racial inequality (Bonilla-Silva and Embrick 2007; Croll 2013; McDermott 2011; Oliver and Wong 2003) and of poverty—residents of homogenous neighborhoods are more likely to think minorities and poor people are themselves to blame for their troubles (Alesina, Baqir, and Easterly 1999; Alesina, Glaeser, and Sacerdote 2001:30–33; Luttmer 2001; see also Gilens 2009).

These findings are indicative of the role of context in shaping inequality beliefs, through contact with and exposure to others. Along these lines, Lee, Farrell, and Link (2004) suggest that exposure to the homeless shapes inequality beliefs regarding the causes of homelessness, and Wilson (1996:417) concludes that “personal contacts with the poor constitute another manner in which beliefs that are contrary to the dominant ideological explanation of poverty causation can be constructed.” Shedd (2015:58) describes the other side of the coin in her study of Chicago public school students:

[These students'] perceptions of the world are indelibly shaped by their place in that world. (...) In a city as segregated as Chicago, attending a school with a sizable population of White youth might arguably lend youth of color one of their only opportunities to compare their personal experiences with those of their White peers. (...)

Youth of color attending segregated schools experience structural discrimination on a daily basis, but they lack the opportunity to make between-race comparisons on a daily basis. Students who cross boundaries, in other words, are more likely to see discrimination than those who do not make these journeys.

Taken together, these studies open up a sociological investigation into the contextual factors shaping inequality beliefs. My approach in this dissertation draws from both strands of research by asking how social environments shape the way people see and learn about inequality. To the extant literature I add an inferential model describing the formation of inequality beliefs. Specifically, I argue that a sociological investigation of inequality beliefs about inequality must ask how citizens' inequality beliefs are affected by their different socialization trajectories and the institutional settings that citizens are exposed to in their upbringing and beyond. The next section presents my theoretical framework for studying that process.

THEORETICAL FRAMEWORK AND EXPECTATIONS

This dissertation develops the idea that the way a young person learns to explain inequality is principally based on whether they have been exposed to experiences and information signaling the role of structural, non-meritocratic, factors in shaping life outcomes—either in their own lives or those of the people they know. Meritocracy is a powerful narrative, told and reproduced by parents, politicians, writers and movie makers (Hochschild 1996; Kluegel and Smith 1986; McCall 2013; Piketty 2014:419). I argue that developing a structuralist understanding of inequality in most cases requires that a person has some evidence of non-meritocratic processes: a person is more likely to believe that money can buy you an education, that family connections can get you a job, or that the 'right' tone of skin can get you out of a speeding ticket, if that person, or someone close to them, themselves experienced one or more of these things. A

person's race, sex, and religion are proxies for such experiences, insomuch as people live in societies where such identity categories are subject to discrimination. That is, being a member of a sex, race or religion that faces discrimination makes a person more likely to directly witness how life outcomes are shaped by non-meritocratic processes (e.g. discrimination, favoritism). The same is true of social class, especially in societies where status differences are salient in everyday interactions, through speech, appearance, and other status markers (Bourdieu 1984; Breen and Goldthorpe 1999; Evans 1997).

A second source of experiences with inequality is the social environment in which people grow up. This environment can be more or less racially and socioeconomically heterogeneous. I argue that encounters with people from a different racial or socioeconomic background may introduce information indicative of the structural sources of inequality in society, namely how race and family background may help or hinder social mobility (Evans 1997:451; Gerber and Green 1999; Hagan, Shedd, and Payne 2005; Shedd 2015; Shedd and Hagan 2006; Wilson 1996). Such encounters produce experiences which may lead emerging adults to re-evaluate their worldview (Evans 1997:452; Gurin et al. 2002; Margalit 2013:83; Piaget 1975). Conversely, an environment low in ethnoracial and socioeconomic heterogeneity may keep young people from this kind of information and thus does not provide counterevidence to the dominant meritocratic view of society (Newman, Velez, et al. 2015; Shedd 2015; Xu and Garand 2010).

Sampson and Bartusch go as far as to suggest we conceptualize beliefs as stemming from different "cognitive landscapes" at the neighborhood and community level (Sampson & Bartusch, 1998; and see Sampson, Raudenbush, & Earls, 1997). This concept helps identify the fact that, certainly in America, being poor, black, and living in certain neighborhoods, importantly shapes a person's social (peer) group, interactions with authorities, and exposure to

violence, among other formative experiences (Duncan and Murnane 2011; Lareau 2011; Massey 2007; Massey and Denton 1993; Sampson 2012).

Whereas I have in the preceding referred to environments in general, my focus in this dissertation is on institutions such as neighborhoods and schools. These institutions, more than others, constitute the context of adolescence, which research suggests is when young adults are particularly impressionable; moreover, beliefs formed in these years are quite durable over a person's life course (Alwin and Krosnick 1991; Sears and Funk 1999; Sears and Levy 2003). Inasmuch as they provide a durable context to a person's experiences and interactions with others, I argue, schools and neighborhoods are *inferential spaces*: they shape the development of a person's inequality beliefs by exposing that person to a certain type and range of information, but not to their counterfactuals.

My theoretical framework builds on contact theory (Allport 1954; Williams 1947), which posits that exposure to heterogeneity will, given the right conditions, improve people's (cognitive) understanding of and (affective) orientation toward members of ethnoracial or socioeconomic groups other than one's own (for a review, see Pettigrew and Tropp 2000). I depart from contact theory in theorizing that exposure to heterogeneity matters most because it provides people with information about structural processes shaping the society we live in—regardless of whether such experiences make a person more empathetic to the plight of others, as recent work suggest is not always the case (Denis 2015; Enos 2014; Sands 2017).

Specifically, I conceive of an inferential process whereby people draw from direct experiences and information available to them to develop an understanding of social inequality. That is, the way people learn from their homogenous or heterogeneous environment is not necessarily based on what they are explicitly taught or told, but instead entails inferential work,

1. To explain specific life outcomes, and inequality more broadly, people implicitly construct a causal model of the social world that includes a vector of variables, X , for all factors they think are relevant to explaining the observed outcome, Y . We can express structural factors as X_{str} and individual factors as X_{ind} , such that

$$Y = X_{str} + X_{ind} \quad (1)$$

2. The variables that enter a person's model of the social world are based in large part on how salient individual and structural factors, E_{ind} and E_{str} , are in a person's own experiences and observations, as well as on information, I_{ind} and I_{str} , people collect from other sources, conditional on whether this information seems plausible in light of their experiences and observations, such that

$$Y = X_{str} (E_{str} + I_{str}|E_{str}) + X_{ind} (E_{ind} + I_{ind}|E_{ind}) \quad (2)$$

3. For a person to experience the salience of an individual or structural factor, he or she must be able to observe variation both in the factor and in the relevant outcome—e.g. variation in effort and corresponding reward, variation in race/ethnicity and corresponding discrimination. A person's assessment of the salience of individual and structural factors, E_{ind} and E_{str} , thus varies with the extent to which they have had an opportunity to observe or experience variation in these factors.

4. Opportunities to experience or observe variation in individual and structural factors are conditioned by the composition of the institutions in which people grow up and learn about the social world: the more socioeconomically and/or ethnoracially heterogeneous an institution, H , the more opportunities a person has for observing and experiencing the salience of race and family resources (structural factors) and conversely the more homogenous an institution the more salient are individual factors, relative to structural factors, such that

$$H \uparrow \rightarrow E_{str} \uparrow E_{ind} \downarrow \quad \text{and} \quad H \downarrow \rightarrow E_{ind} \uparrow E_{str} \downarrow \quad (3)$$

5. The composition of institutions, in turn, is shaped by policies, practices and processes that govern entry into and exit from institutions—such as real estate markets and race-based or biased mortgage policies, for neighborhoods, admission policies for schools and universities, and hiring practices for jobs.

Figure 1.3 An inferential model of belief formation

whereby a person constructs a model of the world based on the information available to them (Cruces et al. 2013:101; Hitlin and Vaisey 2013:62; Vaisey 2009:1684). In Figure 1.3, I present my theoretical framework and expectations in terms of an inferential model of belief formation.

Figure 1.4 graphically summarizes the main theoretical expectations: people exposed to heterogeneous environments, having learned more about the role of structural factors in shaping life outcomes, are more likely to have a causal model of inequality that features more structural factors as compared to people who have been exposed mainly to homogeneous institutions.

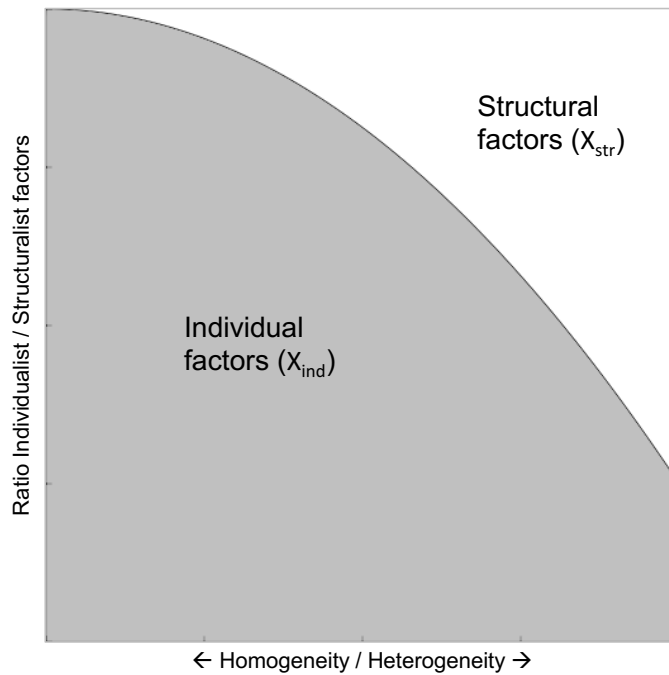


Figure 1.4 Composition of a person’s causal model of inequality (Y) by exposure to heterogeneity (H)

Note. Displayed on the horizontal axis is the level of socioeconomic and ethnracial homogeneity/heterogeneity a person is exposed to growing up, ranging from perfect homogeneity (no variation) to perfect heterogeneity (every socioeconomic and ethnracial group is represented in equal numbers). The vertical axis gives the composition of a person’s causal model of inequality as the ratio of individual factors (area shaded grey) to structural factors (area in white).

In sum, I describe an inferential process whereby people learn about the world they live in by drawing conclusions supported by their observations and experiences. Specifically, I propose that one of the ways (young) people make sense of their world is by constructing a causal model of success and failure, as determined by the variables they have understood to be important. The implication is that people's causal accounts of success and failure—and, consequently, of inequality—are informed to a great extent by the type of environment and people they've been durably exposed to. I expect people who are durably exposed to more heterogeneity to develop a more structuralist understanding of inequality over time, whereas I expect people in more homogenous settings to develop more individualist beliefs about inequality. Whereas this process may take many forms, my focus in this dissertation, in line with that of my discipline, is on the institutions that govern social life, especially those that have been shown to impact children and adolescents: the kinds of neighborhoods they grow up in, the schools they attend, and the type of college they go to (Duncan and Murnane 2011; Lareau and Goyette 2014; Sharkey 2008; Stevens, Armstrong, and Arum 2008).

PLAN OF THE DISSERTATION

The theoretical framework described above is the backbone for the empirical research presented in the subsequent chapters. Given the magnitude of the project I propose and the necessary limits to the evidence I can amass within the scope of this dissertation, I present five studies that together shed light on distinct parts of the process I theorize and lay the foundations for future work. I proceed as follows.

In Chapters 2 and 3, I present evidence gathered through a series of survey-experiments to describe the relationship between people's childhood exposure to heterogeneity and their

inequality beliefs in adulthood. A first set of experiments, described in **Chapter 2**, explore people's inequality beliefs regarding one important institution in America: college. I ask how people explain successful and unsuccessful college applications, and the extent to which people blame or praise the applicants for the outcome. To investigate these questions, I simulated a college admission process and experimentally varied the information provided to participants about how a college weighs applicants' school grades and their social class in making admission decisions.

My findings are twofold. First, I find that people adjust their praise and blame when given information signaling the role of non-meritocratic factors in the college admission process. Participants attributed more responsibility to applicants when the college is described as meritocratic than when an applicant is applying to a legacy college (i.e. a college that favors applicants from wealthy families). In the former scenario, applicants are praised more for getting in, and blamed more when they do not. Second, I show that there are distinct patterns in people's thinking about these scenarios: responses can be grouped into a cluster of people who are very responsive to the informational cues, and those who think grades (a meritocratic factor) are what determines college admission, no matter the admission policy.

In a second study I explore differences in people's responsiveness to contextual information. To this end I replicate the first study and add a set of background questions. I find that people with a more ethnoracially and socioeconomically heterogeneous childhood environment generally attribute more responsibility to applicants at a merit-based college and assign less blame and praise to applicants at a legacy college, as compared to people with a more homogeneous childhood environment. Comparing response patterns by other background factors, such as participants' age, gender, race/ethnicity, mother's education and politics,

suggests that the observed pattern is not driven by selection. I also provide evidence against the alternative explanation that people's different attributions are driven by their beliefs about college admissions more generally.

In **Chapter 3**, I present participants with three sets of vignettes, describing various positive and negative life outcomes in the realm of school, work and criminal justice. Each vignette gives a simple prompt—e.g., [A person] graduates from college / is promoted at work / is stopped by police but gets away without a speeding ticket—together with four factors that may be more or less important in explaining the event described. The factors are picked so that each vignette goes together with two factors signaling an individual's role (e.g., their positive attitude and hard work) and two factors signaling structural forces that are beyond the person's control (their family's resources, the color of their skin). Participants are asked, for each factor, to indicate its importance (on a scale from 0-100) in explaining the outcome, and are asked to explain their reasoning.

In addition to evaluating the twelve vignettes, participants fill in a survey that is meant to take them back to their childhood neighborhood and school: I ask people to describe the affluence and diversity of these environments in their own words, and I collect zip codes based on which I collected geocoded information objectively describing their childhood environments at the county level. Half of the participants are randomly assigned to the treatment condition in which they recall their personal background, by responding to the survey questions, prior to evaluating the vignettes, while the other half fills in the survey only after going through the vignettes.

The people in my sample typically explained outcomes by referring to meritocratic factors. Participants were most likely to do so when evaluating education and work-related

outcomes, as compared to events in the criminal justice realm. They were more likely also to explain positive life events in terms of meritocratic factors (like winning college admission or finding work), compared to negative life events like dropping out of school, or being arrested. Second, and in line with my findings in Chapter 2, I find that people's responses varied with the heterogeneity of their childhood environment: the more ethnically and racially diverse their childhood neighborhood and peer group, the less likely they were to attribute life outcomes to meritocratic factors. Conversely, the more homogenous the setting in which a person grew up, the more likely a participant was to see outcomes in meritocratic terms. Whereas the pattern varies in strength and statistical significance across the three domains (education, work, crime), it does not vary by treatment condition, suggesting that the association between a person's childhood environment and their inequality beliefs does not reflect an experimental priming or recall-effect. The association is robust, moreover, for different measures of childhood environment, and when statistically controlling on individual background factors.

Having produced tentative evidence on the association between the (homogenous or heterogeneous) environment in which people grow up, and the process through which they have learned to make sense of inequality in their society, I set out to collect observational data on children and young adults who find themselves in the midst of that process.

In **Chapter 4**, I present findings based on a longitudinal study of students attending a representative set of colleges across the US. I draw on questions posed to students in their first and last year of college, the responses of which tell me about their inequality beliefs and their college environment. I link student data to administrative records, which allows me to also factor in objective features of the college environment such as the demography of the student body and selectivity of the college. I show that over their college years, about half of all students change

their beliefs about meritocracy and racial inequality in America. The direction in which their inequality beliefs change, is shaped by (1) the racial diversity and exclusivity of the college setting; (2) the frequency of students' interactions with peers from different backgrounds; and, in particular, (3) the roommate a student is paired with.

I find that the more ethnoracially homogeneous and exclusive the college setting, the more likely a student is to develop a more meritocratic view of inequality in America. Conversely, the more heterogeneous the college, the more likely a student is to develop a critical stance toward meritocracy. On the interactional level, I find that students who are in frequent contact with students from another racial group come to be more concerned with racial and income inequality in America, and more critical of meritocracy. Similarly, students paired with a different-race roommate, net of student background factors, outgroup interactions and college characteristics, developed a better understanding of the structural sources of inequality during their college years.

An important question that has so far remained unaddressed, is whether people differently explain things that happen to them from things that happen to other people. In other words, do we apply the lessons of our experiences to our own lives as much as we do to others? To address this question, in **Chapter 5**, I look at middle school students to see if their classroom and school environment impacts their beliefs about inequality. Turning the focus on these students, I ask how they understand their own school performances, when confronted with poor test results. Data come from the Programme on International Student Assessment (PISA) which is an international test students' mathematics, science, and reading skills, administered every three years to 128,110 15-year-olds around the world.

Students' explanations of poor test results took a variety of forms: from internalizing

their failure and blaming themselves (“I’m not very good at solving mathematical problems”) to blaming their teachers (“My teacher did not explain the concepts well this week”) to attributing their results to bad luck (“Sometimes I am just unlucky”). I find that the way students explain their school performance is only loosely connected to the particular country a student lives in, the resources of the school he or she attends, the quality of its teacher corps, or students’ social background. Instead, students’ explanations of their test results are informed by the way their school is organized.

I identified two features of the school’s organization, namely the extent to which students are stratified, hierarchically, into different ability tracks within the school (e.g., AP classes, honor’s courses for high-performers and vocational tracks for low-performers) and the extent to which the student body is segregated, socioeconomically. Regardless of their factual school performance, students in schools characterized by a low degree of stratification and segregation are more likely to attribute their academic performance to their teachers and to (bad) luck, whereas students in highly stratified and/or segregated schools tend to blame only themselves for their poor test results.

Together, the chapters of my dissertation develop a research agenda on the forms, causes and consequences of (young) citizens’ inequality beliefs—a research agenda that takes into account and draws fruitfully from insights produced in social psychology and cognitive science, but that places front and center the sociological inquiry of how our social environment shapes, consciously and unconsciously, the ways we think, feel and act toward others in ways that push back against or promote the unequal societies we live in today. In **Chapter 6**, I conclude by reflecting on lessons learned and questions unanswered, and by spelling out the objectives and challenges of future research.

Chapter 2

Making Sense of Merit and Responsibility in College Admission

ABSTRACT

How do people understand unequal life outcomes? And how do people weigh contextual information against information that comes from past experiences, when attributing responsibility for such outcomes? I investigate these questions by means of a survey-experiment of people's evaluation of the college admission process, one of the drivers of earnings inequality in America. I ask people to evaluate the outcome of college admission, experimentally varying the contextual information presented to participants signaling meritocratic or non-meritocratic processes. In study 1, I assess whether people's attributions of responsibility (blame or praise) are relatively fixed across contexts, or if, instead, participants' attributions vary with the contextual information made available to them. In study 2, I explore differences in participants' responsiveness to contextual information. Specifically, I investigate if people who grow up in more ethnoracially diverse environments are more responsive to information signaling the role of non-meritocratic factors in shaping life outcomes.

NOTE

This chapter and the next report on studies that are part of my collaborative research with Tobias Gerstenberg, whose contribution I describe in the acknowledgements.

AS DAVID HUME KNEW IN 1777, causality cannot be observed; we see things happening, we find patterns and we ‘make’ causality. Drawing on advances in neuroimaging, scholars in cognition, neuroscience and neuropsychology suggest people have a ‘theory of mind,’ that allows them to reason about the (unobserved) causes of the things that happen in their lives. Descriptions of this process vary, but there is a consensus about the fact that people make causal inferences based on the limited information available to them, and update their beliefs when presented with new information (Alicke et al. 2015; Baron-Cohen, Lombardo, and Tager-Flusberg 2013; Koster-Hale et al. 2013; Koster-Hale and Saxe 2013).

This study explores the respective roles of immediate contextual information available to people, on the one hand, and the information that comes from past experiences, on the other. My theoretical interest is in exploring what kind of information people draw on in making inferences about other people’s actions. I investigate this question with a survey-experiment through which I solicit participants’ evaluation of the college admission process, one of the drivers of earnings inequality in America. My question is twofold: 1) to what extent are people’s evaluations of the college admission process fixed, or shaped by the kind of information they are presented with, and 2) to what extent does a person’s background experiences explain their receptiveness to take contextual information into account?

To address this question, I design an experiment where I simulate the college admission process at different types of colleges and ask participants to assign responsibility for the outcome of that process (admission or rejection) by attributing blame or praise to the applicant. The experiment is based on a paradigm developed by Lagnado, Gerstenberg, and Zultan (2013), as used in Gerstenberg et al. (2014), and is part of a broader set of studies I developed with the latter.

In the first (pilot) study I experimentally vary the information provided to participants about how a college weighs applicants' school grades and their family background in making admission decisions. In the second study I replicate the first study and collect additional background information on participants to establish to what extent variation in their receptiveness to contextual information can be explained by their background characteristics, specifically the ethnoracially homogeneous or heterogeneous environment they grew up in.

BACKGROUND

Recent scholarship in neuroscience (Koster-Hale and Saxe 2013; Mitchell, Macrae, and Banaji 2006), developmental psychology (Baron-Cohen et al. 2013), and cognitive science (Clark 2013; Tenenbaum et al. 2011) has fruitfully drawn on advances in neuroimaging to study the way in which people make inferences about other people's actions and intentions. Their work describes a theory of mind, that drives an inferential process which draws on lessons from past experiences, and, furthermore, that is socially shaped. Taken together, these studies raise the question, what experiences are salient in shaping our inferential accounts of other people's actions?

My aim is to make a sociological contribution to this inquiry by describing the ways in which people's evaluations of other people's actions vary with the kind of information that is available to them, on the one hand, and their background experiences on the other. To this end I designed a survey-experiment to solicit people's evaluations of the college application process. In a pilot study, I ask 30 participants to assign blame or praise to (un)successful college applicants. I experimentally vary the contextual information presented to participants to assess whether their attributions of responsibility (blame or praise) are relatively fixed across contexts

or if, instead, participants' attributions vary as a response to the contextual information made available to them—i.e. a process of belief updating (Gerber and Green 1999; Margalit 2013). The contextual information is designed to describe three types of colleges: a meritocratic college where high school grades are the most important factor determining admission; a 'legacy college,' where family wealth is the most important factor determining admission; and a hybrid college that weighs each of these factors equally.

In study 2, I replicate study 1 with a larger number of participants ($N = 115$), and add two components. In addition to asking participants to attribute blame and praise, I ask participants to estimate the chances of an applicant to get into a top-tier college in the US, varying the applicant's high school grades and family background. I also add a background survey, to be completed at the end of the experiment. Through this survey I collect information on applicants' childhood neighborhood and school environment as well as their age, sex, gender, race/ethnicity, mother's education, and politics. I draw on the neighborhood data to assess whether participants' responsibility attributions vary by the level of ethnoracial heterogeneity of their childhood environment and school environment, growing up. The additional background data allow me to check to what extent this relationship is reflective of non-random variation in people's politics, education, race, etc.

My expectations are as follows. First, if attributions are shaped by contextual information, we should see a pattern of variation in participants' attributions with the experimentally-varied provision of contextual information. Specifically, I expect participants to attribute more responsibility to an applicant at a ("merit-based") college that weighs grades more heavily than family background, and conversely, to attribute less responsibility to applicants who applied to a ("legacy") college that weighs family background more heavily (Hypothesis 1).

Second, if attributions are shaped by a person's childhood exposure to heterogeneity, we should see participants' responses to contextual information vary with their past exposure to heterogeneity. Specifically, I expect participants who grew up in a more heterogeneous environment to be more receptive to information signaling the causal role of structural factors than participants who grew up in a more homogenous environment. Consequently, I hypothesize that participants with a more heterogeneous childhood environment will make a sharper distinction between the scenarios as demonstrated by attributing more responsibility to applicants at a merit-based college and less responsibility to applicants at a legacy college (Hypothesis 2).

STUDY 1

I simulate the college admission process and ask study participants to evaluate the outcome of that process (admission or rejection) by attributing blame or praise to the applicant. To study how participants draw from contextual information, I experimentally vary the information provided to participants about how a college weighs applicants' school grades and their family background.

METHODS

PARTICIPANTS. Thirty study participants were recruited through an advertisement posted on the Amazon Mechanical Turk (MTurk) marketplace. MTurk is an online marketplace bringing together people ('workers') willing to perform generally small computer-based tasks and so-called requesters who pay for tasks. MTurk has come to be widely used by researchers (economists, psychologists, sociologists) as an interface within which to recruit and field studies. One advantage of using MTurk over student samples is that its pool of 500,000 workers is much

more diverse, in terms of age, social background, and race/ethnicity than that of the typical student recruit (Berinsky, Huber, and Lenz 2012; Horton, Rand, and Zeckhauser 2011; Paolacci, Chandler, and Ipeirotis 2010)—not representative of the US population, but comparable to other online samples used widely in survey research (Kuziemko et al. 2015). Moreover, studies suggest that MTurk is as reliable or more reliable than in-person data collection (Buhrmester, Kwang, and Gosling 2011; Weinberg, Freese, and McElhattan 2014). For this study, I limited participation to US residents, and to workers who are in good standing (have a 95% approval rating), which is a standard requirement for social science experiments using MTurk (Kuziemko et al. 2015).

PROCEDURE. I ask participants to attribute responsibility to a fictional person that succeeds or fails to win admission into one of three colleges. Admission outcomes vary by college to create a total of $3 \times 2 = 6$ scenarios. Participants are asked to evaluate each scenario, presented in randomized order.

Each scenario is presented by means of a contingency table and an accompanying text. The contingency table graphically illustrates two features of the applicants who were admitted and of those who were rejected admission at the college, namely whether the applicant came from a rich or poor family, and whether he held average or good grades in high school. Each table is accompanied with a prompt asking participants to indicate, by means of a slider ranging from 0 to 100, “to what extent should [applicant] be [praised *or* blamed] for [getting accepted *or* not getting accepted] at college [A, B or C],” where praise goes with getting accepted and blame is the wording used in the scenario where a student did not get accepted. Applicant names were drawn from a list of common first names for American men. See Figure A1 in the Appendix for

a screenshot of the prompt and setup.

The contingency tables are designed to present one of three ideal types:

1. A *merit-based* college (A) that mostly admits applicants with good grades, regardless of their family background.
2. A *legacy college* (B) that mostly admits applicants from rich families, regardless of their grades.
3. A *hybrid college* (C) that weighs in both family background and high school grades.

The three conditions present participants with different information about the factors explaining an applicant’s success or failure in the admission process. The first condition describes a college that rewards mostly individual factors; i.e. ‘merit.’ The second condition describes a college that rewards something outside the applicants’ control: their family fortune. The third condition describes an intermediary position between the other two. Participants evaluate two outcomes (college admission and no college admission) for each experimental condition (each of three colleges). The six different scenarios (3 conditions x 2 outcomes) are presented to participants in randomized order (Figure 2.1).

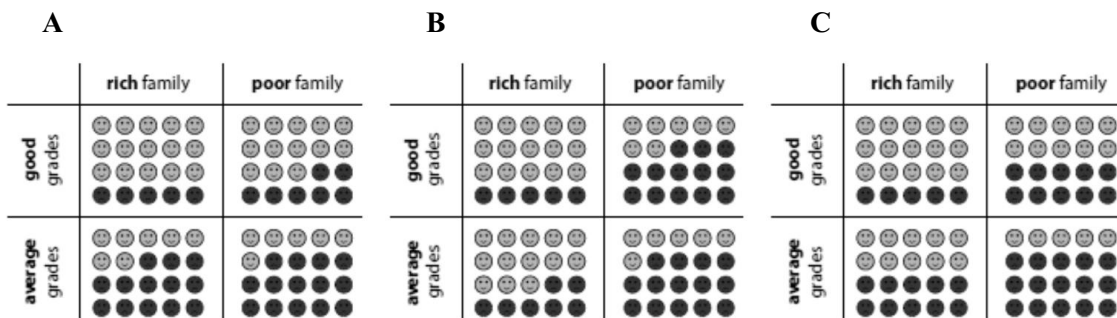


Figure 2.1 Graphical description of the college scenarios

Note. Admission is indicated by a smiley face; rejection is indicated by a dark frowny face.

RESULTS

I report the responsibility attributions given by participants in Figure 2.2. Displayed along the horizontal axis are the three college scenarios for the two outcomes (successful and unsuccessful application). The vertical axis gives the distribution of responsibility scores, corresponding to the level of praise or blame given, measured on the 0 – 100 scale that was presented to participants.

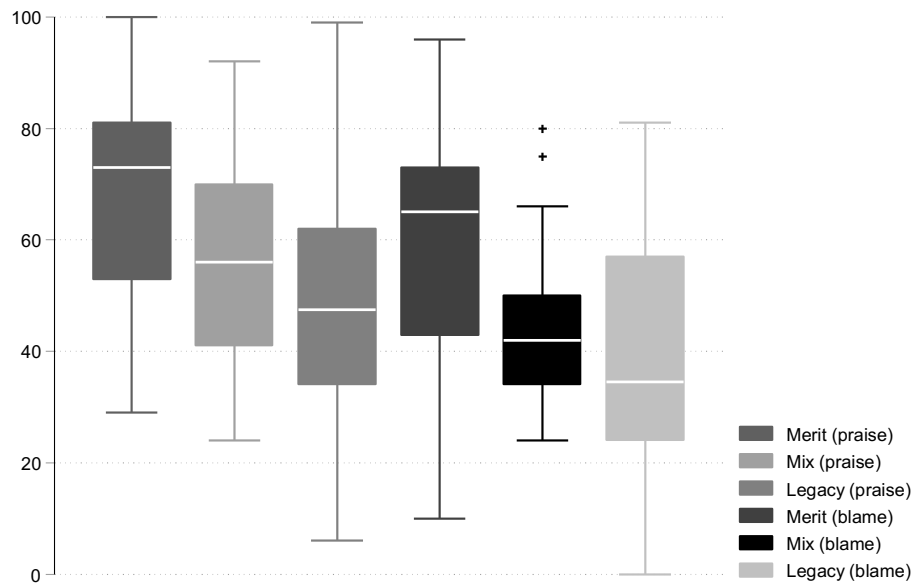


Figure 2.2 Responsibility attributions by scenario and outcome, Study 1 (N = 30)

Note. The vertical axis indicates the level of responsibility (0 – 100) attributed to an applicant for the various scenarios and outcomes. The white line indicates the median score, the box spans participants' responses from the first through the third quartile, and the whiskers below and above the box mark the first and fourth quartile and minimum and maximum scores, respectively.

Participants awarded an average responsibility score (praise) of 67.5 to applicants admitted to a meritocratic college, compared to a score of 49 for an applicant winning admission to a legacy college (a difference of 18.5 points, significant at $p < .05$). Admission to a hybrid college receives a score of 57, roughly in-between the other scenarios. Participants gave a responsibility score (blame) of 59.5 to applicants who did not get into a merit-based college, as

compared to a score of 41 for applicants rejected at a legacy college (a difference of 18.5 points, significant at $p < .05$). Applicants rejected by a hybrid college received a responsibility score of 44, statistically different ($p < .05$) from 59.5 but not from 41.

The results suggest that participants attributed responsibility in line with their inference about the admission process, based on the information they received about the college setting (emphasizing individual factors, structural factors, or a combination of both) and the outcome of the application process (positive or negative): participants generally assigned more praise than blame, and were more likely to attribute responsibility to an applicant who gained or failed to gain admission to a college based on their merit, as compared to a college where rich applicants had a leg up in the application process.

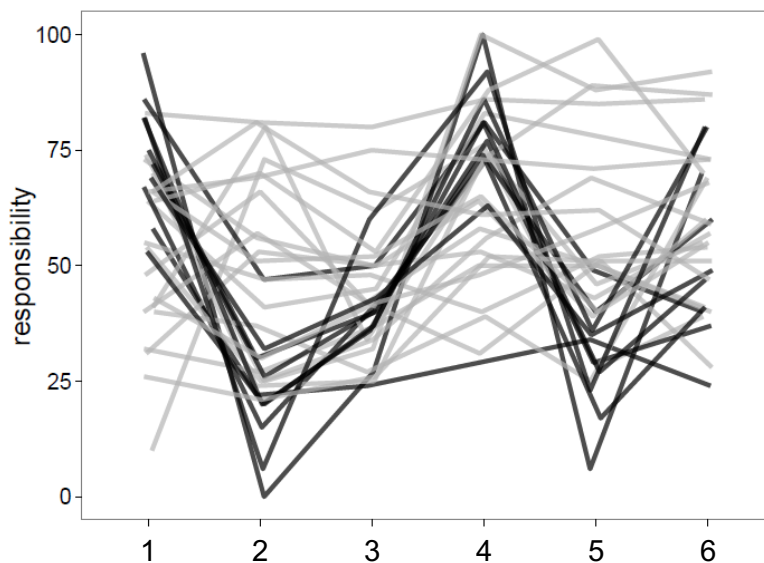


Figure 2.3 Response patterns for all research participants, Study 1 (N = 30)

Note. Each line indicates the responsibility attributions for a single participant across the six scenario-outcome combinations, plotted along the horizontal axis: rejected at a merit-based college (1), hybrid college (2) and legacy college (3), and admitted at merit-based college (4), hybrid college (5) and legacy college (6), respectively.

The graphs also indicate considerable variation within each category. To explore variation in participants' responses, I graph the response patterns for all participants (Figure 2.3, on the previous page). Whereas I have no detailed information about the participants, I did ask participants after completing the experiment to comment briefly on how they decided how much responsibility to attribute in the different scenarios. Participants' descriptions of their attribution rationale roughly fall into two categories, corresponding to the two response patterns identified above. The first category of comments suggests participants mostly focused on characteristics of the college and the application process it suggested. Take for instance the following two participants:

“If a school had a somewhat larger acceptance rate for students from rich families then I tended to attribute somewhat less praise for students who got accepted and somewhat less blame for students who did not.” Participant 7, pattern one

“[My approach was] taking in all the information and seeing whether being rich had any influence, since that is obviously not fair to poorer students and not their fault.” Participant 20, pattern one

By contrast, the second category of participants' comments are indicative of relative fixed ideas about responsibility and deservingness, as illustrated by these participants:

“If they got accepted they were more likely to be in charge of that outcome.” Participant 1, pattern two

“Everyone got what they deserved. I assumed that the poor students had bad grades or came from bad schools and didn't test as high, etc.” Participant 8, pattern two

In sum, this study describes how (most) participants take into account the contextual information provided to them when making responsibility attributions. As expected, people generally attributed more blame or praise to applicants at a meritocratic college; less to applicants at a hybrid college; and less even to applicants at a legacy college. Whereas this

describes the typical response pattern, a subgroup of participants was relatively unresponsive to the information provided to them; these participants instead attributed about the same levels of praise and blame to applicants across the different scenarios.

STUDY 2

Study 2 investigates variation in people's responsibility attributions. Specifically, are people's variable responsiveness to contextual information associated with their background or experiences, growing up? To this end, I replicate the first study and collect background information on participants.

METHODS

PARTICIPANTS. Recruitment proceeded along the same lines as reported for study 1, the only difference being that for study 2, I recruited a larger sample of 123 participants. I dropped eight respondents with missing values on key variables, leading to a final sample size of 115.

PROCEDURE. In study 2, I reproduce the test phase of study 1, to which I add a background survey, after the end of the test phase, followed by an estimation phase. In the background survey, I ask participants to estimate the ethnoracial composition of the neighborhood they grew up in and the high school they attended. I also collect zip codes for their childhood neighborhood and ask participants if they have attended a private elementary, middle or high school. I use the self-reported information to calculate a neighborhood and high school heterogeneity index score (Blau 1974, 1977; Moody 2001) as

$$\text{heterogeneity} = 1 - \sum_{i=1}^N p_i^2,$$

where N = number of ethno-racial groups and p_i = proportion of people in ethnic group i .

Heterogeneity index scores indicate the deviation from a perfectly heterogeneous environment where each ethnoracial group is the same size (score 1) and the ‘perfect homogeneity’ situation in which everyone is of one and the same ethnoracial background (score 0).

I merge the zip codes with county-level data from the American Community Survey from the year in which participants turned 13 to additionally derive a county-level heterogeneity score (cf. Johnston and Newman 2016). Participants who did not remember their zip code were asked to provide the name of their childhood town, city and state or county instead, based on which I was able to collect geolocation data for all but two participants. I focus on the early teenage years for this is when research suggests adolescents are beginning to develop an understanding of how they and others fit into the social order (Baird and Astington 2004a; Flanagan et al. 2009; Flanagan and Sherrod 1998; Grayman and Godfrey 2013). I also ask a set of control questions to collect information on participants’ age, sex, ethnoracial self-categorization, their political affiliation, and their mother’s education as a measure of family background (for descriptive statistics, see Table A1 in the Appendix).

In the estimation phase, following the survey, I ask participants to estimate the chance of an applicant “getting into a top-tier university in the US.” I ask for an estimation of the chances of admission to a top-tier college rather than simply any college for the latter is a very diverse category, made up of selective and non-selective schools. Moreover, participants likely vary in their views of what a typical is college, based in part on their own school background, whereas “top-tier university” is a relatively closely delineated category. As before, fictional applicants vary by high school and family wealth (see Figure A2 in the Appendix).

RESULTS

RESPONSIBILITY ATTRIBUTIONS BY SCENARIO. Figure 2.4, on the next page, graphically describes the responsibility scores given in the six scenarios. The results follow the same pattern and are close in point average to those obtained in the first study: participants attribute a mean responsibility score of 72 (rounded-off) to successful applicants at a merit-based college, as compared to a score of 61 to applicants at a hybrid college and 46 to applicants at a legacy college. The corresponding responsibility score are 57, 42 and 28 for unsuccessful applications at a merit-based college, a hybrid college and a legacy college, respectively.

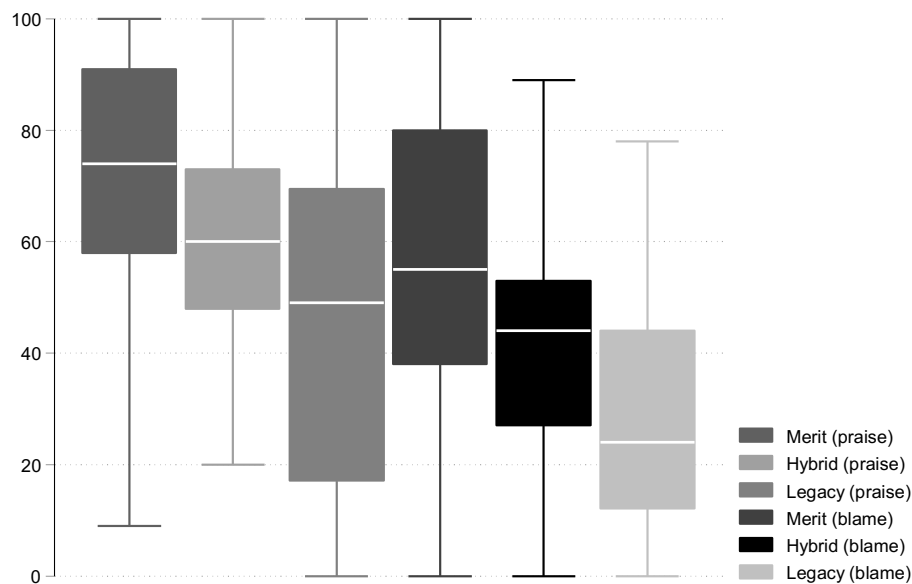


Figure 2.4 Responsibility attributions by scenario and outcome, Study 2 (N = 115)

The average score for each college scenario is significantly different from the other two scenarios, for each admission outcome ($p < .05$). The boxplot graphs also reveal considerable variation in responsibility attributions within scenarios, indicating little consensus between participants especially on how much to praise an applicant admitted to a legacy college or how

much blame to assign an applicants rejected from a merit-based college.

RESPONSIBILITY ATTRIBUTIONS BY CHILDHOOD EXPOSURE TO HETEROGENEITY. In the next phase of the study, I investigate whether participants' attributions can be linked to their background experiences. Specifically, my interest is in establishing whether participants' responsiveness to the scenarios signaling meritocratic and non-meritocratic processes varies, based on their experiences growing up in neighborhoods and attending schools in which they were or were not exposed to heterogeneity in terms of people's social and ethnoracial background.

In what follows I graph attributional patterns by homogeneity and heterogeneity in participants' childhood environment. I first consider their self-reported neighborhood environment, split in two equally sized groups based on participants' heterogeneity index score: participants who grew up in a relatively ethnoracially homogenous neighborhood and those who grew up in a heterogeneous neighborhood (Figure 2.5A). Next I compare responsibility attributions by participants' county-level neighborhood environment, based on the zip codes they provided, using the same procedure (Figure 2.5B). For sake of presentation, for each comparison I show only the two categories which the descriptive findings revealed to have the least consensus between participants: praise for an applicant admitted to a legacy college, and the level of blame attributed to an applicant rejected from a merit-based college. My expectation is that participants with more childhood exposure to heterogeneity on average attribute less praise to legacy college admits and attribute more blame to applicants rejected through a meritocratic process.

The figures describe a pattern in line with this expectation: participants who grow up in more heterogeneous neighborhoods give less praise in scenarios where non-meritocratic forces

play a large role, and more praise in scenarios where meritocracy is the leading factor, as compared to people who grew up in more ethnoracially homogeneous neighborhoods. This pattern holds for the measure based on participants' self-reported childhood neighborhood environment, but is not significant (at $p < .05$) for the measure of heterogeneity based on geolocation data, as indicated by the overlap in confidence intervals.

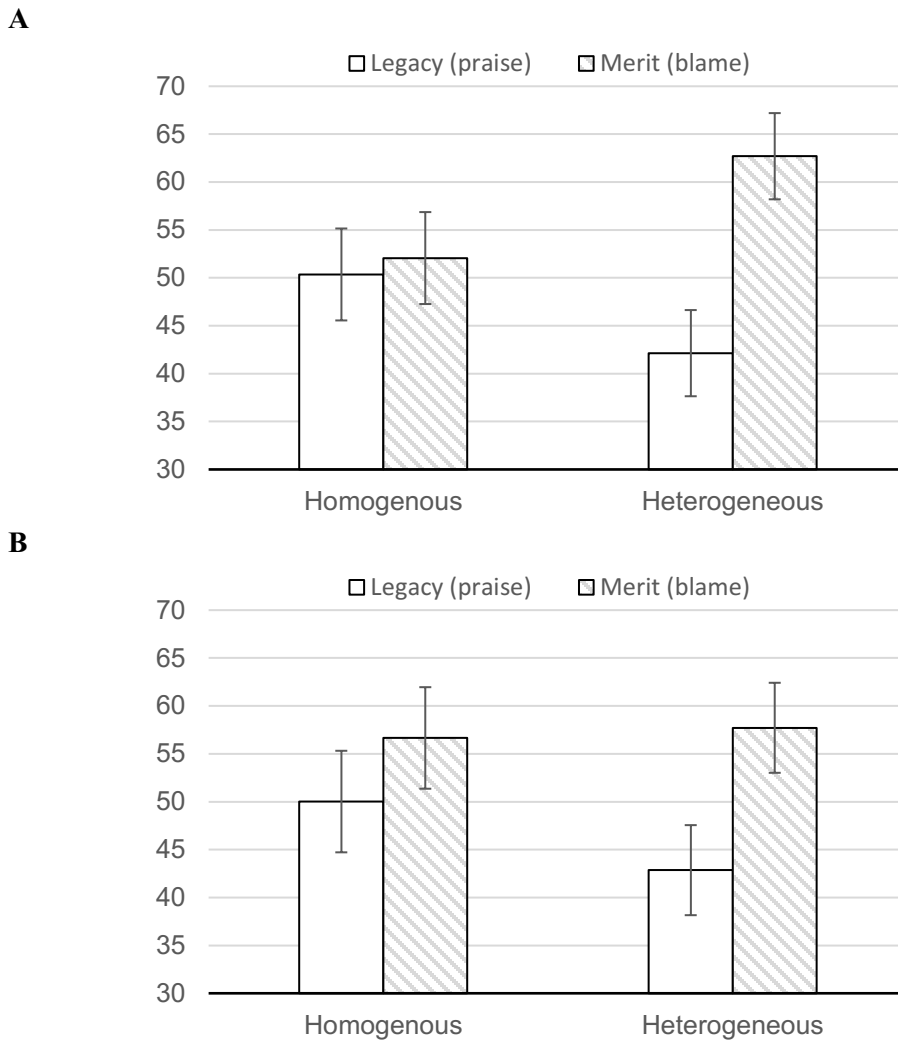


Figure 2.5 Attributions by exposure to heterogeneity (N=115)

Note. The vertical axis gives the mean responsibility attributions for participants by their childhood exposure to ethnoracial heterogeneity based on their self-reports (A) and on county-level geolocation data (B). Error bars indicate the 95% confidence interval.

As an alternative indicator of exposure to heterogeneity I also compared students who exclusively attended public schools (N = 90) with those who went to a private elementary, middle and/or high school (N = 25). The analysis (not shown here) indicates a comparable pattern as what is described above: compared to participants who attended one or more private school growing up, those with a public school background assign more blame to applicants at merit-based colleges, whereas they attribute less responsibility to applicants at legacy colleges.

RESPONSIBILITY ATTRIBUTIONS BY INDIVIDUAL BACKGROUND CHARACTERISTICS. Having described a relationship between participants' attributions and their childhood neighborhood experiences, I next assess to what extent this relationship may be due to non-random variation in participants' responsibility attributions associated with people's background characteristics. In Table 2.1, on the next page, I report average responsibility scores by participants' age, sex, race/ethnicity, politics, and family background for the two scenarios evaluated in the preceding. For each background variable, I break down the average scores for these two scenarios by background category (under 25/between 25 and 35/ over 35; male/female; white/minority; democrat/republican/independent; mother college-educated/mother not college educated). I report the t-test statistic for each pairwise comparison of mean scores. The number of participants in each response category is reported in the final column.

As described in Table 2.1, there is some variation in participants' attributions by background category, but most differences are limited to just a few points in responsibility ratings. The largest variation I found is a six-point difference in the typical responsibility scores given by the oldest and youngest age group of participants concerning the level of blame given in the merit-college scenario. None of the differences in mean attributions however pass

conventional standards of significance; all t-scores are lower than the critical value $t = 1.28$ for a one-tailed test of significance at $p < .10$, $df = 113$.

Table 2.1 Responsibility attributions by participants' background and politics (N=115)

Variable	Mean praise (legacy)	T-test diff \neq 0	Mean blame (merit)	T-test diff \neq 0	N
Age					
Under 25	44	0.71	60	1.10	(30)
Between 25 and 35	47	0.14	58	0.59	(51)
Over 35	48	0.56	54	0.70	(34)
Sex					
Male	44	0.92	58	0.35	(60)
Female	49		57		(55)
Race/ethnicity					
White	47	0.62	57	0.67	(90)
Minority	43		58		(25)
Political affiliation					
Democrat	44	0.56	59	0.24	(51)
Republican	48	0.20	56	0.29	(21)
Independent	48	0.89	57	0.14	(43)
Mother's education					
College-educated	46	0.07	58	0.05	(42)
Not college-educated	47		57		(73)

Note. Responsibility scores are rounded-off.

ESTIMATING APPLICANTS' CHANCES OF COLLEGE ADMISSION. In the final step of the study, I asked participants to estimate the chances of a person to gain admission to a "top-tier college in the US," depending on the applicant's high school grades and family background. One way to think of participants' estimations is as general beliefs or "priors" of how the admission process works. The various college scenarios introduced in the experiment, then, confront participants' priors with new information intended to make participants update their beliefs. The result is the responsibility attributions that have been described in the previous two sections. In this section I

consider the possibility that participants' priors vary by their childhood neighborhood environment.

I report participants' mean estimations in Figure 2.6. The results indicate that participants, on average, think a rich person has the highest chance of gaining admission to college, especially when they have good grades in high school. Participants estimate that close to 80 percent of rich applicants get into a top-tier college if they have good grades, and about 45 percent if they do not. Interestingly, in participants' estimation, an applicant with just average high school grades but hailing from a wealthy background has as much chance of getting into a top-tier college as an applicant from a more humble background but with better grades. Applicants from a poor family and with no more than average grades are estimated to have a chance of just 15 out of 100 of getting into a top-tier institution.

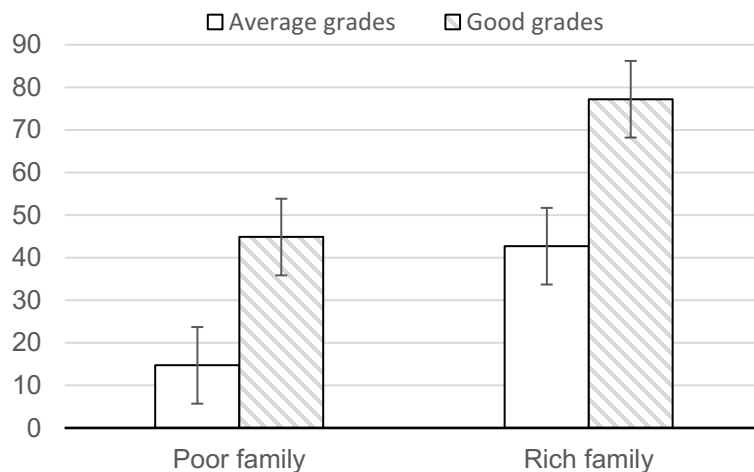


Figure 2.6 Estimation of an applicant's chances to get into a top-tier college (in percentages)

Making the same set of comparisons by participants' childhood environment as reported above, I find no systematic differences. Figure 2.7 shows minimal differences in participants' estimations by their childhood exposure to heterogeneity, which are well-within the range of

statistical error. The same is true for a comparison by participants' childhood environment based on the county-level measure of heterogeneity, and for a comparison between participants with a public or private school background.

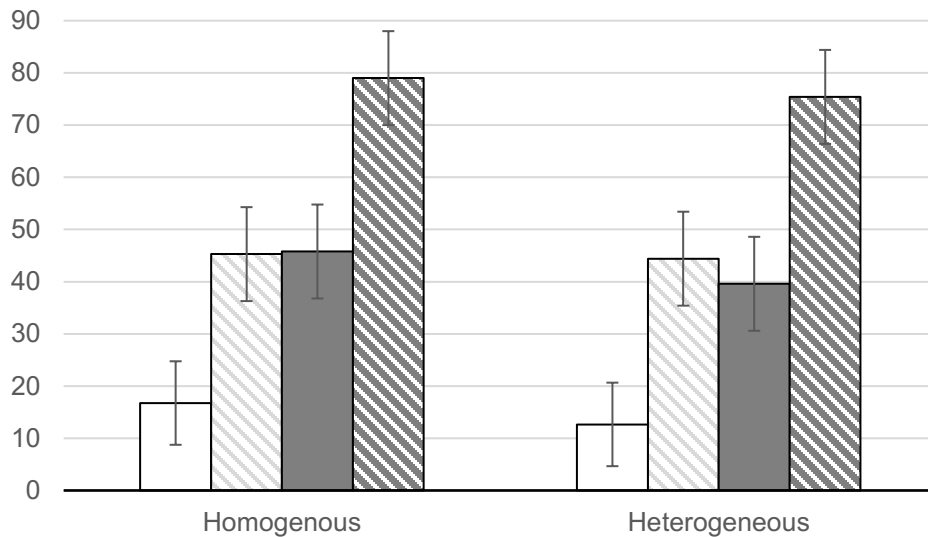


Figure 2.7 Estimation of an applicant's chances to get into a top-tier college by participants' exposure to heterogeneity (in percentages)

Note. The vertical bars indicate, from left to right, the estimated chance of admission for a poor student with average grades, a poor student with good grades, a wealthy student with poor grades, and a wealthy student with good grades.

CONCLUSION

In this chapter I set out to investigate the extent to which people explain life outcomes by drawing on immediate contextual information and on information that comes from past experiences. I studied this question by means of a survey-experiment of people's evaluation of the college admission process. In study 1, I ask study participants to assign a responsibility score to applicants in college scenarios that ranged from a 'meritocratic college' to a 'legacy college' where admissions are decided mainly by a person's family background. I experimentally vary the

contextual information presented to participants to assess whether people's attributions of responsibility (blame or praise) are relatively fixed across contexts, or if, instead, participants' attributions vary with the contextual information made available to them. I hypothesized that participants attribute more blame and praise to applicants to the merit-based college as compared to the legacy college.

My findings are in line with this expectation: participants typically attribute higher levels of praise and blame to applicants who went through a meritocratic admission process, than to applicants admitted or rejected by a legacy college. Participants responses however break down into two distinct patterns. The smaller group's attributions are relatively unaffected by contextual information signaling meritocracy or class reproduction, respectively. Asked to explain their attributions, these participants provide relative fixed ideas about responsibility and deservingness, with little room for considerations of contextual information.

In study 2, I explored the background to these differences in participants' responsiveness to contextual information. In addition to asking participants to attribute blame and praise I asked participants to estimate the chances of an applicant to get into a top-tier college in the US, varying the applicant's high school grades and family background. I also collected background characteristics for each participant, with a focus on their childhood exposure to ethnoracial heterogeneity—I ask participants to describe the ethnoracial makeup of their childhood neighborhood and collect zip codes which I match with geolocation data at the county-level. I hypothesized that people who grow up in more ethnoracially heterogeneous neighborhoods are more responsive to information signaling the role of structural factors in shaping life outcomes.

My findings are generally in line with this expectation: participants with more childhood exposure to heterogeneity attribute higher levels of responsibility to applicants at a merit-based

college, and assign less praise and blame to applicants at a legacy college—although the significance of the differences varies by how exposure to heterogeneity is measured. Comparing response patterns by participants’ age, sex, gender, race/ethnicity, mother’s education, and politics reveals small, non-significant, differences. These findings suggest that the observed pattern is not driven simply by a selection process through which people’s experiences with heterogeneity are reflective of differences in background characteristics.

Looking at participants’ estimation of the chances of gaining admission at a top-tier college, I find that participants on average estimate that a rich applicant with good grades has an 80 percent chance of getting in, as compared to a 15 percent chance for a poor student with average grades. Participants think a poor student with good grades has an equal chance of getting in as a rich student with average grades; about 45 percent. Participants’ estimations do not vary by experienced heterogeneity, which indicates that the association between participants’ childhood environment and their responsibility attributions is not reflective of differences in their views about college admissions more generally.

In sum, the evidence here presented suggests that what drives people’s different attributions of responsibility for success and failure is based first and foremost on their understanding of what process generated the observed outcome—principally, whether or not the process was meritocratic (cf. Hypothesis 1). Furthermore, I provide tentative evidence that the extent to which people distinguish between meritocratic and non-meritocratic processes may be conditioned by their experiences growing up—one dimension of which is their exposure to ethnoracial heterogeneity in their childhood neighborhood (cf. Hypothesis 2). In the next chapter I further explore this process by collecting more fine-grained data on people’s inequality beliefs and better measures of their childhood exposure to heterogeneity.

Chapter 3

Explaining (Mis)fortune in Education, Work and Crime

ABSTRACT

In this chapter I build on insights from Chapter 2 by means of an expanded survey-experimental design. I ask 331 study participants to make sense of various events, pertaining to the realm of education, work and crime, that are consequential for people's lives and which constitute building blocks of social inequality. As in the previous experiment, I also collect information on participants' childhood exposure to heterogeneity. By randomizing the order in which people are asked about their evaluations of the vignettes and their own background, respectively, I assess whether participants' responses vary by their exposure to heterogeneity, or simply by prompting to recall their childhood experiences. In line with my theoretical expectations, I find evidence suggestive of a relationship between study participants' exposure to heterogeneity and their beliefs about inequality: participants with more childhood exposure to heterogeneity generally attributed more importance to structural factors in explaining life events, as compared to participants with less exposure to heterogeneity. These findings are robust for priming effects, self-selection processes, and alternative measures of inequality beliefs.

“I think people are mostly capable of getting what they want out of life, if they don't they either didn't try hard enough or are too lazy, unmotivated or whatever.” Participant 12

“I believe that work ethic and respect is and always will be more important than racial bias or other excuses.” Participant 385

“I think that in a lot of cases, outcomes are determined by privilege and race... or a lack thereof. For instance, a person is more likely to be stopped by police if he is a racial minority in a low-income area. White people whose families have money are likely to receive more opportunities and less punishment when they break rules.” Participant 171

“To quote the Usual Suspects, "The greatest trick the devil ever pulled was to convince the world that he doesn't exist." Racism is the great Keyser Söze of America. It ever was. Has ever been, and shall ever be.” Participant 279

THE OPENING QUOTES, TAKEN FROM participants in the study presented in this chapter, suggest two things about people's inequality beliefs: beliefs about the causes of inequality can vary widely from person to person, and the way that people explain inequality bears on their feelings of empathy and solidarity with the plight of others (cf. Kluegel and Smith 1986). On top of that, we know from a long line of research, inequality beliefs are often a starting point for people's politics and policy views on issues such as criminal justice, the welfare state, and income redistribution (Applebaum 2001; Bobo 1991; Gilens 2009; Kwate and Meyer 2010; Thompson and Bobo 2011). Given these facts, it is no surprise that scholars have long been concerned with explaining how people come to hold the inequality beliefs they have. Studies suggest that inequality beliefs vary with age, gender, income, education (Barnes 2002; Bullock 1999; Hunt 2007) and race (Bauman and Skitka 2006; Hunt 1996, 2007; Kluegel 1990; Telles and Bailey 2013) as well as with religion (Hunt 2007; Taylor and Merino 2011), and that such differences are observable already with children 14 years of age (Grayman and Godfrey 2013).

While these studies suggest a host of covariates of inequality beliefs, for almost every factor suggested there is another study that reports a non-significant relationship. Further, there is little agreement over how these factors are related to inequality belief and what the direction of causality is. In short, nearly thirty years of scholarship since *Beliefs About Inequality* has not produced a comprehensive account that explains the observed patterns of co-variation.

One of the issues underlying the variety of findings is that the initial interest in detailed inequality beliefs (Hochschild 1996; Kluegel and Smith 1986; Verba and Orren 1985) has given way to a literature with little consensus about what questions to ask and how to measure people's responses (Evans 1997:456; McCall and Kenworthy 2009:474), as well as the fact that a typical study looks at inequality beliefs about just one of many realms of social life, e.g. school settings, the workplace, or criminal justice, among other topics.

In this chapter I contribute to the literature an account of people's inequality beliefs that is (1) more detailed than what is typically reported, (2) covers three spheres of social life, (3) is agnostic as to the precise measurement of inequality beliefs, and (4) which allows for an assessment of the statistical relationship between people's background characteristics and their beliefs. To this end, I designed a survey-experiment (N = 323) in which I ask participants to make sense of 12 events, pertaining to the realm of education, work and crime, that are consequential for people's life and constitute building blocks of social inequality. Participants' evaluation of these various life events allows for a detailed image of their inequality beliefs. I further link participants' beliefs to background characteristics collected through a questionnaire. I am interested in particular in assessing the relationship between participants' childhood neighborhood environment and their inequality beliefs in adulthood. In line with the theoretical framework outlined in Chapter 1, my expectation is that participants who grew up in more

heterogeneous neighborhoods have a more structuralist set of beliefs about inequality, as compared to people who grew up in more homogeneous environments.

METHODS

PARTICIPANTS. Study participants were recruited through an advertisement posted on the Amazon Mechanical Turk (MTurk) marketplace. MTurk is an online marketplace bringing together people (‘workers’) willing to perform, generally small, computer-based tasks and so-called requesters who pay for tasks. MTurk has come to be widely used by researchers (economists, psychologists, sociologists) as an interface within which to recruit and field studies. One advantage of using MTurk over student samples is that its pool of 500,000 workers is much more diverse, in terms of age, social background, and race/ethnicity than that of the typical student recruit (Berinsky et al. 2012). Moreover, studies suggest that MTurk is as reliable or more reliable than in-person data collection (Buhrmester et al. 2011; Weinberg et al. 2014). I limited participation to workers who are in good standing (have a 95% approval rating)—which is a standard requirement for social science experiments using MTurk. My only other selection criterion was that participants currently reside in the US. After eliminating for failed attention checks (see below) and missing values on key variables, I obtain a sample of 331 participants.

PROCEDURE. The study consists of two parts: (1) a test phase, and (2) a background questionnaire. In the test phase, I present participants with a set of 12 vignettes describing various events. For each event, participants are prompted with the question “To what extent do you believe [the event happened] because...”, followed by a list of four factors that give a background to the event and the person involved. The factors were picked to describe, for each

scenario, two individual factors and two structural factors—i.e. two factors that are within a person’s control, such as how hard a person worked for something, and two factors that are beyond a person’s control, such as whether that person grew up in an affluent or poor neighborhood. Figure B1, in the Appendix, is a screenshot of the instructions, a sample vignette, and the response categories. Note that the last response category is the attention check; participants were excluded from the sample if they attributed importance to this factor. The order in which the vignettes and response categories are presented is randomized. See Tables B1, B2 and B3 of the Appendix for the full list of vignettes and response categories pertaining to education, work and crime, respectively.

In part two, participants are prompted with a background questionnaire from which I draw information about participants’ individual characteristics and their exposure to heterogeneity. I ask participants about their age, sex, race/ethnicity, education, employment, family background, religion, and politics. For each participant I also collect the zip code of the neighborhood where they grew up to record the spatial context of participants’ childhood. As in the previous chapter, I match zip codes with geolocation data from the American Community Survey from the year in which participants turned 13 to get the county-level ethnoracial heterogeneity index score (cf. Johnston and Newman 2016).

I supplement the geolocation data with measures of heterogeneity exposure that I derive from participants’ responses to three open-ended questions about their childhood neighborhood and school. The questions are the following: “What percentage of the adults and children that you interacted with on a weekly basis (in your neighborhood, in school, etc.) was much richer or much poorer than you and your family? Please give your best estimate”; “What percentage of the adults and children you interacted with on a weekly basis (in your neighborhood, in school, etc.)

was from a different ethnic/racial group than your own? Please give your best estimate”; “Would you say you grew up in a diverse environment? Please explain.” Each question is followed by a comment box, providing participants with the means to provide as detailed an account as they wish, and to explain their responses. Responses to the first two questions were divided by 100 so that numbers indicate proportions rather than percentages. Responses to the latter question were recoded into a dichotomous homogeneous/heterogeneous variable (for details, see Table B4 in the Appendix). Table 3.1, on the next page, reports descriptive statistics for my sample.

In order to check for a priming effect of childhood recall (McCoy and Major 2007), I randomized the order in which participants complete part one and part two of the experiment: half of participants evaluate the vignettes before filling in the questionnaire, whereas the other half completes the questionnaire prior to evaluating the vignettes. At the end of the experiment, participants are asked to describe how they decided on their evaluation of the vignettes, after which they were thanked for their participation, and debriefed.

FINDINGS

IMPORTANCE OF INDIVIDUAL AND STRUCTURAL FACTORS. Participants on average assign an importance score of 75.6 to individual factors and 60.2 to structural factors, across the three topics. Comparing participants in the treatment condition (questionnaire first) to those in the control condition (vignette first), differences are small and non-significant, both for individualist attributions (diff = 0.13, $t(319) = 0.11$, $p = .46$) and for structuralist attributions (diff = -1.03, $t(319) = -0.77$, $p = .22$).

Table 3.1 Descriptive Sample Statistics (N = 323)

<i>Variable</i>	<i>Mean</i>
Exposure to heterogeneity	
Ethnoracial (self-reported)	.32 [0 – 1]; SD = .31
Ethnoracial (county-level)	.42 [.04 – .76]; SD = .19
Socioeconomic (self-reported)	.46 [0 – 1]; .26
Diversity (self-reported)	.43 [0 – 1]; .50
Age	35.8 [18 – 69]; SD = 10.83
Sex (male)	.53
Race/ethnicity	
White	.78
Black	.09
Hispanic	.06
Asian	.07
Education	
High school degree	.12
Some college	.34
College degree or more	.54
Mother's education	
No high school degree	.06
High school degree	.42
Some college	.18
College degree or more	.34
Religious (yes)	.55
Intention to vote for	
Donald Trump	.21
Hilary Clinton	.46
Neither	.33
Employment	
Employed	.75
Unemployed	.17
Student	.08

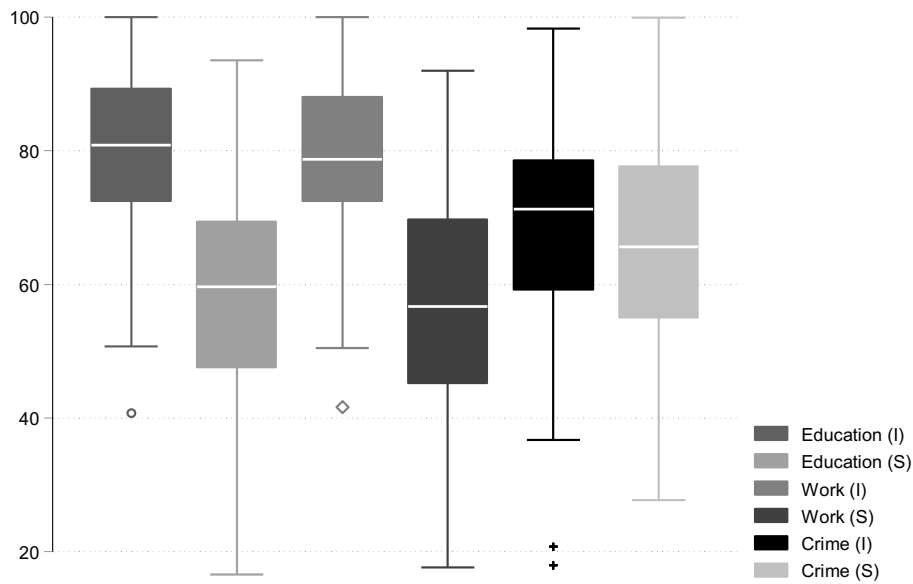


Figure 3.1 Average individualist and structuralist attributions by sphere of life

Note. The vertical axis indicates the level of importance (0 – 100) attributed to individual (I) and structural (S) factors in the domain of education, work or crime. The white line indicates the median score, the central box spans participants’ responses from the first through the third quartile, and the whiskers below and above the box mark the first and fourth quartile and minimum and maximum scores, respectively.

The distribution of responses for the three categories are presented in Figure 3.1. The vertical axis gives the level of importance attributed to individual or structural factors. The difference between individualist and structuralist attributions is especially strong in participants’ evaluation of the scenarios in work and education, where individual factors receive an average importance score of 79 and 80 as compared to a score of 57 and 59 for structural factors, respectively. The corresponding numbers are 68 and 66 for crime.

Participants’ inclination to attribute more importance to individual factors than to structural factors in line with findings reported in Chapter 2 and expected given the dominant meritocratic narrative that most Americans grow up with. The fact that participants’ evaluations of the vignettes about crime do not distinguish strongly between the two kind of explanations

may indicate that people do not think about crime in these meritocratic terms—at least not to the same extent as they do for education and work. Alternatively, it could be that participants' evaluation of the response categories does not correspond to what I predefined as individual and structural factors. I explore this possibility in the section titled 'Inductive measures of individualist and structuralist attributions' (pp. 53-57).

PARTICIPANTS' ATTRIBUTIONS AND THEIR CHILDHOOD EXPOSURE TO HETEROGENEITY. Next I compare responses by participants' childhood exposure to heterogeneity. Table 3.2, on the next page, describes the differences in participants' structuralist attributions by a dichotomization of the four measures of childhood heterogeneity across the three domains. For all four measures and the three domains, differences in average structuralist attributions are positive, indicating a relationship between childhood exposure to heterogeneity and participants' likelihood to make structuralist attributions, in line with my theoretical expectations. Differences are significantly different from zero for most of the measures, but not for all. Specifically, measures of heterogeneity are not as good a predictor of structuralist attributions in the realm of crime as they are for topics in education and work. Within the realm of work and education, the various measures of heterogeneity consistently and reliably predict higher structuralist attributions across the different scenarios. For seven out of eight of these, the difference by childhood heterogeneity is significantly different from zero at $p < .05$ or $p < .10$.

Table 3.2 Differences in average structuralist attributions by childhood exposure to heterogeneity

<i>Measure</i>	<i>Education</i>	<i>Work</i>	<i>Crime</i>
Ethnoracial heterogeneity (self-reported)	0.31 n.s.	4.23* p = .03	3.03† p = .07
Ethnoracial heterogeneity (county-level)	3.77* p = .04	3.11† p = .08	0.38 n.s.
Childhood diversity (self-reported)	3.86* p = .03	7.40** p < .01	1.86 n.s.
Socioeconomic heterogeneity (self-reported)	2.77† p = .07	3.09† p = .05	1.18 n.s.

Note. Numbers reported indicate the difference in average importance attributed to structural factors by dichotomous measures of participants' childhood exposure to heterogeneity = $\text{mean}_{\text{heterogeneous}} - \text{mean}_{\text{homogeneous}}$. Positive scores indicate higher structuralist attributions by childhood exposure to heterogeneity. † $p < .10$; * $p < .05$; ** $p < .01$.

SELF-SELECTION IN CHILDHOOD EXPERIENCES. Childhood exposure to heterogeneity is of course conditional on processes of self-selection in terms of parents' choice of neighborhood and school choice for their children, and by a person's openness to meeting and interacting with people from a different background. We know that these processes are related, among other things, with people's political ideology, income and race (DiPrete et al. 2011; Fiel 2015; McVeigh and Sobolewski 2007; Mouw and Entwisle 2006; Reardon and Bischoff 2011). To tease out the relationship between childhood heterogeneity and inequality beliefs in adulthood, I estimate regression models that include controls for characteristics that are known to condition people's exposure to heterogeneity: their age, sex, race/ethnicity, employment, education, family background, religion, and politics. Doing so, I obtain estimates of the association between exposure to heterogeneity and participants' structuralist inequality beliefs, net of differences in individual characteristics.

In what follows I present the results of models based on two measures of exposure to heterogeneity: participants' self-reported exposure to ethnoracial diversity growing up, and the

ethnoracial make-up of the county in which they grew up. The former measure most closely captures participant's experiences yet is also the most vulnerable to selective perception or recall, which may be conditioned by political beliefs, among other things. The latter measure has the benefit of being objective and unaffected by participants' perceptions, while its drawback is that it is a relatively distant measure of the environment participants encountered. Therefore, rather than picking one over the other, I use both measures. For each I estimate the statistical relationship with participants' structuralist attributions in adulthood as such, and the relationship net of controls for self-selection. In Table 3.3 (next page) I report results for a pooled average of all vignettes on education and work, but excluding vignettes about crime. I obtain qualitatively equivalent results looking at the domain of work and education separately (not shown here).

In correspondence with the descriptive results discussed above, the model estimate is positive for both the self-reported and the county-level measure of exposure to ethnoracial heterogeneity; indicating a positive relationship between childhood exposure to heterogeneity and participants' structuralist attributions in adulthood. The self-report measure is associated with a 4-point difference in participants' structuralist attributions in the domain of work and education, and the county-level measure with an estimated difference of about 9 points. Including controls into the regression model increases the estimates to approximately 5 and 12 points of difference, respectively. The fact that point-estimates are higher for the models which include controls for self-selection processes suggests that the latter indeed explain part of the real relationship between childhood exposure to heterogeneity and the way that people learn to explain inequality.

Table 3.3 Ordinary least squares (OLS) regression results predicting structuralist attributions

<i>Variable</i>	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
Heterogeneity (self-reported)	4.00**	1.51	4.86**	1.58				
Heterogeneity (county-level)					9.00*	3.96	12.03**	4.17
Age			0.20	0.27			0.13	0.27
Age-squared			-0.00	0.00			-0.00	0.00
Male			0.35	1.62			-0.12	1.62
Black			-8.09**	2.74			-8.14**	2.76
Latino			-5.31	3.44			-6.22†	3.50
Asian			-0.68	3.33			-0.95	3.46
Intend to vote Trump			-2.92	2.21			-2.57	2.23
Intend to vote Clinton			-3.79*	1.78			-3.30†	1.80
Religious			-1.16	1.54			-0.84	1.57
Education								
Some college			-1.29	2.78			-1.85	2.79
College degree or higher			-0.41	2.61			-1.15	2.62
Mother's education								
No high school degree			-1.05	3.32			-0.63	3.35
Some college			6.79**	2.16			7.18*	2.18
College degree or higher			0.22	1.80			-0.24	1.82
Unemployed			-0.03	2.02			-0.27	2.03
Student			-1.40	3.09			-2.43	3.13
Treatment condition			-2.07	1.52			-2.28	1.54
Constant	56.62**	0.99	55.71**	7.36	54.56**	1.82	55.29**	6.54
R-squared	0.017		0.093		0.023		0.091	
N	323		323		323		323	

Note. Reference categories are as follows: female (for sex), white (for race), neither (for voting intention), not religious (for religiosity), high school degree (for education and mother's education), employed (for employment status), control (for treatment). † $p < .10$; * $p < .05$; ** $p < .01$

INDUCTIVE MEASURE OF INDIVIDUALIST AND STRUCTURALIST ATTRIBUTIONS. The analysis so far can be summarized as having established a pattern of co-variation between participants' childhood exposure to ethnoracial heterogeneity and the level of importance they assign, in evaluating vignettes about educational and work-related events, to factors predefined as structuralist (vs. individualist). In this section I consider the extent to which this categorization of participants' evaluations in terms of individualist and structuralist attributions corresponds with people's own thinking about the vignettes. As an alternative to the predefined categories of individualist and structuralist factors we can take an inductive approach and look at the dimensions underlying participants' evaluations of all response categories. To this end I perform a principal component analysis of participants' evaluations of all 48 response categories presented to them in the course of the 12 vignettes.

Figure 3.2, on the next page, describes a loading plot of the two-component solution which explains 68% of variance. The figure graphically describes, for each response category, its position on two dimensions—one indicating individual factors, the other structural factors. The graph reveals clustering around the diagonal, indicating that high scores on the structural dimension generally go with low scores on the individual dimension and vice versa. A majority of response categories is in either the structuralist corner (high on the structural dimension, low on the individual) or the individualist corner (high on the individual dimension, low on the structural). About a quarter of all response categories takes up a position in between of the two corners, with positive values on both the individual dimension and the structural dimension, indicating that participants consider some response categories to be a combination of individual and structural factors.

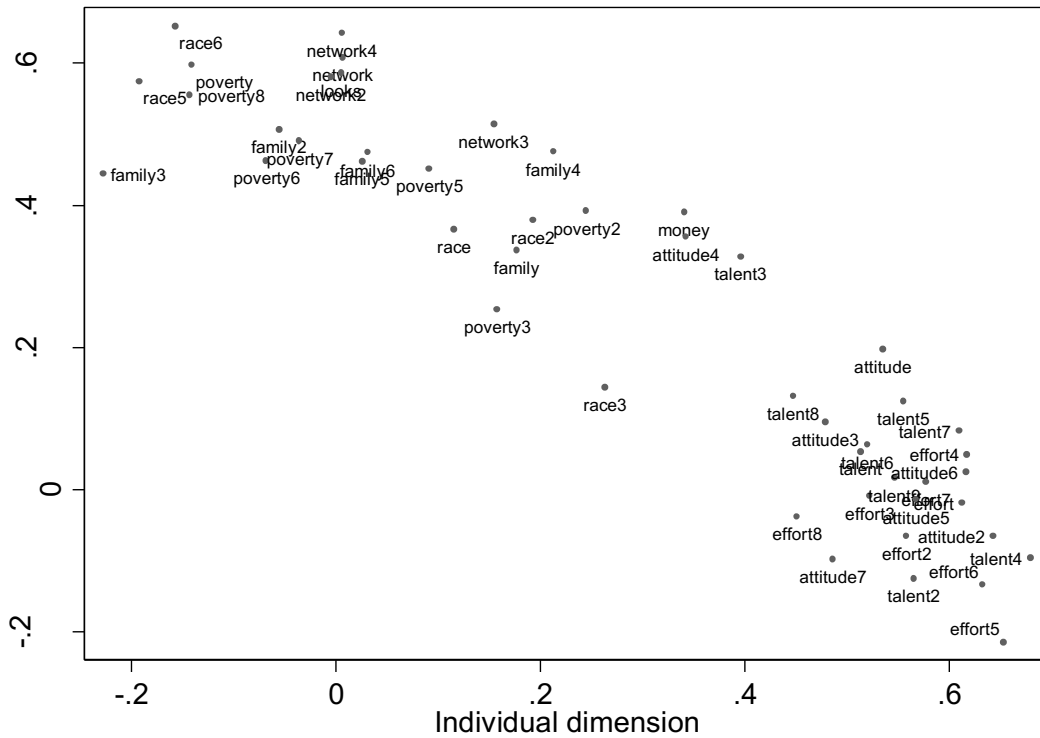


Figure 3.2 Loading plot of all response categories by individual and structural dimension

I labeled every response category with its predefined indicator so as to graphically examine if factors scoring high on the individual dimension are reflective of what in theory and the scholarly literature are considered individual factors (i.e. attitude, talent, effort). I find that overall they are. Similarly, all response categories with high loading scores on the structural dimension reflect structural factors so-defined (i.e. race, poverty, family background, family network). The cluster of response categories with positive loadings on both dimensions reflect a combination of individual and structural factors (i.e. race, poverty, attitude, talent).

Starting from these inductively-derived dimensions we can estimate, with the same OLS models as in the previous analysis, participants' attributions by the two dimensions of heterogeneity—this time across all domains (education, work and crime). I summarize the results

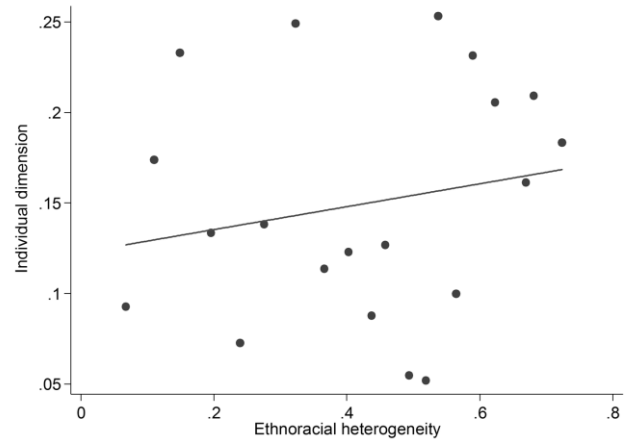
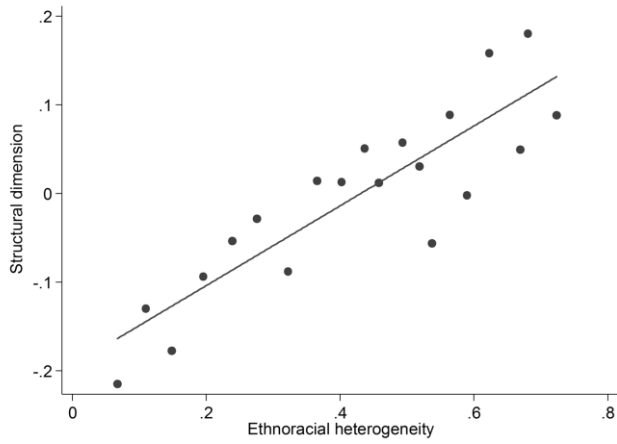
in two sets of binned scatterplots. To facilitate visualization, a binned scatterplot plots the mean of the x-axis and y-axis variables within each of 20 equal-sized bins. The line represents the best fit linear regression line.¹

Figure 3.3 presents the relationship between participants' attributions and their county-level childhood exposure to ethnoracial heterogeneity. The relationship is statistically indistinguishable from zero (at $p < .10$) for the individual dimension, but positive and statistically significant from zero for the structural dimension for vignettes on education ($p = .01$), work ($p < .01$) and crime ($p < .01$). Figure 3.4 gives the relationship between participants' attributions and their self-reported childhood exposure to socioeconomic heterogeneity, which is statistically insignificant for the individual dimension, but positive and statistically significant from zero for the structural dimension ($p < .10$).

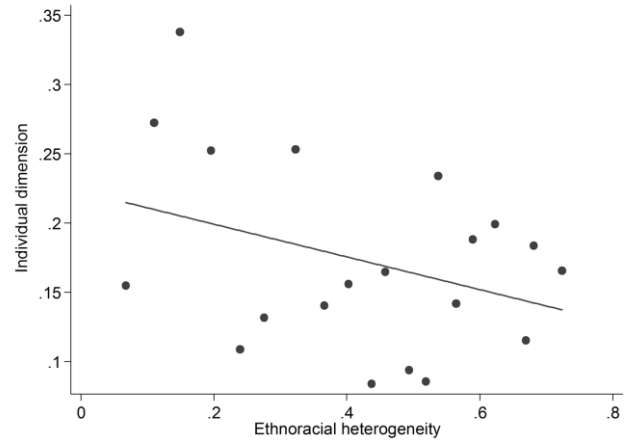
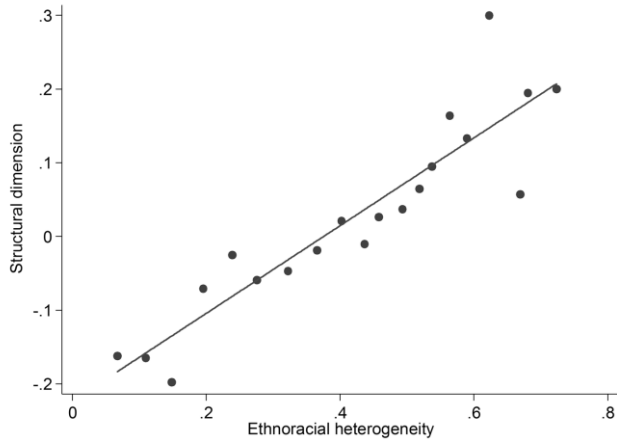
In sum, participants' own categorization of the response categories presented to them overlaps strongly with the predefined categories of individual and structural factors, based on theory. Moreover, looking at the association between participants' childhood exposure to heterogeneity and their attributions, these inductively generated dimensions confirm the pattern described in the previous paragraphs: across domains, exposure to heterogeneity goes together with higher structuralist attributions and lower individualist attributions.

¹ Graphs were produced with the *scatterbin* Stata program by Michael Stepner, based on Jessica Laird's original work. <https://michaelstepner.com/binscatter>.

Education



Work



Crime

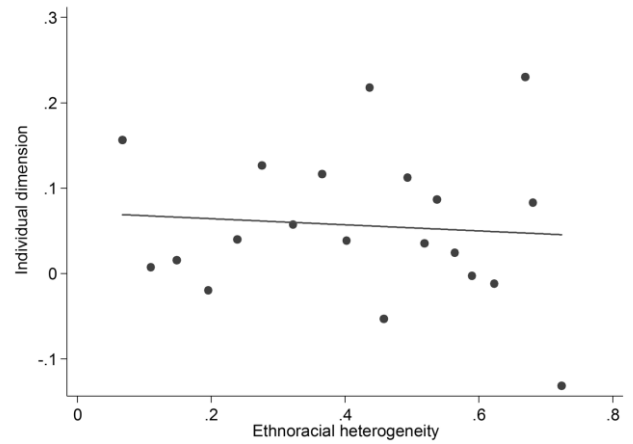
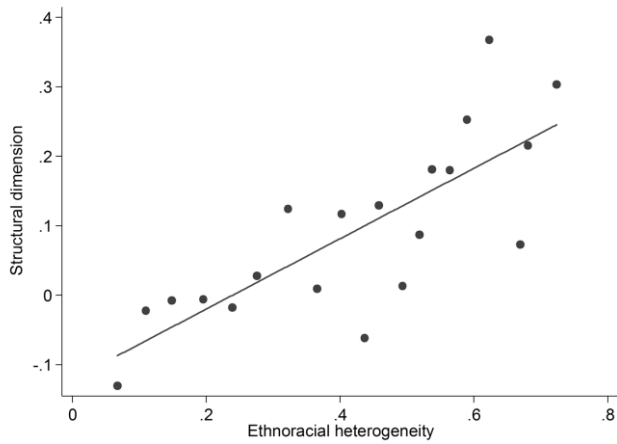
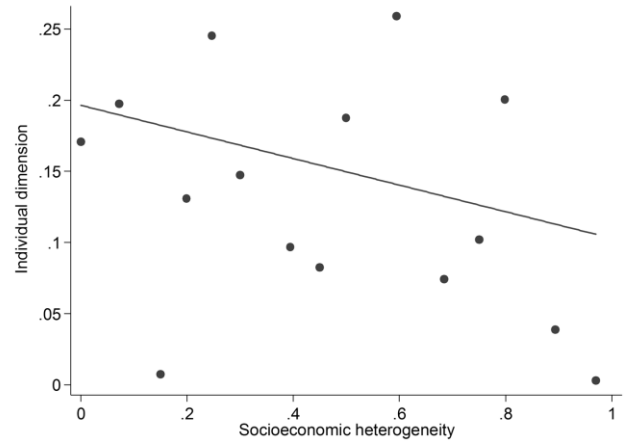
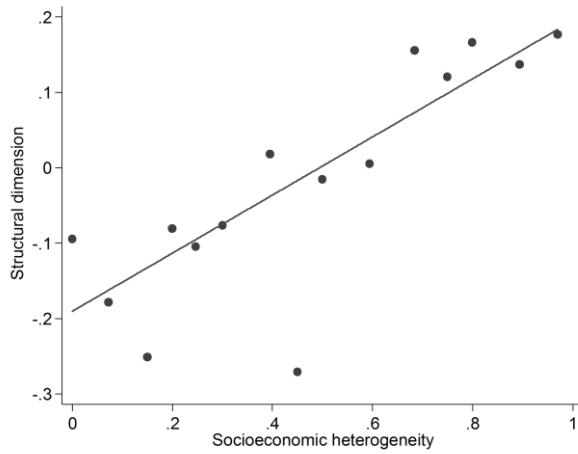
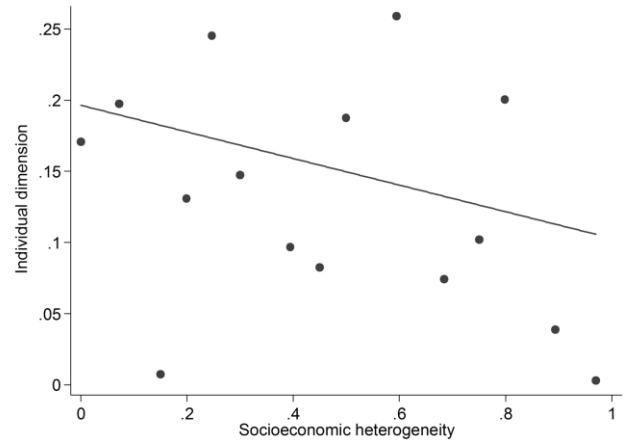
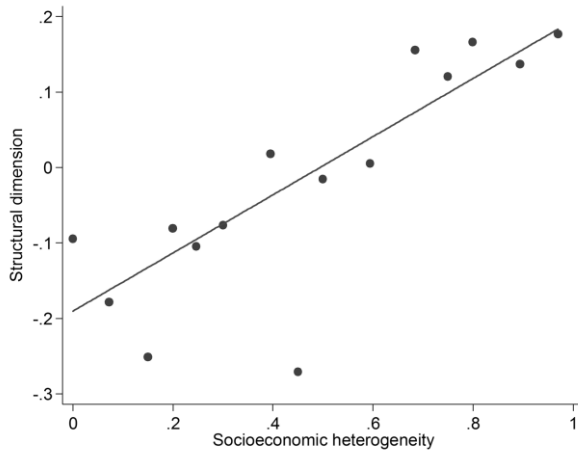


Figure 3.3 Binned scatter plots of inductive attributions by ethnoracial heterogeneity

Education



Work



Crime

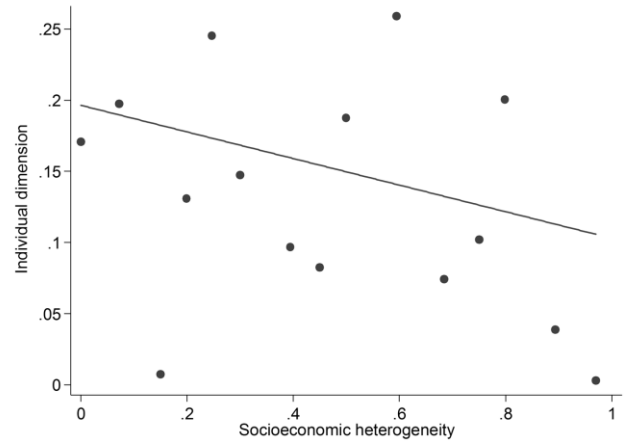
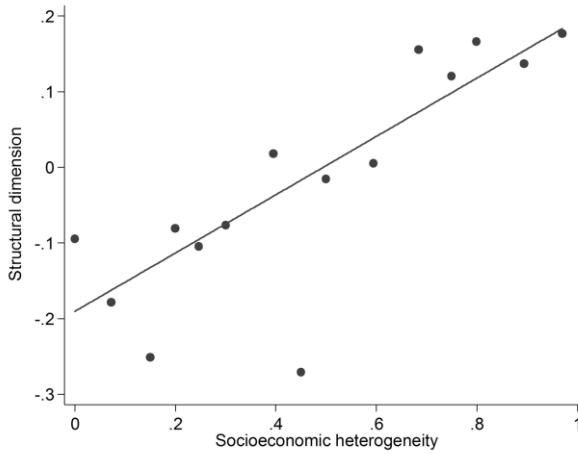


Figure 3.4 Binned scatter plots of inductive attributions by socioeconomic heterogeneity

HOW DO PARTICIPANTS DECIDE ON THEIR ATTRIBUTIONS? In this final section I describe participants' responses to a question posed at the end of the experiment, where I ask them to tell me how they decided on their evaluation of the vignettes. I coded participants' responses into four categories: participants who wrote that their attributions are based on their experience growing up; those who said that what drove their attributions was a gut-feeling or intuition; people who described the process as one involving only reasoning and logic; and participants who reported that their attributions were based on how likely or realistic they thought each factor to be. Table 3.4 lists the categories and gives examples for each.

Table 3.4 A typology of the reasoning behind participants' responses

<i>Reasoning</i>	<i>Examples</i>
Logic	<p>"It may be naive of me, but I like to assume that the events described were caused by the reasonable direct influence the person in question showed. And not because of visual discrimination or their past."</p> <p>"I just applied logic."</p>
Experiences	<p>"Personal experience, listening to the stories of my peers, and educated guessing."</p> <p>"My own experiences influenced how I decided on some of the different factors."</p>
Gut-feeling	<p>"I don't really know how to answer this...it was just intuition."</p> <p>"All I can say is that I went with my gut instinct when presented with each scenario."</p>
Likelihood	<p>"I attempted to gauge what appeared realistic and/or plausible."</p> <p>"I determined how plausible and likely a factor in real life would influence the scenario."</p>

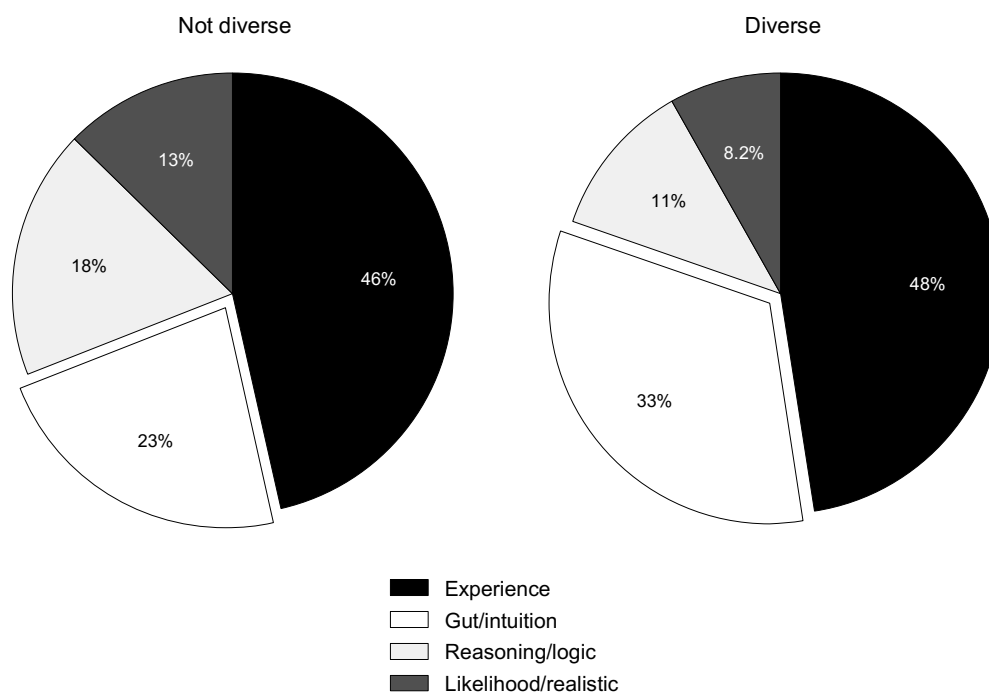


Figure 3.5 Pie diagram of participants’ reasoning by heterogeneity of childhood environment

I find that about half of participants described the process of evaluating the various vignettes as one involving past experiences, followed by a gut feeling or intuition. Figure 3.5 breaks down participants’ responses by their self-reported childhood exposure to ethnoracial heterogeneity, revealing that experience is equally important for participants in both groups. Participants with more childhood exposure to heterogeneous reported gut-instinct at a higher rate than participants with less exposure to heterogeneity, and were a little less likely to draw on reasoning or to base their evaluation on the perceived likelihood of the factors presented to them. The fact that experience features importantly in the two groups of participants’ reasoning means we have no reason to assume that the (inferential) process through which people arrived at their explanations of life outcomes was different for the two groups of participants.

CONCLUSION

The study presented in this chapter set out to collect detailed information on the inequality beliefs of a sample of American citizens, who grew up in different environments. Specifically, I sought to describe the association between people's childhood exposure to ethnoracial and socioeconomic heterogeneity and the way they have come to see and explain social inequality in adulthood. To this end, I asked 323 study participants, recruited through Amazon Mechanical Turk, to explain different life events that are consequential for social inequality. I presented life events by means of a series of 12 vignettes and asked participants, for each vignette, to indicate the importance of four factors, two of which indicating things an individual has control over ('individual factors,' such as hard work and ambition) and two pointing to forces beyond the individual's control ('structural factors,' such as a person's race/ethnicity, and family resources).

Participants on average attribute much more importance to individual factors than to structural factors when evaluating events in educational or work settings. Making sense of events in the realm of criminal justice, participants attribute about as much importance to individual and structural outcomes. In line with my theoretical expectations, I find evidence suggestive of a relationship between study participants' exposure to heterogeneity and their beliefs about inequality: participants with more childhood exposure to heterogeneity generally attributed more importance to structural factors in explaining life events, as compared to participants with less exposure to heterogeneity. This relationship is more robust for events in the realm of education or work than for events pertaining to criminal justice, where I find only a weak relationship.

I address three possible concerns about the empirical analysis: 1) the relationship between people's exposure to heterogeneity and their inequality beliefs may be driven by priming them to recall their childhood experiences; 2) the observed relationship may be indicative of self-

selection processes that make a certain kind of people more likely to be exposed to heterogeneity; 3) the results may be driven by the predefined categorization of individual and structural factors, which may be different from participants' own thinking about these matters.

First, to test for a priming effect, I randomized the order in which participants were asked to evaluate the vignettes and provide details of their background: half of the sample evaluates the vignettes first, the other half completes the background survey before evaluating the vignettes. Comparing the two groups of participants, I find no statistically significant differences in attributions. Second, in acknowledgement of the fact that exposure to heterogeneity is conditioned by people's family background, race/ethnicity, and politics, among other factors, I estimate a regression model that includes a range of control variables. I find that the relationship between exposure to heterogeneity and structural attributions holds, net of controls. Third, I repeat the analysis using a factor analysis of participants' responses instead of the predefined categories. Using this alternative measurement of participants' inequality beliefs, I verify the association between exposure to heterogeneity and structuralist attributions in the realm of education and work, and also find evidence for the same pattern in participants' evaluation of the vignettes about crime.

In future work, I will assess how these findings generalize to a nationally representative sample by fielding a version of this study through Time-sharing Experiments for the Social Sciences. In the next chapters I draw on observational data to assess the external validity of these findings. In Chapter 4, I describe how the inequality beliefs of entering college students change with students' exposure to heterogeneity in their social life and in the college environment. In Chapter 5, I study an international sample of middle schoolers to look at the relationship between exposure to heterogeneity and students' likelihood to blame themselves for bad school outcomes.

Chapter 4

How College Students Learn About Inequality

ABSTRACT

As the US becomes increasingly separated by socioeconomic and racial fault lines, how do people learn about the lives of others? Scholarship has produced a long list of correlates of inequality beliefs, but lacks an organizing theoretical framework. I suggest that people learn about inequality in institutions that can be homogenous or heterogeneous. The latter expose people to information on the structural sources of inequality that is not available in the former. I test hypotheses drawn from this theoretical approach using a national panel of college students. I find that: (1) inequality beliefs change substantially over the college years; (2) the direction of change is shaped by exclusivity and diversity of the college, and by students' opportunity structure for outgroup social interaction—especially via their roommates. The cognitive process that links institutions to belief formation helps explain why Americans have not rallied against inequality: the joint growth of inequality and segregation means that, paradoxically, the more unequal America becomes, the less likely people are to experience its full extent.

NOTE

This chapter has been submitted for publication and is currently under review.

THE JOINT GROWTH OF INCOME segregation and inequality in America calls attention to the changing conditions of life on each end of the growing divide (Logan 2011; Massey and Tannen 2016; McCall and Percheski 2010; Reardon and Bischoff 2011).

But alongside the material effects of this process, there is an important cognitive aspect: as social worlds become both more unequal and more segregated by socioeconomic and racial fault lines, how do people learn about the lives of others? Recent scholarship is beginning to address this question by describing Americans' inequality beliefs (Croll 2013; McCall 2013, 2016; Reynolds and Xian 2014).² Understanding how people perceive and explain inequality is important because their beliefs, in turn, are predictive of a host of political attitudes, in the diverse policy domains of crime (Kraus and Keltner 2013; Thompson and Bobo 2011), healthcare (Kwate and Meyer 2010), and income redistribution (Applebaum 2001; Bobo 1991; Gilens 2009).

We have learned a great deal about what Americans believe and how those beliefs inform politics, but we lack a framework for understanding how people come to hold different inequality beliefs in the first place. These beliefs range from a meritocratic view of inequalities as the result of a fair race that was decided by individual hard work alone, to understanding the race as fixed: some people have a much better shot at winning the race than do others, because the color of their skin, their gender, and their parents' resources, among other structural conditions beyond their control. The former belief is referred to as an *individualist* explanation of inequality, whereas the latter reflects a *structuralist* perspective (Kluegel and Smith 1981, 1986).

² Kluegel and Smith originally called these 'stratification beliefs,' while the social psychological literature variously uses the term belief, attribution or explanation. I follow the more recent sociological literature on beliefs about inequality (McCall 2013; Reynolds and Xian 2014) and refer to beliefs, as opposed to attitudes, for I am interested in how people understand inequality rather than what they think their society ought to be like, while I acknowledge that the two are related.

Scholarship has produced evidence of correlates of inequality beliefs, among which are a person's wealth and income (Hochschild 1996; McCall 2016), and status position, more generally (Lamont 1992, 2009); their race (Bobo et al. 2012; Croll 2013; Hunt 1996); gender (Reynolds and Xian 2014); and religion (Taylor and Merino 2011). Scholars have however been less successful in explaining these patterns in a general theoretical framework, which complicates accounting for the sometimes conflicting conclusions that these studies support (Hunt and Bullock 2016).

In contrast to previous studies based on a cross-sectional design, I draw on longitudinal data and techniques for causal analysis to describe the institutional foundations of inequality belief formation. I study belief formation in college because young adults in this developmental stage are especially open to learning about their society, and beliefs formed in adolescence are relatively stable over a person's life span (Alwin and Krosnick 1991; Sears and Funk 1999; Sears and Levy 2003). I suggest that socializing institutions like colleges are *inferential spaces* that young adults draw from in developing an understanding of the society they live in. Through their recruitment and admission practices, colleges shape the exclusivity and diversity of the setting that students are exposed to (Boisjoly et al. 2006; Gurin et al. 2002; Sidanius et al. 2010). This in turn determines the range and type of information available to students in developing their inequality beliefs—by inference from their experience (Campbell and Horowitz 2016; Massey et al. 2003:200; Warikoo and Deckman 2014). I ask how students develop inequality beliefs in contexts that vary in the extent to which they confront students with peers from a racial and socioeconomic background different than their own.

My framework builds on contact theory (Allport 1954), which posits that exposure to diversity will, given the right conditions, improve people's (cognitive) understanding of and

(affective) orientation toward members of racial groups other than one's own (for a review, see Pettigrew and Tropp 2000).³ I depart from contact theory in theorizing that experiences with diversity matter most because they provide people with information about structural processes shaping the society we live in—regardless of whether such experiences make a person more empathetic to the plight of others.

To disentangle the mechanisms through which the diversity and exclusivity of college settings may shape the formation of young adults' inequality beliefs, I leverage unique longitudinal data from the College Freshman Survey and College Senior Survey of the class of 2010 to construct a nationally representative panel of 13,753 students across 99 American residential four-year colleges, surveyed at the beginning and end of their college years. I draw on coarsened exact matching and student fixed-effects regression as two methodological strategies to analyze how having a same-race or different-race roommate affects a student's inequality beliefs. I then estimate random-effects models to estimate the effect of college exclusivity, the racial composition of the college environment, and the frequency of a student's outgroup interactions. Combining the three analyses provides the empirical grounds for discussing how college is an inferential space in the development of students' inequality beliefs, and how this cognitive process, in turn, shapes students' civic orientation and political beliefs.

INSTITUTIONAL FOUNDATIONS OF INEQUALITY BELIEFS

While the role of institutions in shaping inequality beliefs has seldom been the explicit focus of

³ In Allport's formulation, exposure to diversity reduces racial prejudice if intergroup contact happens in a setting where: a) participants have equal status, b) are pursuing common objectives, c) and work together toward these objectives, and d) are supervised. These four conditions are generally met in the college setting (Laar et al. 2005; Sidanius et al. 2010).

study, a number of research findings imply a relationship. Two studies, based on surveys in Los Angeles county (Merolla et al. 2011) and nationally representative data (Newman, Johnston, et al. 2015), find that the composition of a person's neighborhood is associated with that person's inequality beliefs: people in areas with low levels of income inequality are more likely to hold meritocratic (individualist) beliefs, while those living in more economically heterogeneous areas are more likely to think that success in life is determined by forces outside their control (structuralist belief). Scholars report similar findings for the relationship between ethnic heterogeneity and beliefs about the causes of racial inequality (Bonilla-Silva and Embrick 2007; Croll 2013; McDermott 2011; Oliver and Wong 2003) and of poverty—residents of homogenous neighborhoods are more likely to think minorities and poor people are themselves to blame for their troubles (Alesina, Baqir, and Easterly 1999; Alesina, Glaeser, and Sacerdote 2001:30–33; Luttmer 2001; see also Gilens 2009).

These findings are indicative of the role of context in shaping inequality beliefs, through contact with and exposure to others. Along these lines, Lee, Farrell, and Link (2004) suggest that exposure to the homeless shapes inequality beliefs regarding the causes of homelessness, and Wilson (1996:417) concludes that “personal contacts with the poor constitute another manner in which beliefs that are contrary to the dominant ideological explanation of poverty causation can be constructed.” Similarly, as Shedd (2015:58) finds in her study of Chicago public schools:

[These students'] perceptions of the world are indelibly shaped by their place in that world. (...) In a city as segregated as Chicago, attending a school with a sizable population of White youth might arguably lend youth of color one of their only opportunities to compare their personal experiences with those of their White peers. (...) Youth of color attending segregated schools experience structural discrimination on a daily basis, but they lack the opportunity to make between-race comparisons on a daily basis. Students who cross boundaries, in other words, are more likely to see discrimination than those who do not make these journeys.

Taken together, these studies give a compelling account of the institutional foundations of inequality beliefs, but their cross-sectional design means we cannot establish the direction of causality or identify the mechanism through which exposure to heterogeneity shapes belief formation (Boisjoly et al. 2006:1902; Laar et al. 2005:329), nor can we rule out composition and selection effects (cf. Abascal and Baldassarri 2015).

Shifting focus to the realm of education may give us better tools for dealing with these obstacles. The role of institutional context in the formation of attitudes and beliefs is a longstanding concern of educational research: “Primary school introduces children to the neighborhood environment; secondary school enlarges their range of social experience and crystallizes awareness of realities and subtleties in community social structure” (Stern and Searing 1976). Schools, more than any other institution today, provide the context for children’s cognitive, social and moral development, for its presence in children’s lives across the Western world is sustained, durable, and, moreover, compulsory. In other words, schools are sites of socialization (Brint, Contreras, and Matthews 2001) that shape collective knowledge and perceptions of legitimacy. As Coleman (1974:1) observed:

Every society must somehow solve the problem of transforming children into adults. In every society there is established some kind of institutional setting within which the process of that transition is to occur (...). The world of the maturing child, formerly dominated by the home, is now monopolized on the formal level by the school and on the informal level by the age group.

These characteristics make schools an especially fitting starting point for evaluating the role of institutional spaces on the development of inequality beliefs. I concur with Stevens, Armstrong, and Arum (2008:132) that, at least in the American context, “colleges and universities are quintessentially social places, shaping the number, quality, and type of social ties that particular individuals and groups enjoy.” This view of college as an ‘incubator’ for young

adults has been powerfully illustrated by recent studies describing how the college setting shapes students' networks (Benediktsson 2012), as well as the development of their political beliefs (Binder and Wood 2014), civic attitudes (Campbell and Horowitz 2016) and racial views (Warikoo and Deckman 2014).

More to the point of inequality beliefs, Khan (2010) and Gaztambide-Fernández (2009) describe how elite boarding schools and colleges instill in their students the belief that they (and they alone) merit their academic success. Khan (2010:162): "These privileged students are made into elites by the interactions that consecrate them, by the consistent, generous feedings they receive of their own capacity and promise." If this correctly describes belief formation at some (elite) institutions, we still lack a framework to evaluate how different kinds of colleges induce different kinds of inequality beliefs in their students.

HOW HETEROGENEITY IN COLLEGE SHAPES INEQUALITY BELIEFS

My focus in this chapter is on the general institutional influence on belief formation. The studies reviewed thus far suggest that a comparative account of the characteristics of colleges associated with belief formation must describe how colleges provide an environment, and enable interactions among students, in a context that can be more or less exclusive and diverse (for an in-depth review of the literature, see Pascarella and Terenzini (2005).

A useful distinction regarding the ways through which colleges may expose students to heterogeneity is that between heterogeneity of the student body, *structural* heterogeneity, and the frequency and quality of interactions between students of different socioeconomic and racial groups, *interactional* heterogeneity (Dinesen and Sønderskov 2015:553; Gurin et al. 2002:332–33). Most of what we know about the impact of heterogeneity on students concerns interactional

heterogeneity, as research tends to be situated in a single institution.

A methodological starting point for investigating the role of interactional heterogeneity is Boisjoly et al.'s (2006) study of 1,278 white students at an (anonymous) American college who were randomly assigned a roommate. They find that white students who were assigned an African American roommate express more positive attitudes toward affirmative action years after college entry, suggesting that close personal interaction with students of a different racial background increases empathy and understanding. Larger panel studies of UCLA students find that the roommate effect holds for all major racial groups (Laar et al. 2005; Pettigrew and Tropp 2000) and also that, net of roommate effects, outgroup interactions, be they casual, romantic or study-related, reduce prejudice and increase egalitarian attitudes (Sidanius et al. 2010). Gurin and colleagues extend the literature with longitudinal data from the University of Michigan, by describing how outgroup interactions and classroom heterogeneity also contribute to the development of students' cognitive and democracy outcomes, defined as "perspective-taking, citizenship engagement, [and] racial and cultural understanding," which are in close proximity to the kind of beliefs of interest in this chapter (Gurin et al. 2002; Gurin, Nagda, and Zúñiga 2013).

COLLEGE AS AN INFERENTIAL SPACE

While the findings discussed so far are generally framed in terms of contact theory, Boisjoly et al. (2006a:1902) note that the mechanism accounting for the observation that exposure to and interactions with students of a different race may lead to more positive attitudes toward affirmative action is far from clear:

Alternatively, one could tell a purely informational story in which whites who believe discrimination is a thing of the past learn otherwise if they are assigned an African American roommate. Understanding the particular channels will be important for assessing whether working, studying, or sharing a neighborhood with African Americans

is likely to have similar effects as being assigned an African American roommate.

In line with Boisjoly et al.'s (2006a) speculation, I focus on how inequality beliefs, like political beliefs, are affected by the intensity and homogeneity of information a person is exposed to. I conceive of an inferential process whereby students draw from the homogeneity or heterogeneity of their school setting (structural heterogeneity) and on their interactions with students different from themselves (interactional heterogeneity), in developing inequality beliefs.

Heterogeneity is a proxy for the type and range of information that students are or are not exposed to. Encounters with people from a different racial or socioeconomic background introduce new and rich information, which may lead emerging adults to re-evaluate their worldview (Gurin et al. 2002; Piaget 1975). This is particularly true in the US where extensive educational tracking and segregation mean that young adults have exceedingly limited experiences with heterogeneity before entering college (Oakes 1985; Reardon and Owens 2014). Specifically, heterogeneity experiences provide students with information indicative of the structural sources of inequality in American society: how race and family background may help or hinder social mobility. An environment low in ethnoracial and socioeconomic heterogeneity may keep students from this kind of information and thus does not provide counterevidence to the dominant meritocratic view of society. I thus expect students who are durably exposed to more structural and interactional heterogeneity to develop a more structuralist understanding of inequality over time, whereas I expect students in more homogenous settings to develop more individualist beliefs about inequality.

The way students learn from their homogenous or heterogeneous environment is not necessarily based on what they are explicitly taught, but instead entails inferential work, whereby students construct a model of the world based on the information available to them (Hitlin and

Vaisey 2013:62; Vaisey 2009:1684). Socializing institutions like college, inasmuch as they provide a durable context to a person's and interactions with others, are *inferential spaces*: they shape the development of a person's inequality beliefs by exposing that person to a certain type and range of information, but not to their counterfactuals.⁴ Figure 4.1, on the next page, schematically presents this theoretical framework.

Families and neighborhoods can be understood as socializing institutions; that is, 'individual' factors such as race, class and place matter because of what they are proxies for: experiences in more or less distinct institutional settings. Social class as a socializing institution shapes the development of inequality beliefs inasmuch as it durably exposes people to some settings and experiences, but not to others.⁵ Neighborhoods, similarly, matter in their composition and in how (dis)connected the neighborhood is vis-a-vis other spheres of social life (Abascal and Baldassarri 2015). Strictly in this respect, race can similarly be considered an institution inasmuch as it is an organizing force in people's lives and leads to expose actors to a certain kind of people and experiences (e.g., discrimination) but not others (cf. Thompson and Bobo 2011). A parallel case can be made for gender and sexuality among other ascribed categories of difference (Correll 2004; Kanter 1977). Whether these and other categorical differences indeed play an organizing role in person's lives, and, as such, constitute an inferential space, is an empirical question. Consideration of such broad categories as race, class and neighborhood of course is complicated for these mean different things for different people: some

⁴ I use the word durable as a contrast to fleeting, to focus on those institutions that provide a social space that is relatively stable in the kind of experiences, peers, rules and norms, the actor is exposed to.

⁵ This is a re-specification of Bourdieu's account of class-based habitus formation, as illustrated most insightfully by Lareau's (2011) study of class-based parenting logics; see especially Appendix B.

people’s lives are structured to a much greater extent by their class, race, and neighborhoods than are others, e.g., for some the neighborhood constitutes the gravitational center of life, whereas for another person it is just the geographical location where they sleep at night.

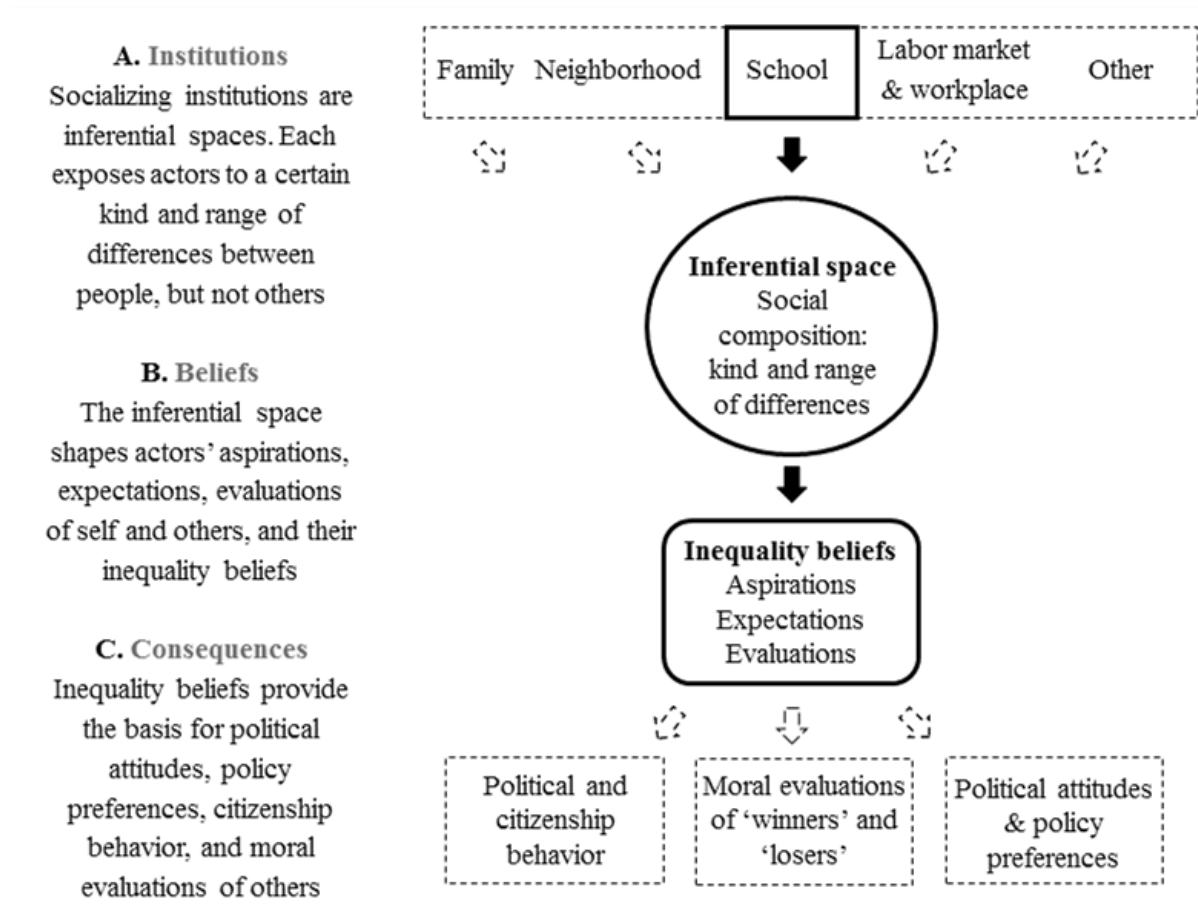


Figure 4.1 Institutions as Inferential Spaces

Note. Thick lines and arrows indicate the processes studied in this chapter. Interrupted lines indicate processes following from the theoretical model but not studied here.

As a starting point for evaluating the applicability of this inferential space framework, my focus in this chapter is on the institutional context of college. Studies of lifespan political socialization suggests that young adults are particularly impressionable in their college years,

and that beliefs formed in those years are quite durable over a person's life course (Alwin and Krosnick 1991; Sears and Funk 1999; Sears and Levy 2003). Hence, studying the institutional foundations of belief formation for adolescents and young adults is an important gateway for understanding inequality beliefs, policy preferences, and political involvement.

The following hypotheses follow from the discussion:

H1: Students at more racially homogeneous and exclusive colleges are more likely to develop individualist inequality beliefs over time.

H2: Conversely, students at more racially heterogeneous and less exclusive campuses are more likely to develop structuralist inequality beliefs over time.

H3: Students who seldom or never interact across racial groups develop more individualist inequality beliefs over time.

H4: Conversely, students who frequently interact with students of a different race develop more structuralist inequality beliefs over time.

Finally, I hypothesize that the intensity of exposure is predictive of its impact on belief formation. I expect the impact of interactional heterogeneity to be greatest when it concerns intergroup friendship and contact in social life, as compared with more formal interactions in class and study settings (Laar et al. 2005; Pettigrew and Tropp 2000).

H5: The effects of social interactions are stronger when they happen in informal settings than when they occur in formal settings.

DATA AND METHODS

I take the following methodological steps to disentangle the mechanism through which heterogeneity and exclusivity in the college setting may shape the formation of young adults' inequality beliefs. First, my focus is on belief formation; I investigate change in students' beliefs using two-stage panel data, comparing beliefs at enrollment to those at the time of graduation. I consider two dimensions of students' inequality beliefs: students' beliefs about meritocracy and their beliefs regarding racial discrimination in America.

I deploy two analytical strategies to describe how interactional and structural heterogeneity may affect change in a student's inequality beliefs over time. The first strategy is to compare students who have had a different race roommate in college to those who have not. To estimate the causal effect of roommate assignment, I use coarsened exact matching to eliminate any association between student and institutional characteristics, on the one side, and roommate assignment, on the other. I then calculate matching-weight balanced and doubly-robust regression coefficients (combining matching weights and control variables) to obtain the sample average treatment effect on the treated.

The second strategy is to analyze the association between roommate assignment and the over-time change in beliefs for each student individually, holding constant all time-invariant factors. To this end I estimate panel regression models with student fixed-effects to eliminate the influence of time-invariant factors and to isolate the effect of roommate assignment on over-time (within-student) change in inequality beliefs.

To estimate the effect of other sources of structural and interactional heterogeneity, I estimate random-effect models. I evaluate how students' inequality beliefs may be shaped, respectively, by the frequency with which a student interacts across racial lines, and by the

exclusivity and racial composition of the college environment. I estimate these models for a panel of 13,753 students enrolled in a representative set of 99 colleges across the US, which includes elite research universities like Dartmouth College, selective public universities, like the University of Michigan—Ann Arbor, and non-selective private and public colleges. The next section describes the data in more detail (see Table 4.1 for an overview).

DATA. I analyze data from the Cooperative Institutional Research Program (CIRP) collected by the Higher Education Research Institute at UCLA. I combine data from The College Freshman Survey (TFS) 2006, a survey taken before students start college, typically at freshman orientation, and the College Senior Survey (CSS) 2009, which is an exit survey taken in the spring semester of senior year 2009/2010. These data are particularly well suited for assessing the impact of diversity on the development of students' inequality beliefs for three reasons.

First, the CIRP surveys are taken by a nationally representative sample of students across residential four-year colleges in America. CIRP uses two-stage stratified sampling to select, first, a wide range of colleges, and, second, to sample students within those institutions (Eagan et al. 2014). The combined panel is of 13,753 students across 99 colleges.⁶

Second, the surveys include unique student and college identifiers and are designed to measure change in students' cognitive skills, social experiences, and citizenship views over the college years. The freshman and senior survey include the same set of questions on inequality beliefs, thus making possible an investigation of the development of beliefs over time.

Third, the CIRP data include a large bank of control variables. The two surveys ask

⁶ I use listwise deletion to remove 406 cases with missing values on one or more of the variables of interest in this study.

students about their family background, their high school and academic record, religiosity and political beliefs. In addition, I match college identifiers with administrative data, which allows me to include a college-level measure of exclusivity and of the college’s racial composition.

Table 4.1 Number, type and typical schools sampled

	Non-selective	Selective	Very selective	Total
Public	5 e.g. Arkansas State University	4 e.g. Colorado State University	6 e.g. University of Michigan—Ann Arbor	15
Private	33 e.g. McPherson College	37 e.g. Gonzaga University	14 e.g. Dartmouth College	84
Total	38	41	20	99

Note. Non-selective corresponds to average admitted students’ combined scores below 1080 on the 2003 scholastic aptitude test; selective corresponds to scores between 1080 and 1199; and very selective corresponds to scores higher than 1200. Source: Author’s sample of The College Freshman Survey 2006 and College Senior Survey 2009.

MEASURING INEQUALITY BELIEFS. I construct the dependent variable by combining values on two questionnaire items, posed to students in freshman orientation and again in the spring semester of senior year. The two questions assess students’ understanding of meritocracy and racial equality of opportunity in America: “Through hard work, everybody can succeed in American society,” and “Racial discrimination is no longer a major problem in America.” Responses to these questions on a four-point agree/disagree scale represent students’ inequality beliefs about meritocracy and racial inequality, where higher scores (agreement) are indicative of an individualist understanding of inequality, and lower scores (disagreement) indicate a structuralist perspective.

It is important to consider both responses together to capture the multifaceted nature of

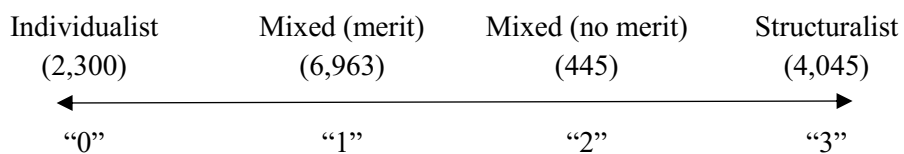
inequality beliefs (Bobo 1991; Bobo et al. 2012; Hunt 1996; Kluegel and Smith 1986): A person could believe that their society is organized in a meritocratic way such that through hard work and effort, anyone can succeed; that person could at the same time however believe that there is a racial dimension to the opportunity structure in America. To describe these two dimensions, my dependent variable takes one of four categorical values: a person’s beliefs about meritocracy and racial equality can align on either the structuralist and individualist end of the continuum, or they can be a mixture of both (Table 4.2A). Note that while I use the word continuum, I initially estimate inequality beliefs as a set of nominal categories. Only after verifying the ordinal relationship between the four categories, do I treat my dependent variable as a continuum of beliefs, ranging from an individualist to a structuralist understanding of inequality in America (Table 4.2B).

Table 4.2 Conceptual framework and measurement of inequality beliefs

A. Multi-faceted inequality beliefs (number of responses listed with percentages in parentheses)

		Is America a meritocracy?	
		Yes	No
Is America free of racial discrimination?	Yes	Individualist 2,300 (17 %)	Mixed: racially equal but no meritocracy 445 (3 %)
	No	Mixed: racially unequal meritocracy 6,963 (51 %)	Structuralist 4,045 (29 %)

B. Continuum of inequality beliefs and corresponding variable coding



Inequality beliefs change considerably over the college years: slightly more than half of all students express the same inequality beliefs in senior year as in freshman year (Table 4.3). About nineteen percent of students (the sum of unshaded cells below the diagonal) have more individualist beliefs in senior year; and about 30 percent of students (the sum of shaded cells above the diagonal) hold more structuralist beliefs by the time they graduate. Next I discuss the variables that may account for changes in students' beliefs in one or the other direction.

Table 4.3 Stability and change in inequality beliefs over the college years (percentages in parentheses)

		Inequality beliefs senior year			
		Indiv. "0"	Mixed "1"	Mixed "2"	Struct. "3"
Inequality beliefs freshman year	Indiv. "0"	841 (6%)	1,182 (9%)	109 (>1%)	431 (3%)
	Mixed "1"	1,197 (9%)	4,848 (34%)	202 (1%)	2,107 (15%)
	Mixed "2"	66 (>1%)	86 (>1%)	32 (>1%)	102 (>1%)
	Struct. "3"	196 (1%)	847 (6%)	102 (>1%)	1,405 (10%)

INDEPENDENT VARIABLES. I consider three sets of independent variables: (1) interactional heterogeneity in college, (2) heterogeneity of the college environment, and (3) time-invariant student background characteristics (control variables). The first set of variables is measured with data from the College Senior Survey; the latter two sets of variables are taken from The College Freshman Survey, matched with administrative records. Table 4.4 (next page) gives an overview of all variables used in this study.

Table 4.4 Sample descriptive statistics (N = 13,753)

Variables	Mean	Standard Deviation		Range	Source	
		Overall	Between			Within
Dependent variable						
Inequality beliefs	1.216	0.909	0.694	0.587	[0 – 3]	TFS & CSS
Interactional heterogeneity						
Different-race roommate	0.461				[0 – 1]	CSS
Racial diversity in study settings						
Seldom	0.281					
Occasionally	0.287					
Often	0.433					
Racial diversity in dining hall						
Seldom	0.167					CSS
Occasionally	0.273					
Often	0.561					
Racial diversity in social life						
Seldom	0.047					CSS
Occasionally	0.454					
Often	0.499					
Structural heterogeneity						
College exclusivity (SAT scores)	1196	139			[864 – 1495]	CIRP
College prop. black or Hispanic	0.115	.093			[0.02 – 0.93]	CIRP
Control variables						
Female (dummy)	0.611				[0 – 1]	TFS
Race						
White	0.720					TFS
Black	0.090					
Hispanic	0.056					
Asian	0.064					
Other or more than one	0.080					
Mother's education						
No high school degree	0.029					TFS
High school degree	0.175					
Some college	0.142					
College degree	0.374					
More than college	0.280					
Religiosity (dummy)	0.448				[0 – 1]	TFS
Political orientation						
Liberal (dummy)	0.274				[0 – 1]	TFS
Conservative (dummy)	0.283				[0 – 1]	

Table 4.4 (continued)

Variables	Mean	Standard Deviation			Range	Source
		Overall	Between	Within		
High school GPA						TFS
B- or lower	.035					
B	.111					
B+	.177					
A-	.285					
A or A+	.392					
Religious high school (dummy)	0.222				[0 – 1]	TFS
Public high school (dummy)	0.646				[0 – 1]	TFS
College GPA						CSS
B- or lower	.129					
B	.182					
B+	.255					
A-	.265					
A or A+	.169					
College major						CSS
Humanities	.229					
Life sciences	.139					
Business	.224					
Education	.046					
Engineering	.067					
Science	.053					
Social Science	.225					
Other	.017					

Note. TFS = The College Freshman Survey 2006, CSS = College Senior Survey 2009, CIRP = administrative data collected through the Cooperative Institutional Research Program in 2006.

Interactional Heterogeneity. The main variable assessing students' experience in college is the roommate a student is paired with. I compare students paired with a roommate from a different racial background than their own to those students who roomed with a student from the same racial group. The measure pertains to the full college trajectory, from freshman to senior year, and distinguishes between those who have (in one or multiple years) roomed with a different-race student to those who have never. In contrast to studies that draw on detailed information on roommate assignment (Boisjoly et al. 2006; Sacerdote 2001), the nature of my

data means that I must rely on students' self-reported roommate situation.

While this form of measurement is less ideal than detailed administrative data, it puts my study in a similar position as other studies on roommate effects (Laar et al. 2005; Sidanius et al. 2010), with the important difference that my data afford me the means to control for selective roommate assignment through a host of variables pertaining to a student's background, high school history, and the college experience. Furthermore, the representative sampling of students and colleges in my data set allow me to generalize roommate effects for colleges across the country.

In addition to considering how a student's inequality beliefs may be shaped by their roommate, I consider the frequency of contact with students of a different racial background in three settings: study, dining, and social life (cf. Gurin et al. 2002; Sidanius et al. 2010). The first two variables come from students' answers to response categories "Studied or prepared for class" and "Dined or shared a meal" to the question "To what extent have you experienced the following with students from a racial/ethnic group other than your own?" Responses fall within one of five categories: Very often / Often / Sometimes / Seldom / Never. The third variable comes from responses to the category "Socialized with someone of another racial/ethnic group" to the question "For the activities listed below, please indicate how often you engaged in each during the past year." Responses to this question fall within one of three categories: Frequently / Occasionally / Not at all. For these variables I use "sometimes" or "occasionally" as the reference category to which I compare responses indicating less frequent contact (i.e. "not at all," or "seldom" and "never", taken together) and more frequent contact (i.e. "frequently," or "often" and "very often" taken together).

Structural Heterogeneity. I consider two indicators of the college setting: exclusivity, which is the average SAT score for admitted students, and the number of African American and Hispanic students as a proportion of total enrollment.⁷ I include squared terms for both variables to test for non-linear effects. All college-level data are from administrative records, linked through CIRP.

CONTROL VARIABLES. Research shows that a student's socioeconomic and ethnoracial background importantly shape the (higher) education experience, including how a student will perceive and experience diversity (Armstrong and Hamilton 2013; Espenshade and Radford 2009; Jack 2016; Young 2006). To control for baseline differences in inequality beliefs as well as heterogeneous treatment effects, I include all main correlates of those beliefs as reported in the literature: I control for students' gender, race, mother's education, religiosity, and political orientation (dummies for liberal and conservative, respectively) (cf. Bobo 1991; Hunt 1996; Taylor and Merino 2011). I also control for a students' high school GPA, and include dummies for whether a student attended a public high school or a private nondenominational or religious high school. Inclusion of these control variables is motivated by the fact that academic performance and school characteristics are predictive of students' selection into (a more exclusive) college and, moreover, are a proxy for students' pre-college exposure to diversity (Alon 2007; Reardon, Baker, and Klasik 2012). This, in turn, is predictive of students' outgroup interactions in college (Bowman and Stewart 2014; Park and Bowman 2015). Last, I control for college GPA and for choice of college major.

⁷ Supplementary analyses using instead the proportion of African American students, not shown here, lead to the same results. Taking the joint proportion of African American and Hispanic students has my preference for it yields more precise measurements (lower standard errors).

MEASUREMENT MODELS

In the next section I present the outcomes of two types of measurement models. First, I use coarsened exact matching (CEM) to estimate the sample average treatment effect on the treated for a different-race roommate pairing. CEM has an important advantage over other matching techniques in that it asks the researcher, drawing from theory and an understanding of the data, to define substantively meaningful strata in which variables can be grouped (coarsened), based on which observations are subsequently matched. This strategy mirrors one-to-one exact matching, the major difference being that the matching criteria are theoretically derived rather than empirically defined. CEM thus allows for a much larger number of possible matches than would one-to-one exact matching, while avoiding arbitrary criteria for establishing the similarity of matched observations such as required for kernel matching, propensity score matching and other techniques. For a more extensive discussion, see Iacus, King, and Porro (2012). With CEM, I condition on observable pre-treatment characteristics that may be associated with treatment assignment (i.e. the individual-level controls described above). I then use the weights generated in the matching process to estimate multinomial logistic regression coefficients. I additionally estimate doubly-robust regression coefficients, combining matching weights with control variables (Bang and Robins 2005).

After estimating the effect of different-race roommate pairing on inequality belief formation, based on the comparison between treated and non-treated students (with a same-race roommate), I turn to more fully exploit the longitudinal nature of the data. I first estimate the over-time change in students' inequality beliefs associated with the roommate assignment by fitting a two-way fixed-effects regression of the form

$$Y_{it}^* = \beta_1 X_{it} + \alpha_i + \mu_t + u_{it},$$

where Y_{it}^* is the latent dependent variable (inequality belief) for student i at time t , α_i is the student-specific intercept, μ_t is a time-specific intercept, β_1 is a coefficient for the time-varying independent variable X_{it} (roommate assignment) and u_{it} is the error term. By including a term that is constant over time for each student (α_i), while varying between students, I effectively hold constant all time-invariant factors. The time-specific term (μ_t), means I control also for time-varying factors that affect all students. This specification allows me to identify the within-student change in inequality beliefs over the college years and estimate its association with (same-race or different-race) roommate assignment (Allison 2009; Firebaugh, Warner, and Massoglia 2013).

Next I assess to what extent the development of students' inequality beliefs is shaped by the variable college environment they are exposed to (structural heterogeneity) and the frequency of contact they have with students of a different race (interactional heterogeneity). To estimate the effects of these time-invariant factors, I estimate random-effects models of the form

$$Y_{it}^* = \beta X_{it} + \alpha + u_i + \varepsilon_{it},$$

where Y_{it}^* is the latent dependent variable (inequality belief) for student i at time t , α is the intercept, β is a vector of coefficients for a vector of independent variables X_{it} , u_i represents that part of the error that is between-students and ε_{it} is the within-student (over-time) error. I estimate all models with school cluster-robust standard errors. Since the purpose of the analyses is to model change in a categorical variable, I am less interested in point estimates than in understanding what may lead a student to categorically change their beliefs—e.g. what makes a

student come to hold an individualist understanding of inequality, as opposed to a structuralist or mixed inequality belief? To this end I will present estimation results from ordinal logistic regressions based on which I calculate predicted probabilities for the two main categories of my dependent variable: individualist and structuralist conceptions of inequality.

Whereas I hypothesize that exclusivity and diversity affects white and minority students similarly, in supplementary analyses not reported here I run the analyses separately for white students and for black and Hispanic students, respectively, to assess if the effects are in fact asymmetrical. The results support symmetry rather than asymmetry; i.e. the results are qualitatively the same as those reported in the next section.

IDENTIFYING THE ‘ROOMMATE EFFECT’ ON INEQUALITY BELIEF FORMATION

Table 4.5 (on the next page) presents results from a coarsened exact matching strategy for identifying the causal effect of roommate assignment on the development of students’ inequality beliefs over the college period. The left side of the table reports differences between the treated (with a different-race roommate) and non-treated (with a same-race roommate) for the matched sample for the different categories of the dependent variable, with the second category (“mixed”) as the reference category. The right side of Table 4.5 displays coefficients for doubly-robust regression analyses of a model including all control variables.

For both analyses, the effect of different-race roommate assignment is statistically significant ($p < 0.01$). The negative coefficient for individualist beliefs indicate that students with a different-race roommate over the college years are less likely, by 16 to 17 percent, to hold an individualist inequality belief in senior year than they would if they had been assigned (a) same-race roommate(s). Students with a different-race roommate are more likely (by an estimated 9 to

11 percent) to have a structuralist understanding of inequality of America by the time they are in senior year. The matching exercise further indicates that there is no statistically significant difference between the two mixed belief categories, which suggests that inequality beliefs range from individualist to mixed to structuralist beliefs in an ordinal relationship.

Table 4.5 Treatment effect of different-race roommate assignment on development of inequality beliefs

Inequality beliefs	SATT		Doubly-robust	
	Coefficient	Odds-Ratio	Coefficient	Odds-Ratio
Individualist	-0.179**	0.836**	-0.187**	0.830**
Mixed (merit)	(ref.)	1	(ref.)	1
Mixed (no merit)	0.003	1.003	-0.004	0.996
Structuralist	0.089**	1.093**	0.111**	1.117**
Observations	10,498		10,498	

Note. SATT = Sample average treatment effect on the treated. A positive value indicates that rooming with a different-race roommate is associated with an increase in the corresponding inequality belief, a negative value indicates a negative association. *** $p < .001$; ** $p < .01$; * $p < .05$ (two-tailed tests). Source: Author’s sample of The College Freshman Survey 2006 and College Senior Survey 2009.

There are two ways to put these findings in perspective. The effects of roommate assignment on inequality beliefs that I report are similar in magnitude to the effects of college completion on a person’s support for civil liberties and gender equality, as estimated with sibling fixed-effects (Campbell and Horowitz 2016) or age-period-cohort models (Horowitz 2015). This suggests that rooming with a person of a different race may have as much impact on a person’s beliefs about inequality in America as the (liberalizing) effect of going to college as such. Alternatively, we could ask what it would mean for public opinion if every college graduate were to have roomed with someone from a different racial background. McCall (2016) calculates that about 53 percent of Americans report being satisfied with “the opportunity for a person in this

nation to get ahead by working hard.” If satisfaction would deteriorate by 26 percent (16 less individualist beliefs and 10 percent more structuralist) for all 66 million college educated Americans, satisfaction would drop by 5 percent and the new consensus (48 percent agrees, 52 percent disagrees) would be dissatisfaction. In other words, belief change of this magnitude could prove a political tipping point.

Table 4.6 Two-way ordinal logistic fixed-effects regression of within-student change in inequality beliefs

Variable	Log-odds	S.E.	Odds-Ratio
Different-race roommate	0.170***	0.032	1.186***
Observations	13,753		

Note. A positive value indicates change toward structuralist inequality beliefs, a negative value indicates change toward individualist beliefs. *** $p < .001$; ** $p < .01$; * $p < .05$ (two-tailed tests). Source: Author’s sample of The College Freshman Survey 2006 and College Senior Survey 2009.

In the next step to identify the roommate effect on a students’ inequality beliefs, I estimate ordinal logistic panel regression with student fixed-effects (Table 4.6). The estimated coefficient reported in Table 4.6 indicates the within-student change in beliefs that is associated with a different-race roommate assignment, holding constant all time-invariant factors: that part of changing students’ beliefs about inequality that can be attributed to their roommate experience. The fixed-effects analysis corroborates the matching approach; it supports the conclusion that a student with a different-race roommate is more likely to develop structuralist inequality beliefs. To visualize the roommate effect on students’ inequality beliefs, I graph the predicted probabilities of students’ structuralist and individualist beliefs by roommate assignment, calculated from the regression results (Figure 4.2). The predicted probability, on the vertical axis, can be interpreted as the proportion of students that would subscribe to that

particular inequality belief, given their roommate assignment as indicated on the horizontal axis. An estimated 19 percent of students with a same-race roommate holds an individualist perspective, compared to 15 percent of students with a different-race roommate. Conversely, 22 percent of students with a same-race roommate would think of inequality as the result of structural processes, compared to 32 percent of students with a different-race roommate.

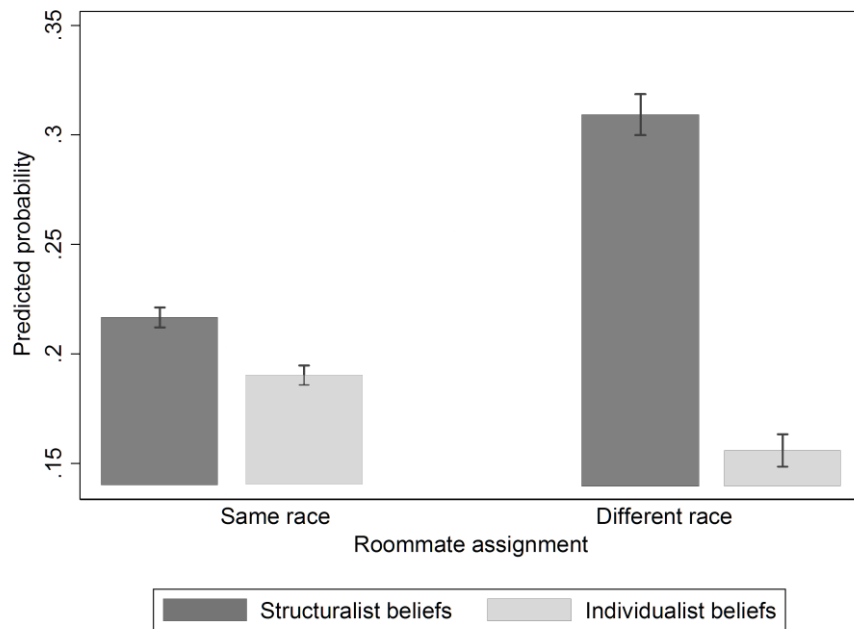


Figure 4.2 Predicted probabilities for students' inequality beliefs by roommate assignment

Note. The predicted probability on the vertical axis can be interpreted as the proportion of students (between 0 and 1) that would subscribe to that particular inequality belief, given their roommate assignment as indicated on the horizontal axis. Estimations are based on Table 6 and plotted with a 95% confidence interval. Source: Author's sample of The College Freshman Survey 2006 and College Senior Survey 2009.

ASSESSING THE IMPACT OF INTERACTIONAL AND STRUCTURAL DIVERSITY

In the final set of analyses, I report on random-effects models estimating the statistical relationship between inequality beliefs and various measures of interactional and structural

heterogeneity. I consider how change in students' inequality beliefs co-varies with the proportion of black and Hispanic students at the college, and the exclusivity of a college, as indicated by the average SAT score for admitted students (structural heterogeneity). I include three measures of interactional heterogeneity: the frequency of outgroup contact in study settings, dining hall, and social life. All analyses include control variables for students' race, mother's education, religiosity, political orientation, high school GPA, a dummy for religious high school attendance and public high school attendance, choice of college major, GPA, and college year. I report the Akaike Information Criterion as an indicator of model fit (lower values indicate better fit).

The results can be summarized as follows. First, the estimated coefficients indicate a statistically significant effect of roommate assignment, net of other measures of interactional and structural heterogeneity; thus corroborating the fixed-effects and matching strategies for identifying the roommate effect on inequality beliefs (Table 4.7 on the next page). Second, the model estimates suggest that structural heterogeneity is associated with change in inequality beliefs in the expected direction: the proportion of black and Hispanic students is positively associated with the development of structuralist inequality beliefs (Hypothesis 2), while college exclusivity shows a negative relationship (Hypothesis 1). Both measures of structural heterogeneity indicate a curvilinear relationship, as visualized by graphs of the predictive margins for individualist and structuralist inequality beliefs in Figure 4.3 and Figure 4.4.

Table 4.7 Multilevel ordinal logistic regression of students' inequality beliefs with student random-effects

Variables	1	2	3	4	5	6	7
Different-race roommate (ref = same-race)	0.226*** (.039)	0.236*** (.039)	0.179*** (.040)	0.176*** (.041)	0.160*** (.041)	0.155*** (.041)	0.152*** (.041)
Proportion black/ Hispanic students		0.516 (.807)	-2.298** (.821)	-2.224** (.838)	-2.200** (.837)	-2.363** (.830)	-2.231** (.840)
Proportion black/ Hispanic students squared		0.452 (.598)	1.767** (.604)	1.687** (.618)	1.665** (.617)	1.802** (.612)	1.762** (.621)
College exclusivity			0.003* (.002)	0.003 (.002)	0.003 (.002)	0.003 (.002)	0.004 (.002)
College exclusivity squared			-0.000** (.000)	-0.000* (.000)	-0.000* (.000)	-0.000* (.000)	-0.000** (.000)
Diversity in studying (ref = occasionally)	Seldom			0.029 (.042)			0.060 (.046)
	Often			0.173*** (.050)			0.163** (.052)
Diversity in dining (ref = occasionally)	Seldom				-0.013 (.041)		0.011 (.046)
	Often				0.084* (.044)		0.055 (.048)
Diversity in social life (ref = occasionally)	Seldom					-0.208** (.079)	-0.186* (.079)
	Often					0.100** (.034)	0.066 (.041)
AIC	59,354	59,331	58,998	57,556	57,762	58,145	57,259
Observations	13,753	13,753	13,753	13,753	13,753	13,753	13,753

Note. Coefficients are log-odds. Positive values indicate change toward structuralist inequality beliefs, negative values indicate change toward individualist beliefs. All models control for students' race, mother's education, religiosity, political orientation, high school GPA, a dummy for religious high school attendance and public high school attendance, choice of college major, GPA, and college year. AIC = Akaike Information Criterion. *** $p < .001$; ** $p < .01$; * $p < .05$ (two-tailed tests). Source: Author's sample of The College Freshman Survey 2006 and College Senior Survey 2009.

In the most racially homogenous (white) college environment, an estimated 17 percent of students holds individualist inequality beliefs and about the same share of students has a structuralist understanding of inequality. In colleges that are more heterogeneous, the proportion of students expressing individualist beliefs is much lower (dropping to about 4 percent in the extreme) and the number of students holding structuralist beliefs is higher (peaking at about 27 percent). In the most exclusive colleges, an estimated 26 percent of students holds an individualist inequality belief and about 12 percent holds an structuralist belief, compared to 17 and 30 percent, respectively, in the least exclusive colleges.

Third, the model estimates suggest that interactional heterogeneity is associated with the development of structuralist inequality beliefs (Hypothesis 4), while the absence of outgroup interactions is associated with change toward a more individualist understanding of inequality (Hypothesis 3). Model 7, which includes all measures of interactional and structural heterogeneity, suggests that the impact of interactional heterogeneity is stronger when these interactions take place in social or study settings than when they occur in dining hall (Hypothesis 5). The AIC values indicate that the full model explains the development of inequality beliefs better than models 1 through 6. Similarly, the estimated size of the roommate effect is lower in the full model than it is in previous models, which suggests that both forms of interactional heterogeneity impact belief formation.

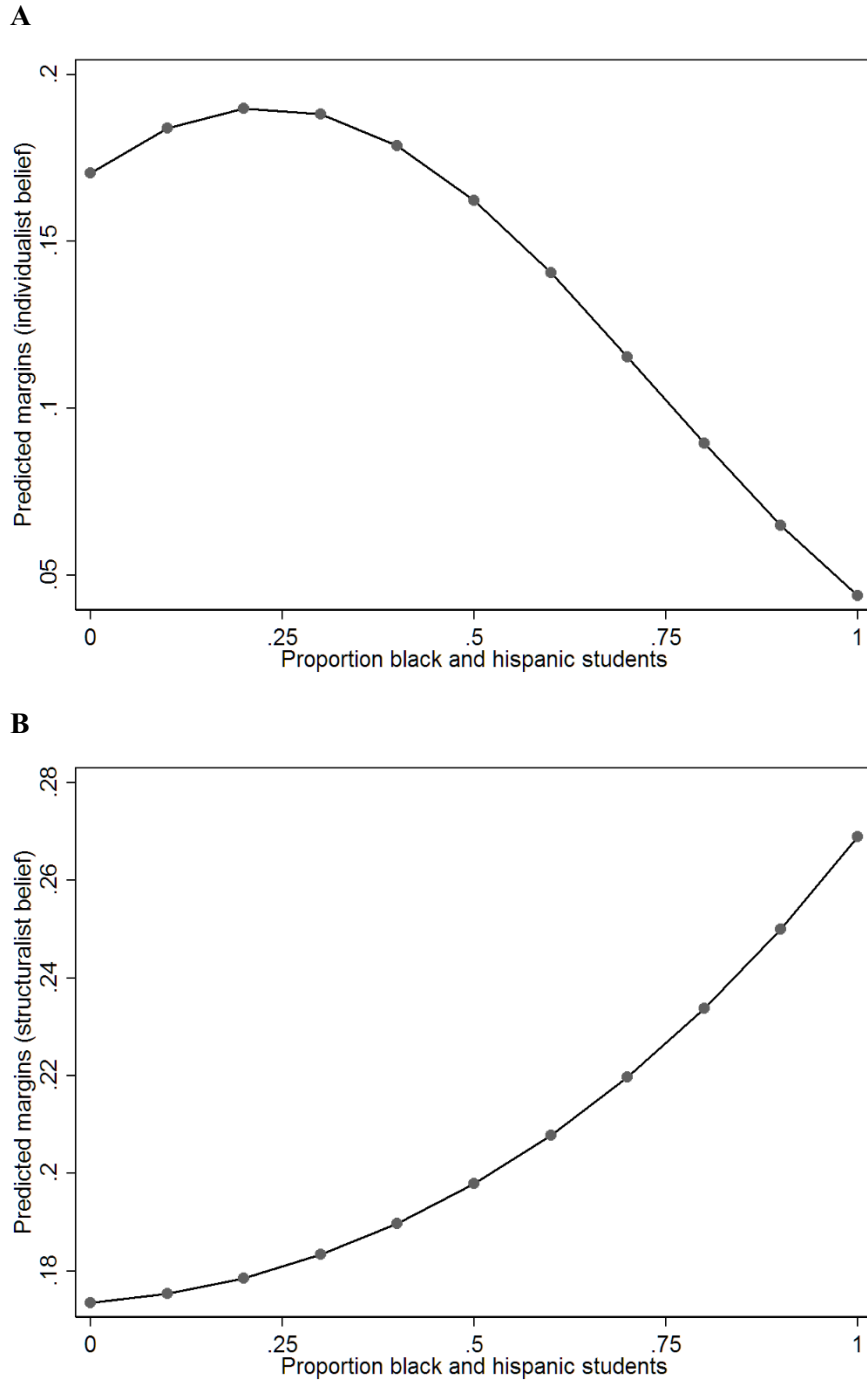


Figure 4.3 Predictive margins for students' individualist (A) and structuralist (B) inequality beliefs by proportion of black and Hispanic students enrolled at their college

Note. The predictive margins on the vertical axis can be interpreted as the predicted proportion of students (ranging from 0 to 1) that subscribes to this inequality belief, given the proportion of black and Hispanic students marked on the horizontal axis. Estimations are based on Table 7, model 7. Source: Author's sample of The College Freshman Survey 2006 and College Senior Survey 2009.

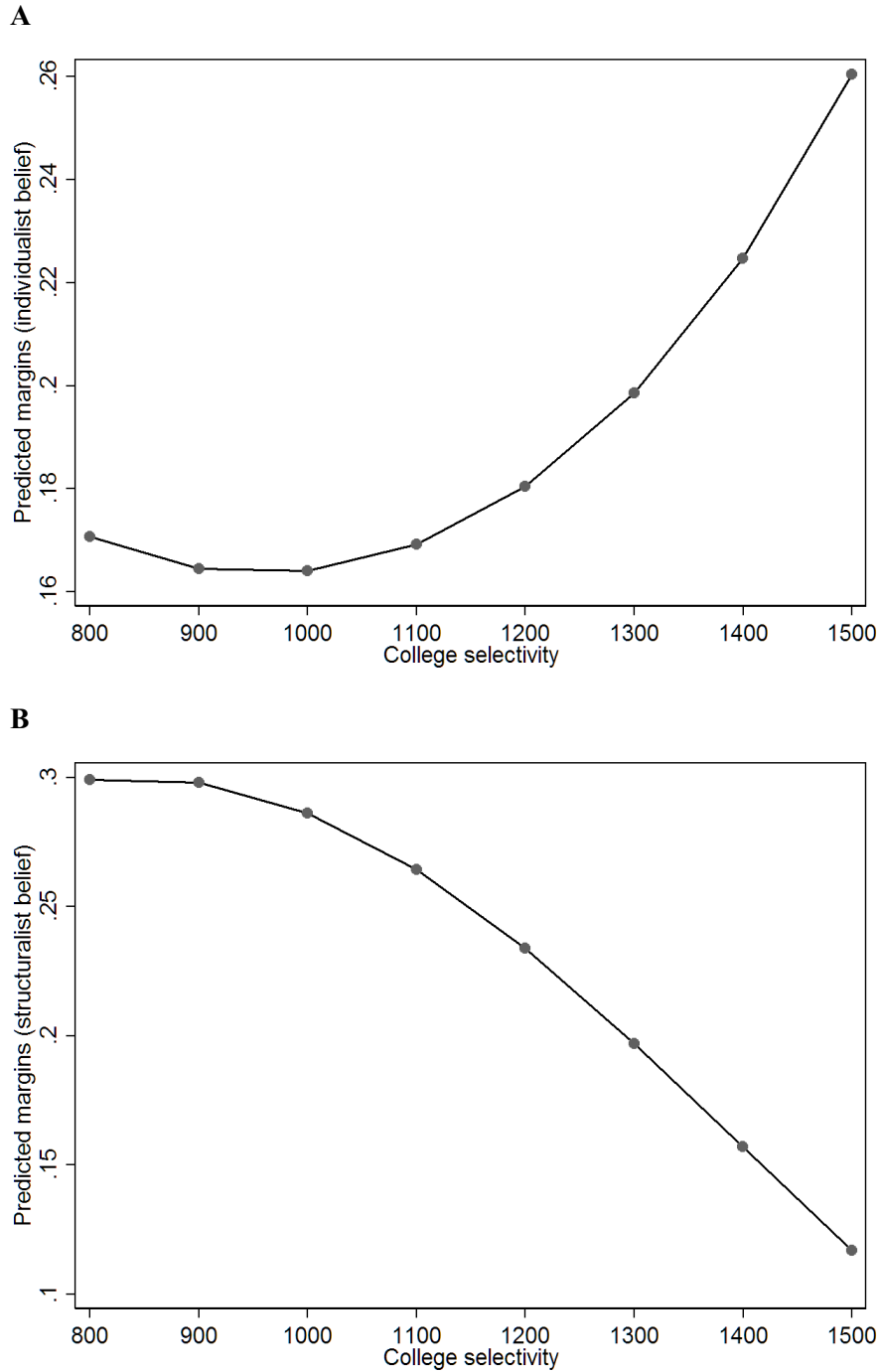


Figure 4.4 Predictive margins for students' individualist (A) and structuralist (B) inequality beliefs by college exclusivity

Note. The predictive margins on the y-axis can be interpreted as the predicted proportion of students (ranging from 0 to 1) that subscribes to this inequality belief, given the degree of college exclusivity marked on the x-axis (mean SAT score of admitted students). Estimations are based on Table 7, model 7. Source: Author's sample of The College Freshman Survey 2006 and College Senior Survey 2009.

CONCLUSION

This chapter sought to accomplish two objectives: to develop a framework for describing the institutional foundations of inequality beliefs, and to empirically test expectations derived from this framework with data on the development of young adults' inequality beliefs during their college years. I focused on college as an "incubator" for young adults (Stevens et al. 2008) and on the ways in which colleges can and do confront students with heterogeneity. Specifically, I investigated how the development of students' inequality beliefs is affected by the diversity and exclusivity of their college environment (structural heterogeneity), and by the frequency by which students interact across racial lines in study settings, dining hall, and in their social life, as well as by whether or not they roomed with a student from a different racial group (interactional heterogeneity).

I find that over their college years, about half of all entering students change their beliefs about inequality in America. Thirty percent of students graduate college believing that inequalities in their society are more structural in nature than they thought in freshman year, and nineteen percent of students come to believe that there are no structural barriers standing in the way of a person' success.

The direction in which students' inequality beliefs change is shaped by (1) the racial diversity and exclusivity of the college setting; (2) the frequency of outgroup interactions between students; and, in particular, (3) the roommate a student is paired with. The more heterogeneous the college setting, the more likely a student is to develop a structuralist understanding of inequality in America; conversely, the more homogeneous the college environment, the more likely a student is to develop a more individualist view of inequality. Students paired with a different-race roommate, net of background factors and college

characteristics, develop a more structuralist belief about inequality during their college years. Similarly, students who are in frequent contact with students from another racial group come to hold a more structuralist understanding of inequality. These effects are stronger for outgroup interactions that take place in study settings and social life, and less strong for dining hall contact.

These empirical findings imply a reevaluation of the equalizing promise of college. Research shows that U.S. colleges have become more socioeconomically exclusive and less racially diverse, particularly at the top of the college hierarchy (Bastedo and Jaquette 2011; Pryor et al. 2007; Reardon et al. 2012; Torche 2011). Moreover, the higher education experience greatly varies by students' racial and socioeconomic background; college is a comfortable place for the privileged, but often a struggle for students of more humble origins (Alon 2007; Armstrong and Hamilton 2013; Espenshade and Radford 2009; Goldrick-Rab et al. 2016; Jack 2016). My findings suggest that the variable college setting that students encounter, comes to shape also their views about American society, their own place in it, and the (limited or limitless) opportunities it affords.

This inferential process has ramifications for the underappreciated civic role—especially the integrative function—that colleges (could) play in the lives of young adults. Colleges historically have had the mission to educate young citizens ('tomorrow's leaders') about their country's past and present, the democratic process, and their part in it (Bischoff 2016). They have the potential, more generally, to broaden students' perspectives and increase intergroup understanding (Gurin et al. 2013). Currently, however, a majority of students receives only limited exposure to socioeconomic and racial diversity, both in an interactional sense and as concerns the college environment more broadly. In the absence of heterogeneity exposure, many

students will come to develop a naive understanding of American meritocracy in a country that is increasingly divided along racial and socioeconomic lines (Bobo and Smith 1998; Bonilla-Silva 2006; Massey and Tannen 2016). For these students the college experience undermines rather than serves the civic role of higher education.

As such, colleges may reinforce inequality in two ways. First, by providing valuable skills and credentials to some people, but not to others, colleges increase the income and wealth gap that separates college graduates from the other 70 percent of Americans without a college degree. Second, the cognitive process described in this chapter means that (homogeneous and exclusive) colleges create settings in which tomorrow's educational elite learns to legitimize this growing financial gap as meritocratically deserved.

More exposure to heterogeneity in college creates the conditions under which students can develop an appreciation of the structural processes shaping inequality in America, and possibly a willingness to address it. The potential power of outgroup interactions however is subject to students' preferences—some actively try getting to know their peers from different backgrounds, while others avoid it. My findings suggest that roommate assignment is an effective means through which administrators can create conditions for interactional diversity for all students.

Small changes in college policies can have large effects. A college environment which better reflects the diverse American population would impact the perspective of 20+ million students currently in college and, with it, public opinion, which research suggests is approaching a tipping point: only a slim majority of Americans currently expresses satisfaction with the opportunity that their society affords a person to get ahead by working hard (McCall 2016).

As is, the growing exclusivity and socioeconomic homogeneity of colleges means that

the non-college going population is also becoming increasingly socioeconomically homogenous. Low-wage labor markets in particular have become increasingly homogeneous spaces for low-educated workers from poor and minority backgrounds (Kalleberg 2009; Kalleberg, Reskin, and Hudson 2000; U.S. Bureau of Labor Statistics 2015). By isolating low-wage workers from high-wage workers and from seeing the advantages that their education and socioeconomic background affords them, segregated labor markets may reinforce meritocratic beliefs—in parallel to how Young (2006:59) describes the impact of social isolation for the young black men he interviewed: “These men, who had virtually no sustained social exposure outside of their community, were unable to register a strong sense of how race or other factors operate as social forces.” Paradoxically, then, as the U.S. is looking more unequal to the analyst, actors are increasingly less likely to appreciate the breadth of the gap that separates their lives from those of others—not despite but because of the size of the gap.

Research abroad describes a similar pattern where people in highly unequal and segregated societies are less able to see the role of structural forces beyond their control: their social and spatial isolation from the city elites mean that Chinese from the countryside come to think their society functions meritocratically, despite the well-documented urban-rural barrier to social mobility (Bian 2002; Whyte 2011); and people across Latin America express individualist beliefs about the causes of poverty and wealth (Bucca 2016), in what are in reality some of the most unequal societies in the world (Torche 2014).

The *inferential space* concept developed in this chapter sets up a sociological approach for assessing how belief formation is impacted by the institutions that people find themselves in, and provides an organizing framework for the study of inequality beliefs. It adds an important insight to the burgeoning study of Americans’ complex political beliefs (Baldassarri and Gelman

2008; Baldassarri and Goldberg 2014; McCall 2013; McVeigh and Sobolewski 2007), especially the question why people have been unwilling to politically address inequality: inferential spaces are the link between the changing institutional landscape of America and citizens' beliefs about inequality. The fact that life in America is increasingly organized in homogenous institutions—neighborhoods, schools, labor markets—helps explain why social science research and news reporting on inequality have not resonated with people's experiences. Neither the poor, isolated in inner-city neighborhoods, attending public school or consigned to low-wage labor markets, nor the rich, in their homogenous suburbs, colleges and work settings, are able to experience the full extent of inequality in America.

Chapter 5

When Middle Schoolers Internalize Academic Failure

ABSTRACT

Country rankings based on the Programme for International Student Assessment (PISA) invite politicians and specialists to speculate why their country did or did not do well. Rarely, however, do we hear from the students on whose performance these rankings are based. This omission is unfortunate for two reasons. First, how students explain their academic performance, has important consequences for their future achievements. Second, students' attributions of success and failure can develop into explanations for social inequalities in adulthood. This chapter draws on PISA 2012 data to explore how educational stratification shapes students' explanations of their academic performance. I find that students in mixed-ability groups tend to attribute their mathematics performance to their teachers and to (bad) luck, whereas tracked students are more likely to blame themselves for not doing well. Differences between mixed-ability group students and tracked students are more pronounced in school systems where tracking is more extensive. I conclude by discussing how these findings speak to the broader impact of educational stratification on students' psychology, cognition and the legitimation of inequalities.

NOTE

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PUBLICATION OF THE PROGRAMME FOR International Student Assessment (PISA) world ranking has become a spotlight event. Politicians and specialists evaluate their country's score and try to explain their relative position. Rarely, however, do we hear from the students on whose performance these rankings are based. There are two reasons why students' own attributions of their academic success and failure warrant closer attention.

First, how students explain their school performance in turn affects their future achievements: students who believe they have control over how well they do are more likely to be successful later in life than those who do not (Bozick et al. 2010; Dweck 1999; Lerner 2006). This applies to the PISA test too: students who are convinced that success is within their control perform a third of a standard deviation better than students who are not so sure (OECD 2013). Conversely, a self-fulfilling prophecy may link low expectations to low achievement (Halleröd 2011; McLeod and Fettes 2007), especially for people who blame themselves for their failure or misfortune (Callan, Kay, and Dawtry 2014).

Second, research suggests that students' attributions of school outcomes are instantiations of their emerging worldviews, which can develop into explanations for social inequalities in adulthood (Aloise-Young 1993; Altermatt et al. 2002; Baird and Astington 2004b). This line of inquiry may thus provide a bridge to recent work on citizens' inequality beliefs (McCall 2013; Reynolds and Xian 2014). However, we lack a generative model of the formation of these beliefs. The extant literature considers attributions either as beliefs described by certain universal tendencies (e.g., to justify one's own successes, while blaming others for their failings) or as monolithically shaped by the culture a person is socialized in (Jost et al. 2004).

Disconnected from this literature, however, is a classic concern in the sociology of education with the kind of inferences students draw from their school environments (Parsons

1959; Turner 1960; Willis 1977). Work in this tradition describes how students' school performance, their expectations and aspirations, and in fact much of their school experience, is shaped by the degree to which their school system is stratified into vocational (labor market oriented) and academic (college-bound) tracks (Buchmann and Dalton 2002; Buchmann and Park 2009).

I build on this work to contribute a new approach to explain students' attributions of success and failure. I argue that stratified school systems create settings that are relatively homogeneous in terms of students' academic abilities and socioeconomic background, compared to mixed-ability groups (Chmielewski 2014; Flecha 2015; Gamoran 1992). Students in stratified systems learn from the homogeneity of those settings, and from the selection process that brought them there, that school performance is determined principally by effort and ability (Clycq, Nouwen, and Vandenbroucke 2014). In mixed-ability groups, students learn from the heterogeneity of their setting—by comparing themselves to other students—that school performance is shaped by effort and ability, as well as by their teachers, the family support they do or do not receive, and sometimes by (bad) luck. That is, students in more heterogeneous school settings learn from those settings that school performance is determined by a range of factors within and beyond their control.

I test hypotheses developed from this approach using PISA 2012 data for 128,110 secondary-school students in 24 countries with different educational tracking practices. I exploit variation in track placement, school composition, and features of the school systems to describe patterns of co-variation between educational stratification and students' attributions of their mathematics performance.

SCHOOLS AND STUDENTS' ACADEMIC ATTRIBUTIONS

Recent scholarship in sociology has explored the role of educational institutions in shaping the process whereby children learn to make attributions of school achievement and broader life outcomes (Brint, Contreras, and Matthews 2001; Teeger 2015; Warikoo and Fuhr 2014).

Cultural sociologists treat schools as sites of social learning, where the lessons students learn concern the substance of learning as well as the topic of learning itself. Nunn (2014), for instance, describes how schools, through their discourse, policies, and grading systems, shape students' understanding of the importance of effort and ability for doing well in school and beyond; this understanding leads students to develop a distinct "intelligence identity." Khan (2010) shows how elite boarding schools similarly instill in their students the belief that they (and they alone) merit their success.

It is difficult, however, to confirm the role of the suggested cultural processes that are unique for any school, for every school is different from the next in infinite ways. Rather, I propose to focus on educational structure in an attempt to show some basic processes that affect all students. Specifically, I focus on the role of educational stratification: the extent to which a school system is organized as a collection of comprehensive, mixed-ability schools (e.g., as in Canada, Denmark, and Spain), or, alternatively, as a collection of programs hierarchically differentiated in vocational and academic tracks, on the basis of ability tests or teacher recommendations (e.g., Belgium, Hungary, and Slovakia). In the latter school systems, selection into different tracks happens as early as age 10 and as late as age 14; mobility between tracks is possible but happens infrequently (Kerckhoff 2001; LeTendre, Hofer, and Shimizu 2003). Scholarship on educational stratification has established the negative effects such selection processes have for social inequality: social (and racial) background is strongly related to track

placement (Rosenbaum 1976; Tyson 2011), which in turn is highly predictive of students' academic performance, college enrollment, and labor market outcomes (Van de Werfhorst and Mijs 2010). Research also suggests that track placement may affect students' educational aspirations, expectations, and academic self-concept, as students infer a more or less realistic view of their future school and work trajectory based on their track placement (Buchmann and Park 2009; Van Houtte and Stevens 2008).

Recent scholarship links educational stratification to students' attributions of their school performance, but exactly how the two are related is disputed. Studies in Belgium, a country with a highly stratified school system, find that vocational-track students, net of social background, are more likely to internalize failure than are students in college-bound tracks (Agirdag, Van Houtte, and Van Avermaet 2012; Van Houtte and Stevens 2008). Students in academic tracks, conversely, are more likely to hold meritocratic beliefs and to think they can get anywhere if only they work for it (Clycq et al. 2014). Related research suggests that schools' ethnic and socioeconomic composition can breed a "culture of futility" (Agirdag et al. 2012): students in settings with a large share of underprivileged and immigrant peers may come to feel that school is working against them, and that whether they do well academically is out of their hands. This, in turn, negatively affects these students' academic performance. Scholars thus argue that the culture of futility explains the statistical relationship between school composition and average school performance.

Trautwein and colleagues (2006) give an alternative account, arguing that students are more likely to develop meritocratic beliefs in the absence of educational stratification. Their finding is based on a study of German students before Germany's reunification, exploiting exogenous variation in educational stratification due to the different setup of East and West

German school systems. The authors argue that the comprehensive East German schools, by fostering competition between students, promoted meritocratic beliefs. In contrast, West German schools tracked students by ability from an early age and thus tended to be relatively homogeneous; this made for a learning environment where “academic success and failure are seen as being multiply determined, with some of its causes falling outside a student's realm of responsibility (e.g., difficulty of tasks), or being nonmeritocratic (e.g., ingratiation, luck)” (Trautwein et al. 2006:338).

A limitation of Trautwein and colleagues’ design is that the comparison of East and West Germany involves two school systems as well as two groups of students with distinct (cultural-ideological) upbringings. Likewise, the confluence in Belgium of tracking and school segregation complicates identifying the causal processes underlying the reported patterns. Absent internationally comparative research, we have no basis for assessing the role of national ideology, school composition, and confounding variables that may explain these disparate findings on how educational stratification shapes students’ attributions of their school performance. In what follows I develop a novel theoretical framework that allows for the comparative study of students in different school tracks, in schools that are differently constituted, and in countries that are differently marked by educational stratification.

TRACK LOGIC: HOW EDUCATIONAL STRATIFICATION SHAPES STUDENTS’ ATTRIBUTIONS

My argument that students’ explanations of success and failure are shaped by their selection into and exposure to a particular educational setting builds on Blau’s (1977, 1994) theory on the heterogeneity and homogeneity of social structures. However, I look not at how these structural parameters affect a person’s life chances, but instead at how homogeneity and heterogeneity

shape students' understanding of their life chances; specifically, how students learn to explain their own school success or failure and that of others.

I further draw from research in social psychology on how college students' political beliefs are shaped by the racial and socioeconomic heterogeneity of their school environment (Gurin et al. 2002; Sidanius et al. 2010). These studies are grounded in symbolic politics theory, which describes how political belief formation is shaped by the intensity and homogeneity of information a young person is exposed to (Sears 1993; Sears and Valentino 1997). Shedd's (2015) longitudinal study of 9th and 10th graders in three Chicago schools provides an illustration of how homogeneity/heterogeneity may shape belief formation: students in segregated schools, with a racially and socioeconomically homogenous student body, were less likely than students in integrated schools, with a more heterogeneous student body, to develop perceptions of injustice due to their "restricted comparative frame from which to understand their position in society" (Shedd 2015:158). The primacy of race may be unique to the U.S. context on which these studies are based, but I draw heavily on these insights in formulating my theoretical framework.

I argue that educational stratification leads to more homogeneous classrooms in terms of students' academic ability as well as, indirectly, their social and ethnoracial background (Flecha 2015; Hallinan 1994; Sørensen 1970). Conversely, in the absence of educational stratification, in comprehensive school systems, students' immediate school setting will be more heterogeneous (Gamoran 1992; Marks 2006). My argument implies that vocational and academic tracks are surprisingly similar in one crucial dimension: homogeneity.

By taking placement tests and hearing their teachers' evaluations, students in stratified school systems learn of the importance of academic ability for their school success. These

influences are compounded by going to school in relatively homogenous high (academic) or low (vocational) ability tracks. Here, students develop an understanding of success and failure as dealt out on the basis of effort, as effort is what principally distinguishes one student from the next. The more homogeneous the school setting, the more remains hidden from sight. Through their school experience, students learn that hard work pays off: in their experience, students who struggle academically, fail, or drop out do so by their own fault—they did not work hard enough (Agirdag et al. 2012; Clycq et al. 2014).

In contrast, students in more heterogeneous mixed-ability programs should be more likely to experience differences between themselves and others in terms of academic talents, race and ethnicity, family background, and status. They should thus be more attuned to the role these factors play in how well students do academically (Blau 1977, 1994). Students in mixed-ability programs learn that school success is shaped by effort, talent, home support, and luck—that is, a combination of things within and beyond a student’s control. Students who fail academically may be lacking in any one of those things.

In summary, educational stratification may affect students’ understanding of their academic performance in two ways, typically referred to as “selection” and “treatment” effects (Bol et al. 2014; Van Houtte and Stevens 2008). I consider these effects as two sides of the same coin: educational stratification is both a selection mechanism and a treatment. Students are shaped by educational stratification through both the “selection effect” of ability tests and teacher advice, on the basis of which students are assigned to a vocational or academic track, and the “treatment effect” of the (homogeneous or heterogeneous) group of students who will be their classmates (cf. Gamoran 1992; Hallinan 1994). Students, I argue, draw on both experiences in making sense of their school performance (Graham 1991; Trautwein et al. 2006).

In the empirical analysis, I study educational stratification as expressed in terms of (1) students' track placement, (2) the (heterogeneous or homogeneous) composition of their school's student body, and (3) the rigidity of their country's school system, which may involve within- and between-school tracking. I expect the effects of educational stratification to be most strongly felt by students in ability-tracked classrooms (as compared to mixed-ability groups), in schools that are homogenous in terms of students' academic ability and socioeconomic background, and by students in countries with more extensively stratified school systems.

Hypothesis 1: Ability-tracked students are more likely than mixed-ability group students to attribute their academic performance to factors within their control (internal attribution).

Conversely, mixed-ability group students are more likely to attribute their academic performance to factors outside of their control (external attribution).

Hypothesis 2: The differences in attributions between mixed-ability group students and tracked students are greater in school systems marked by more extensive educational stratification.

Hypothesis 3: Students in schools that are more homogenous in terms of students' academic ability are more likely than students in less homogeneous schools to attribute their academic performance to factors within their control (internal attribution). Conversely, students in schools that are more heterogeneous in terms of students' academic ability are more likely to externalize their academic performance (external attribution).

Hypothesis 4: Students in more socioeconomically homogenous schools are more likely than students in more socioeconomically heterogeneous schools to attribute their academic performance to factors within their control (internal attribution). Conversely, students in

more socioeconomically heterogeneous schools are more likely to externalize their academic performance (external attribution).

DATA AND METHODS

I analyze data from the 2012 edition of the Programme for International Student Assessment (PISA), which is the only dataset, to my knowledge, to (1) contain measures of tracking and students' attributions (2) for a representative sample of the student body (3) in a large set of countries. For each country, schools were sampled from a national list of PISA-eligible schools, after which a target number of 35 students were sampled within each school. In countries with tracked school systems, students were sampled from each school track (OECD 2014). I draw on a subset of 128,110 students in 7,627 schools, based on two restrictions. First, I selected only the 24 out of 65 countries for which PISA collected data on students' track enrollment, and for which I have country-level data on the extent of educational stratification.⁸ Second, the main dependent variable for my analyses is part of a rotated student context questionnaire, which was posed to two out of every three students. As a result, my sample is further restricted to the 128,110 out of 193,935 students who filled out this questionnaire (OECD 2014). The percentage of missing values on control variables is between 0 and 1.34, which I address by listwise deletion. I use sampling weights to give equal weight to each country, in line with PISA's data analysis manual (OECD 2014).

⁸ The following 24 countries make up my sample: Belgium, Canada, Croatia, Czech Republic, Denmark, Finland, France, Hungary, Ireland, Italy, Japan, Lithuania, Montenegro, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, South Korea, Spain, Sweden, Turkey, and United Kingdom.

Table 5.1 PISA’s scale of students’ attributions of failure in mathematics

		Parameter estimates		
		Delta	Tau 1	Tau 2
“Each week, your mathematics teacher gives a short quiz. Recently you have done badly on these quizzes. Today you are trying to figure out why. How likely are you to have these thoughts or feelings in this situation?”				
a	I’m not very good at solving mathematical problems Internal (ability)	-0.136	-1.250	-0.280
b	My teacher did not explain the concepts well this week External (teacher)	0.248	-1.147	-0.103
c	This week I made bad guesses on the quiz External (luck)	0.284	-0.999	-0.291
d	Sometimes the course material is too hard Internal (ability)	-0.551	-1.045	-0.293
e	The teacher did not get students interested in the material External (teacher)	0.044	-0.962	0.002
f	Sometimes I am just unlucky External (luck)	0.110	-0.765	-0.223

Note: The scale of students’ attributions is based on the six items listed here, which follow the question as worded above. The response categories ranged from “strongly disagree” to “strongly agree” (four options). In creating the scale, all items were reversed so that a higher score indicates external attributions of failure (to the teacher or to bad luck).

Source: PISA 2012.

MEASURING STUDENTS’ ATTRIBUTIONS. The dependent variable for this study is an index of attributions of failure in mathematics (OECD 2014), which is based on a question posed to students after they took the PISA mathematics test but before they were informed of the result. The question assesses how students would explain a bad test result in mathematics, and was asked on a four-point agree/disagree scale with six items. Each item emphasizes a potential explanation for their failure to do well in mathematics: a student’s inability, the poor support they received from their teacher, and bad luck. Responses were coded such that positive values indicate external attributions (i.e., bad luck, teachers) and negative values indicate internal attributions (i.e., ability). Table 5.1 gives an overview of the question, response categories, and item parameters. The delta scores show to what extent each of the six items is taken as an indicator of an external or internal attribution: high scores for items c and b (blaming failure on bad guesses and a teacher’s poor explanation, respectively) mean these are the strongest forms of

externalization, followed by items e and f, which point to a teacher's failure to enthuse students for the material and bad luck, respectively. Conversely, items d and a (in that order) are the strongest indication of students blaming failure on their inability to do well in mathematics: the material is too hard for them, or they are just not good at mathematics. The scale has a moderate to high internal reliability, $\alpha = .64$.

MEASURING EDUCATIONAL STRATIFICATION

I measure educational stratification in three ways. First, on the student level, track placement gives the program a student is enrolled in: vocational, academic, or mixed-ability. Second, I acknowledge the difference between the rigid ability-group stratification that happens in countries like Belgium, Hungary, and the Czech Republic, and the less widespread tracking that happens in countries such as France, Ireland, or Slovenia (Chmielewski 2014; LeTendre et al. 2003). To incorporate variation of this kind in my models, I include a country-level tracking index variable that indicates the extent to which students are tracked in rigidly separated vocational and academic school tracks, or, more loosely, in separate streams within schools. Here I follow other comparative research on school systems and draw on Bol and Van de Werfhorst's index of tracking (Bol et al. 2014; Levels, Van der Velden, and Di Stasio 2014), updated with PISA 2012 data. The tracking index is based on publicly available data on three features of tracking regimes: a student's age at first track placement, the length of the tracked curriculum, and the number of parallel tracks (Bol and Van de Werfhorst 2013).⁹

⁹ I draw on the most recent PISA report (OECD 2014) to update the country-system characteristics and add information for Croatia, Lithuania, Montenegro, and Romania. Following Bol and Van de Werfhorst's (2013) specifications, I performed a new factor analysis of the complete set of 42 countries for which tracking data are available. The new factor scores correlate highly ($R = .98$) with the original scores.

The three indicators are loaded on one factor (eigenvalue 1.76). Factor loadings, saved as regression coefficients, give each country a score on the index, with a mean of zero and a standard deviation of one. Scores higher than zero mean a school system is more extensively stratified compared to other countries; scores lower than zero indicate the opposite.

Third, I look at the cross-level interaction between a student's track placement (individual level) and the school system's score on the index of tracking (country level) to assess the variable impact of track placement by the extent to which a school system is stratified.

I concur with scholars who argue that tracking may have a different impact on students depending on the school context (Gamoran 1992; Van Houtte and Stevens 2009). Therefore, in addition to these three ways of measuring tracking, I include school composition measures for average socioeconomic status and its standard deviation, and for the mean PISA math test score and its standard deviation. These measures allow me to assess to what extent students' attributions are associated with their peers' academic and social background characteristics, especially the extent to which the peer group is more heterogeneously or homogeneously constituted.

CONTROL VARIABLES. I include a set of control variables that other studies suggest are correlated with students' attributions and related beliefs, such as their expectations (Buchmann and Park 2009), aspirations (Buchmann and Dalton 2002), and academic self-concept (Chmielewski, Dumont, and Trautwein 2013). I observe that boys tend to do better in mathematics than girls, and may hold higher expectations, as do older students and those in higher grade levels (as compared to lower grade levels). Hence, I include controls for students' gender, age, and grade level.

I address selection effects by including a dummy for immigration status and a measure of socioeconomic status (PISA's index of economic, social, and cultural status) (cf. Bol et al. 2014; Borgna and Contini 2014), in acknowledgment of the fact that ethnic minority students and students from lower socioeconomic backgrounds are disproportionately placed in vocational tracks (compared to the academic track), and peer processes may affect these students differently (Agirdag et al. 2012; Tyson 2011).

Furthermore, I expect students' attributions to be affected by how good they are at mathematics. As an indicator of mathematics ability, I use students' mathematics score on the PISA test, which is unknown to students when they fill out the questionnaire. I focus on mathematics rather than science and reading, because the latter two are more sensitive to students' socioeconomic background (Bol et al. 2014; Driessen, Slegers, and Smit 2008). PISA mathematics scores are reported in an arbitrary metric, scaled to an average of 500 with a standard deviation of 100, which I standardized (mean of zero, standard deviation of one) for the sake of interpretation (cf. Evans, Kelley, and Sikora 2014).¹⁰

Finally, I include country dummies to account for country-specific variation in students' attributions of success and failure. Incorporating dummy variables allows me to estimate a country effect, net of the structure of the school system and student-level variables. Table 5.2, on the next page, gives descriptive statistics on all variables used in this study.

¹⁰ PISA recommends using the five plausible values recorded for students' mathematics performance and running the analysis five times, but Byun, Schofer, and Kim (2012:236), averaging results, observe that "prior analyses indicate little variability between the results generated from the combined use of the five plausible values and those generated from using one plausible value."

Table 5.2 Descriptive sample statistics

	Mean	Standard Deviation	Range
Individual Level			
Gender (Female)	.500		[0 – 1]
Age (standardized)	0	1	[-2.09 – 1.90]
Immigration status			[0 – 1]
No immigrant background	.908		
Immigrant background	.092		
Grade level (standardized)	0	1	[-3.72 – 4.69]
Socioeconomic status (standardized)	.023	.948	[-5.63 – 3.13]
Math performance (standardized)	0	1	[-4.34 – 4.69]
Attribution of Failure in Mathematics Index	.034	.980	[-3.77 – 3.91]
Track placement			
Vocational track	.250		
Mixed-ability track	.274		
Academic track	.476		
School Level			
School's mathematics performance			
Mean score	0	.657	[-2.95 – 2.63]
Standard deviation	.757	.175	[0.01 – 2.16]
School's socioeconomic status			
Mean level	.022	.565	[-4.01 – 1.88]
Standard deviation	.766	.171	[0 – 2.74]
Country Level			
Tracking index	-.166	.915	[-1.63 – 2.06]

Note: Data are weighed to give equal weight to each country. Source: Author's empirical sample of the PISA 2012 ($N = 128,110$).

MODELING APPROACH. I estimate the relationship between students' attributions of failure in mathematics and a set of student-level, school-level, and country-level determinants. To account for the multilevel structure of the data, I estimate two-level hierarchical models (students nested in schools), with random school intercepts and country-level fixed effects. By modeling random effects for the school level, I consider the set of schools included in the analysis to be a sample from a larger population defined in terms of the observed school characteristics. The estimated regression intercept is a population average, and deviations from this average are assumed to be

uncorrelated with the school-level random effects included in the model. With these assumptions, we can generalize the results to other schools.

I use a fixed-effects approach to model the country-level influence to account for unobserved heterogeneity at the country level, following previous research (Hanushek and Wösmann 2005). In this approach, the emphasis is on the uniqueness of each country in the dataset: I estimate a country effect for each country, reflecting its unique characteristics as they relate to students' attributions. Using a fixed-effects approach avoids two pitfalls of random-effects models: the non-random sample of countries violates the assumption of normality of the country-level residuals, and the low sample size of 24 countries means the limited degrees of freedom would lead to unreliable country-effect estimates (Bryan and Jenkins 2013). These problems do not arise with the estimation of school effects, which is based on a random and large sample of 7,627 schools.

Baseline Model 0 allows for an interpretation of the proportion of total variation in students' attributions that is explained by students' enrollment in different schools. In Model 1, I add country dummies to estimate the variation in students' attributions associated with the country a student lives in. Model 2 gives an estimation of the association between track placement and students' attributions of their mathematics performance. For a first assessment of Hypothesis 1, Model 3 includes the full set of individual-level controls.

In Model 4 I add a cross-level interaction, which allows me to estimate if the association between track enrollment and students' attributions varies with the degree to which a school system is stratified (cf. Gelman and Hill 2006). Positive values for the estimated interaction effect would indicate that students in ability tracks are more likely to attribute failure to external factors, the more rigidly their school system is stratified; a negative value would indicate that

tracked students are more likely to internalize failure when the school system is more rigidly stratified (Hypothesis 2).

In Model 5, I add measures for the school-level mean mathematics performance and the school-level standard deviation in math performance. These estimates allow me to assess whether students' attributions vary as a function of (1) how well their peers do and (2) how much difference there is between the mathematics performance of students in a given school (Hypothesis 3). In Model 6, I make a similar assessment by incorporating the school-level mean socioeconomic status and the school-level standard deviation (Hypothesis 4). Model 7, the full model, allows for an assessment of Hypotheses 1 and 2, taking into account the variable composition of schools.

RESULTS

Before discussing the results, I look more closely at the variance explained at various levels of the multilevel model. Model 0, which includes only the dependent variable and school-level random effects, allows for an assessment of the proportion of variance in students' attributions that is due to differences in the schools that students attend. The estimated variance at the school level is .282, compared to an estimated variance at the student-level of .934, which means that

$\rho = \frac{.282^2}{.282^2 + .934^2} = .083$ of total variance in students' attributions, or 8.3 percent, is due to

differences between schools (see Table 5.3 on the next page).

Model 1 incorporates country-level fixed effects in recognition of the fact that students' experiences may be shaped by the school context as well as their unique country context. The estimated variance components for Model 1 indicate that, when factoring in the country level, the variance explained at the school level drops from an estimated 8.3 percent to 2.7 percent.

Table 5.3 Multilevel Linear Regression Model of Students' Externalization of Failure in Mathematics

	0	1	2	3	4	5	6	7
Country fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual level								
Mixed-ability track			ref.	ref.	ref.	ref.	ref.	ref.
Vocational track			-0.142*** (.014)	-0.140*** (.015)	-0.120*** (.016)	-0.129*** (.016)	-0.161*** (.016)	-0.151*** (.015)
Academic track			-0.085*** (.014)	-0.057*** (.015)	-0.045*** (.015)	-0.043*** (.016)	-0.043*** (.016)	-0.045*** (.016)
Female				0.089*** (.005)	0.088*** (.005)	0.085*** (.005)	0.084*** (.005)	0.084*** (.005)
Age				0.003 (.003)	0.003 (.003)	0.003 (.003)	0.003 (.003)	0.003 (.003)
Immigrant background				-0.092*** (.010)	-0.092*** (.010)	-0.092*** (.010)	-0.093*** (.010)	-0.092*** (.010)
Grade level				0.050*** (.003)	0.050*** (.005)	0.049*** (.005)	0.053*** (.005)	0.053*** (.005)
Socioeconomic status				0.005 (.003)	0.005 (.003)	0.005 (.003)	-0.003 (.003)	-0.004 (.003)
Math performance				-0.166*** (.003)	-0.166*** (.003)	-0.160*** (.003)	-0.164*** (.004)	-0.162*** (.004)
Country level								
Tracking index					0.024 (.028)	0.021 (.029)	-0.000 (.028)	0.001 (.029)
Cross-level interaction								
Tracking index * Vocational track					-0.049*** (.014)	-0.048*** (.014)	-0.053*** (.014)	-0.053*** (.014)
Tracking index * Academic track					-0.011 (.014)	-0.018 (.014)	-0.039*** (.014)	-0.038*** (.014)
School level								
School mean math performance						-0.040* (.024)		-0.035 (.025)
School SD math performance						0.099*** (.011)		0.015 (.011)
School mean socioeconomic status							0.025 (.025)	0.031 (.025)
School SD socioeconomic status							0.130*** (.007)	0.123*** (.009)
Observations	128,110	128,110	128,110	128,110	128,110	128,110	128,110	128,110
Number of schools	7,627	7,627	7,627	7,627	7,627	7,627	7,627	7,627
Variance between-schools	0.282	0.157	0.155	0.161	0.160	0.157	0.152	0.152
Variance within-schools	0.934	0.935	0.935	0.919	0.919	0.919	0.919	0.919
ICC (school)	0.083	0.027	0.027	0.030	0.029	0.028	0.027	0.027

Note. Positive coefficients indicate externalization of failure in mathematics; negative values indicate internalization. Standard errors are in parentheses. ** $p < .01$, * $p < .05$, two-tailed tests. Source: Author's empirical sample of the PISA 2012.

A comparison between Model 0 and Model 1 thus indicates that a large portion of the between-school variance in students' attributions is associated with differences at the country level: a majority of the between-school variance indicates between-country variance, whereas a smaller part of the between-school variance can be considered between-school, within-country variance. This points to the importance of country factors, such as the organization of the school system, and emphasizes the salience of considering both the school- and country-level in studying students' attributions.

A first indication of the association between students' track placement and their attributions of failure in mathematics is given in Model 2, which describes the pattern of association by track placement, taking into account the fact that students attend different schools and come from different countries. The negative model estimates for the ability-grouped tracks ($-.142$ and $-.085$ for students in the vocational and academic track, respectively) indicate that these students are more likely than students in a mixed-ability group (the reference category) to blame themselves for not doing well. Conversely, students in mixed-ability groups, on average, tend to blame their failure on forces outside of their control, such as the teacher's lack of enthusiasm, the teacher's poor explanation of the material, or a case of bad luck.

Model 3 includes individual-level variables for gender, age, immigrant background, socioeconomic status, and mathematics performance. Incorporating these controls does not change the direction or significance of the association between track placement and students' attributions, but it does affect the size of the coefficients: whereas the estimated coefficient for students in the vocational track remains strong at $-.140$, the coefficient for academic-track placement drops from $-.085$ to $-.057$. This reduction in the strength of association points to the fact that students in the academic track, on average, do better than vocational students. The

negative coefficient for mathematics performance ($-.186$) indicates that students who generally do better in mathematics are less likely to attribute failure to external factors: when they fail on a particular test, these students tend to blame themselves.

In Model 4, I assess the role of the school system by modeling a cross-level interaction between students' track placement and the extent to which their school system is stratified. My findings are threefold. First, the negative coefficient estimated for the cross-level interaction between students' vocational-track enrollment and stratification of the school system indicates that vocational students, compared to students in mixed-ability groups, are especially likely to internalize their failure in mathematics. The total association between students' track placement and attributions, for students who are placed in a vocational track in a school system with above-average educational stratification (i.e., one standard deviation above the mean), can be estimated as $-.120 + -.049 = -.169$, which is roughly equal to the estimated coefficient for a one standard deviation change in mathematics performance. In contrast, the model estimates show no cross-level interaction between educational stratification and students' placement in an academic track or a mixed-ability group.

Model 5 introduces school-level measures of average math performance and standard deviations, as an indicator of school-level ability heterogeneity. The estimates indicate that school average mathematics performance is negatively associated ($p < .05$) with students' scores on the attribution index: students at schools where math performance is higher are more likely to internalize their failure to do well in math. Conversely, students in heterogeneous schools are more likely to attribute failure to factors outside of their control. Incorporating these school-composition measures does not affect the estimated relationship between students' track placement and their attributions, nor does it affect the cross-level interaction.

In Model 6 I assess the association between students' attributions and their school's socioeconomic composition. I find no association for the school-level mean, but heterogeneity in socioeconomic status is associated with an increased likelihood to externalize failure in mathematics. Including measures of school-level socioeconomic status affects other model estimates in two ways: the coefficient for vocational-track placement increases by about 25 percent, from $-.129$ to $-.161$; estimates for the cross-level interaction also increase, rendering the coefficient for academic-track placement by educational stratification statistically significant. These changes in the estimated coefficients reflect the fact that the makeup of a school's student body is systematically associated with track type.

Model 7 includes all previously discussed measures and validates the statistical patterns discussed earlier: students in ability-tracked programs are more likely to internalize failure. A direct interpretation of the strength of association is not readily available, because the dependent variable is an index score. However, the strength of association can be interpreted by making comparisons between variables. Thus, the association between students' placement in the vocational track and their score on the attribution index, net of student-level, school-level, and country-level factors, can be expressed as $\frac{-.151}{.084} = 1.8$ times the difference in attributions between male and female students, or as $\frac{-.151}{-.162} = 93$ percent of the difference in students' attributions associated with a one standard deviation change in mathematics performance. The strength of association for placement in the academic track is significantly less and can be expressed as 54 percent of the difference between male and female students, or 28 percent of the difference between students associated with a standard deviation change in mathematics performance. At the school level, the most important difference between the full model and the

other models with school-level measures is that inclusion of all four school composition measures renders the coefficients for mathematics performance statistically insignificant.

SCHOOL SYSTEM AND COUNTRY EFFECTS

With regard to the school system, the association between students' track placement and their attributions is more pronounced in countries with a more extensive tracking regime. Figure 5.1 illustrates the cross-level interaction between (student-level) track placement and (country-level) educational stratification, estimating scores on the attribution index for students in the three tracks, based on the estimated coefficients in the full model:

$$\text{Attribution} = (-.151 \times V) + (-.045 \times A) + (-.053 \times \text{StrxV} \times \text{Str}) + (-.038 \times \text{StrxA} \times \text{Str})$$

where V is a dummy (0 or 1) for vocational-track placement, A is a dummy for the academic track, StrxV is a dummy for the interaction between educational stratification and vocational-track placement, aStrxA is a dummy for the interaction between stratification and the academic track, and Str is the score on the stratification index for students' school system.

Figure 5.1 shows that the differences between students in the three school tracks are larger in more stratified school systems: the difference between students in mixed-ability programs versus vocational tracks is less than .05 on the attribution index in countries at the lower end of the educational stratification index, whereas the difference reaches a peak of .25 in countries whose school systems are most extensively stratified.

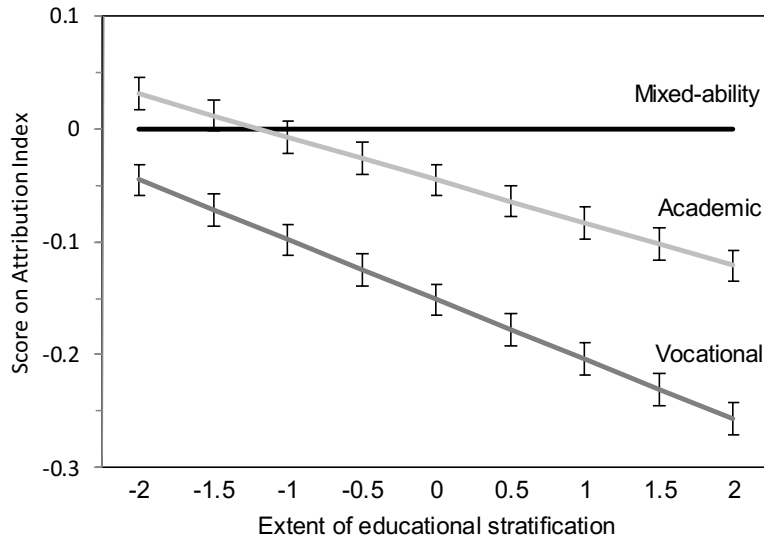


Figure 5.1 Attributions of failure by track placement and educational stratification

Note: The graphed lines indicate estimated values on the attribution index for a student placed in a mixed-ability group, an academic track, or a vocational track, respectively, by the extent of educational stratification of the student's school system (as indicated by scores on the tracking index), holding all else constant. Higher values on the attribution index indicate that a student attributes failure in mathematics to external factors; lower values indicate students internalizing their failure. Estimates are taken from the full multilevel regression model (Model 7) in Table 3. *Source:* Author's empirical sample of PISA 2012 ($N = 128,110$).

In the final step of my analysis, I more closely examine the variation in students' attributions associated with country factors. I take the regression coefficient estimated for each country dummy in Model 7, and plot these against that country's corresponding tracking index score to assess the co-variation and correlation of the two (see Figure 5.2).¹¹ The correlation between the country regression coefficients and the country's score on the tracking index shows how much of the country's association with students' attributions is a product of variation in the school system and how much is due to unobserved institutional and cultural factors.

¹¹ The reference category for the estimation of country effects is South Korea, which has the tracking index score (.072) closest to zero and, as such, represents the most typical educational system from an educational stratification perspective. I dropped Turkey from this analysis because of collinearity.

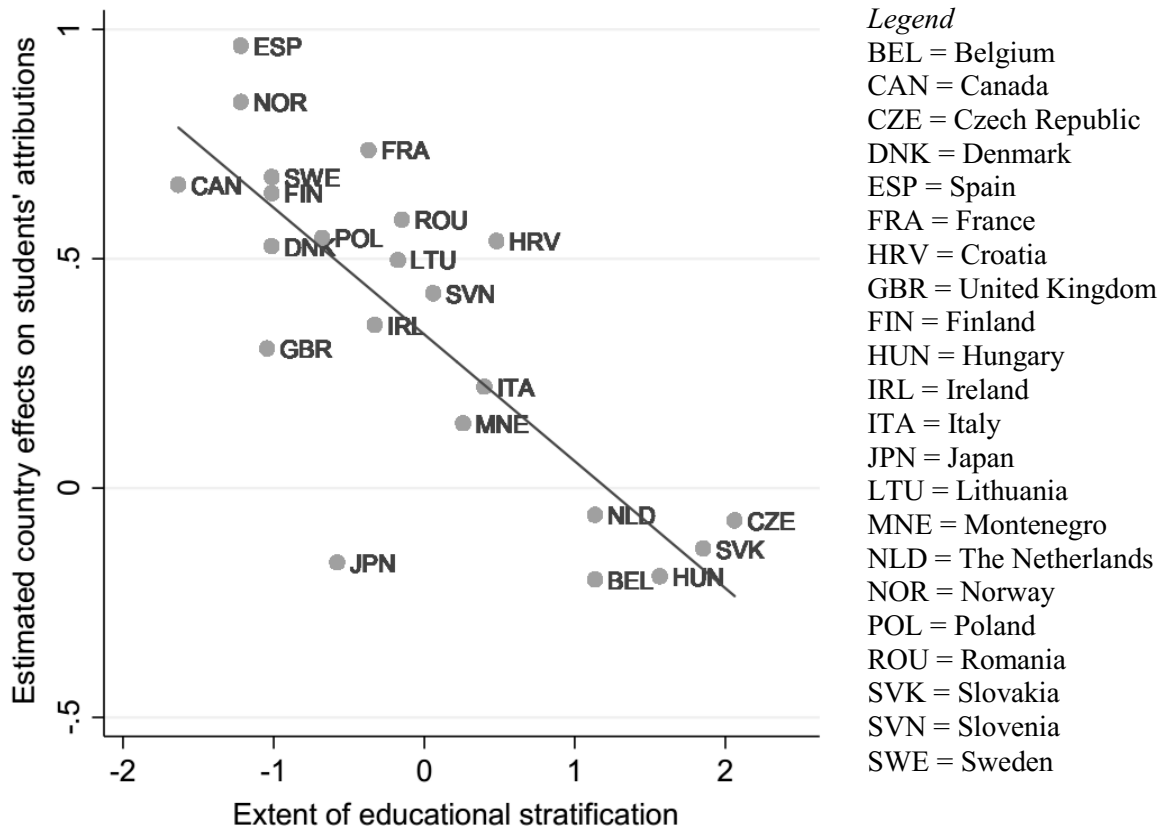


Figure 5.2 Estimated country effects on students' attributions by educational stratification

Note: $R = -.79$; r -squared = .63; $p < .01$. The y -axis gives the estimated association between countries and their students' attributions of their mathematics performance: positive values indicate that students in that country are more likely to externalize their failure; negative values indicate that students in these countries are more likely to internalize their failure in mathematics (the reference category is South Korea). These values are plotted by a country's score on the index of stratification, which indicates the extent to which that country is marked by educational stratification. Estimates are taken from the full multilevel regression model (Model 7) in Table 5.3. *Source:* Author's sample of PISA 2012 ($N = 128,110$).

As can be gauged from the figure and inferred from the coefficient of determination ($R = -.79$), the tracking index is a good predictor of the country effects: about 63 percent of all variation in students' attributions at the country level is due to variation in the country's school system in terms of the tracking index.

CONCLUSION

After accounting for between-country differences, the role of schools, as well as student background factors, important differences in students' attributions of their mathematics performance remain unexplained. I find that these patterns are associated with educational stratification in the following ways.

First, students in mixed-ability groups are more likely than students in vocational and academic tracks to attribute their mathematics performance to teachers or (bad) luck and to externalize failure. Conversely, students in ability-tracked programs are more likely to internalize their failure and attribute poor test results to their inability to do well in math (Hypothesis 1).

Second, differences between the attributions of mixed-ability and ability-tracked students are more pronounced in countries where tracking is more extensive: students are particularly likely to internalize failure when they are placed in an ability-tracked program in a school system that is extensively stratified (Hypothesis 2).

Third, the association between educational stratification and students' attributions is strengthened by the fact that schools attended by ability-tracked students have a more socioeconomically homogenous student body: the more homogenous the student body, the more likely a student is to internalize failure (Hypothesis 4). Taking into account schools' socioeconomic composition, I find no support for Hypothesis 3, which states that students' attributions are shaped by school-level heterogeneity in math scores.

These findings are best explained by the track logic perspective developed in this chapter. Educational stratification affects students' understanding of their academic performance in two ways: students' attributions of their school performance are shaped through ability tests and

teacher advice, on the basis of which they are placed in a vocational, mixed-ability, or academic track, and by the (homogeneous or heterogeneous) group of students who are their classmates.

The more homogeneous their school experience, the more likely students are to believe that how one does in school is due solely to one's own (lack of) hard work and academic (in)ability.

Conversely, the more students are exposed to heterogeneity in school, the more likely they are to attribute academic failure to a range of things, including effort, ability, and external factors such as teachers, bad luck, or the home support a student does or does not receive.

I acknowledge a number of limitations to this study. First, the measurement of students' attributions relies on only six indicators, underlying a single survey question. In discussing the findings of this study, I implicitly assumed that attributions of failure have a symmetric structure, that is, they are also reflective of attributions for success. However, this remains a testable hypothesis. Second, the limited set of countries for which tracking data were available, with the notable exclusion of the United States and Germany, further limits the generalizability of my findings. Finally, my survey-based cross-sectional approach means I cannot directly observe the processes I hypothesize, nor can I study the formation of beliefs over time or ascertain their behavioral consequences. These limitations suggest paths for future research and data collection.

Research from the 1970s onward demonstrates that incorporating the structure of school systems into our analyses greatly enriches our understanding of social inequality and social reproduction (Hallinan 1994; Kerckhoff 2001; Rosenbaum 1976). My findings suggest that educational stratification may also provide a context for cognitive processes that reinforce social inequality. In fact, the statistical evidence presented in this chapter suggests that most of the variation in how students make sense of their mathematics performance is attributable to students' track placement, mathematics ability, and individual background factors. Only a very

small part of the variation in students' attributions of their mathematics performance can be linked to the particular school they go to or the country they live in.

The nature of the evidence presented in this chapter means that these findings should not be taken as necessarily conflicting with accounts of school-level (Nunnn 2014; Shedd 2015; Van Houtte and Stevens 2008) or country-specific (Trautwein et al. 2006; Warikoo and Fuhr 2014) processes that affect students' attributions of their academic performance. Rather, the cross-national design of this study allows me to describe general patterns of association between educational stratification and students' attributions of failure, which are realized in the unique cultural context of school and country. The framework presented here builds on these studies, confirms their main findings, and provides a roadmap for systematic exploration of the educational structures that shape young adolescents' attributions of success and failure.

This chapter points to general processes, but it bears emphasis that underprivileged and minority students' disproportional allocation to vocational tracks means they are especially likely to internalize failure. Conversely, the disproportional representation of students from more privileged social backgrounds in the academic track, in combination with these students' higher average academic performance, means they may come to justify their advantage as merited by their superior ability.

Taken together these findings support the claim that public educational policies are consequential for more than students' outcomes in school and on the job market; my research suggests that policies that stratify students into hierarchical school tracks may also shape these students' inclination to blame themselves when they fail. As such, educational stratification affects social stratification in two ways: (1) educational stratification sets the pathways to social stratification by providing preparation for college and the upper echelons of the labor market to

students in the academic track, while pointing students on vocational tracks toward increasingly precarious work; and (2) the process of track selection and treatment cements social stratification by shaping how students come to understand what makes for success, and why some are less successful than others. The outcome of that process may serve to legitimize inequalities: students who fare well come to think of their accomplishments as the sole result of their effort and ability, whereas students who fail to do well academically have only themselves to blame.

Chapter 6

Conclusion

TOO OFTEN DO WE FORGET C. Wright Mills' important sociological lesson: "When, in a city of 100,000, only one man is unemployed, that is his *personal trouble*, and for its relief we properly look to the character of the man, his skills, and his immediate opportunities. But when in a nation of 50 million employees, 15 million men are unemployed, that is an *issue*, and we may not hope to find its solution within the range of opportunities open to any one individual" (Mills 1959:9; emphasis added). Inequality confronts us as a public issue, but the idea of meritocracy turns it into personal trouble. This dissertation is an inquiry into the forces driving that process: what makes people take a meritocratic view of life outcomes in the face of overwhelming evidence of public issues?

I argue that what explains the solidification of citizens' meritocratic beliefs is the fact that people are increasingly unable to see the full extent of inequality in their society, nor develop an awareness of the structural processes shaping unequal life outcomes. The reason for people's inability to see what separates and divides them from their fellow citizens, is that the lives of the rich and poor are increasingly segregated: people live in neighborhoods, go to schools, and pick romantic partners and friends that fit their education and income level (Logan 2011; Massey and Tannen 2016; Reardon and Bischoff 2011; Reardon and Owens 2014). Housing segregation, school segregation and social homogamy mean that one's chances of getting to know someone

from a different socioeconomic background, let alone developing an understanding of another person's privilege or plight, are slim. This cuts both ways: growing up in a homogeneously poor neighborhood is probably as likely to make a person unaware of just how much easier others have it as it is hard for someone surrounded by privilege to appreciate the obstacles other people face. These then are the processes that produce the paradox we face, where citizens of some of the world's most unequal societies think of their country as the paragon of meritocracy (Bucca 2016; Whyte 2011). In what follows I discuss implications for theory, practice, and future research.

CONTRIBUTIONS TO THEORY

LEVEL OF ANALYSIS. The inferential model of inequality beliefs presented in this dissertation posits a relationship between people's homogeneous or heterogeneous environments and the inequality beliefs they develop in such settings. While this relationship may manifest itself at the country-level, the mechanism driving it is based in the institutions that shape (young) people's experiences and interactions: their neighborhoods, schools and workplace. Therefore, the fact that citizens of different countries hold variable inequality beliefs, is not a sufficient reason to search for causes in common cultural or ideological experiences. Rather, my argument implies that we explain people's beliefs by reference to the variable institutional environments that people inhabit. The greater the proportion of citizens living in relatively heterogeneous environments, the more likely the citizenry of that country is to hold structural beliefs about inequality. Conversely, when experiences with heterogeneity are rare, citizens are much more likely to reach a meritocratic consensus. In fact, it would be interesting to assess whether institutional environments, in the aggregate, affect the shape of the distribution of beliefs within

a country, as has been investigated for beliefs about fairness (Koçer and Van de Werfhorst 2012) and income inequality (Osberg and Smeeding 2006).

This is not to say I disregard cultural explanations of how people develop inequality beliefs; I acknowledge the role of news media, and the production of culture in narratives and ideologies: who would know of the American Dream, if it wasn't told and retold—produced and reproduced—on a daily basis by parents, pundits and politicians? Rather, I consider these cultural narratives and ideologies the source of baseline beliefs, as it were, that people are confronted with in their struggle to make sense of their own experiences and that of others around them. Whether they accept and make those bits of culture their own—whether they find themselves drawing on them, and playing their part in cultural reproduction—depends in strong part on their lived experience, and the extent to which the two clash or correspond. To find out, we should give priority to the micro-interactional and the meso-institutional level of analysis.

CONTACT THEORY. In Allport's (1954) formulation, contact theory states that exposure to ethnoracial (or socioeconomic) heterogeneity reduces prejudice if intergroup contact happens in a setting where: a) participants have equal status, b) are pursuing common objectives, c) and work together toward these objectives, and d) are supervised. Much of the contemporary literature inspired by contact theory revolves around describing when these conditions are or are not sufficient for the hypothesized prejudice reduction to occur (Denis 2015; Enos 2014; Pettigrew and Tropp 2000). Whereas I believe contact theory provides a valuable perspective on how experiences can translate into tolerance and sympathy, I suggest we can develop a more precise account of that process by taking as a starting point the cognitive relationships between experiences and beliefs (cf. Boisjoly et al. 2006; Cruces et al. 2013; Hitlin and Vaisey 2013:62;

Vaisey 2009:1684).

I suggest that experiences with heterogeneity may impact, through an inferential process, a person's beliefs about inequality and, by implication, the deservingness of people in power and in need. Whether these (updated) beliefs translate into affect, empathy, politics, and intergroup relations, is another matter. Different settings—interactional, local, or national—may give rise to forces that either promote or suppress change. Looking at the process through this lens opens up a fruitful line of research at the intersection of cognition and culture. By more systematically studying the links between experience, beliefs, and attitudes we should get better answers to questions like, when do experiences and interactions with heterogeneity translate into belief change and under what conditions do such changes impact a person's attitudes about people from a different class or racial background?

We can think of situational, political, and cultural forces that keep a person from updating their beliefs or changing their attitudes. Breaking down the steps between experiences and attitudinal change brings into focus more clearly the possible barriers to cognitive and attitudinal change. Doing so may allow us to unpack some of the concepts that scholars have suggested play a key part in this process, such as lack of information (Kuziemko et al. 2015; Trump 2017), economic self-interest (Cruces et al. 2013; Margalit 2013), political discourse (Cavaillé 2017; Dancey and Goren 2010) and available repertoires of action and reaction (Hall and Lamont 2013; Lamont et al. 2016; Mijs, Bakhtiari, and Lamont 2016; Small, Harding, and Lamont 2010).

LESSONS FOR PRACTICE & POLICY

EDUCATIONAL POLICY. Some of the factors behind the rise of inequality and growing segregation likely reflect processes of self-selection and self-segregation (DiPrete et al. 2011; McVeigh and

Sobolewski 2007), but much is the result of (public) policies and (private) practices that regulate entry into and exit from neighborhoods, schools and labor markets—i.e. the way that housing markets are set up, how schools are funded, and who gains access to the best schools, colleges, and jobs. Studies describe the material consequences of these processes for the people involved as well as their communities more broadly (Fiel 2015; Lareau and Goyette 2014; Reardon and Bischoff 2011; Rivera 2015; Sampson 2012; Wilson 2010). The research presented in this dissertation suggests that there is a cognitive dimension to segregation which tends to exacerbate its material impact: practices and policies that create homogeneous institutions, where privilege or disadvantage is concentrated, give rise also to the legitimation of difference. In Chapter 4 and 5, I illustrate how by linking school policies to students' beliefs about inequality, and students' inclination to blame themselves for academic failure, respectively.

College admissions shape the composition of the student body—among other things, its ethnoracial and socioeconomic makeup. Through that process they also condition the way in which students learn about their society, by inference from their experiences in college. Specifically, I find that homogenous and exclusive colleges create settings in which tomorrow's elite learns to think of the growing income and wealth gap and their position on the right side of it as meritocratically deserved. In fact, a majority of students receives only limited exposure to socioeconomic and racial diversity, both in an interactional sense and as concerns the college environment more broadly (Bastedo and Jaquette 2011; Pryor et al. 2007; Reardon et al. 2012; Torche 2011). In the absence of heterogeneity exposure, many students will come to develop a naive understanding of American meritocracy in a country that is increasingly divided along racial and socioeconomic lines (Bobo and Smith 1998; Bonilla-Silva 2006; Massey and Tannen 2016).

These findings add to the mounting evidence suggesting that many colleges today are not living up to their civic mission to educate young adults about their country's past and present, the democratic process, and their part in it, nor are they broadening students' horizons or increasing intergroup understanding (Bischoff 2016; Gurin et al. 2013). For many (elite) students the college experience undermines rather than serves the civic role of higher education.

In secondary education, I find that policies that lead to school stratification and segregation impact not just the quality of education for students, but also the ways in which students learn to understand their own competencies and how they deal with setbacks. Regardless of students' factual school performance, those who attended highly stratified, segregated schools are most likely to think only they are to blame for their failure. Conversely, students in less stratified, socioeconomically integrated, schools tend to attribute their academics to a range of factors within their control (effort, talent) and beyond their control (teachers, bad luck). Underprivileged and minority students' disproportional allocation to vocational tracks means they are especially likely to internalize failure. Conversely, the disproportional representation of students from more privileged social backgrounds in the academic track, in combination with these students' higher average academic performance, means they may come to justify their advantage as merited by their superior ability.

Educational policy debates tend to focus on school and teacher quality, but what also warrants attention is the environment in which we want our students to learn. School environment, I show, impacts the way students learn larger lessons about the society they live in, and their own place in it—lessons that bear on how they see themselves and what they can accomplish. These findings add a new dimension to the conversation on how school stratification—through processes of tracking, streaming and sorting—impacts students' school

experiences and outcomes (Ainsworth 2012; Buchmann and Park 2009; Oakes 1985; Van de Werfhorst and Mijs 2010): Stratified, segregated school structures are hindering progress toward bringing together a diverse society to solve social problems. If we want to equip students with the skills and experiences to do so, we need to create the kinds of environments in which students can develop empathy, and learn how to fail without giving up (Mijs and Thigpen 2017).

How to best do so depends of course on local, regional and national contexts. In the American higher education sector, short of a complete overhaul of financial aid, recruitment, and college admissions, it may be worthwhile to consider small but meaningful steps to maximize students' exposure to ethnoracial and socioeconomic heterogeneity. One means for creating conditions for interactions across socioeconomic and racial lines, as suggested by my own and other research (Laar et al. 2005; Sidanius et al. 2010), is to explicitly make heterogeneity a goal of roommate assignment by purposively pairing students across racial or socioeconomic lines.

SEGREGATION IN OTHER INSTITUTIONS. Whereas the focus in this dissertation has been on neighborhood and schools, there is evidence that similar processes affect labor markets and workplaces. Low-wage labor markets in particular have become increasingly homogeneous spaces for low-educated workers from poor and minority backgrounds (Kalleberg 2009; Kalleberg et al. 2000; U.S. Bureau of Labor Statistics 2015). By isolating low-wage workers from high-wage workers and from seeing the advantages that their education and socioeconomic background affords them, segregated labor markets may reinforce meritocratic beliefs.

Scholarship on occupational sex segregation and stratification similarly describes how men's and women's individualist beliefs about the causes of sex differences in income and status are reinforced, in the absence of exposure to diversity in status and gender (Kanter 1977; Ridgeway

1997, 2001; and see Correll 2004). Meritocratic beliefs reinforce existing inequalities, by sex, race, and class, both within and between organizations (Castilla 2008; Castilla and Benard 2010). Recruitment, selection and promotion decisions thus have the potential to impact both the representation of minorities within organizations *and* people's beliefs about the position of minorities—how well they do and why.

FUTURE RESEARCH

CONCEPTUALIZATION & MEASUREMENT. Whereas there is growing interest in the study of beliefs about inequality, picking up momentum since the first wave of studies in the 1980s and 1990s (Hochschild 1996; Kluegel and Smith 1986; Verba and Orren 1985), there is little consensus about how to best measure people's beliefs—nor is there much debate on the topic! In fact, the field of research on inequality beliefs is not much of a field at all, but rather a series of studies in economics, social psychology and sociology that overlap in topical interest but in little else. This means the proverbial wheel is being invented many times over. Whereas more debate on these points is much welcome and much needed, I offer three lessons based on previous work that could provide a starting position from where we can push this literature forward.

First, inequality beliefs are best considered cognitive concepts, distinct from norms and preferences (cf. Kluegel and Smith 1986; Osberg and Smeeding 2006). That is to say that a person may have a belief about how the world is and works (i.e. how much inequality there is and what processes generate it) that is different from, even conflicting with, how they would like the world to be and how they would like to get there (i.e. through what interventions, politics and policies).

Second, inequality beliefs are best assessed as detailed explanations of life outcomes,

adding up to a more or less coherent perspective (cf. Evans 1997:456; McCall and Kenworthy 2009:474). As illustrated in Chapter 3, patterns of explanations may differ by topic or domain: people may hold beliefs that can be characterized as individualist when explaining life outcomes in education or work, but take a more structuralist form when thinking about the determinants of crime. It is an empirical question whether these domain differences are the product of people’s experiences with regard to these outcomes, or whether they reflect different notions of how cause-and-effect and responsibility apply to these domains (on the latter, see Miller 1999).

Third, inequality beliefs are best conceptualized as multidimensional (Bobo 1991; Bobo et al. 2012): whereas there is a negative relationship between structural and individualist beliefs, there is no evidence to suggest that the two are in a zero sum relationship. Just as any single life outcome is best explained by a multitude of factors, we can think of a person’s inequality beliefs as being marked by a combination—or repertoire—of individual and structural factors that they can apply—or activate—to explain various life outcomes. Operationalizing a multidimensional concept requires some kind of ‘flattening’ for purposes of measurement.

Table 6.1 Two-dimensional conceptualization of inequality beliefs

Societal success is the product of hard work	Disagree	Agree
... is the product of structural forces	Disagree	5%	55%
	Agree	20%	20%

Table 6.1 illustrates one way to do so: dichotomizing beliefs about hard work (individualist beliefs) and beliefs about the role of structural forces allows for an operationalization of four possible (multinomial) categories that describe a person’s inequality beliefs. We can label these as “predominantly individualist” / “predominantly structuralist” / “mixed beliefs” and a final category which denotes the belief that neither hard work nor

structural forces explain societal success—we can think of this position as emphasizing the importance of chance. The numbers here provided for illustrative purposes would indicate that while approximately 75 percent of people (55 + 20) think that societal success is the product of hard work, a large share of these people ($\frac{20}{75}$) also thinks structural factors are part of the explanation.

MECHANISMS. Given the self-selection and self-segregation processes described above, identifying the causal mechanism between environment and beliefs requires more than theory and correlation. I have fruitfully drawn, in Chapter 4, on exogenously induced variation in interactional heterogeneity by studying roommate assignments, and have used longitudinal data together with statistical techniques to hold constant time-invariant factors. Limited data availability unfortunately meant that much of the research here presented relied on making plausible a relationship, the causal nature of which remains unproven.

I see two ways forward. First, whereas survey experiments have limited external validity, repeating experiments in different (regional or national) contexts may prove fruitful to explore variation in participants' responses, or lack thereof. Much research (my own included) has focused on the US context, which has limited the range of institutional variation available for analysis. Moreover, the US is an outlier relative to other rich democracies, in the level of income inequality that characterizes American society and in the extent to which the lives of the rich and poor are segregated from one another in relatively homogenous institutions (neighborhoods, schools, and workplaces). Shifting focus to Europe, makes it possible to leverage international institutional variation to study what factors most impact belief formation. Theoretically, inequality beliefs could be the product of a combination of micro-interactional experiences (e.g.,

discrimination, upward or downward mobility), meso-level institutions (e.g., neighborhoods, schools, and workplaces), and national politics and policies (e.g., political discourse, welfare state arrangements). The importance of these factors likely varies between societies.

Second, we can study how individuals growing up in different institutional environments explain similar life events—e.g., graduating or dropping out of school; finding or losing employment; witnessing or experiencing violence. A survey approach would require the linkage of geolocation data and administrative records with individuals' self-reported descriptions of their institutions. Combining objective and subjective measures of institutional environment would allow for more robust measurements of people's perceived and experienced context, and would enable us to study how such perceptions and experiences may shape belief formation. Alternatively, we can take a qualitative approach, define two or more groups of youth growing up in settings varying in heterogeneity, and ask respondents to keep a diary and record their thoughts on a set of events or life outcomes. Whereas a survey would bring out most clearly likely patterns of variation, comparing diary entries may yield more nuance and insight.

FOCUS ON DEVELOPMENT. My aim has been to offer a developmental account of inequality beliefs, by linking people's childhood environments to beliefs held in adulthood (Chapters 2 and 3) and by studying how students' beliefs about inequality change over the college years as a factor of their school environment and interactions with other students (Chapter 4). An important question to consider next is if and how beliefs solidify during the life course or whether people generally stay open to update their beliefs—what economists call elasticity (Kuziemko et al. 2015). Research in developmental (neuro)psychology suggests that children make sense of their world based on their immediate environment, starting from around the age of eight (Aloise-

Young 1993; Anon 2000; Banerjee 2000; Banerjee and Yuill 1999; Heyman, Fu, and Lee 2007) and we know that different inequality beliefs are observable at least by age 14 (Grayman and Godfrey 2013). Further, research on lifespan political socialization suggests that young adults are particularly impressionable in their college years, and that beliefs formed in those years are quite durable over a person's life course (Alwin and Krosnick 1991; Sears and Funk 1999; Sears and Levy 2003). It remains an open question however when the impact of experiences reaches its peak and if and when experiences with homogeneity/heterogeneity reach a saturation point, as implied by my theoretical model. I look forward to doing my part in pursuing these questions in the years to come.

Appendices

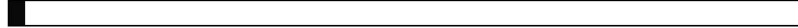
Appendix A: Supplementary Materials Chapter 2

Table A1 Descriptive statistics (N=115)

<i>Variable</i>	<i>Mean</i>
Neighborhood heterogeneity	
Index (based on self-report)	.29 [0 – .74]; SD = .24
Index (county-level geo data)	.32 [.02 – .78]; SD = .21
Private school attendance (yes)	.20 [0 – 1]
Age	33.7 [18 – 67]; SD = 13.3
Sex (male)	.48
Race/ethnicity	
White	.79
Black	.08
Hispanic	.06
Asian	.07
Mother's education	
No high school degree	.08
High school degree	.30
Some college	.20
College degree or more	.42
Do you consider yourself a	
Democrat	.42
Republican	.19
Independent	.39





Figure A1 Test Phase Prompt

Progress 1/6



The table below shows you how many of the students got accepted at the college (green smileys) and how many did not (red smileys) depending on whether they had **good** or **average grades** and on whether they came from **rich** or **poor families**.

College Y

	rich family	poor family
good grades		
average grades		

Josh was one of the students who applied to **College Y**.

Josh did **get accepted**.

To what extent is Josh to **praise for getting accepted** at College Y?



not at all

very much

Continue

Figure A2 Estimation Phase Prompt

Prediction judgments

Thanks for answering the background questions!

We would now like you to answer a few questions about what you think the chances are of different people to be accepted at a top-tier university in the US (please type in a number between 0 and 100 into each text box):

a person from a **poor family** who got **average grades**: %

a person from a **rich family** who got **average grades**: %

a person from a **poor family** who got **good grades**: %

a person from a **rich family** who got **good grades**: %

Continue

(If the button is grayed out it means that you didn't answer all of the questions. You can only proceed if you've answered all of the questions. You may need to click with the mouse outside of the text box.)

Appendix B: Supplementary Materials Chapter 3

Table B1 Scenarios, Prompt and Factors in Domain of Education (average importance listed in parentheses)

	1	2	3	4
Scenario	Mason graduated from high school	Wesley did not finish high school	Isabel was accepted at an Ivy League university	Tara did not finish college
Prompt	To what extent do you believe that Mason graduated because ...	To what extent do you believe that Wesley did not finish high school because ...	To what extent do you believe that Isabel was accepted because ...	To what extent do you believe that Tara did not finish because ...
Factors				
Personal	a "Mason worked hard in school" (86)	"Wesley did not study hard for his exams" (78)	"Isabel had good grades in high school" (88)	"Tara wasn't as motivated as other students" (76)
	b "Mason is a bright student" (83)	"Wesley often got into trouble with his teachers" (72)	"Isabel spent many months preparing her applications" (83)	"Tara struggled with academic writing" (71)
Individual	c "Mason is in a stable two-parent family" (59)	"Wesley's mother is raising four children on her own" (53)	"Isabel's high school teacher is close friends with the college dean" (56)	"Tara was the first of her family to go to college" (39)
	d "Mason had access to a tutor when he needed it" (72)	"Wesley went to an underfunded high school" (57)	"Isabel is from an underrepresented minority" (52)	"Tara's public high school did not prepare her well for college" (68)

Note. The average importance attributed to each factor by study participants is listed in parentheses.

Table B2 Scenarios, Prompt and Factors in Domain of Work

	5	6	7	8
Scenario	Upon graduation, Jamie was hired by a large consulting firm	Mia started a successful restaurant	James has been unable to find employment for over a year	Amy was passed over for a promotion into management
Prompt	To what extent do you believe that Jamie was hired because ...	To what extent do you believe that Mia was successful because ...	To what extent do you believe that James is unemployed because ...	To what extent do you believe that Amy did not get promoted because ...
Factors				
Individual a	"Jamie is willing to work long hours" (77)	"Mia has put in a lot of effort" (89)	"James has not applied for as many jobs as he could have" (72)	"Amy has many years on the job, but not a lot of leadership experience" (72)
b	"Jamie did well on the interview and assessment" (86)	"Mia has a very competitive drive" (85)	"James does not have great references from his last job" (68)	"Amy did not do especially well on her most recent assessment" (79)
Structural c	"Jamie is very attractive" (50)	"A friend of Mia works at a local TV station and did a feature on the restaurant" (62)	"The city where James lives has a high unemployment rate" (79)	"Amy has two young children and has been unable to regularly attend the social events at the office" (50)
d	"Jamie's uncle is a senior executive at the company" (75)	"Mia received a tax cut promoting underrepresented minority businesses" (48)	"James has been caring for his sick mother" (63)	"Amy's company has an affirmative-action policy that favors minorities" (39)

Note. The average importance attributed to each factor by study participants is listed in parentheses.

Table B3 Scenarios, Prompt and Factors in Domain of Crime

	9	10	11	12
Scenario	Jonathan is in court on shoplifting charges	Cathy was stopped for a serious speeding violation and received a caution	Samuel was stopped and searched by police three times last month	Connor was caught vandalizing a public playground, but no charges were pressed
Prompt	To what extent do you believe that Jonathan is in court because ...	To what extent do you believe that Cathy got only a caution because ...	To what extent do you believe that Samuel was stopped by police because ...	To what extent do you think that no charges were pressed because ...
Factors				
Individual a	"Jonathan did not make the most of his opportunities" (63)	"This was Cathy's first violation" (77)	"Samuel dresses in a way that police find suspicious" (70)	"Connor showed genuine regret" (63)
b	"Jonathan lacks a strong work ethic" (59)	"Cathy was polite to the police officer" (76)	"Samuel has a criminal record" (70)	"Connor volunteered to do a month of community service" (72)
Structural c	"Jonathan grew up in a violent neighborhood" (58)	"Cathy's father is a respected local politician" (67)	"Samuel is Hispanic" (63)	"Connor's family could afford a good lawyer" (79)
d	"Jonathan lives in a city with high unemployment" (57)	"Cathy is white" (57)	"Samuel lives in a poor neighborhood" (73)	"Connor lives in a rich suburban community" (68)

Note. The average importance attributed to each factor by study participants is listed in parentheses.

Table B4 Coding Homogeneity/Heterogeneity

Would you say you grew up in a diverse environment? Please explain.

Coded “homogeneous”	Coded “heterogeneous”
“No, not at all, with the exception of one South Asian friend at school quite literally everyone I interacted with regularly as a child was white.”	“Yes, I grew up in a metropolitan area just outside of a major city. All walks of life were around me.”
“No, pretty much all Hispanic and few whites.”	“Yes. Both of my best friends from high school were different race from me”
“No. I grew up in a small white community and did not have much diversity until I reached college.”	“Yes. I lived next door to and was friends with White, Black, Asian, and Hispanic families.”
“I wouldn't call it diverse. The biggest population of people in my area were white, then the next was Mexican. I lived in a more predominantly white neighborhood and school. There were very few other people from different ethnic backgrounds after those two.”	“Yes. I think I grew up in a very diverse environment. My childhood neighborhood was roughly half African American and about 40% white and 10% other (Latino, Asian, etc.). My school district had forced integration as a result of a lawsuit, and so our classrooms were required to be diverse.”

Figure B1 Instructions and Presentation of Vignette

Instructions

In this experiment, your task is judge how important different factors were for a person's positive or negative life event.

We will show you positive or negative life events of 12 different people. For each person, we will tell you what happened, and provide some facts that are true about the person. For example:

Life event: **Mason graduated from high school.**

Here are some facts that are true about Mason:

- 1. Mason has a good work-ethic.
- 2. Mason is in a stable two-parent family.
- 3. Mason's mother is close friends with the school principal.
- 4. Mason is smart.

Your task will be to say how important you think each of the different factors were for what happened.

Please press the Start button to proceed.

Start

Progress 1/12

Mason graduated from high school.

Here are some facts that are true about Mason. **To what extent do you believe that Mason graduated because ...**

Mason is a bright student.

not at all very much

Mason is in a stable two-parent family.

not at all very much

Mason had access to a tutor when he needed it.

not at all very much

Mason worked hard in school.

not at all very much

Mason's mother's name is Sarah.

not at all very much

Continue

(If the button is grayed out it means that you didn't answer all of the questions. You can only proceed if you've answered all of the questions.)

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