An Experimental Study of Diversity Management Techniques

Sangick Jeon*
Groundtruth.io

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Abstract

A novel field experiment is used to evaluate two competing strategies for managing ethnic diversity: (1) *assimilationist* strategies, which encourage the construction of shared, superordinate social identities (e.g., based on a team or nation), and (2) *multiculturalist* strategies, which aim to foster beliefs that ethnic differences are valuable. Results from Kenya indicate that assimilationist approaches are more effective at minimizing diversity's social costs, such as discrimination and reduced cohesion. But multiculturalist approaches are better at maximizing diversity's economic benefits, such as increased creativity and problem-solving capabilities. I also provide evidence that the productivity gains from ethnic diversity are larger than the gains from age, birthplace, gender, and religious diversity, and driven by skill complementarities between ethnic groups. These findings provide an empirical foundation for adjudicating between competing theories about diversity's costs and benefits, and strategies for managing them.

*Co-Founder at Groundtruth.io, 2582 Great Highway, San Francisco, California 94116. Email: sunny@groundtruth.io. This research was made possible by support from an SBE Doctoral Dissertation Improvement Grant from the National Science Foundation (SES-1160303), a DDRO grant from the Stanford Vice-Provost of Graduate Education, a GRO grant from the Stanford School of Humanities and Sciences, and a fellowship from the Stanford Institute for Innovation in Developing Economies. I am particularly grateful to David Laitin for very helpful feedback and guidance at all stages of this project. I also thank Jonathan Wand, Saumitra Jha, Joshua Cohen, Simon Jackman, Eran Bendavid, and participants at the Stanford Comparative Politics Workshop for useful suggestions. Romeo Castro, Peter Kariuki, Kevin Kimani, Chacha Maroa, Joseph Njoro, Stacey Ondimu, Franc Tiago, and the staff at the Busara Center for Behavioral Economics provided excellent research assistance. Supplementary materials for this paper are available at `http://sangickjeon.io`.

1 Introduction

The increasing ethnic and cultural diversity brought on by globalization presents both challenges and opportunities.[1] Its potential challenges are well-known, and include a number of socially undesirable outcomes, like an increased risk of civil conflict (Horowitz 1985), violent economic competition (Olzak 1992), social distrust (Putnam 2007), the underprovision of public goods (Alesina, Baqir and Easterly 1999), lower economic growth rates (Easterly and Levine 1997), and democratic instability (Rabushka and Shepsle 1972), amongst others. But increasing diversity also presents opportunities. Because diverse populations possess a variety of useful skills and perspectives, they are often more productive, more innovative, and better at intellective tasks like problem-solving, prediction, and decision-making (Hoffman and Maier 1961; Hong and Page 2001, 2004; Ottaviano and Peri 2006; Alesina, Harnoss and Rapoport 2013)—skills that are critical for building smart, robust, and prosperous societies.

This paper aims to identify public policies and interventions that can enable heterogeneous societies to minimize the challenges of ethnic differentiations while simultaneously taking advantage of its opportunities. Using a novel field experiment, the paper evaluates two of the most widely-used classes of diversity management strategies: (1) *assimilationist* strategies, which encourage the creation of unifying superordinate social identities (e.g., based on a team, religion, or nation) to minimize the salience of ethnic differences and increase perceptions of "we-ness," and (2) *multiculturalist* strategies, which entail the construction of shared intergroup beliefs that acknowledge the value of each group's unique culture (e.g., through diversity training, education, or public policies that celebrate ethnic differences).

Although widely endorsed, the relative effectiveness of assimilationist and multiculturalist strategies is a topic of debate in multiple disciplines. A large and growing body of experimental work in social psychology and organizational behavior provides support for assimilationist strategies, demonstrating that the construction of superordinate social identities can effectively reduce the tensions commonly associated with ethnic differences (Kramer and Brewer 1984; Gaertner et al. 1989; Chatman et al. 1998; Gaertner and Dovidio 2000; Nier et al. 2001). But adherents to multicul-

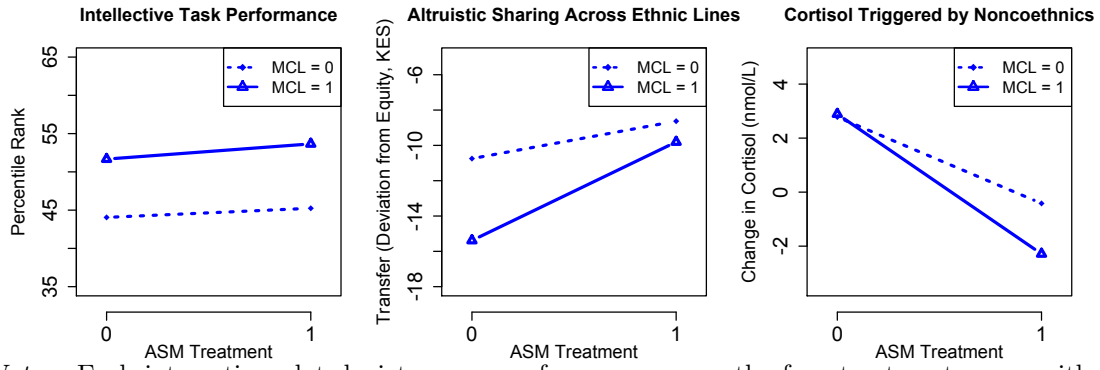
[1] For good surveys of the literature on the costs and benefits of diversity, see Williams and O'Reilly (1998), Alesina and La Ferrara (2005), and Mannix and Neale (2005). Laitin and Jeon (2014) discuss recent advances in the literature.

turalist approaches caution that such convergence towards homogeneity reduces the productivity gains from heterogeneity by temporarily eliminating functional differences (Swann, Milton and Polzer 2000; Polzer, Milton and Swann 2002; Swann et al. 2004). Similarly, in political science, there is evidence that multiculturalism policies—such as those that provide legal protections for minority rights, support bilingual education in schools, and permit dual citizenship—are associated with increased ethnic tolerance and social cohesion across developed countries (Berry et al. 2006; Bloemraad 2006; Weldon 2006; Kesler and Bloemraad 2010; Kymlicka 2012). But critics call for a return to the assimilation model, contending that multiculturalism exacerbates ethnic tensions by creating a divisive "us" versus "them" mentality (Miller 1995; Wolfe and Klausen 1997; Barry 2001; Sniderman and Hagendoorn 2007). There are thus competing hypotheses about the relative effectiveness of assimilationist and multiculturalist approaches—hypotheses that have yet been subject to systematic empirical testing in a well-controlled setting.

To discriminate between competing hypotheses, I leverage the analytical power of experimental methods and conduct a field experiment designed to reveal the individual, relative, and combined effectiveness of assimilationist and multiculturalist strategies. The experiment consists of participants from Kenya—a developing East African nation with salient ethnic divisions—being recruited to participate in a problem-solving competition for a large cash prize. In the controlled competition, participants are randomly assigned to groups of three and groups are randomly assigned to one of four treatment groups created by two cross-cutting treatments: an assimilationist treatment, which manipulates the salience of the common group identity, and a multiculturalist treatment, which manipulates beliefs about the value of diversity. The experiment is thus a 2x2 factorial experiment.

Under the cross-cutting treatment combinations, groups complete a series of incentivized puzzles and cooperative tasks developed in social psychology, organizational behavior, and behavioral economics to study intellective task performance and social cooperation in laboratory settings. Moreover, because prejudices and discriminatory attitudes towards non-coethnics are private, often unconscious, and difficult to measure due to social desirability bias, saliva samples are taken before and after the group exercises to estimate the impact of non-coethnic interactions on participants' production of cortisol—a hormone that is involuntarily triggered by stress (Kirschbaum and Hellhammer 1994; Cohen et al. 1996). Altogether the laboratory instruments permit

Figure 1: Interaction Plot of Experiment Outcomes Across Treatment Arms



Notes: Each interaction plot depicts mean performance across the four treatment arms, with the ASM treatment status on the x-axis, and the MCL treatment status denoted by the plotted lines. The figure on the left plots the performance of ethnically diverse groups in the intellective tasks (measured using a pooled score that averages groups' percentile rank across all tasks). The center figure plots altruistic sharing across ethnic lines (at the dyad level). The figure on the right plots the production of cortisol among subjects assigned to groups with no coethnics (at the subject level).

an estimation of treatment effects on intellective task performance and social cohesion as measured by real discriminatory behavior and a biological indicator that can capture the more passive, "implicit" forms of discrimination that occur unintentionally.

The experiment results indicate that assimilationist and multiculturalist strategies have divergent effects on intellective task performance and social cohesion. In the experimental puzzles that tested group innovation, creativity, and prediction, the multiculturalist prime was substantially more effective than the assimilationist prime at improving the performance of ethnically diverse groups, exerting a positive effect that is equivalent to a five year (or two standard deviation) increase in a group's mean years of formal education. However, it failed as a strategy for promoting social cohesion. The multiculturalist prime decreased prospects for interethnic cooperation, as indicated by altruistic sharing across ethnic lines, and this negative effect was particularly strong between ethnic groups with a salient history of conflict. The assimilationist prime, on the other hand, increased altruistic sharing across ethnic lines and reduced the production of cortisol associated with exposure to non-coethnics, even between individuals from contending ethnic groups. These treatment effects are illustrated as interaction plots in Figure 1. They show that assimilationist and multiculturalist approaches have their respective strengths and weaknesses, and that they should consequently be harnessed for distinct purposes.

In the sections below I elaborate on these findings. In Section 2 I begin by describ-

ing the theoretical rationale behind assimilationist and multiculturalist approaches to diversity and providing empirical illustrations. In Section 3 I describe the experimental design, and present the results in Section 4. In Section 5 I explore the source of diversity's productivity-enhancing effects, in Section 6 I compare the gains from ethnic diversity to the gains produced by other forms of diversity—such as those based on age, gender, education, and religion—and in Section 7 I conclude with a summary of the paper's contributions.

2 Strategies for Managing Ethnic Diversity

Ethnic and cultural diversity imposes both costs and benefits on the productivity of groups, organizations, communities, and societies. Because diverse groups of people exhibit a variety of useful skills and perspectives, they are often better than homogeneous groups at intellective tasks like problem-solving, decision-making, and innovation-generation (Hoffman and Maier 1961; Hong and Page 2001, 2004; Nemeth 1986; Watson, Kumar and Michaelsen 1993). But diversity also complicates group processes, frequently leading to interpersonal conflict, in-group favoritism, emotional dissatisfaction, and decreased communication (Milliken and Martins 1996; Pelled, Eisenhardt and Xin 1999; Tajfel et al. 1971; Tsui, Egan and O'Reilly 1992). Given these tradeoffs, academics and practitioners have developed (at least) two promising classes of strategies for managing diversity: assimilationist strategies and multiculturalist strategies.[2] In this section I describe the components and motivations of these two competing classes of diversity management strategies and provide examples of real-world applications.

[2]Other notable strategies for promoting cooperation and social cohesion in heterogeneous societies include: the contact hypothesis, which prescribes greater exposure to out-group members (Allport 1954; Cook 1978), the construction of well-designed democratic institutions (Horowitz 1985; Laitin 2007; Lijphart 1977; Reilly and Reynolds 1999), empathy-building and norm-influence through media outlets (Paluck 2009; Paluck and Green 2009*a*), in-group policing (Fearon and Laitin 1996), the promotion of shared discourse systems (Morgan and Várdy 2009), and positive peer influence (Blanchard, Lilly and Vaughn 1991; Blanchard et al. 1994; Paluck 2011). See Gaertner and Dovidio (2000) and Paluck and Green (2009*b*) for good reviews of the social psychology literature on prejudice-reduction. With the exception of multiculturalist approaches, however, most diversity management strategies tend to focus exclusively on minimizing the costs of diversity, not on realizing its benefits.

2.1 Theoretical Foundations

From a behavioral perspective, assimilationist and multiculturalist strategies are motivated by competing models of group behavior. Assimilationist strategies are built on insights from social identity theory (Tajfel 1978; Tajfel and Turner 1986) and self-categorization theory (Hogg and Terry 2000; Turner 1987) from social psychology, which suggest that the process-oriented problems created by diversity are the result of powerful psychological tendencies to make divisive in and out-group distinctions based on salient, ascriptive characteristics. These in and out-group distinctions become the basis for in-group favoritism and out-group discrimination, undermining productivity and social cohesion. To remedy these unproductive cognitive tendencies, assimilationists propose deemphasizing the individual qualities that make group members unique and emphasizing the superordinate identity of the broader group as the basis for categorization, thereby extending the benefits of in-group affiliation to out-group members. Cooperative strategies that advocate the construction of a unifying social identity—such as one based on a team, religion, political affiliation, or nation—are examples of assimilationist strategies.

Many experimental studies provide evidence that this self-*re*categorization approach is effective at reducing intergroup biases in diverse groups. Kramer and Brewer (1984), for instance, run an experiment in which subjects face common pool resource dilemmas after a superordinate (collective) or subordinate (differentiating) identity is activated, and show that groups that were given superordinate identities were far more likely to exercise individual restraint and act cooperatively, even if the superordinate identity was based on a trivial categorization (e.g., age, location of residence). Gaertner et al. (1989) report similar findings in their experimental evaluation of recategorization strategies, as do Chatman et al. (1998), who find that in a laboratory simulation organizations that emphasized collectivistic values and collective membership were more productive and experienced less interpersonal conflict than organizations that emphasized individualism. Nier et al. (2001) conduct a field experiment that systematically manipulates the salience of a common university affiliation between an interviewer and respondents walking into a college football game. They find that a common university identity increases prosocial behavior across ethnic lines as measured by respondents' compliance with a request for assistance from an interviewer

of a different racial group.[3]

One specific type of assimilationist strategy advocates the construction of a superordinate national identity to support intergroup cooperation in culturally fractionalized societies. Miguel (2004) and Putnam (2007), for example, argue that nation-building and political socialization may moderate ethnic tensions by increasing perceptions of "we-ness" and instilling citizens with cooperative political and social ideals, such as a strong attachment to a shared national identity over one based on ethnic group or tribe. These expectations were borne out in studies by Transue (2007), who used a survey experiment to show that priming American respondents to a superordinate American identity increases support for policies that benefit racial minorities, and by Charnysh, Lucas and Singh (2013), who report that increasing the salience of a shared Indian national identity can promote altruistic sharing between rival ethnic groups.

A competing alternative to assimilationist strategies are multiculturalist strategies, which take a different position on the value of homogeneity. Critical of assimilationist approaches, proponents of multiculturalist strategies argue that when multiethnic groups are recategorized under a collective, homogeneous identity, the very individual-level differences that make heterogeneous groups particularly powerful become temporarily lost. Swann et al. (2004) explain:

> "[A]lthough emphasizing superordinate goals and the identities associated with them may represent an effective means of uniting members of diverse groups, it falls short as a strategy for finding diversity... [S]elf-categorization theory suggests that members of diverse groups should become so single-mindedly committed to the groups' agendas that distinctions among them become blurred... [A]s a strategy for finding value in diversity, it is tantamount to arguing that the best way to exploit a resource is to minimize and disregard that resource!" (pg. 10)

Work by Janis (1972) also suggests that a collective identity can hamper the benefits of heterogeneity. Janis contends that, when pressures for uniformity are combined with stereotyped views and/or over-estimations of the groups morality, groups are likely to fall into *groupthink*—a cognitive state in which groups temporarily lose critical decision-making capabilities under pressure for consensus. Studies by Nemeth (1986) and Priem, Harrison and Muir (1995) similarly indicate that diverse perspectives and

[3]See Gaertner and Dovidio (2000) for more details about experiments in this tradition.

critical dialogue are essential for good decision-making since they generally lead to a more complete consideration of the issues at hand.

Multiculturalists advocate an alternative approach to diversity that attempts to avoid this unproductive convergence toward homogeneity. Based on insights from self-verification theory (Polzer, Milton and Swann 2002; Swann 1983; Swann et al. 2004), multiculturalists hold that individuals are motivated by powerful psychological tendencies to ensure that their self-views are confirmed by their experiences with group members, and that the process-oriented problems created by diversity are the result of disagreements between individuals' self-views and others' appraisals of them. Polzer et al. (2002) refer to this as *interpersonal congruence*—"the degree to which group members see others in the group as others see themselves" (pg. 298). When there is high interpersonal congruence, group members are more likely to feel known and understood by the broader group, making them more motivated to participate in group activities. They are also more likely to know how to behave and how others will respond to their behaviors, which is likely to facilitate social interactions.

Indeed, Swann et al. (2000) conduct a longitudinal study of 83 study groups in a MBA program and report that self-verification is associated with increased group cohesion and improved group performance at creative tasks, regardless of whether self-views were positive or negative. These results were replicated by Polzer et al. (2002), who used a similar research design to show that diversity improves creative task performance in groups that achieve high levels of self-verification, but undermines performance in groups with low levels of self-verification. A follow up study by Swann et al. (2003) investigated the antecedents of self-verification and discovered that groups that had positive impressions of their teammates were far more likely to achieve congruent self-verification and perform better in intellective tasks than groups that had neutral or negative impressions of their teammates. The rationale is that positive impressions give individuals confidence to contribute their unique ideas and create interest in learning from the "idiosyncrasies" of non-coethnics.

Based on these findings, multiculturalist approaches encourage groups to actively express and externalize their unique qualities, while simultaneously initiating self-verification processes by creating positive impressions of each other's differentiating characteristics, for example, by pointing out that diversity in skills, perspectives, and backgrounds are invaluable assets. These prescriptions are consistent with the Hewstone-Brown intergroup contact model, which also suggests that discriminatory

attitudes can be reduced not by eliminating ethnic boundaries, but by recognizing them and creating mutual positive intergroup differentiations (Hewstone and Brown 1986). In essence, the multiculturalist approach aims to minimize the costs of diversity without also suppressing its benefits by shaping beliefs and expectations about the benefits of interethnic interactions and helping groups reach a working consensus about each others' self-views. It promotes the celebration—rather than toleration—of diversity and ethnic differences.

Although assimilationist and multiculturalist strategies are generally placed on opposite ends of an assimilation–multiculturalism continuum, it is worth noting that there may be room for an integrated approach. While multiculturalists argue that recategorization will create a convergence toward homogeneity that will suppress the benefits of diversity, Gaertner et al. (1989) argue that it is possible to induce a collective, superordinate identity without requiring subgroups to relinquish their differentiating ones. For example, it may be possible for a baseball team to be united by a common team identity without losing sight of their individual functions as pitchers, catchers, in-fielders, and out-fielders. This is an untested hypothesis, however, as no study has examined whether it is possible to encourage recategorization and simultaneously realize the productivity gains from heterogeneity.

2.2 Empirical Illustrations

Qualitative work by Ely and Thomas (2001) provide illustrative examples of what assimilationist and multiculturalist strategies might look like in work settings (see also Thomas and Ely 1996). Elements of the assimilationist approach are present in what the authors call the "discrimination-and-fairness" diversity perspective—a work perspective that views an ethnically and racially diverse workforce as a moral imperative to eliminate discrimination and ensure equal treatment of all members of society. Firms that advance this perspective often pride themselves of being blind to cultural differences, create powerful committees to scrutinize the organization's treatment of people of color, and treat diversity as an end in itself (see pgs. 245-7). Groups that adopt this perspective often claim: "everyone is just a human being; it doesnt matter what color we are," "everyone is the same," or "we dont see people in color, we treat them all the same" (pg. 247).

Elements of the multiculturalist approach are present in what Ely and Thomas call

the "integration-and-learning" diversity perspective—an alternative work perspective that views diversity in skills, perspectives, and backgrounds as potentially valuable resources for work groups. Rather than ignore or reject individual-level differences, firms that promote the integration-and-learning perspective encourage employees to explore different points of views, deliberate, and learn from each others cultural differences (see pgs. 240-243). Groups that hold this perspective rarely feel like other group members are "just like me" (pg. 242). Although this sometimes causes interpersonal conflict, groups expect this conflict to be constructive, creating opportunities for intergroup learning.

In their sample of professional services firms, Ely and Thomas found that these divergent diversity perspectives were associated with markedly different levels of group productivity. Whereas the integration-and-learning (multiculturalist) perspective positioned groups to realize the enormous benefits of diversity, the discrimination-and-fairness (assimilationist) perspective was associated with significant intergroup tensions. Of the firms that advanced the colorblind discrimination-and-fairness perspective Ely and Thomas wrote:

> "[I]n the discrimination-and-fairness perspective...the view of the role of racial diversity restricted the discourse about race to one in which employees negotiated the meaning of all race-related differences on moral grounds. Questions and concerns about fairness led inevitably to strained race relations characterized by competing claims of innocence, with each group assuming a defensive posture... This made it difficult for people to bring all relevant skills and insights to bear on their work, thus compromising their ability to learn from one another and to be maximally effective." (pg. 266)

State policies and programs designed to manage cultural pluralism can also possess elements of assimilationist and multiculturalist strategies. Banting and Kymlicka (2012) develop a multiculturalism policy index (see also Banting et al. 2006) in which countries are categorized by the presence or absence of the following eight policies characteristic of multiculturalism:[4] (1) official affirmation of multiculturalism at the national and/or regional levels, (2) multiculturalism in school curriculums, (3) ethnic representation in public media or media licensing, (4) legal exemptions from dress codes, (5) acceptance of dual citizenship, (6) funding of ethnic group organizations to support cultural activities, (7) funding of bilingual education or mother-tongue

[4]For alternative classification schemes see Koopmans et al. (2005) and the Migration and Integration Policy Index developed by the British Council and the Migration Policy Group.

instruction, and (8) affirmative action.

Of the 21 Western democracies for which the index has been computed, Canada, Australia, and Sweden are identified as countries that have adopted relatively strong multiculturalism policies during the 1980-2010 time period. Canada's commitment to multiculturalism is reflected in its constitution, which mandates the preservation and enhancement of Canada's multicultural heritage (section 27), and in various policies that guarantee religious exemptions from dress codes, allow dual citizenship, and provide funding to support ethnic organizations and activities. Similarly in Sweden, minority groups are granted constitutional rights to engage in cultural practices, eligible to receive public funding to engage in cultural activities, permitted to possess dual citizenship, and offered an educational system that not only provides mother-tongue instruction, but also encourages students to develop an appreciation for other cultures.[5]

According to the multiculturalism policy index, multiculturalism is becoming increasingly popular in Western democracies. But assimilationist approaches are still common in Denmark, France, Germany, Austria, and Switzerland, where social programs and public policies are often designed to create incentives for immigrants to adopt the host culture's language, values, and customs. The French constitution, for example, embodies the republican ideal of citizenship, in which all citizens are to be treated equally without distinction to race or religion. This principle of neutrality is applied to many facets of social life, such as in schools, where minorities are prohibited from wearing religious symbols or garbs, such as Islamic headscarves, Sikh turbans, and Jewish yarmulkes. Religious symbols are also prohibited in Danish courtrooms, and exemptions from dress codes are non-existent in Danish workplaces. Austria, Denmark, and Germany have no formal affirmative action policy, nor permit dual citizenships.[6] One of the motivations behind these types of race-neutral assimilationist policies is the defensible concern that salient social divisions undermine the solidarity and "fellow-feeling" that often help promote political, economic, and social prosperity (Huntington 2004; Schlesinger 1991) This concern goes back to at least Mill (1861), who wrote: "[f]ree institutions are next to impossible in a country made up of different nationalities. Among a people without fellow feeling, especially

[5]See country profiles for Canada and Sweden on the Multiculturalism Policy Index website: `http://www.queensu.ca/mcp/index.html`.

[6]See country profiles for Denmark, France, Germany, and Austria on the Multiculturalism Policy Index website: `http://www.queensu.ca/mcp/index.html`.

if they read and speak different languages, the united public opinion, necessary to the working of representative government, cannot exist" (pg. 197). However, there is evidence from small-N comparisons that policies that permit ethnic and cultural differentiation do not necessarily reduce cohesion in multicultural countries, but may actually increase it (Berry et al. 2006; Kesler and Bloemraad 2010; Weldon 2006). Due to unmeasured confounders and selection bias though it is difficult to draw strong causal inferences from this empirical work.

3 Experimental Design

The field experiment[7] is designed to isolate the impact of assimilation and multiculturalism on economic productivity and social cohesion. It is conducted in Nairobi, Kenya—one of the largest metropolitan centers in sub-Saharan Africa. Due to its status as an economic hub, Nairobi is ethnically and culturally diverse, attracting a substantial portion of Kenya's 42 tribes and a number of immigrants from neighboring countries—like Uganda and Somalia—and overseas—like India and China. Moreover, ethnic divisions are salient and often the basis of communal conflict. In the 2007 presidential elections, for example, allegations of electoral fraud led to massive post-election violence between contending ethnic groups, claiming over 1,000 lives and displacing up to 500,000 more (Human Rights Watch 2008). The intensity of violence led to the provision of constitutional protections for minority rights and the creation of the National Cohesion and Integration Commission (NCIC), which was charged with the responsibility of promoting ethnic tolerance and peaceful coexistence. Despite the changes in public policy, the NCIC claims that racial discrimination persists in both public and private spheres (NCIC 2012), and sporadic incidents of interethnic violence are reported on a regular basis.[8] The Kenyan context thus provides the political and cultural context necessary to conduct a meaningful test of diversity management strategies.[9]

[7]More specifically, the experiment may be categorized as a "framed field experiment" according to the taxonomy proposed by Harrison and List (2004), since the experiment involves a nonstandard subject pool and the experiment tasks and information set that subjects can use have field context.

[8]See, for example, the Kenya conflict data in the Armed Conflict and Location and Event Dataset (ACLED).

[9]Moreover, assimilationist and multiculturalist approaches are common in Kenya, although the latter is more prevalent. The national languages of Kenya, for example, are Swahili and English, creating assimilationist pressures. The Constitution of Kenya, however, is written in multiculturalist

In the experiment, an ethnically diverse sample of participants is recruited to participate in a 3-hour problem-solving competition in which they are matched with other participants and asked to complete a series of puzzles for a large cash prize.[10] Participants are told that the purpose of the competition is to study the determinants of effective group problem-solving, that they will be reimbursed for travel costs, and that they will receive a show-up fee of 300 Kenyan Shillings (KES), which at that time was worth approximately USD 3.50, equivalent to a days worth of wages in the informal economy. They are also informed that the group that performs the best at the experimental puzzles will win a KES 10,000 cash prize (approximately USD 120). Respondents that agree to participate are scheduled for one of the experiment time slots and sent a text message the day before the experiment to remind them of their appointment.

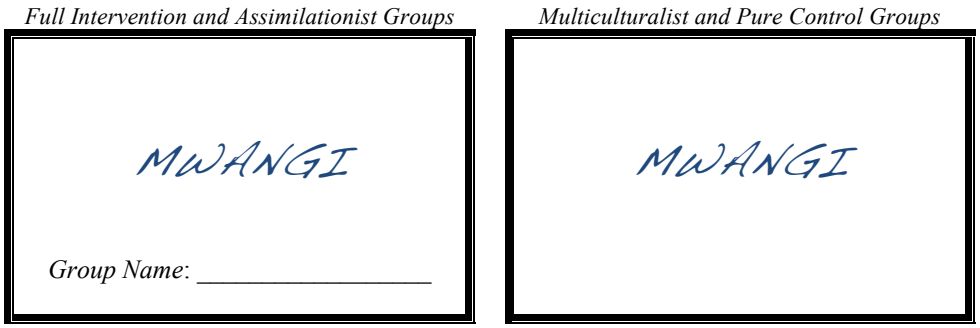
Participants are recruited by drawing on the subject pool at the Busara Center for Behavioral Economics, a state-of-the-art behavioral economics laboratory hosted by Innovations for Poverty Action. The subject pool consists of a simple random selection of individuals from two informal settlements in Nairobi—Kibera and Viwandani—all of whom were recruited in multiple door-to-door campaigns. For half of the experiment sessions, a simple random sample of subjects from the pool are selected to be invited. For the other half of the sessions, subjects are randomly drawn from two of the largest Kenyan tribes—the Kikuyu and Luo—to ensure that the experiment has a large enough number of participants from a single ethnic group to create a sufficient number of homogenous groups.

When participants arrive to the experiment site, a laboratory in the Busara Center, they are randomly assigned to heterogeneous and homogenous groups of three, and the groups of three are randomly selected to receive an assimilationist prime, a multiculturalist treatment, both assimilationist and multiculturalist primes (full intervention), or neither (pure control). The experiment is thus a 2x2 factorial ex-

terms, affirming and providing legal protections for the country's diverse population, as exemplified by the preamble, which states: "[w]e, the people of Kenya... [are] proud of our ethnic, cultural, and religious diversity, and determined to live in peace and unity as one indivisible sovereign nation." Multiculturalist strategies were also widely-used by civil society groups in the lead-up to the ethnically charged 2013 national elections. One of Uwiano's primary slogans were "unity in diversity," and Uraia televised ads that reminded citizens that "a diverse country is a country with many strengths" (personal observations from the field, January–April 2013; photo of Uraia's ad provided in Figure B.1 of the Appendix).

[10]The experiment protocol and scripts are available in Appendix D.

Figure 2: Nametag Variations



periment with four treatment arms. Hereafter the assimilationist treatment will be referred to as the *ASM treatment*, and the multiculturalist treatment will be referred to as the *MCL treatment*.

The experiment begins with the ASM treatment, which consists of a cognitive prime that aims to de-emphasize ethnic differences and emphasize the superordinate identity of the group. This is accomplished by taking groups through an exercise in which they create a team name to represent them in the problem-solving competition (for KES 10,000), and to write it on a nametag that they wear for the duration of the experiment, along with their individual names. Groups that do not receive the ASM treatment (the MCL and pure control groups) go through a placebo exercise in which they create a title for a Paul Klee painting and wear nametags with only their individual names on them. Figure 2 depicts the two variations in nametags.

Immediately following the ASM treatment, groups receiving the MCL treatment (the MCL and full intervention groups) are primed to multiculturalism by being encouraged verbally to value and utilize their team diversity. The experimenter tells groups (in Swahili):

> "*Some of the experimental puzzles are difficult, so I'd like to give you a tip:* Use the power of diversity. In past competitions, groups that were made up of people from different occupational backgrounds and cultures performed far better than groups made up of similar people. The reason was because diverse groups had a wider range of useful skills and perspectives. So value your team diversity, and don't be afraid to disagree and state your point of view with your group when attempting the puzzles. This kind of debate and discussion helps groups find the best solution to a given problem."

ASM and pure control groups receive the placebo script, which consists of a series

of generic problem-solving tips (in Swahili):

> "*Some of the experimental puzzles are difficult, so I'd like to give you a tip:* Be patient and try your best. All of the puzzles you'll attempt have a solution, but groups rarely come up with it right away. Sometimes the puzzles require creative thinking, others require logical thinking, and some require both. But none of them require any kind of special skills or knowledge, so everybody here is capable of completing these puzzles. Also, remember that the exercises are timed, so try not to waste time once the exercises begin."

After the ASM and MCL treatments are administered, the problem-solving competition begins. The controlled competition consists of four timed intellective tasks, each task designed to test different aspects of group productivity:

- Intellective Task #1/4: Brainstorm Game (5 minutes). This intellective task tests group creativity (see McLeod and Lobel 1992; Nemeth 1986) by asking groups to generate as many plausible uses to a tarpaulin as possible (tarpaulin is used for a wide variety of purposes in developing country settings, such as drying grains when a dry floor is unavailable, and patching roofs).

- Intellective Task #2/4: Paper Tower Problem (10 minutes). This intellective task tests group problem-solving and innovation capabilities by asking groups to construct the highest possible free-standing paper tower using one 20x25 cm (8x10 in) sheet of paper and one 10 cm strip of masking tape. The tower must stand on its own for 10 seconds before the height is recorded.

- Intellective Task #3/4: Guessing Game (5 minutes). This intellective task combines elements of several guessing games used to study group prediction-generating capabilities (see Gordon 1924; Surowiecki 2004). In this task, subjects are asked to guess the weight (in grams) of a 288 gram bag of sugar.

- Intellective Task #4/4: Candle Problem (10 minutes). The Candle Problem is a classic problem-solving task developed by experimental psychologists to study "functional fixedness"—a cognitive tendency to overlook solutions to a problem due to a fixation on an object's conventional function (Duncker 1945; Adamson 1952). In this task, subjects are given a box of thumbtacks, a book of matches, and a candle, and asked to attach the candle directly onto the wall in such a way that it would illuminate the room without dripping wax on the floor or burning the wall. The solution here is to use the box of thumbtacks as a platform for the candle, and to tack the box onto the wall, but scholars argue that subjects often fail to identify this solution because they are cognitively fixed on the box's traditional function of holding thumbtacks.

After groups attempt the three intellective tasks, participants are (correctly) told that the problem-solving competition is over, and that any decisions made after this point will not affect groups' chances of winning the competition and cash prize. They

are then asked to complete an exit survey privately on a personal touchscreen computer. The survey consists of a range of demographic and attitudinal questions about their cultural and education background and their thoughts about their teammates and the team process.[11] Embedded in the exit survey are two final experimental tasks that will be used to gauge social cohesion and prospects for interethnic cooperation:

- Cooperative Task #1/2: Saliva Sampling to Measure Cortisol. Participants' cortisol levels are estimated by taking a 1mL sample of saliva (using a Salivette) and conducting a radioimmunoassay (RIA). Cortisol is a stress hormone in humans that is triggered by the activation of the hypothalamic-pituitary-adrenal (HPA) axis and the subsequent release of the hormones corticotropin-releasing hormone (CRH) and adrenocorticotropin (ACTH). This process is stimulated by stressful situations, particularly when the situation is interpreted as being novel, unpredictable, uncontrollable, and posing a threat to one's ego (Kirschbaum and Hellhammer 1994; Cohen et al. 1996). Cortisol measurements are used to estimate the stress and anxiety participants feel when interacting with non-coethnics. Saliva samples are taken twice. First, a baseline sample is taken before participants are divided into groups of three, and a post-treatment measurement is taken immediately following the group exercises. Participants are told that their saliva samples will be used to measure their sugar levels and study how people perform under time-pressure.

- Cooperative Task #2/2: 1:2 Dictator Game. At the end of the experiment, participants play a variant of the Dictator Game, an experimental game widely used by behavioral economists to study altruistic preferences (see Camerer and Fehr 2004; Henrich et al. 2004; Habyarimana et al. 2007). In the 1:2 Dictator Game implemented here, the Dictator is given KES 150 and told that he/she can keep all of it, or split it with their two other teammates in any way they pleased. They are told that their decisions will remain strictly confidential, that their teammates will not know who gave the money to them, and that their decision will not affect their chances of winning the problem-solving competition. The game is played on a touchscreen computer programmed with z-Tree.

4 Experimental Results

4.1 Sample

The experiment was conducted at the Busara Center in Nairobi, Kenya in November and December 2012. Of the 1,084 participants that were invited to the study, 485 (45 percent) participants showed up.[12] Of the 485 participants that showed up, 348

[11] The exit survey is provided in Appendix D.

[12] There are some statistically significant differences between participants that showed up and those that did not. Participants that showed up were on average slightly older (by 1.81 years), had

Table 1: Verifying Balance Across Treatment Groups

		Treatment Groups			
	Full Sample	ASM x MCL	ASM Only	MCL Only	Pure Control
Diversity	2.09	2.18	2.00	2.13	2.03
(Num. of Tribes)	(0.77)	(0.80)	(0.79)	(0.76)	(0.75)
Diversity	1.85	1.79	1.65	1.83	2.06
(Num. of Religions)	(0.68)	(0.53)	(0.75)	(0.65)	(0.76)
Mean Age	32.60	32.23	31.58	32.54	33.62
	(6.51)	(4.48)	(6.30)	(6.87)	(8.19)
Mean Education	10.14	10.32	10.33	10.17	9.79
	(1.94)	(1.59)	(1.73)	(1.89)	(2.44)
Num. of Females	1.34	1.47	1.35	1.43	1.11
	(1.02)	(0.95)	(1.18)	(0.90)	(1.08)
Num. of Occupations	2.29	2.42	2.25	2.22	2.23
	(1.94)	0.64	0.64	0.52	0.73
Pretest Cortisol	12.44	12.16	10.34	16.06	11.14
	(9.99)	(4.24)	(2.31)	(20.27)	(2.57)
N	116	38	20	23	35

Notes: Means with standard deviations in parentheses. None of the differences in sample means across treatment groups are statistically significantly in a Tukey-Kramer multiple comparison of means test.

were admitted into the study. The remaining 137 were sent home because the study was full or they showed up late. Of the 348 participants that were admitted into the study, 45 percent were female and 55 percent. The mean age was 33, and the mean years of formal schooling was 10. Descriptive statistics of participant composition are placed in Table 1. There are no significant differences in pretreatment characteristics (age, ethnicity, gender, education, religion, occupation, pre-treatment cortisol level) across the four treatment arms according to a Tukey-Kramer multiple comparison of means test.

In the experiment, the 348 participants were divided into 116 groups of three and randomly assigned to one of the four treatment groups. 38 groups were selected to receive the full intervention (ASMxMCL), 20 groups were selected to receive the assimilationist (ASM) prime, 23 were selected to receive the multiculturalist (MCL) prime, and 35 groups were selected to serve as the pure control group and received

a little more formal education (by 0.53 years), and had more children (by 0.25). The differences are substantively small but statistically significant in two-tailed t-tests at the $\alpha = 0.05$ level. There are no significant differences in ethnicity or gender.

neither the assimilationist nor multiculturalist prime. Most groups of three were composed of participants from two different tribes (41 percent). 25 percent of groups were composed of participants from the same tribe, and 34 percent of groups were composed of participants from three different tribes.[13]

4.2 Treatment Effects on Intellective Task Performance

Cell means describing intellective task performance are provided in Table 2. Performance is measured using a pooled score that averages a group's percentile rank across all four intellective tasks. For the moment, the analysis is restricted to diverse groups only (i.e., groups composed of at least two different tribes, $Num.ofTribes > 1$), since the research hypotheses pertain to the efficacy of assimilationist and multiculturalist interventions *in diverse groups* specifically.[14] The main effects of the treatments are given by the difference in its (unweighted) marginal means, so the main effect of the MCL treatment is $52.67 - 44.65 = 8.02$ and the main effect of the ASM treatment is $49.45 - 47.86 = 1.59$. Interaction effects are implied by a difference in simple main effects, which are the cell mean differences between conditions of one treatment for a specific level of the other treatment. Thus, the simple main effect of the ASM treatment when the MCL treatment is also administered is 1.99, and when the MCL treatment is not administered, 1.19. The difference in differences is $1.99 - 1.19 = 0.80$, which indicates that there is a small positive interaction effect. However, in a two-factor analysis of variance (ANOVA) the interaction effect is not statistically distinguishable from zero at the $\alpha = 0.10$ level ($F(1, 83) = 0.01$, $p = 0.91$), and neither is the main effect of the ASM treatment ($F(1, 84) = 0.22$, $p = 0.64$). The main effect of the MCL treatment is statistically significant at the $\alpha = 0.05$ level ($F(1, 84) = 5.25$, $p = 0.02$), suggesting that only the MCL treatment is effective at improving intellective task performance in diverse groups.[15]

[13]Due to space constraints, descriptive statistics of ethnic composition across the four treatment arms are placed in Table A.1 and Table A.2 of Appendix A (Supplementary Tables). Table A.3 and Table A.4 provide descriptive statistics of group performance across each of the experimental tasks, and Figure B.2 in Appendix B (Supplementary Figures) depicts the distribution of all the experiment outcomes using smoothed histograms. Appendix C (Variable Definitions) describes all the data used in this paper.

[14]Cell means for homogenous groups ($Num.ofTribes = 1$) are placed in Table A.5 in the Appendix.

[15]Results from the two-factor ANOVA are given in Table A.6. In these models and all subsequent two-factor ANOVAs, I compute both Type II and Type III sum of squares because the data is unbalanced. I use Type III sum of squares to first test for interaction effects. If there is evidence of

Table 2: Main Effects and Interaction Effects on Intellective Task Performance in Diverse Groups (Pooled Score)

Pooled Score		MCL Treatment		Marginal Means	Difference
		Yes	No		
ASM Treatment	Yes	**53.66**	45.24	49.45	8.42
		(n = 29)	(n = 14)		
	No	*51.67*	44.05	47.86	7.62
		(n = 18)	(n = 26)		
Marginal Means		52.67	44.65		
Difference		1.99	1.19		

Notes: Cell means and unweighted marginal means with sample sizes in parentheses. Cell with highest performance score in bold, and cell with second highest performance score in italics. Analysis restricted to diverse groups only ($Num.ofTribes > 1$).

The treatments have similar effects in each of the experimental games. Table 3 presents average percentile rank for each of the treatment groups by game. The main effects of the ASM and MCL treatments are positive in the Brainstorm Game, Tower Problem, and Guessing Game, but negative in the Candle Problem. In a two-factor ANOVA the main effect of the ASM treatment and the interaction effects are not distinguishable from zero in any of the games at conventional levels of statistical significance. However, the positive main effect of the MCL treatment is statistically significant in the Brainstorm Game (23.11, $F(1, 84) = 16.15$, $p < 0.01$) and Tower Problem (14.42, $F(1, 84) = 5.18$, $p = 0.03$).[16] Results are robust to the inclusion of a variety of controls in an OLS framework, including age, education, ethnic diversity, gender diversity, occupational diversity, and fixed effects for each experimenter.[17]

These estimates of treatment effects, however, are based on a dataset that pools together groups of differing ethnic compositions ($Num.ofTribes > 1$) within each treatment arm. Because subjects are randomly assigned to ethnically homogenous and heterogeneous groups of three, ethnic composition is technically a block. There are three blocks: a homogenous block ($Num.ofTribes = 1$), a moderately fractionalized

an interaction effect, I test for main effects using Type III sum of squares. If there is no evidence of an interaction effect, I assume the interaction effect is zero and evaluate the main effects using Type II sum of squares for power.

[16]Results from the two-factor ANOVA are available in Table A.7.

[17]See Table A.8. Regression results using the sample of homogenous groups are provided in Table A.9, and regression results using raw scores are available in Table A.10.

Table 3: Main Effects and Interaction Effects on Component Scores (Percentile Rank)

Brainstorm Game		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	**62.19**	33.65	47.92	28.54
	No	*53.64*	35.96	44.80	17.68
Marginal Means		57.92	34.81		
Difference		8.55	-2.31		
Tower Problem		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	**53.39**	36.21	44.80	17.18
	No	*48.71*	37.05	42.88	11.66
Marginal Means		51.05	36.63		
Difference		4.68	-0.84		
Guessing Game		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	52.99	**59.17**	56.08	-6.18
	No	*53.95*	47.58	50.77	6.37
Marginal Means		53.47	53.38		
Difference		-0.96	11.59		
Candle Problem		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	46.06	*51.94*	49.00	-5.88
	No	50.38	**55.62**	53.00	-5.24
Marginal Means		48.22	53.78		
Difference		-4.32	-3.68		

Notes: Cell means and unweighted marginal means of group percentile rank, by task. Cell with highest performance score in bold, and cell with second highest performance score in italics. Analysis restricted to diverse groups only ($Num.ofTribes > 1$).

block ($Num.ofTribes = 2$), and a fully fractionalized block ($Num.ofTribes = 3$). I thus separate the data by blocks and perform the same analysis as above to explore whether assimilation and multiculturalism approaches have a differential impact in moderately and fully fractionalized groups.

Table 4 gives cell means of overall performance scores under each treatment combination and unweighted marginal means, separating the data by groups with $Num.ofTribes = 2$ and groups with $Num.ofTribes = 3$ (cell means for groups

Table 4: Main Effects and Interaction Effects on Intellective Task Performance by Ethnic Composition (Pooled Score)

Pooled Score ($Num.of Tribes = 2$)		MCL Treatment: Yes	MCL Treatment: No	Marginal Means	Difference
ASM Treatment	Yes	**63.69** **($n = 13$)**	46.35 ($n = 8$)	55.02	17.34
	No	*56.90* *(n=10)*	43.70 ($n = 16$)	50.30	13.20
Marginal Means		60.30	45.03		
Difference		6.79	2.50		
Pooled Score ($Num.of Tribes = 3$)		MCL Treatment: Yes	MCL Treatment: No	Marginal Means	Difference
ASM Treatment	Yes	**45.51** **($n = 16$)**	43.77 ($n = 6$)	44.64	1.74
	No	*45.14* ($n = 8$)	44.61 ($n = 10$)	44.88	0.53
Marginal Means		45.33	44.19		
Difference		0.37	-0.84		

Notes: Cell means and unweighted marginal means. Cell with highest performance score in bold, and cell with second highest performance score in italics.

with $Num.of Tribes = 1$ available in Appendix Table A.5). In a two-factor ANOVA there is no evidence of an interaction effect in either moderately or fully fractionalized groups. But the main effect of MCL drops to 1.14 in fully fractionalized groups and loses its statistical significance ($F(1, 37) = 0.07$, $p = 0.79$), while it increases to 15.27 in moderately fractionalized groups and retains its statistical significance ($F(1, 44) = 9.33$, $p < 0.01$), implying that MCL is an effective intervention only among moderately fractionalized groups. Similarly, the main effect of ASM drops to -0.24 in fully fractionalized groups and jumps to 4.72 in moderately fractionalized groups, but neither of these effects are statistically distinguishable from zero at the $\alpha = 0.10$ level.[18]

Table 5: Main Effects and Interaction Effects on Altruistic Sharing in the Dictator Game (Mean Transfers as Deviation from Equity in KES, Dyad-level)

All Dyads		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	*-11.95*	**-10.75**	-11.35	-1.20
		(n = 208)	**(n = 106)**		
	No	-16.06	-16.22	-16.14	0.16
		(n = 126)	(n = 190)		
Marginal Means		-14.00	-13.49		
Difference		4.11	5.47		
Non-coethnic Dyads		**MCL Treatment**			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	*-9.81*	**-8.63**	-9.22	-1.18
		(n = 130)	**(n = 62)**		
	No	-15.38	-10.75	-13.07	-4.63
		(n = 78)	(n = 107)		
Marginal Means		-12.60	-9.69		
Difference		5.57	2.12		

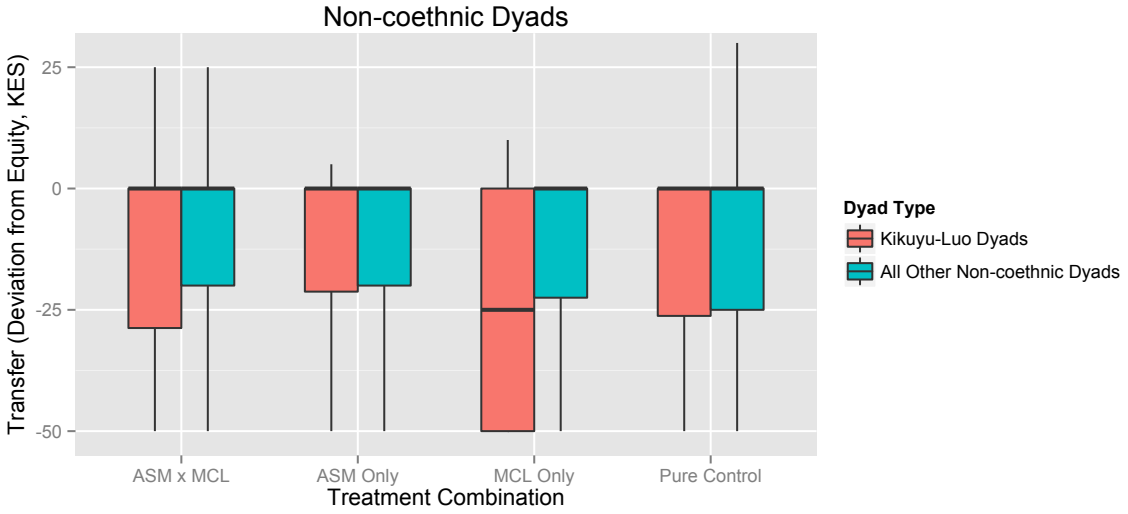
Notes: Cell and unweighted marginal means with sample sizes in parentheses. Cell with highest performance score in bold, and cell with second highest performance score in italics. Analysis conducted at dyad-level.

4.3 Treatment Effects on Interethnic Sharing

To identify the impact of assimilationist and multiculturalist approaches on prospects for interethnic cooperation I analyze differences in monetary transfers in the Dictator Game across treatment groups. Mean transfer levels (expressed in deviation from equity, KES 50) are presented in Table 5, by dyad type. In the full sample (all dyads), average transfers are closer to equity in ASM treatment groups, regardless of whether the MCL treatment is administered or not. A two-factor ANOVA provides no evidence of an interaction effect (-1.36, $F(1, 626) = 0.15$, $p = 0.70$) nor a main effect for the MCL treatment (-0.51, $F(1, 627) = 0.08$, $p = 0.78$). But the positive main effect of the ASM treatment is statistically significant (4.79, $F(1, 627) = 7.18$, $p < 0.01$). Treatment effects are similar in non-coethnic dyads. There is no evidence of an interaction effect (3.45, $F(1, 373) = 0.68$, $p = 0.41$) nor a main effect for the

[18]Results from the two-factor ANOVA are given in Table A.11. Results from using OLS are similar and available in Table A.12.

Figure 3: Box Plots of Transfers in Kikuyu–Luo Dyads versus All Other Non-coethnic Dyads



Notes: The y-axis is amount transferred expressed as deviation from equity ($KES = 50$).

MCL treatment (-2.91, $F(1, 374) = 2.01$, $p = 0.16$), but the positive main effect of the ASM treatment is statistically significant (3.85, $F(1, 374) = 3.75$, $p = 0.05$).[19] These findings are robust to the inclusion of controls in an OLS framework.[20]

The negative impact of the MCL treatment on altruistic sharing is more pronounced when examining transfers across one of the more salient ethnic cleavages in Kenya—between Kikuyus and Luos. Figure 3 provides box plots of transfers in Kikuyu–Luo dyads compared to all other non-coethnic dyads by treatment status. In the full intervention, ASM, and pure control groups, the median transfer in Kikuyu–Luo dyads and all other non-coethnic dyads is KES 50, the fair split. However, in MCL groups, the median transfer in Kikuyu–Luo dyads drops to -25 below equity while the median transfer in all other non-coethnic dyads remains at equity, suggest-

[19]Results from the two-factor ANOVA available in Table A.13.

[20]See Table A.14. Survey results tell a similar story. Among subjects that were assigned to heterogeneous groups ($Num.of Tribes > 1$), subjects receiving the ASM treatment claim they experienced lower levels of tension with their group members. However, this difference is statistically significant only among subjects assigned to moderately fractionalized groups. Subjects receiving the MCL treatment report that they felt more discomfort working with their group members, but this difference is significant only among subjects assigned to moderately fractionalized groups. Subjects assigned to moderately fractionalized groups also report that they felt significantly more anger towards their group members under the MCL treatment (see Table A.15).

ing that the MCL treatment is particularly harmful for interethnic relations between groups with hostilities. A two-tailed t-test indicates that transfers in Kikuyu–Luo dyads are significantly lower than transfers in all other non-coethnic dyads in MCL groups (mean difference of KES -11.83, $p = 0.03$). It is not possible to reject the null of no difference in all other treatment groups at conventional levels of statistical significance.

4.4 Treatment Effects on Interethnic Stress

A second way of assessing the cooperative effects of the ASM and MCL treatments is by comparing the effect of non-coethnic interactions on cortisol levels under different treatment combinations.[21] Cortisol production is operationalized as $\Delta Cortisol_i$, which gives subject i's pretest levels of cortisol minus posttest levels of cortisol (in nmol/L), where pretest levels of cortisol were taken before the group exercises and treatments, and posttest levels of cortisol were taken after the treatments and group exercises.

As before, I compute cell means describing the main and interaction effects on cortisol production and present them in Table 6, separating the data by exposure to non-coethnics. Among subjects that interacted with just one non-coethnic during the group exercises, there is a negative interaction effect of -15, which is marginally significant in a two-factor ANOVA ($F(1, 82) = 3.19$, $p = 0.08$). In addition, the ASM treatment has a statistically significant positive main effect of 5.81 ($F(1, 82) = 4.43$, $p = 0.04$), while the negative main effect of the MCL treatment is not statistically distinguishable from zero ($F(1, 82) = 0.05$, $p = 0.83$). Among subjects with two non-coethnic partners, there is no evidence of an interaction effect ($F(1, 135) = 0.27$, $p = 0.60$) nor a main effect for the MCL treatment ($F(1, 136) = 0.20$, $p = 0.66$). However, the ASM treatment has a statistically significant negative main effect of -4.44 ($F(1, 136) = 3.78$, $p = 0.05$).[22] These results are robust to the inclusion of controls for age, ethnicity, gender, time of sample, performance in the group exercises,

[21] In the Appendix, I validate variation in cortisol production as a useful indicator of social cohesion by showing that exposure to non-coethnics increases cortisol production (see Table A.17). There is also a strong, positive correlation between cortisol production and the extent to which subject's felt differences of opinion and rivalry in the group exercises ($p < 0.01$ in Pearson's test for association). Table A.18 provides a correlation matrix of experiment outcomes and survey responses.

[22] Results from the two-factor ANOVA are presented in Table A.19

Table 6: Main Effects and Interaction Effects on Cortisol Production at Subject-level (Posttest – Pretest in nmol/L, by Exposure to Non-coethnics)

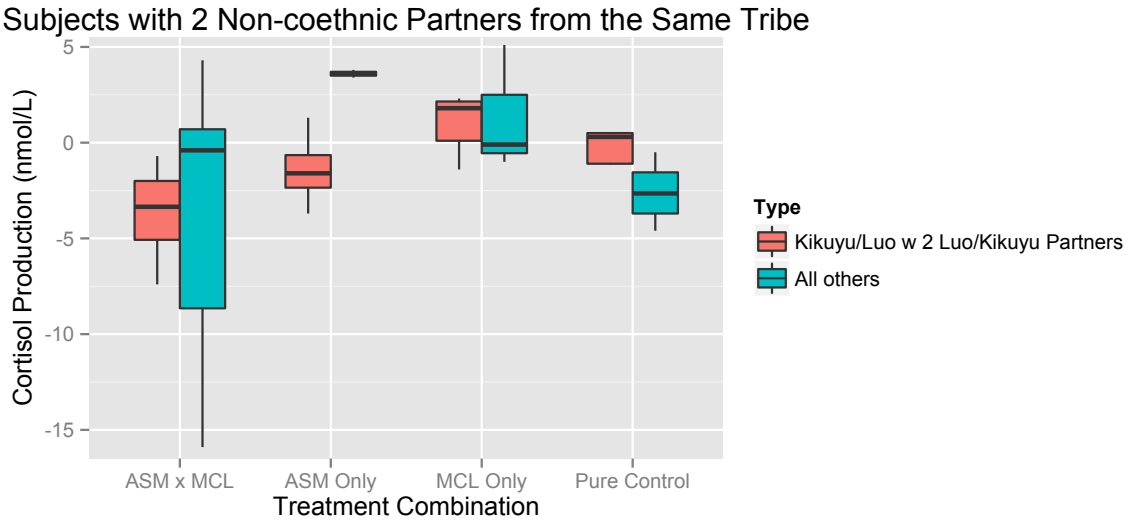
All Subjects		MCL Treatment			
		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	**-2.03**	2.19	0.08	-4.22
		($n = 102$)	($n = 51$)		
	No	*0.21*	0.28	0.245	-0.07
		(n=66)	($n = 92$)		
Marginal Means		-0.91	1.24		
Difference		-2.24	1.91		
Subjects with		MCL Treatment			
0 Non-coethnic Partners		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	-0.59	-1.22	-0.91	0.63
		($n = 27$)	($n = 18$)		
	No	**-4.59**	*-1.27*	-2.93	-3.32
		($n = 15$)	*(n=26)*		
Marginal Means		-2.59	-1.25		
Difference		4.00	0.05		
Subjects with		MCL Treatment			
1 Non-coethnic Partners		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	**-2.03**	11.79	4.88	-13.82
		($n = 25$)	($n = 12$)		
	No	-0.34	*-1.52*	-0.93	1.18
		($n = 20$)	*(n=29)*		
Marginal Means		-1.19	5.14		
Difference		-1.69	13.31		
Subjects with		MCL Treatment			
2 Non-coethnic Partners		Yes	No	Marginal Means	Difference
ASM Treatment	Yes	**-2.81**	*-0.38*	-1.60	-2.43
		($n = 50$)	*(n=21)*		
	No	2.89	2.78	2.84	0.11
		($n = 31$)	($n = 37$)		
Marginal Means		0.04	1.20		
Difference		-5.70	-3.16		

Notes: Cell and unweighted marginal means with sample sizes in parentheses. Cell with highest performance score in bold, and cell with second highest performance score in italics.

the total number of non-coethnic experiment partners, and experimenter effects.[23]

[23]See Table A.20.

Figure 4: Box Plots of Cortisol Production in Groups Polarized by Kikuyu & Luo versus All Other Polarized Groups



Notes: The y-axis is cortisol production at the subject-level in nmol/L. Analysis restricted to subjects that were assigned two non-coethnic partners from the same tribe.

The cooperative effects of the ASM treatment are particularly pronounced among groups polarized by Kikuyu and Luo. Among Kikuyu subjects assigned to groups with two Luo subjects and among Luo subjects assigned to groups with two Kikuyu subjects, only the ASM treatment is effective at reducing cortisol production. In all other treatment groups, Kikuyu/Luo subjects interacting with two Luo/Kikuyu subjects generate more cortisol than all other subjects with two non-coethnic partners. Two-tailed t-tests indicate that Kikuyu/Luo subjects singled out in groups of Luo/Kikuyu produce significantly less cortisol than all other subjects with two non-coethnic partners in ASM only groups (mean difference of -5nmol/L, $p = 0.02$). It is not possible to reject the null of no difference in all other treatment groups. This pattern is observable in Figure 4, which provides box plots depicting cortisol production in groups polarized by Kikuyu and Luo versus all other polarized groups.

5 The Source of Diversity's Benefits

An interesting question to ask given the presence of productivity gains from ethnic diversity is *why* do ethnicity-based differences produce productivity gains? The most

prominent theories of diversity suggest that diversity's gains are the product of beneficial information and skill complementarities across ethnic groups (Lazear 1999; Hong and Page 2001, 2004; Mannix and Neale 2005). In theory, such complementarities are not the product of any inherently "ethnic" differences *per se*, but emerge from useful cognitive differences created by systematic variations in education, culture, life experiences, and geographic endowments across ethnic groups. I provide evidence for this position by showing that the gains from ethnic diversity detected in the experiment operate primarily though its effect on skill complementarities between ethnic groups.

To measure skill diversity I rely on a rich spatial dataset of the location of ethnic group homelands and geographic variability. The procedure involves using satellite imagery to identify substantively meaningful differences in geographic characteristics across group homelands and to use these differences to estimate intergroup complementarities and substitutabilities in skill sets. This strategy is motivated by Michalopoulos (2012), who shows that differences in land endowments give rise to location-specific human capital and the formation of localized ethnic identities. Work by Jha (2007, 2013) also provides evidence that variation in geographic endowments can produce invaluable and irreplaceable economic complementarities across ethnic groups. Building on this research, I hypothesize that variation in four types of geographic endowments capture important variations in economically useful skills and insights among the ethnic groups in the experiment: the percent of land devoted to crops, the percent of land devoted to pasture, the intensity of nighttime lights, and proximity to a large body of water (ocean, lake).[24]

Geographic variability along these four dimensions is informative because differences in geographic characteristics across ethnic group homelands provides information about complementarities and substitutabilities in skill sets across groups. Groups that specialize in agriculture should be more likely to possess complementary skill sets with ethnic groups that specialize in alternative subsistence types (e.g., pastoralism) than with groups that also specialize in agriculture. Similarly, nighttime lights indicate the presence of a modern, commercial economy, and as a result, may be

[24]Cropland data are from Atlas of the Biosphere (2002), grazing land data are from Global Land Use Data (1998), nighttime lights data are from National Oceanic and Atmospheric Administration (2010), distance from water computed using Global Mapping International (2010*a*), and the location of ethnic homelands identified using Wucherpfennig et al. (2011). For time-consistency, all data are from 1992.

associated with a particular set of economic skills. And if generations of adapting to a marine environment produces a unique set of perspectives and talents, groups living at different distances to a major body of water should be more likely to possess complementary information and skill sets than groups living at similar distances to a major body of water. Although these four dimensions are unlikely to capture the full range of functional differences that exist between ethnic groups, it will capture some of them, and permit a preliminary investigation into its relevance for intellective task performance.[25]

I operationalize geographic variability across ethnic homelands by creating a variable:

$$(1) \qquad ComplementaryDiversity_{ijk} = \Sigma_{s \in S}(|g_{si} - g_{sj}| + |g_{si} - g_{sk}| + |g_{sj} - g_{sk}|),$$

where $ComplementaryDiversity_{ijk}$ is a measure of skill complementarities for a group consisting of participants i, j, and k. It is the sum of pairwise differences in group endowments along $s \in S$ different dimensions, where $S =$ (percent of land devoted to crops, percent of land devoted to pasture, nighttime luminosity, proximity to large body of water). All variables representing geographic endowments (g_s) are standardized to have mean zero and standard deviation one, so the sum of pairwise differences in group endowments ($|g_{si} - g_{sj}| + |g_{si} - g_{sk}| + |g_{sj} - g_{sk}|$) is the sum of the pairwise differences in the percent of land devoted to crops, the percent of land devoted to pasture, nighttime luminosity, or proximity to a large body of water between subject i's ethnic group and subject j's ethnic group, subject i's ethnic group and subject k's ethnic group, and subject j's ethnic group and subject k's ethnic group, expressed in

[25]This spatial approach yields classifications of ethnic groups subsistence types that are consistent with qualitative evidence. In a separate analysis, I match a random sample of 612 ethnic groups in the Murdock (1967) dataset (48 percent) to one or more geo-referenced ethnolinguistic groups in the *Ethnologue* (Global Mapping International 2010*b*). In this sub-sample, the precent of land devoted to crops and the percent of land devoted to pastures are statistically significant predictors of a group's reliance on agriculture and animal husbandry, respectively, as coded by Murdock. I conduct a similar analysis by using the *Ethnologue* research notes to classify the subsistence type of 2,024 mapped ethnolinguistic groups (27 percent). Again, the percent of land devoted to crops, the percent of land devoted to pastures, and nighttime luminosity are statistically significant predictors of a group's reliance on agriculture, animal husbandry, and the commercial economy, respectively, as coded qualitatively by *Ethnologue*. Table A.24 provides the regression results. For purposes of illustration, Figure B.5 provides maps depicting ethnic group homelands in Kenya and variation in the four geographic characteristics of interest for the year 1992 (using the universe of ethnic groups in Wucherpfennig et al. 2011). Figure B.6 in the Appendix depicts the differences in geographic endowments across Kenyan ethnic groups.

standard deviations. To make the simplest possible set of assumptions in the generation of the $ComplementaryDiversity_{ijk}$ variable, I give equal weight to each of the S dimensions of geographic variability.

I compute measures of complementary diversity for each of the experiment groups and find a strong, statistically significant, positive correlation between complementary diversity and ethnic diversity (+0.86, $p < 0.01$).[26] In fact, ethnic diversity has statistically significant positive correlations with the sum of pairwise differences in each of the four geographic endowments being analyzed (+0.66 – +0.77, $p < 0.01$), and even with latitude (+0.79, $p < 0.01$),[27] which is known to be associated with divergent geographic endowments (Diamond 1997; Laitin, Moortgat and Robinson 2012). This is the first piece of evidence that the positive effects of ethnic diversity operate through skill complementarities.

The second piece of evidence is that measures of complementary skill diversity have statistically significant positive effects on intellective task performance, but only among treatment groups receiving the MCL prime. To demonstrate this, I replicate the analysis of group performance conducted in the previous section, replacing measures of ethnic diversity with measures of skill complementarities. I also test for non-monotonic effects by estimating linear and quadratic models and using an F-test to assess the linear assumption. The OLS estimates are presented in Table 7. Separate models are run for each treatment group, with odd-numbered models representing the restricted linear model and the even-number models representing the unrestricted quadratic model. I estimate models using $ComplementaryDiversity_{ijk}$ as the primary independent variable of interest, and four separate sets of models for each of the component measures. All models include the vector of group-level controls (age, gender ratio, education, occupations, RA fixed effects).

In these models, the impact of complementary diversity on intellective task performance (as indicated by pooled scores) is conditional on treatment status. Like the effects of ethnic diversity, the effects of $ComplementaryDiversity_{ijk}$ and each of the component measures is positive and statistically significant at the 90% confidence level among MCL only groups, and negative and statistically significant in some of the models among pure control groups. Unlike the effects of ethnic diversity, however,

[26]The full correlation matrix is provided in Table A.25.

[27]Latitude diversity is operationalized as the sum of pairwise differences in the latitude of ethnic group homelands (or more specifically, the latitudinal coordinate of the centroid of group homelands).

Table 7: Ethnic Complementarities and Intellective Task Performance

	Dependent Variable: Pooled Score (Percentile)							
	ASM x MCL		ASM Only		MCL Only		Pure Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A.								
Complementary Diversity	−0.13	3.67	1.53	9.63	4.50**	10.00	−2.04	−4.99
	(1.28)	(4.40)	(2.60)	(10.56)	(1.68)	(9.89)	(1.45)	(4.77)
Complementary Diversity^2		−0.74		−1.65		−1.21		0.50
		(0.82)		(2.09)		(2.14)		(0.77)
F-statistic	0.81		0.63		0.32		0.42	
(linear v. quadratic)	$p = 0.38$		$p = 0.45$		$p = 0.58$		$p = 0.52$	
B.								
Diff. in Croplands	1.77	5.04	10.77	45.52	17.37*	80.00**	−17.44**	−60.00**
	(6.47)	(21.55)	(11.03)	(37.41)	(8.81)	(28.44)	(8.05)	(24.14)
Diff. in Croplands^2		−3.26		−36.98		−67.46**		46.00*
		(20.47)		(38.05)		(29.50)		(24.74)
F-statistic	0.03		0.94		5.23**		3.46*	
(linear v. quadratic)	$p = 0.87$		$p = 0.36$		$p = 0.04$		$p = 0.08$	
C.								
Diff. in Pasture	−2.08	1.65	−3.56	15.45	11.71*	25.08**	−1.95	−7.96
	(3.51)	(9.38)	(6.41)	(15.23)	(5.88)	(11.41)	(4.66)	(11.69)
Diff. in Pasture^2		−1.58		−8.79		−6.79		3.10
		(3.66)		(6.45)		(5.02)		(5.51)
F-statistic	0.19		1.86		1.83		0.32	
(linear v. quadratic)	$p = 0.67$		$p = 0.21$		$p = 0.20$		$p = 0.58$	
D.								
Diff. in Night Lights	1.04	−5.41	7.68	15.14	9.21*	48.14	−9.43**	−30.34
	(3.77)	(18.96)	(6.31)	(43.92)	(5.13)	(32.48)	(4.39)	(21.54)
Diff. in Night Lights^2		3.99		−4.82		−24.78		12.56
		(11.48)		(28.01)		(20.43)		(12.67)
F-statistic	0.12		0.03		1.47		0.98	
(linear v. quadratic)	$p = 0.73$		$p = 0.87$		$p = 0.25$		$p = 0.33$	
E.								
Diff. in Dist. to Water	−0.44	17.12	4.78	38.22	13.87**	29.83	−4.26	−36.70
	(4.04)	(18.68)	(9.09)	(38.55)	(5.44)	(25.10)	(5.00)	(26.32)
Diff. in Dist. to Water^2		−11.69		−23.78		−11.19		21.51
		(12.14)		(26.61)		(17.16)		(17.14)
F-statistic	0.93		0.80		0.43		1.57	
(linear v. quadratic)	$p = 0.34$		$p = 0.40$		$p = 0.53$		$p = 0.22$	

Notes: OLS coefficient estimates with standard errors in parenthesis. Each row (A, B, C, D) provides estimates from models using a different measure of complementary diversity as the independent variable of interest. All models include the intercept and full set of controls (age, education, number of females, number of occupations, and RA fixed effects). Odd-numbered models are linear models and even-numbered models are quadratic models. The F-test examines whether the unrestricted quadratic model is a better fit than the restricted linear model. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table 8: Ethnic Complementarities and Intellective Task Performance (in *MCL only* Groups)

	Dependent Variable: Pooled Score (Percentile)					
	(1)	(2)	(3)	(4)	(5)	(6)
Num. of Tribes = 2	18.91**	24.60	4.49	20.32	23.82	13.26
	(7.80)	(42.31)	(18.93)	(13.28)	(13.40)	(15.31)
Num. of Tribes = 3	15.57	27.19	7.38	22.52	26.45	15.98
	(9.20)	(46.52)	(23.06)	(15.45)	(16.15)	(16.15)
Complementary Diversity		−1.08				
		(9.72)				
Diff. in Croplands			69.48			
			(56.63)			
Diff. in Croplands^2			−61.59			
			(46.08)			
Diff. in Pasture				−0.31		
				(9.64)		
Diff. in Night Lights					−2.99	
					(8.38)	
Diff. in Dist. to Water						5.61
						(10.92)
R^2	0.71	0.73	0.78	0.73	0.74	0.74
Num. obs.	23	21	21	21	21	21

Notes: OLS coefficient estimates with standard errors in parenthesis. The analysis is restricted to groups assigned to the MCL only treatment. All models include the intercept and full set of controls (age, education, number of females, number of occupations, and RA fixed effects). * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

there is no evidence of an inverted-U shaped relationship between complementary diversity and intellective task performance (F-statistic of 0.32, $p = 0.58$, row A, models 5 and 6). Rather, the relationship is linear, with a one standard deviation increase in complementary diversity (2.09) associated with a 9.41 point increase in a group's pooled score (approximately 3/5 of a standard deviation).[28]

The third and final piece of evidence is that the statistically significant positive effects of ethnic diversity disappear in regression models that include any one of the spatial-based measures of skill complementarities. In Table 8 I provide OLS coeffi-

[28]I run the same set of linear and quadratic models to study the impact of skill complementarities on performance in each of the individual puzzles. There is strong evidence that skill complementarities improve performance in the Brainstorm Game, Guessing Game, and Candle Problem, but, interestingly, no evidence that it matters in the Tower Problem. Tables A.26-A.29 present the OLS results.

cient estimates for the ethnic diversity indicator, $Num.of.Tribes$, while cycling in one at a time each measure of skill complementarities. The models restrict the analysis to MCL only groups—the treatment condition under which gains from ethnic heterogeneity were identified. In all of the models, the effect of moderate fractionalization, which was significant at the 95% confidence level (model 1), becomes statistically indistinguishable from zero at the $\alpha = 0.10$ level when any of the measures of skill complementarities are included in the specification. Altogether the results imply that diversity's benefits works through its effect on the production of beneficial economic complementarities across groups.

6 The Gains from Age, Gender, Educational, and Religious Diversity

If information and skill complementarities are the source of diversity's productivity-enhancing effects, other types of social diversities—such as those based on age, gender, education, or religion—may also produce benefits. However, when estimating the effects of other types of cultural and social diversity, I find that ethnicity-based differences are associated with the largest performance gains in intellective tasks. In the Kenyan context, non-ethnic forms of diversity, like age diversity,[29] birth province diversity,[30] and educational diversity[31] have, for the most part, no statistically detectable effects on intellective task performance. The number of females in a group has strong negative effects across all treatment groups, and the impact of religious diversity[32] is conditional on treatment status, exerting significant positive effects among ASM only groups but significant negative effects among MCL only groups. Results from the regressions are reported in Tables 9 and 10.

Ethnicity-based diversities, such as tribal diversity and linguistic diversity, however, have statistically significant positive effects when differences are well managed. Consider, for example, the refined measure of ethnic diversity discussed in Laitin (2000) and Fearon (2003), which incorporates concepts of "social distance" by using the distance between "tree branches" in a language tree. Suppose d_{ij} is a measure of

[29] Measured as standard deviation in age.
[30] Operationalized as the number of different birthplace provinces.
[31] Measured as standard deviation in years of formal schooling.
[32] Operationalized as the number of different religions.

Table 9: Effects of Alternative Measures of Social and Cultural Diversity on Intellective Task Performance (Ordinal Variables)

	Dependent Variable: Pooled Score (Percentile)							
	ASM x MCL		ASM Only		MCL Only		Pure Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A.								
Num. of Females = 1	−12.36*	−6.01	−10.64	−17.20	−5.88	−6.99	−10.48**	−8.14
	(6.63)	(6.61)	(10.88)	(10.70)	(8.00)	(10.33)	(5.03)	(5.97)
Num. of Females = 2	−21.84***	−18.14**	−29.72***	−32.26**	−27.19***	−22.78*	−17.71**	−14.75
	(6.28)	(7.32)	(8.77)	(12.34)	(7.55)	(11.56)	(7.25)	(10.24)
Num. of Females = 3	−20.65**	−15.77*	−26.39**	−25.66*	−37.34***	−34.76*	−5.23	−1.42
	(8.03)	(9.26)	(9.88)	(13.97)	(11.06)	(16.28)	(6.28)	(9.29)
B.								
Num. of Provinces = 2	2.38	−3.85	−34.92	−24.13	−17.62	1.42	−13.48	
	(9.71)	(8.59)	(20.20)	(18.90)	(17.75)	(11.53)	(13.63)	
Num. of Provinces = 3	−6.93	−5.89	−25.77	−9.07	−1.51	17.24	−8.77	11.83**
	(10.05)	(8.87)	(20.42)	(20.49)	(17.82)	(12.11)	(13.73)	(5.62)
C.								
Num. of Religions = 2	8.55	2.37	17.60*	14.83*	−18.97**	−13.23**	−0.45	−2.41
	(5.66)	(4.85)	(9.22)	(7.84)	(6.69)	(6.09)	(5.82)	(6.17)
Num. of Religions = 3	18.35	10.84	−1.19	0.09	9.74	4.33	−1.93	−4.81
	(11.78)	(9.95)	(12.32)	(11.25)	(9.85)	(8.99)	(6.20)	(6.79)
Group-level Controls	*N*	*Y*	*N*	*Y*	*N*	*Y*	*N*	*Y*

Notes: OLS coefficient estimates with standard errors in parenthesis. Each row (A, B, C, D) provides estimates from models using a different measure of diversity as the independent variable of interest. All models include the the intercept. Odd-numbered models do not include the vector of group-level controls (age, education, number of females, number of occupations, and RA fixed effects), whereas even-numbered models include it. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table 10: Effects of Alternative Measures of Social and Cultural Diversity on Intellective Task Performance (Continuous Variables)

	Dependent Variable: Pooled Score (Percentile)							
	ASM x MCL		ASM Only		MCL Only		Pure Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A.								
Age Diversity	−0.16	1.25	−1.32	−0.16	0.25	0.91	0.18	1.06
	(0.47)	(1.82)	(0.90)	(2.54)	(0.88)	(3.33)	(0.60)	(1.21)
Age Diversity^2		−0.07		−0.04		−0.03		−0.03
		(0.09)		(0.09)		(0.14)		(0.04)
F-statistic	0.64		0.24		0.04		0.71	
(linear v. quadratic)	$p = 0.43$		$p = 0.63$		$p = 0.84$		$p = 0.41$	
B.								
Educational Diversity	0.53	1.86	−0.40	2.30	−1.93	−6.35	1.88	−0.49
	(1.66)	(4.85)	(2.77)	(7.22)	(2.40)	(4.84)	(1.94)	(5.06)
Educational Diversity^2		−0.22		−0.46		0.69		0.35
		(0.75)		(1.13)		(0.66)		(0.68)
F-statistic	0.09		0.17		1.10		0.26	
(linear v. quadratic)	$p = 0.77$		$p = 0.69$		$p = 0.31$		$p = 0.62$	
C.								
Linguistic Diversity	−0.28	2.91*	0.53	3.24	1.37**	3.08	−0.87*	−2.35
	(0.43)	(1.55)	(0.81)	(3.34)	(0.56)	(1.80)	(0.48)	(1.99)
Linguistic Diversity^2		−0.18**		−0.14		−0.10		0.08
		(0.08)		(0.17)		(0.10)		(0.10)
F-statistic	4.57**		0.70		1.00		0.59	
(linear v. quadratic)	$p = 0.04$		$p = 0.42$		$p = 0.34$		$p = 0.45$	
D.								
Latitude Diversity	−5.71	7.42	8.64	30.93	6.16	49.56*	−2.35	−45.77**
	(5.47)	(16.74)	(8.28)	(33.80)	(7.27)	(22.95)	(8.38)	(18.84)
Latitude Diversity^2		−10.84		−18.14		−35.07*		32.16**
		(13.06)		(26.62)		(17.77)		(12.78)
F-statistic	0.69		0.46		3.90*		6.34**	
(linear v. quadratic)	$p = 0.41$		$p = 0.51$		$p = 0.07$		$p = 0.02$	

Notes: OLS coefficient estimates with standard errors in parenthesis. Each row (A, B, C, D) provides estimates from models using a different measure of complementary diversity as the independent variable of interest. All models include the intercept and full set of controls (age, education, number of females, number of occupations, and RA fixed effects). Odd-numbered models are linear models and even-numbered models are quadratic models. The F-test examines whether the unrestricted quadratic model is a better fit than the restricted linear model. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

linguistic distance between subjects i and j, equaling 20 if groups i and j speak languages from the same language family, 1 if they are from different language families, and 1+ the number of shared languages before branching off if languages are distinct but belong to the same language family. Then, let linguistic diversity for a group composed of participants i, j, and k be defined as the sum of pairwise differences in linguistic distance, re-scaled so that higher values represent higher levels of social distance: $D_{ijk} = 21 - (d_{ij} + d_{ik} + d_{jk})/3$. The result is a group-level indicator that gives the mean linguistic distance between all pairs of group members, ranging from 1 (all three group members speak languages from the same language family) to 20 (all three group members speak languages belonging to different language families). In regressions, this measure of linguistic diversity is associated with statistically significant improvements in intellective task performance in the two treatment groups receiving the MCL prime (see row C., Table 10).

7 Conclusion

Motivated by both theory and practice, this paper conducted a systematic assessment of two popular and competing classes of strategies for managing diversity: assimilationist strategies and multiculturalist strategies. Results indicate that assimilationist and multiculturalist strategies have divergent effects on group productivity and social cohesion. In the experimental evaluation, the assimilationist approach was ineffective at increasing productivity in ethnically diverse groups, but it improved social cohesion, as measured by altruistic sharing and interethnic stress levels. The multiculturalist approach, on the other hand, was effective at helping ethnically diverse groups realize the productivity gains from heterogeneity, as measured by performance in a series of intellective tasks that tested group creativity, problem-solving, and prediction. In fact, only under the multiculturalist approach did increasing diversity produce productivity gains. However, it failed as a strategy for promoting interethnic cooperation, particularly between tribes with strong pre-existing hostilities. These results indicate that assimilationist and multiculturalist approaches have their respective strengths and weaknesses and that they should consequently be leveraged for distinct purposes.

The paper also addressed a number of theoretical puzzles regarding the origins and magnitude of diversity's productivity-enhancing effects. I provided evidence that the

origins of diversity's benefits are not inherently "ethnic," but based on useful information and skill complementarities that can be traced back to variation in geographic endowments and culture across ethnic groups. And like the gains from ethnic diversity, the gains from skill diversity were also found to be conditional on the quality of diversity management, detectable only under a multiculturalist environment. When the gains from ethnic diversity were realized, however, they were larger in magnitude than the gains from alternative types of social diversity, such as those based on age, birthplace, education, gender, or religion. Altogether these findings suggest there are large rewards to constructing and implementing well-designed diversity management strategies, and shed light on some of their components.

Although the experiment generated several novel findings about the effectiveness of two widely-used diversity management strategies, it is far from exhaustive and can be built on in at least three ways. First, the treatment effects identified here represent the effects of the multiculturalist and assimilationist treatments as implemented, not what they could be. It may be possible that the cognitive primes employed in the experiment were ineffective and that alternative approaches can strengthen the positive impact of assimilationist and multiculturalist interventions. There is thus a need to replicate the experiment results and start systematically cataloguing potential strategies to test them and identify the most viable approaches. Such a catalogue would have tremendous value in advanced industrialized nations, like the U.S., which are recipients of an increasing share of the world's immigrants, and as well for African nations, nearly all of which gained independence with an ethnically heterogeneous population.

Second, the experiment focused specifically on the impact of assimilationist and multiculturalist approaches on productivity and social cohesion in *groups*, and it is therefore not possible to draw strong conclusions about assimilation and multiculturalism at a larger unit of analysis, such as city, state, or country. Further investigation into the broader societal effects of assimilationist and multiculturalist interventions—such as their effect on innovation, segregation, and communal violence—would thus be useful.

Third, the diversity management strategies described and analyzed in this paper are heavily based on theories from social psychology and organizational behavior. In political science and economics, strategies for managing diversity often focus on institutional design. At the group-level, this may consist of formal rules and procedures

that help facilitate communication and coordination among non-coethnics and provide an outlet for managing conflicts, for example, in the form of decision-making schemes that require majority agreement or the creation of external bodies that can serve as neutral arbitrators. At the community-level, formal and informal institutions that can improve the monitoring and sanctioning of opportunistic behavior may help support broad social cooperation (Fearon and Laitin 1996; Miguel and Gugerty 2005). And at the country-level, well-designed democratic institutions and legal protections for minority rights may reduce ethnic grievances and increase prospects for peace and stability (Laitin 2007; Lijphart 1977; Reilly and Reynolds 1999). An interesting area of work would explore an integrated approach in which institutional and psychological approaches serve complementary functions. Such an integrated approach—that combines insights and methodologies from multiple disciplines—appears most promising for addressing the puzzle of how best to manage the costs and benefits of increasing ethnic diversity around the world.

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