

Which Hat to Wear? Impact of Natural Identities on Coordination and Cooperation

Yan Chen* Sherry Xin Li[†] Tracy Xiao Liu[‡] Margaret Shih[§]

October 21, 2011

Abstract

As the workforce becomes increasingly diverse, motivating individuals from different backgrounds to work together effectively is a major challenge facing organizations. In an experiment conducted at two large public universities in the United States, we manipulate the salience of participants' multidimensional natural identities and investigate the effects of identity on coordination and cooperation in a series of prisoner's dilemma games. By priming a fragmenting (ethnic) identity, we find that, compared to the control, Asians exhibit significantly more ingroup cooperation and outgroup discrimination, while Caucasians are not responsive to ethnic priming. In comparison, priming a common organization (school) identity effectively reduces intergroup bias for Asians in the coordination game, resulting in a significant increase of both ingroup and outgroup cooperation. However, in games with a unique inefficient Nash equilibrium, the effects of priming a common organization identity are more complex. While priming alleviates the negative effects of the competitiveness stereotype on cooperation among UCLA Asians, it enhances such effects among University of Michigan Asians.

Keywords: social identity, diversity, prisoner's dilemma, experiment

JEL Classification: C7, C91

*Corresponding author: School of Information, University of Michigan, 105 S. State Street, Ann Arbor, MI 48109-2112. Email: yanchen@umich.edu. Phone: 1 (734) 764-9488. Fax: 1 (734) 764-1555.

[†]School of Economic, Political and Policy Sciences, University of Texas at Dallas, 800 W. Campbell Road, Richardson, Texas, 75080. Email: sherry.xin.li@utdallas.edu.

[‡]School of Information, University of Michigan, 105 S. State Street, Ann Arbor, MI 48109-2112. Email: tracy.umich@gmail.com.

[§]UCLA Anderson School of Management, 110 Westwood Plaza, Los Angeles, CA 90095-1481. Email: margaret.shih@anderson.ucla.edu.

1 Introduction

As the world becomes increasingly integrated and the workforce becomes more diverse, motivating individuals from diverse backgrounds to work together effectively is a major challenge facing organizations today. While increasing diversity in groups has been found to elicit positive outcomes such as enhancing thoughtful decision processes (Nemeth 1986), expanding access to social networks and resources (Tushman 1977), promoting innovation (Van Der Zee and Paulus 2008), and facilitating problem solving (Hong and Page 2001), increasing diversity also introduces group biases that may contribute to conflict among group members (Pelled, Eisenhardt and Xin 1999; Hargreaves Heap and Zizzo 2009). As a result, organizations wishing to obtain the benefits associated with diversity must also learn how to manage diversity in order to facilitate coordination, cooperation and positive interpersonal relationships among their members.

Research findings underscore the importance of effectively promoting coordination, cooperation and positive interpersonal relationships among members of an organization. Positive relationships have been associated with a host of important outcomes such as more effective sharing of resources and information, greater trust and better performance (Blatt and Camden 2006; Gruenfeld, Mannix, Williams and Neale 1996). Thus, integrating a diverse workforce, and motivating members who come from different backgrounds to work effectively towards a common goal is an important task facing many organizations.

However, despite this importance, organizations trying to promote better coordination and cooperation in diverse groups face several challenges in accomplishing this goal. First, work on minimal groups in psychology and near-minimal groups in economics finds that individuals are predisposed to favor the ingroup over the outgroup to enhance and maintain positive self-esteem (Tajfel and Turner 1979). As a consequence, individuals perceive their ingroup members to be more similar to them than members of the outgroup (Allen and Wilder 1975) and ascribe more positive traits to ingroup members (Brewer 1979). Individuals are also more likely to help members of the ingroup over the outgroup (Crosby, Bromley and Saxe 1980), to allocate more rewards to ingroup members (Wilder 1986), and to show more charity, less envy, more positive reciprocity, less negative reciprocity, and more social welfare maximizing actions towards ingroup members (Chen and Li 2009). In sum, research on minimal and near-minimal groups has collected a great deal of evidence showing that highlighting different social identities may fragment a group by introducing group biases that lead to counterproductive outcomes.

However, in the real world, people can be simultaneously identified along many dimensions of identity (Hewstone 1996). Consider an African American male accountant who is a partner in his firm. He may be identified by his gender (male), his race (black), his role (partner), his occupation (accountant) or his organization (firm). Some of these identities may be shared by other members of the group, while other identities may not. Thus, highlighting these different identities may call forth different group orientations and their consequent behaviors within an organization. Furthermore, research finds that feelings of similarities to others within a group can be situationally altered by manipulating the salience of different social identities (Chatman, Polzer, Barsade and Neale 1998). While highlighting uncommon identities may fragment a group, highlighting common identities might unify a group.

In practice, common identities have been used to create common goals and values. For example, Nike founder Phil Knight and many of his employees have tattoos of the Nike “swoosh” logo on their left calves as a sign of group membership (Camerer and Malmendier 2007). To create a

common identity, organizations have attempted various team-building exercises, such as simulated space missions where the crew works together to overcome malfunctions while navigating through space (Ball 1999). While standard economic theory does not have an explanation for such phenomena, research on social identity shed lights on the effects of common identity on organization outcomes.

Social psychology work on intergroup relations finds that highlighting a common ingroup identity can reduce intergroup bias (Dovidio, Gaertner, and Saguy 2009; Gaertner and Dovidio 2000). For instance, college roommates from differing ethnic backgrounds who perceived more common identities were less likely to show decline in their friendship than roommates who did not (West, Pearson, Dovidio, Shelton and Trail 2009). In another study, emphasizing a common ingroup identity increased satisfaction with coworkers in ethnically diverse workgroups (Cunningham 2005).

Moreover, evidence in experimental economics finds that a common group identity increases cooperation in public goods games (Eckel and Grossman 2005) and prisoner's dilemma games (Goette, Huffman and Meier 2006), where the dominant strategy is to completely free ride or defect. Furthermore, it improves coordination in the battle of sexes game (Charness, Rigotti and Rustichini 2007), the provision point mechanism (Croson, Marks and Snyder 2008), and the minimum effort game (Chen and Chen 2011). The latter two games have multiple Pareto ranked equilibria; a salient common identity leads to the selection of a more efficient equilibrium.

This study extends previous research on the effects of a common identity on economic behavior. In particular, we investigate the effects of highlighting a common vs. fragmenting identity on coordination and cooperation in a series of prisoner's dilemma games with varying incentives for cooperation. Using subjects from two large public universities with comparable academic standing (the University of Michigan and the University of California at Los Angeles), we prime participant school identity as their common identity, and ethnic identity as the fragmenting identity.

Our results show that Asian and Caucasian participants respond differently to priming. While priming ethnic identity significantly increase the ingroup favoritism and outgroup discrimination for both UM and UCLA Asians compared to the control, it has no significant effect among Caucasians. Secondly, priming a common (school) identity reduces group bias for UM Asians in the coordination game, resulting in a significant increase of both ingroup and outgroup cooperation. However, in games with a unique inefficient Nash equilibrium, the effects of priming a common identity are more complex. While priming alleviates the negative effects of the competitiveness stereotype on cooperation among UCLA Asians, it enhances such negative effects among UM Asians. The differential response to priming from first-generation (UM Asian students) and second- or third-generation (UCLA Asian students) ethnic minorities has policy implications for socializing new immigrants which we will elaborate in Section 4.

This paper contributes to the literature on the effects of group identities on cooperation and coordination in several ways. First, rather than inducing group identity in the laboratory, we study two naturally existing social identities - ethnic identity and organization identity. Thus, compared to studies using induced group identity, our results can be more easily applied to relevant real-life work environments. Second, this study goes beyond documenting the intergroup bias in individual choices. We use the identity priming technique from social psychology to manipulate the salience of the respective identities to investigate the extent to which evoking different dimensions of these identities impacts intergroup bias. Third, this study is among the first in economics to empirically evaluate the effectiveness of using a common identity as a design tool to increase cooperation among an ethnically diverse group of participants. Lastly, compared to social psychology studies

of natural identities, we demonstrate that identity priming interacts with the strategic properties of games. The same priming technique can have different effects in different games.

The rest of the paper is organized as follows. Section 2 presents the experimental design. In Section 3, we present our analysis and results. Section 4 discusses the results and concludes.

2 Experimental Design

Our experimental design simulates a work environment in an organization in which employees have multi-dimensional social identities and engage in strategic interactions with one another involving potential tradeoffs between self interest and group interest. Although our participants share a common organization identity, they come from diverse ethnic backgrounds. The incentivized tasks in the experiment involve choices to cooperate or coordinate with another employee in the organization. Thus, the experiment design captures three important factors that may influence individual choices at a workplace: self interest, group interest, and intergroup relations. We use the priming method from social psychology to make one of the participants' natural identities salient before they participate in a sequence of one-shot prisoner's dilemma games.

In this study, we are interested in several questions. First, do people exhibit ingroup favoritism and outgroup discrimination, even in the absence of priming, when the other player's ethnic identity is known? Second, does group behavior intensify when we prime a fragmenting (ethnic) identity? Lastly, can we alleviate ingroup favoritism and outgroup discrimination by priming a common organization identity? In what follows, we describe the priming method, introduce the games and present the experimental procedure.

2.1 Identity Priming

Priming is an experimental technique in psychology that introduces certain stimuli ("primes") to activate individuals' social knowledge structures (Bargh 2006). The types of primes include text (e.g., a questionnaire, an article, or a word scrambling game), image, or audio.

Priming social identities can impact people's behavior and attitudes outside of their awareness and control (see Bargh and Chartrand 1999 for a review), as demonstrated by social psychologists in a large body of work on identity priming. In these laboratory studies, psychologists have found that making social identities salient often induces study participants to adopt behaviors that are consistent with the stereotypes associated with the identity. These effects occur even when participants are not aware that they are being primed. In one study, college students primed with stereotypes of the elderly walk more slowly as they exit the study than those who are not primed with stereotypes of the elderly (Bargh, Chen and Burrows 1996). In another study, Steele and Aronson (1995) find that African American students who are stereotyped to be poor students underperform on academic tests when asked to indicate their race prior to taking the test. These effects have also been documented in other groups such as Hispanic Americans (Aronson, Quinn and Spencer 1998), individuals from lower socio-economic status (Croizet and Claire 1998) and women in math (Spencer, Steele and Quinn 1999).

On the other hand, while activating negative stereotypes can hurt performance, activating positive stereotypes can boost performance. In one experiment, Shih, Pittinsky and Ambady (1999) examined the performance of Asian women on a mathematics test. Women are stereotyped to have

inferior quantitative skills (Benbow 1995; Hedges and Nowell 1995) while Asians are stereotyped to have superior quantitative skills (Steen 1987). Shih et al. (1999) find that Asian American women perform better on a mathematics test when their ethnic identity is primed, but worse when their gender identity is primed, compared to a control group with neither identity primed. In contrast, Asian Americans taking a verbal test showed the reverse pattern of performance. In this case, women are stereotyped to be verbally talented while Asians are not. Asian American women perform higher on the verbal test when their gender is salient, and worse when their ethnicity is made salient (Shih, Pittinsky and Trahan 2006). These priming techniques have also been applied to study risk and time preferences in economics (Benjamin, Choi and Strickland 2010).

Identity priming can also activate intergroup bias. Simply exposing individuals to words indicating ingroup or outgroup identity can elicit differential judgements from people. Perdue, Dovidio, Gurtman and Tyler (1990) find that subliminally exposing individuals to words associated with the ingroup and the outgroup (i.e. “us”, “them”) affects how quickly study participants judge positive and negative words. Participants are more quick to judge positive to be positive if exposed to ingroup words such as “us,” and more quick to judge negative words to be negative if exposed to outgroup words such as “them”. In the present study, we use identity priming methods to examine if individuals automatically exhibit intergroup bias in prisoner’s dilemma games.

We choose two ethnic groups, Caucasians and Asians, which can be differentiated by their last names. For Asian participants, we focus on those with Chinese last names in order to avoid potential complex intergroup preferences among different Asian groups, e.g., Chinese and Japanese.

We adopt the priming technique from Shih et al. (1999), and subtly activate a social category outside of participants’ awareness in the identity treatments. The stimuli are introduced through a pre-experiment questionnaire. In the ethnic identity treatment, the questions pertain to an individual’s ethnic background, family history (“How many generations has your family lived in America?” and “From which countries did you family originate?”), and cultural heritage (“What languages do you speak?”). In the school identity treatment, subjects are asked about which school they attend. They are then asked to reflect on their choices of schools when applying for college (“Did you consider any other school? If yes, what other schools?”, “Why did you decide to choose your specific school?”). Since the subjects in each experimental session study at the same university (UM or UCLA), these questions pertain to an individual’s common identity of being part of her university. Because the two universities share comparable academic standings, we minimize the possibility that the impact of the common identity priming may be influenced by participants’ perception on the standing of their universities.¹ In the control sessions, the questions are designed to be identity neutral, i.e., related to neither the ethnic nor the school identities. Subjects are asked about their activities in leisure time, for example, “How often do you watch television?” “How often do you eat out?” and “How often do you attend movies?” The identity neutral questionnaire is designed to preserve the direct comparability with the two identity treatments. These procedures are adopted from those used in past psychology experiments and the questionnaires are modified versions of those used in Shih et al. (1999). The primes are designed to make salient the appropriate social identity and activate the constructs associated with the identity. A social identity is attached to a whole host of associated traits, stereotypes, social expectations, and schemas (Deaux 1996).

¹Li, de Oliveira and Eckel (2010) design a controlled field experiment in two neighborhoods in Dallas, TX, to study the impact of having a common identity on individual contributions to local public goods. They find that the same common identity priming leads to opposite outcomes. While it *decreases* the likelihood of giving in the poor neighborhood, it *increases* the likelihood of giving in the mid-income neighborhood.

The questionnaires are included in Appendix A.

2.2 The Games

To investigate intergroup and intragroup coordination and cooperation under conditions when a fragmenting or a common identity is made salient, we choose variants of the prisoner’s dilemma games. This class of games is among the simplest of those which capture the tension between individual and group interests. It has also been used in the social identity literature in psychology to investigate the causes of group bias (Yamagishi and Kiyonari 2000, Simpson 2006).

Figure 1 presents the extensive forms of the five sequential prisoner’s dilemma games in our experiment. In each game, player 1 has two strategies, cooperate (C) or defect (D), whereas player 2 has four strategies:

- Always cooperate (CC): cooperate if player 1 cooperates, and cooperate if player 1 defects.
- Always defect (DD): defect if player 1 cooperates, and defect if player 1 defects.
- Reciprocal (CD): cooperate if player 1 cooperates, and defect if player 1 defects.
- Opposite (DC): defect if player 1 cooperates, and cooperate if player 1 defects.

Note that, while we use C and D throughout the paper for the ease of exposition, the subjects are given neutral terminologies. Player 1 (2), called player A (B) in the instructions, has actions A1 (B1) and A2 (B2), corresponding to C and D, respectively.

In one-shot scenarios, a sizeable literature on social preferences uncovers a non-negligible number of conditional cooperators in social dilemma types of games (Fehr and Gaechter 2000, Healy 2007). Healy (2007) models the sequential prisoner’s dilemma game as a game of incomplete information about player 2’s types. Specifically, let p be player 1’s belief that 2 is a conditional cooperator. Assuming risk neutrality, player 1 will choose to cooperate if the expected value from cooperation is at least as great as the expected value from defection, i.e.,

$$p\pi_1(C, C) + (1 - p)\pi_1(C, D) \geq \pi_1(D, D).$$

Therefore, player 1 prefers to choose the lottery rather than choosing Defect if and only if the likelihood that player 2 is a conditional cooperator is sufficiently high, or $p \geq p^*$, where

$$p^* = \frac{\pi_1(D, D) - \pi_1(C, D)}{\pi_1(C, C) - \pi_1(C, D)}.$$

In our experiment, payoffs in each game are chosen such that $p^* \in \{0, 1/4, 1/2, 2/3, 3/4\}$, which corresponds to games 0 to 4. In game 1, player 1 should cooperate if she believes that at least 1/4 of player 2s are conditional cooperators. In contrast, in game 4, player 1 will cooperate when she believes that the proportion of conditional cooperators exceeds 3/4. Other things being equal, we expect to see the likelihood of player 1’s cooperation decrease from game 0 to game 4.

In this design, the range of thresholds for cooperation enables us to measure the sensitivity and robustness of group behavior under varying incentives. This design feature is an improvement over previous studies, where only one threshold is implemented, such as in Yamagishi and Kiyonari (2000) who implement a sequential prisoner’s dilemma game with $p^* = 1/2$.

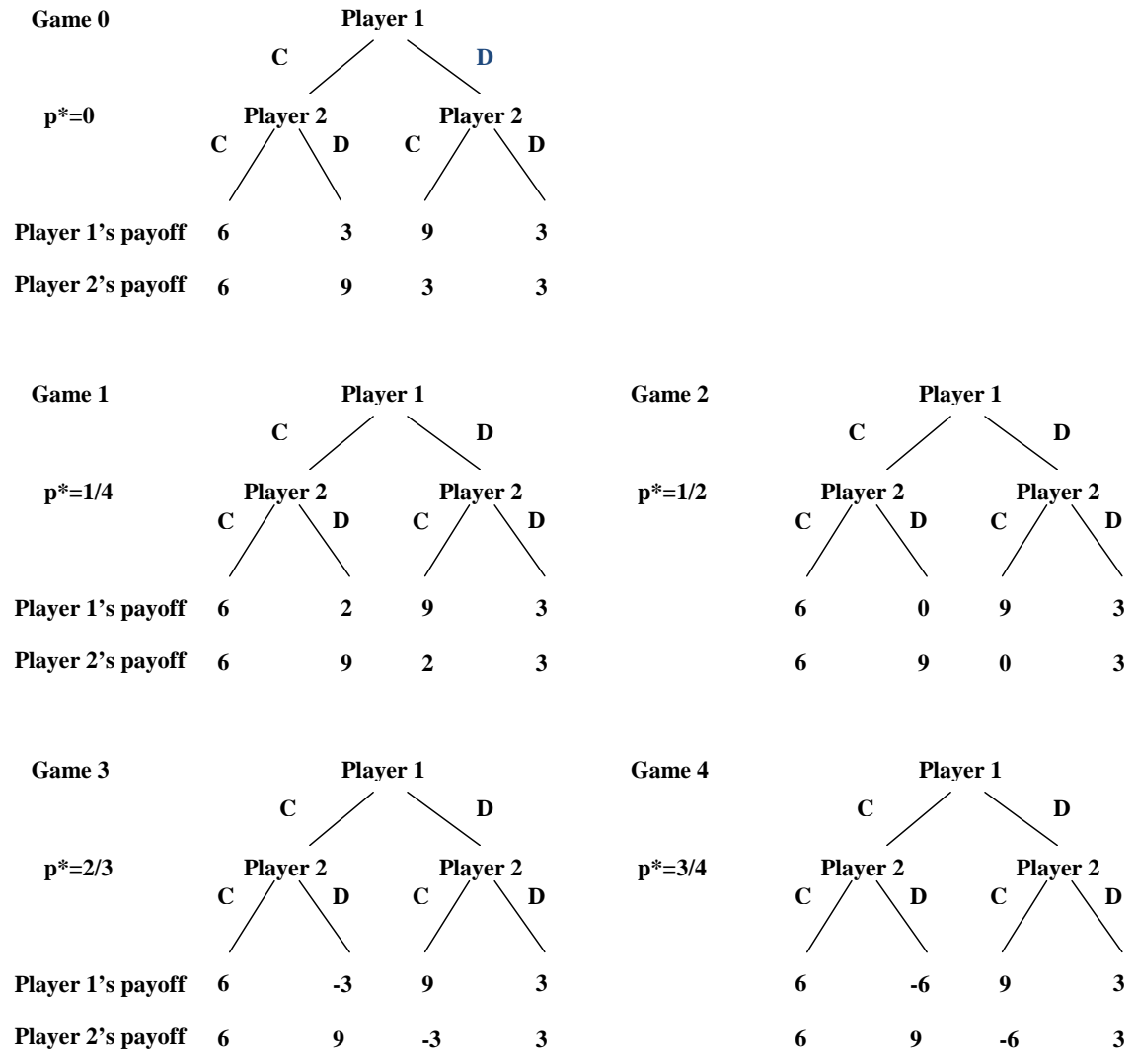


Figure 1: Extensive Form Representation of Games Used in the Experiment

To accurately elicit player 2's type, we use the strategy method. Specifically, player 2 is asked to submit a complete strategy without knowing player 1's choice, in the form of "if A chooses A1, I choose __ (B1 or B2); if A chooses A2, I choose __ (B1 or B2)." The use of the strategy method effectively transforms the extensive form games in Figure 1 into the normal form games in Figure 2.

Game 0	CC	DD	CD	DC
C	6,6	3,9	6,6	3,9
D	9,3	3,3	3,3	9,3

Game 1	CC	DD	CD	DC
C	6,6	2,9	6,6	2,9
D	9,2	3,3	3,3	9,2

Game 2	CC	DD	CD	DC
C	6,6	0,9	6,6	0,9
D	9,0	3,3	3,3	9,0

Game 3	CC	DD	CD	DC
C	6,6	-3,9	6,6	-3,9
D	9,-3	3,3	3,3	9,-3

Game 4	CC	DD	CD	DC
C	6,6	-6,9	6,6	-6,9
D	9,-6	3,3	3,3	9,-6

Figure 2: Normal Form Representation of Games Used in the Experiment

In normal form representation, game 0 has four Nash equilibria, $\{(D, DD), (C, DD), (D, CC), (D, DC)\}$, while each game in games 1-4 has a unique pure strategy Nash equilibrium, (D, DD) . Thus, behavior in game 0 measures group effects on *coordination*, while behavior in games 1-4 measures group effects on *cooperation*.

Of player 2's four strategies, DC (i.e., doing the opposite to what player 1 does) warrants more discussion. In games 1-4, DC is weakly dominated by DD, and as expected, empirically adopted least often (Section 3). In game 0, however, DC is a *weakly dominant* strategy for player 2. Comparing player 2's two weakly dominant strategies, DD and DC, we note that DC maximizes joint payoffs and Pareto dominates DD. Specifically, if player 1 chooses to defect, DC leads to a higher joint payoff without sacrificing own payoff (3 regardless); however, if player 1 chooses to cooperate (which leads to a joint payoff of 12 regardless what player 2 does), player 2 chooses to defect to maximize self interest. Therefore, we name DC as the rational joint-payoff-maximizing

strategy (hereafter rJPM) in game 0. Note that player 2's other joint-payoff-maximizing strategy, CC, is weakly dominated, and thus not rational.

2.3 Experimental Procedure

At both UM and UCLA, we implement one control condition and two identity treatments, each of which has five independent sessions at each university. The two treatments include an ethnic identity treatment where we prime participants' (fragmenting) ethnic identities and a school identity treatment where we prime participants' common school identity. We explain our experimental procedure in detail below.

Common to all three experimental conditions, each session consists of eight subjects and three stages: a pre-experiment questionnaire to prime a participant's natural identity in the treatments and an identity-neutral questionnaire for the control condition, four rounds of two-person prisoner's dilemma (PD) games, each with a different match, and a post-experiment questionnaire to elicit demographics information and to check the effects of priming.

In the first stage, participants in each experimental session fill out a pre-experiment questionnaire designed to prime ethnic or school identity in the two respective treatments, or an identity-neutral questionnaire in the control condition.

In the second stage, eight subjects in each session are randomly assigned as player 1 or 2 in the two-person PD games for four rounds. Although their player roles are fixed during the experiment, their match in each round is different in order to minimize repeated game effects. In each round, each participant plays the five PD games with her match. To control for any game order effect within a treatment, we use a Latin Square design, whereby each of the five sessions in a treatment has a different game order.²

Unlike most laboratory experiments that use anonymous matching,³ we provide the co-player's ethnic background information in all three treatments. Specifically, the co-player's last name appears on the screen in the UM sessions. For example, a participant is told that she is matched with "Chen" or "Smith" while making the decision. The displayed name is the co-player's real last name. At UCLA, we display an acronym that combines three pieces of information including the the co-player's grade standing (Freshman, Sophomore, etc.), ethnicity, and player ID.⁴ For example, a participant is told that she is matched with "FreshAsianCA1" or "SophCaucasianCA3." The grading standing and player ID are added to alleviate any potential experimenter demand effect.

Furthermore, since the participants go through several rounds, we expose them to photos as an unobtrusive means to reinforce the primes.⁵ We select four pictures for each treatment, and display one picture at a time on the computer screen for five seconds before subjects proceed to the next round. In the ethnic identity treatment, pictures of architecture from China and Europe are shown, while in the school identity treatment, subjects see pictures of their university landmarks. In

²The game orders include 0-1-2-3-4, 1-2-3-4-0, 2-3-4-0-1, 3-4-0-1-2, and 4-0-1-2-3, so that each game has appeared once in each position.

³(Andreoni and Petrie 2004) is a notable exception where subjects' digital photos are presented to their partners in a laboratory fundraising experiment.

⁴We were not able to obtain UCLA IRB approval to display subject last names.

⁵The use of posters and pictures to prime stereotypes is common procedure in psychological priming studies. For instance, Cheryan, Plaut, Davies and Steele (2009) used posters to make salient stereotypes in the computer sciences. Chen and Bargh (1997) exposed participants to picture of Black and White faces to prime stereotypes associated with race.

the control sessions, identity-neutral landscape pictures are shown. These photos were pretested to establish that they primed the appropriate identities and that they were equally positive in valence.⁶ Additionally, we elicit individual beliefs about her match’s decision in each game, and reward each correct guess with 2 points. Feedbacks on their matches’ actual decisions are not provided until the end of the experiment. The experimental instructions and the pictures (Figures 3 and 4) are included in Appendix B.

Note in all the treatments, including the control condition, co-player’s surname (or ethnicity) is provided to subjects before they make decisions. We choose this design to make the setting more comparable to real-life social interactions at workplaces. When people interact with one another at work, they have the information on their co-workers’ ethnicity. Therefore, compared to an alternative design in which no information is provided on the co-player, the current control condition serves as a better benchmark and carries more natural generalization to organization design.

In the third stage, we conduct a post-experiment survey, which collects information on demographics, self-statements, strategies used during the experiments, and evaluation of ethnic stereotypes. The post-experiment questionnaire and summary responses are included in Appendix C.

Table 1: Features of Experimental Sessions

Site Treatments	Participants					
	UM		UM	UCLA		UCLA
	Caucasian	Asian	Total	Caucasian	Asian	Total
Fragmenting ID	19	21	8×5	17	23	8×5
Common ID	19	21	8×5	19	21	8×5
Control	20	20	8×5	21	19	8×5

Table 1 summarizes the features of the experimental sessions, including treatments, number of participants, and ethnic compositions by treatment. Overall, 30 independent computerized sessions were conducted. Fifteen sessions were conducted at the School of Information Lab at the University of Michigan from May to July 2008, with 62 Asian and 58 Caucasian participants. Another 15 sessions were conducted in the California Social Science Experimental Laboratory (CASSEL) at UCLA in May 2009, with 63 Asian and 57 Caucasian participants. All 240 of our subjects were students from UM and UCLA.

For each session at UM, we pre-screened the last names of potential participants, with a threshold of at least three participants with European last names, and three with Chinese last names. For each session at UCLA, as CASSEL does not allow any ethnic screening, we over-recruited subjects for each session to ensure the same minimal number of Asian and Caucasian students in each experimental session as in UM. Extra subjects were directed into a separate room for a survey session unrelated to this experiment. At each site, each subject participated in only one session. We use z-Tree (Fischbacher 2007) to program our experiments. Each treatment session lasts approximately one hour, with the first 15 minutes used for instructions. The exchange rate is

⁶For the pretest, we had coders rate the photos on how ethnic, UM/UCLA related, and positive they were. We found that the ethnic architecture were rated as more ethnic than the other photos. The UM/UCLA photos were more UM/UCLA related than the other photos. Furthermore, there were no differences in how positive the photos were.

set to 8 points for \$1. In addition, each participant is paid a \$5 show-up fee. Average earnings per participant are \$20 at UM (\$18 at UCLA), including the show-up fee. Data are available from the authors upon request.

3 Results

Before we present the results several data issues warrant some discussions. Recall that information on subject's ethnicity is revealed to co-players through last names in the UM experiment. In 5% of UM observations, subjects are matched with their acquaintances. Among the acquaintances, 88% of them come from the same ethnic group, which makes it impossible to disentangle the acquaintance effect from intergroup preference.⁷ We thus exclude them from the main analysis. The second issue is that some subjects miscategorize their matches' ethnicities. The post-experiment survey shows this affects 8% of UM observations. For these observations, the match ethnicity is recoded to reflect subjects' perception.⁸ We also report results using the actual ethnic identities (i.e., without recoding) in footnotes whenever the recoding affects statistical significance. In addition, seven subjects at UM, self-identified as economics graduate students or post-doc, are significantly more likely to choose to defect compared to other subjects.⁹ We include them in the analysis, but also report the results if these observations are excluded. In the UCLA experiment, 15 out of 120 subjects self-identify as being from ethnicities other than Asian or Caucasian. We include them in the analysis, although excluding them does not change the results.

Two common features apply throughout our analysis. First, all the analysis controls for potential interdependency of individual decisions across games. In the analysis based on aggregate data, test of proportions is used with standard errors clustered at the individual level, and one-sided *p* values are reported. Standard errors are clustered at the individual level in regressions.¹⁰ Second, we use a 5-percent statistical significance level as our threshold to establish the significance of an effect.

We are interested in the extent to which the ethnic and school priming influences coordination (game 0) and cooperation (games 1-4), respectively. Since earlier studies in social psychology (Brewer 1999) suggest that favoritism towards ingroup and discrimination against outgroup may occur separately, we examine the treatment effects on ingroup favoritism, outgroup discrimination, and intergroup differentials, respectively. The analysis focuses on individual strategies although the results are largely consistent with actions-based analysis.

Since game 0 has multiple Pareto ranked equilibria, while games 1-4 each have a unique but inefficient Nash equilibrium, we report results separately for game 0 in Table 2 and for games 1-4 in Table 3. Each table contains summary statistics on the left and treatment effects on the right. The top panel pertains to player 1s' choice of cooperative strategy, and the bottom panel to player 2s' choice of rJPM (DD) strategy in game 0 (1-4). Note player 2 has four strategies.

⁷Among these acquaintance pairings, the proportion of player 2s choosing rJPM in game 0 (or DD in games 1-4) is 69% (62%), compared to 59% (80%) for non-acquaintance pairings.

⁸The matching type is coded as "outgroup" in the analysis if one categorizes the match's ethnicity as "other" or "don't know".

⁹Among economics graduate students and post-doc, the cooperation rate as player 1 is 12.5% in game 0, and 0 in games 1-4. As player 2, the proportion of them choosing rJPM (DD) in game 0 (games 1-4) is 35% (75%).

¹⁰Participants make their decisions independently, without any feedback on their decisions until the end of the experiment.

We focus on rJPM in game 0 and DD in games 1-4, since the two strategies are weakly dominant in theory and also the mode of empirical distribution in the respective games.¹¹ In each panel of Tables 2 and 3, results are presented separately for each university, and then for the pooled data. The proportions are italicized and bolded if the ingroup-outgroup comparison within treatment is statistically significant ($p \leq 0.05$), whereas the p-value is highlighted in boldface only if the treatment effect is statistically significant ($p \leq 0.05$). Results will be discussed in more detail in the following subsections.

3.1 Control

Recall subjects in the control sessions are given information (i.e., last name or acronym) that reveals the match's ethnicity, although the pre-survey is intended to be identity neutral. This design enables us to identify possible group effects associated with the revelation of ethnicity *information*. It makes the setting comparable to real-life workplaces where co-workers have information about others' ethnicity. The results, presented in columns 1-2 in Tables 2 and 3, establish a baseline for comparison with the two identity treatments.

Pairwise comparisons between columns 1-2 in the top panels of Tables 2 and 3 show higher rate of ingroup cooperation than outgroup cooperation by almost all player 1s in both sets of games, except UCLA Asians in games 1-4. This intergroup difference is statistically significant for Asian player 1s in game 0, and Caucasian player 1s in games 1-4.¹² Similar comparisons in the bottom panel of Table 2 indicate that player 2s in game 0 are more likely to choose a joint payoff maximizing strategy rJPM with an ingroup than with an outgroup match. These observations in the control sessions thus suggest, at least qualitatively, ingroup favoritism and outgroup discrimination as a result of the match's ethnicity information being revealed. These results are partially consistent with Fershtman and Gneezy (2001), who find that Israeli Jewish participants exhibit mistrust towards men of Eastern origin in trust games, where ethnic origins are inferred from the names of their matches.

In contrast to player 2s' choices in game 0, their choices in games 1-4 show outgroup favoritism. The rate of the always-defect strategy DD is at least as high with an ingroup than with an outgroup match (columns 1-2 of bottom panel in Table 3).¹³ This lower rate of DD with an outgroup match is due to player 2s' increased positive reciprocity towards an outgroup match in games 1-4.¹⁴ This outgroup favoritism, while opposite to the findings in earlier studies with near-minimal groups in the lab (Chen and Li 2009), has been reported in studies with natural identities.¹⁵

¹¹For game 0, we also complete a set of analysis for player 2 which includes both rJPM and CC as the two cooperative strategies. As very few subjects play CC, the results do not differ significantly from those reported in the current version.

¹²UM Caucasian player 1s in games 1-4 are significantly more cooperative with an ingroup match (28% with ingroup vs. 18% with outgroup, $p = 0.026$). If we do not correct for misperceptions of the match's ethnicity in the UM data, this effect becomes weakly significant (25% vs. 20%, $p = 0.057$).

¹³The intergroup difference is significant for UM Caucasian player 2s (88% vs. 76%, $p < 0.01$). However, this comparison is not significant if we do not correct the misperceptions of ethnic identities (83% vs. 78%, $p = 0.190$).

¹⁴For UM Caucasian player 2s in the control (games 1-4), when player 1 cooperates, the proportion of cooperation is 10% for an ingroup match and 20% for an outgroup match ($p = 0.001$, one-sided). When player 1 defects, the proportion of cooperation is 16% for an ingroup match and 17% for an outgroup match ($p = 0.156$, one-sided).

¹⁵For example, Friesen, Arifovic, Ludwig, Wright, Giamo and Baray (2011) report outgroup favoritism exhibited by East Asian children in a dictator game.

Table 2: Summary Statistics and Treatment Effects in Game 0

	Player 1: Proportion of Cooperation						Treatment Effects: p-values			
	Control		Ethnic		School		Ethnic vs. Control		School vs. Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UM	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg
Asian	64	41	37	20	40	25	0.101	0.082	0.147	0.177
Caucasian	24	23	41	36	40	25	0.196	0.196	0.175	0.430
UCLA										
Asian	44	29	31	22	27	27	0.194	0.367	0.140	0.473
Caucasian	41	35	36	18	28	33	0.392	0.149	0.239	0.472
UM+UCLA										
Asian	53	36	33	21	33	26	0.060	0.112	0.069	0.228
Caucasian	33	29	39	27	32	29	0.349	0.433	0.463	0.478
	Player 2: Proportion of rJPM						Treatment Effects: p-values			
	Control		Ethnic		School		Ethnic vs. Control		School vs. Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UM	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg
Asian	41	26	45	43	77	76	0.414	0.214	0.016	0.012
Caucasian	69	62	54	73	70	71	0.220	0.269	0.483	0.296
UCLA										
Asian	39	38	38	18	50	50	0.491	0.091	0.289	0.296
Caucasian	50	36	71	67	56	55	0.158	0.109	0.396	0.208
UM+UCLA										
Asian	40	33	42	30	64	64	0.450	0.406	0.038	0.021
Caucasian	57	53	63	70	61	63	0.351	0.120	0.406	0.239

Notes:

- Italicized boldfaced numbers highlight a significant ingroup-outgroup difference ($p \leq 0.05$).
- Boldfaced numbers indicate significant treatment effects ($p \leq 0.05$).

Table 3: Summary Statistics and Treatment Effects in Games 1-4

	Player 1: Proportion of Cooperation						Treatment Effects: p-values			
	Control		Ethnic		School		Ethnic vs. Control		School vs. Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UM	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg
Asian	30	23	38	24	20	19	0.325	0.470	0.260	0.389
Caucasian	28	18	41	39	33	24	0.215	0.070	0.389	0.346
UCLA										
Asian	36	38	24	36	30	18	0.183	0.462	0.305	0.044
Caucasian	33	26	23	20	35	38	0.266	0.320	0.453	0.202
UM+UCLA										
Asian	34	28	30	30	25	18	0.369	0.452	0.201	0.119
Caucasian	31	22	33	30	34	30	0.419	0.225	0.388	0.241
	Player 2: Proportion of DD						Treatment Effects: p-values			
	Control		Ethnic		School		Ethnic vs. Control		School vs. Control	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UM	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg	Ing	Outg
Asian	68	58	67	76	83	90	0.485	0.122	0.144	0.028
Caucasian	88	76	92	93	90	85	0.355	0.018	0.441	0.218
UCLA										
Asian	85	80	63	52	50	44	0.043	0.066	0.015	0.027
Caucasian	55	50	71	69	61	70	0.192	0.124	0.363	0.113
UM+UCLA										
Asian	76	71	65	64	66	69	0.126	0.292	0.190	0.457
Caucasian	67	67	81	83	71	77	0.131	0.061	0.376	0.156

Notes:

- Italicized boldfaced numbers highlight a significant ingroup-outgroup difference ($p \leq 0.05$).
- Boldfaced numbers indicate significant treatment effects ($p \leq 0.05$).

Nevertheless, since we are primarily interested in how different identity priming influences individual choices and their intergroup preferences, these findings in the control sessions serve as a benchmark for the analysis of the treatment effects of ethnic and school priming.

3.2 Ethnic Priming: Fragmenting Identities

This subsection investigates behavioral changes in the ethnic priming treatment relative to the control sessions. Recall subjects in both treatments are given information on the match's ethnicity. The only difference is that the pre-survey in the ethnic priming treatment is used to activate ethnic identities, whereas that in the control is designed to be identity neutral. We focus on the treatment effect, i.e., how ethnic priming, in addition to information on match's ethnicity (surnames/acronyms), influences the way subjects treat ingroup and outgroup as well as intergroup differentials, relative to the control.

Compared to the control sessions, we expect that ingroup favoritism (and outgroup discrimination) will be stronger in the ethnic priming treatment when the ethnicity of participants is made more salient.

Hypothesis 1 (Ethnic Priming). *Compared to the control, players are more cooperative with those from the same ethnic group, and less cooperative with those from the other ethnic group in the ethnic priming treatment.*

Hypothesis 1 implies that, compared to the control, player 1s will cooperate more with an ingroup match in the ethnic priming treatment, whereas player 2s will be more (less) likely to choose rJPM (DD) with an ingroup match in game 0 (games 1-4) under the ethnic priming treatment.

Summary statistics for the ethnic priming treatment are reported in columns 3-4, and the treatment effects in columns 7-8 of Tables 2 (for game 0) and 3 (for games 1-4). Table 2 indicates that Asian player 2s choose rJPM in game 0 more often with ingroup than with outgroup. This observation indicates that, for Asians, the ethnic treatment preserves ingroup favoritism and outgroup discrimination for the coordination game found in the control. The ethnic priming also influences the ingroup-outgroup gap relative to the control - the gap significantly increases for UCLA Asian player 2s as a result of the ethnic priming. This leads to Result 1.

Result 1 (Ethnic Priming on Coordination: Asians). *In the ethnic priming treatment, Asian player 2s are significantly more likely to choose rJPM in game 0 with an ingroup than with an outgroup match. Furthermore, compared to the control sessions, this intergroup difference is significantly stronger for UCLA Asian player 2s.*

Support. *Table 2 indicates that Asian player 2s (UM+UCLA) choose rJPM in game 0 more often with ingroup than with outgroup (42% vs. 30%, $p = 0.035$).¹⁶ Ethnic priming makes UCLA Asian player 2s differentially more likely to choose rJPM in game 0 with an ingroup than with an outgroup match (38% vs. 18%, $p = 0.006$), compared to the control (39% vs. 38%). For the treatment effect, the one-sided p -value of the difference-in-difference analysis is 0.031.*

Result 1 indicates that, in the coordination game (game 0), ethnic priming exacerbates the intergroup gap compared to the control for Asian player 2s. We now turn to games 1-4, each of

¹⁶This effect is stronger if UM economic graduate students and postdocs are excluded (43% vs. 28%, $p = 0.012$).

which has a unique Nash equilibrium. Table 3 indicates that in games 1-4 ethnic priming makes UM player 2s more likely to choose DD strategy with an outgroup than with an ingroup match, increasing the degree of discrimination against the outgroup and hence reversing their outgroup favoritism in the control. Specifically, in the UM experiment, the likelihood to choose DD with outgroup increases from 58% in the control to 76% in the ethnic priming treatment by Asian player 2s (from 53% to 83% if economics graduate students/post-doc are excluded, $p = 0.017$), and increases from 76% to 93% by Caucasian player 2s ($p = 0.018$). In the UCLA experiment, the ethnic priming tends to enhance ingroup favoritism - the likelihood to choose DD with ingroup decreases from 85% in the control to 63% in the ethnic priming treatment by Asian player 2s ($p = 0.043$). In addition, the ethnic priming significantly increases UM Asian player 2s' intergroup differentials - in favor of ingroup - in cooperation, which leads to Result 2.

Result 2 (Ethnic Priming on Cooperation: UM Asians). *Ethnic priming makes UM Asian player 2s differentially more likely to choose DD with an outgroup than with an ingroup match (76% vs. 67%), compared to the control (58% vs. 68%). This effect is stronger if economics graduate students and postdocs are excluded.*

Support. *One-sided p-value in the difference-in-difference analysis is 0.075. When we exclude the economic graduate students and post-doc who choose to defect most time regardless the matching type, the rate of choosing DD with ingroup (outgroup) becomes 63% (53%) in control, and 66% (83%) in the ethnic treatment ($p = 0.021$, difference-in-difference analysis). In this case, the increase in intergroup differentials is primarily driven by the sharp increase in the choice of DD with outgroup ($p = 0.017$).*

In sum, compared to the control, while ethnic priming increases ingroup favoritism and outgroup discrimination for Asians and Caucasians alike, statistically significant impact is found only for Asians. Thus, we reject the null in favor of Hypothesis 1 for Asians. Analysis in this subsection suggests that Asians' social identities may be more malleable compared to Caucasians.

3.3 School Priming: Common Identity

We next evaluate how school identity priming influences individual behavior compared to the control sessions. Recall the common identity prime, implemented in the pre-survey, is designed to subtly activate individual's common identity of being part of her university. We again focus on the treatment effect, i.e., how school identity priming, in addition to the information on a match's ethnicity, influences ingroup favoritism, outgroup discrimination, and intergroup differentials, relative to the control.

In the school priming treatment, we expect less intergroup bias compared to the control. More specifically, we expect to observe an overall increase of cooperation for player 1s and an increase (decrease) of the rational joint-payoff-maximizing (always-defect) strategy for player 2s in game 0 (games 1-4).

Hypothesis 2 (School Priming). *Compared to the control, in the school priming treatment, a player will be more cooperative with an ingroup and an outgroup match.*

Hypothesis 2 implies that, compared to the control, in the school priming treatment, player 1 will be more likely to cooperate with an ingroup and an outgroup match. For player 2, the

likelihood of adopting the rational joint-payoff-maximizing (DD) strategy increases (decreases) from the control to the school priming treatment in game 0 (games 1-4).

Summary statistics for the school priming treatment are reported in columns 5-6, and the treatment effects in last two columns of Tables 2 (for game 0) and 3 (for games 1-4). A comparison between columns 5-6 with 1-2 in the upper panel of Tables 2 and 3 indicates that there is no treatment effect for player 1s, except that UCLA Asians cooperate less with an outgroup match in the treatment than in the control ($p = 0.044$, column 10 in Table 3). However, a comparison between columns 5-6 with 1-2 in the lower panel of Table 2 reveals positive treatment effects. We find that the likelihood that player 2s choose rJPM in game 0 increases for both the ingroup and outgroup matching, from the control to the school priming treatment. We also find that the ingroup-outgroup gap in the proportion of rJPM reduces from 7% in the control to zero in the school priming treatment for Asians. This suggests that, for Asians, common identity priming is effective in enhancing ingroup favoritism while alleviating outgroup discrimination, which consequently reduces the degree of intergroup discrimination. The impact of school identity priming is statistically significant for Asian player 2s, which leads to Result 3.¹⁷

Result 3 (School Priming on Coordination: Asians). *The common school identity priming makes Asian player 2s significantly more likely to choose rJPM in game 0 for ingroup matching (64% compared to 40% in control; $p = 0.038$), and for outgroup matching (64% compared to 33% in control; $p = 0.021$).*

By Result 3, we reject the null in favor of Hypothesis 2 for Asians in the coordination game. Compared to the impact of school priming on coordination in game 0, its impact on cooperation in games 1-4 is more complex. Pooling data from both schools yields no statistically significant results, as school priming impacts UM and UCLA Asians differently. Specifically, Asian player 2s react to school priming in opposite ways at UM and UCLA (Table 3 lower panel). We will first summarize the results and then try to identify possible reasons behind the difference in results.

Result 4 (School Priming on Cooperation: UCLA Asians). *In games 1-4, the common school identity priming makes UCLA Asian player 2s significantly less likely to choose the always-defect strategy (DD) for both the ingroup (50% compared to 85% in control, $p = 0.015$) and the outgroup match (44% compared to 80% in control, $p = 0.027$). The proportion of DD reduces significantly from 82% in the control to 48% in this treatment ($p = 0.022$).*

Result 5 (School priming on Cooperation: UM Asians). *The common school identity priming makes UM Asian player 2s significantly more likely to choose the always-defect strategy (DD) for both the ingroup (83% compared to 68% in control, $p = 0.144$) and the outgroup match (90% compared to 58% in control, $p = 0.028$). The proportion of DD increases from 63% in the control to 87% in the treatment ($p = 0.049$).¹⁸*

¹⁷Results continue to hold if UM economic graduate students/postdoc are excluded. The likelihood for them to choose rJPM significantly increase for ingroup (47% in control vs. 75% in school priming; $p = 0.086$) and outgroup matches (29% vs. 74%; $p = 0.036$). The intergroup difference reduces from 18% to 1%, and the average increases from 38% to 74% ($p = 0.021$).

¹⁸Result 5 still holds even when economics graduate students/post-doc are excluded. In games 1-4, school priming significantly increases UM Asian player 2s' choice of DD for ingroup (85% vs. 63% in the control, $p = 0.062$) and outgroup (86% vs. 53% in the control, $p = 0.056$). The average likelihood of DD increases from 58% in the control to 85% ($p = 0.041$).

Results 4 and 5 show that Asian player 2s react to the school priming differently at the two universities. While it makes UCLA Asian player 2s more cooperative, it makes UM Asian player 2s more competitive, compared to their counterparts in the control sessions. Social psychology research shows that when social identities are primed, individual behavior tends to conform to stereotypes (i.e., some innate statistical models of characteristics or behaviors) of the social categories associated with the primed identities (Shih et al. 1999). We thus conjecture that, while subtly activating a common identity, the school identity priming may also introduce *school specific* cues for behavior (e.g., being competitive) that subsequently influence individual decisions.

This conjecture is formulated based on subject responses to post-experiment survey question of why they chose to attend their university. Among Asian player 2s, 64% at UM report that they chose UM for academic reasons, such as good programs, reputation, and high ranking, significantly higher than the corresponding 20% at UCLA ($p = 0.044$, one-sided χ^2 test), where a substantially higher proportion refer to nonacademic reasons, such as location, food and in-state tuition. Statistics on individual perceptions are also consistent with this conjecture. In the post-experiment survey, subjects are asked to report, on a 1 to 7 Likert scale, their perceptions of the *competitiveness* of each ethnicity. UM Asians report 6.27 for Asians in the school priming treatment, significantly higher than the 5.4 in the control ($p = 0.05$, one-sided Wilcoxon rank-sum test). By contrast, UCLA Asians report 5.40 for Asians in the school priming treatment, comparable to the 5.45 in the control. In other words, the school identity priming may have influenced the ethnic stereotype of being competitive, particularly among UM Asians. In the analysis below, we use probit regressions to study determinants of player 2 choices of DD in games 1-4. We are interested in how perceptions of one's own ethnicity being competitive (coded as *SelfCompetitiveness*) interacts with school priming, and whether the interaction effects can explain the discrepancy between Results 4 and 5.¹⁹

Results are reported in Table 4 separately for UM (column 1 for Asian player 2s, and column 2 for Caucasian player 2s) and UCLA (column 3 for Asian and column 4 for Caucasian). We pool data from the control and the school priming treatment for each university. The dependent variable is the likelihood of player 2s choosing the always-defect strategy DD. The independent variables include the school priming treatment dummy (the control in the omitted category), the ingroup matching dummy, their interaction, the *SelfCompetitiveness* variable and its interaction with the school treatment dummy. We also control for gender, age and game fixed effects. Standard errors are clustered at the individual level. Results hold if the economics graduate students/post-doc are excluded from the UM data.

Result 6 (Stereotypes). *In games 1-4, school priming significantly alleviates the negative effect of the competitiveness stereotype on cooperation by UCLA Asian player 2s, but enhances this negative effect on cooperation by UM Asian player 2s.*

Support. *The effect of SelfCompetitive in column 3 of Table 4 (0.422, $p < 0.10$) suggests that in the control, UCLA Asian player 2s who perceive Asians to be competitive are more likely to act competitively by choosing DD in games 1-4. The impact of the self perception of competitiveness is largely offset by school priming, as shown by the interaction effect of School \times SelfCompetitive -0.620 ($p < 0.05$). In contrast, school priming at UM (unexpectedly) triggers Asian subjects' self*

¹⁹The *SelfCompetitiveness* stereotype has the strongest predictive power among all stereotype variables. It takes on a value between 1 and 7, depending on subject's belief about the competitiveness of her own ethnic group.

Table 4: Effects of School Priming on Stereotypes: Games 1-4

	Likelihood of Always Defect (DD)			
	UM		UCLA	
	(1) Asian	(2) Caucasian	(3) Asian	(4) Caucasian
School Priming	-4.917** (2.485)	-0.770 (2.045)	2.273 (1.675)	2.225 (1.360)
Ingroup	-0.034 (0.307)	0.462** (0.189)	0.251 (0.186)	0.008 (0.230)
School×Ingroup	-0.209 (0.506)	-0.126 (0.174)	-0.015 (0.239)	-0.157 (0.246)
SelfCompetitive	-0.090 (0.239)	0.091 (0.320)	0.422* (0.228)	0.227 (0.199)
School×SelfCompetitive	0.993** (0.447)	0.200 (0.388)	-0.620** (0.302)	-0.377 (0.287)
Women	0.440 (0.495)	-1.115** (0.478)	0.454 (0.525)	0.684 (0.454)
Age	0.071 (0.062)	-0.014 (0.069)	0.037 (0.192)	-0.097 (0.184)
Game2	0.314 (0.192)	0.148 (0.304)	0.144 (0.133)	0.091 (0.239)
Game3	-0.175 (0.114)	-0.030 (0.297)	0.138 (0.172)	-0.062 (0.193)
Game4	0.177 (0.161)	0.233 (0.313)	0.103 (0.143)	-0.063 (0.211)
Observations	316	280	336	304
Log Pseudo L.	-137.551	-118.132	-173.845	-177.169
Pseudo R^2	0.216	0.079	0.197	0.135

Notes:

- a. Robust standard errors in parentheses are clustered at the individual level.
- b. Significant at: * 10-percent level; ** 5-percent level; *** 1-percent level.

*perception of competitiveness, as suggested by the interaction effect of School×SelfCompetitive (0.993, $p < 0.05$), leading to higher rate of DD by Asian player 2s in the school treatment relative to control.*²⁰

While Result 3 reports the positive impact of UM school priming on coordination for Asians player 2s in game 0, Result 5 reports its negative impact on cooperation in games 1-4. The two results, however, do not contradict each other. As discussed earlier, the net influence of school priming depends on two competing factors: the common identity that may improve the level of cooperation and coordination, and individual perception of self-competitiveness triggered by the school identity priming at UM. Which of the two forces dominates depends on the game structure. For example, it is costless for player 2s to choose rJPM over DD in game 0, but it is costly, on absolute terms, for them to do so in games 1-4. So the payoff structure in games 1-4 leaves room for Asian player 2s, who believe Asians to be more competitive than their counterparts in control do, to act competitively by choosing DD to maximize own payoffs. By contrast, the payoff structure in game 0 makes player 2s less likely to be affected by such competitiveness stereotype, since the cost is zero for them to act pro-socially. Thus, the effect of common identity dominates, which leads to an increase in the rate of coordination. It is worth noting that this positive impact of school identity priming on coordination survives despite a relative payoff disadvantage that player 2s have to face when choosing rJPM.

Overall, our results suggest that the impact of common identity priming depends crucially on the incentive structure, as well as organization-specific stereotypes triggered for each social group. Thus, while the social psychology literature focuses on the positive effects of a common ingroup identity (Cunningham 2005), our study suggests that its effects might be incentive, institution and stereotype specific. Further, in both the UM and UCLA experiments, Asians are generally responsive to both the ethnic identity and common identity priming, but Caucasians are not. It remains an open question whether minorities tend to be more responsive to identity priming.

4 Discussions

As the workforce becomes increasingly diverse, organizations more frequently encounter the issue of motivating individuals from different backgrounds to work together towards a common goal. Our paper investigates the effects of priming a fragmenting (ethnic) versus a common organization identity on coordination and cooperation among Asian and Caucasian students in a controlled laboratory experiment.

We have several new findings. First, priming a fragmenting (ethnic) identity has a significant impact on the intergroup preference for Asians compared to the control, increasing both their ingroup favoritism and their outgroup discrimination, while it has no effect on Caucasians. Moreover, priming a common (school) identity reduces group bias for Asians in the coordination game, resulting in a significant increase in both ingroup and outgroup cooperation. However, in games with a unique inefficient Nash equilibrium, the effects of priming a common identity are more complex. While priming alleviates the negative effects of the competitiveness stereotype on cooperation among UCLA Asians, it enhances such negative effects among UM Asians. This result

²⁰For UCLA Asians, the marginal effects are 0.114 for SelfCompetitive and -0.166 for School×SelfCompetitive. For UM Asians, the marginal effects are -0.028 and 0.193, respectively.

suggests that identity priming might work through its interaction with the activated stereotypes. Lastly, in both our treatments, Asians are responsive to priming, while Caucasians are not. It remains an open question whether minorities might be more responsive to identity priming than majorities. To answer this question, more studies are needed to investigate behavior among other ethnic groups.

This paper suggests that Asians, especially first-generation immigrants (UM), are more likely to be influenced by intergroup preferences than are Caucasians. In addition, the findings suggest that their identities are malleable, which consequently influences their behavior. Since first-generation Asians are more responsive to both fragmenting and common identity priming, our results offer new insights into socializing new immigrants.

Immigrants have become a substantial and increasingly important segment of the labor force in the United States and many other parts of the world. In 2004, one in seven workers in the United States, i.e., more than 21 million workers, were foreign born. These foreign-born workers accounted for more than half of the growth of the U.S. labor force during the past decade. Among these foreign-born workers, 40 percent come from Mexico and Central America, 25 percent from Asia, and the rest from the Western Hemisphere and Europe. More than 30 percent held bachelor's or more advanced degrees. Due to the native-born baby-boomers' exit from the labor force and the injection of these immigrant workers into the labor force, workplaces will continue to become more diverse. The U.S. Congressional Budget Office predicts that "[u]nless native fertility rates increase, it is likely that most of the growth in the U.S. labor force will come from immigration by the middle of the century."

Although economic assimilation of immigrants, i.e., the change in the wage gap between immigrant and native-born workers (Borjas 1994, 1999), has been extensively studied in labor economics, immigrant social assimilation, especially at workplaces, has been significantly understudied.²¹ This study underscores the importance to understand the factors that influence immigrant workers' social assimilation and the impact on their social interactions with others at workplaces. It also has important policy implications for organizational management. For example, building employees' common identity in an organization may serve as an identity-based mechanism to raise the cooperation and coordination level among employees in strategic environments and, consequently, increase the overall productivity of the organization. Organizations may also benefit from helping their immigrant workers' social assimilation process and promoting social networking across ethnic lines, or between native-born and foreign-born workers within the organizations.

It would be interesting for future research to study the impact of these policies on behaviors by workers from other ethnic groups (e.g., workers from Mexico and Central America), and to study whether the results can be generalized beyond ethnic lines to other "group" contexts at diverse workplaces, such as gender groups or different professional groups. Finally, we hope to extend this study to the field, and investigate the extent to which organizational policy design that focuses on common identity building may influence cooperation and coordination among workers.

²¹An exception is Cox and Orman (2010) who study immigrants' trust and trustworthiness in a lab experiment.

Appendix A: Pre-experiment Questionnaire

A.1 Control sessions

We are interested in your opinions and experiences about certain aspects of young adult life.

1. Name: _____ (UM only)
2. Age: _____ (UM: *Mean 23.3, Std Dev 4.3, Median 22, Min 19, Max 42*) (UCLA: *Mean 19.8, Std Dev 1.6, Median 19, Min 17, Max 24*)
3. Grade/Year:
 - (a) Freshmen (UM: 0%) (UCLA: 42.5%)
 - (b) Sophomore (UM: 0%) (UCLA: 17.5%)
 - (c) Junior (UM: 17.5%) (UCLA: 17.5%)
 - (d) Senior (UM: 30%) (UCLA: 17.5%)
 - (e) > 4 years (UM: 5%) (UCLA: 2.5%)
 - (f) Graduate student (UM: 47.5%) (UCLA: 2.5%)
4. How often do you watch television?
 - (a) every day (UM: 17.5%) (UCLA: 20%)
 - (b) 4 – 5 times a week (UM: 22.5%) (UCLA: 15%)
 - (c) 2 – 3 times a week (UM: 22.5%) (UCLA: 32.5%)
 - (d) a few times a month (UM: 25%) (UCLA: 17.5%)
 - (e) a few times a year (UM: 5%) (UCLA: 5%)
 - (f) rarely if ever (UM: 5%) (UCLA: 10%)
 - (g) Never (UM: 2.5%) (UCLA: 0%)
5. Do you have cable television?
 - (a) yes (UM: 70%) (UCLA: 67.5%)
 - (b) no (UM: 30%) (UCLA: 32.5%)
6. How often do you eat out?
 - (a) every day (UM: 7.5%) (UCLA: 2.5%)
 - (b) 4 – 5 times a week (UM: 12.5%) (UCLA: 2.5%)
 - (c) 2 – 3 times a week (UM: 27.5%) (UCLA: 42.5%)
 - (d) a few times a month (UM: 42.5%) (UCLA: 45%)
 - (e) a few times a year (UM: 7.5%) (UCLA: 5%)
 - (f) rarely if ever (UM: 0%) (UCLA: 2.5%)

(g) Never (UM: 2.5%) (UCLA: 0%)

7. How often do you attend movies?

(a) every day (UM: 0%) (UCLA: 0%)

(b) 4 – 5 times a week (UM: 0%) (UCLA: 0%)

(c) 2 – 3 times a week (UM: 2.5%) (UCLA: 2.5%)

(d) a few times a month (UM: 32.5%) (UCLA: 15%)

(e) a few times a year (UM: 52.5%) (UCLA: 70%)

(f) rarely if ever (UM: 7.5%) (UCLA: 12.5%)

(g) Never (UM: 5%) (UCLA: 0%)

A.2 Ethnic Priming Treatment

We are interested in your opinions and experiences about certain aspects of young adult life.

1. Name: _____ (UM only)

2. Age: _____ (UM: *Mean 23.8, Std Dev 4.6, Median 22, Min 18, Max 40*) (UCLA: *Mean 20, Std Dev 1.4, Median 20, Min 18, Max 23*)

3. Grade/Year:

(a) Freshmen (UM: 2.6%) (UCLA: 27.5%)

(b) Sophomore (UM: 12.8%) (UCLA: 30%)

(c) Junior (UM: 5.1%) (UCLA: 25%)

(d) Senior (UM: 18%) (UCLA: 12.5%)

(e) > 4 years (UM: 10.3%) (UCLA: 5%)

(f) Graduate student (UM: 51.3%) (UCLA: 0%)

4. Ethnicity:

(a) African

(b) Asian (UM: 48.7%) (UCLA: 55%)

(c) European (UM: 51.3%) (UCLA: 35%)

(d) Hispanic

(e) Native

(f) other (UCLA: 10%)

if it is other, please specify: _____

5. How many generations has your family lived in America?

- (a) First Generation (UM: 48.7%) (UCLA: 30%)
 - (b) Second Generation (UM: 35.9%) (UCLA: 30%)
 - (c) More than Two Generations (UM: 15.4%)(UCLA: 40%)
6. From which countries did you family originate? _____
7. What languages do you speak? _____
8. Are you involved in any student organizations?
- (a) yes (UM: 46.2%) (UCLA: 82.5%)
 - (b) no (UM: 53.9%) (UCLA: 17.5%)
- If yes, which ones? _____

A.3 School Priming Treatment

We are interested in your opinions and experiences about certain aspects of young adult life.

1. Name: _____ (UM only)
2. Age: _____ (UM: Mean 22.2, Std Dev 3.0, Median 21, Min 18, Max 30) (UCLA: Mean 20.1, Std Dev 1.4, Median 20, Min 18, Max 24)
3. Grade/Year:
- (a) Freshmen (UM: 0%) (UCLA: 30%)
 - (b) Sophomore (UM: 18.9%) (UCLA: 17.5%)
 - (c) Junior (UM: 10.8%) (UCLA: 25%)
 - (d) Senior (UM: 35.1%) (UCLA: 20%)
 - (e) > 4 years (UM: 0%) (UCLA: 2.5%)
 - (f) Graduate student (UM: 35.1%) (UCLA: 5%)
4. School: _____
5. Did you consider any other schools?
- (a) yes (UM: 62.2%) (UCLA: 77.5%)
 - (b) no (UM: 37.8%) (UCLA: 22.5%)
- If yes, what other schools? _____
6. Why did you decide to choose your specific school? _____

Appendix B: Experimental Instruction

This is an experiment in decision making. You will be asked to fill out a survey at the beginning of the experiment. You will then make a series of decisions, and fill out another survey at the end of the experiment.

The amount of money you earn will depend upon the decisions you make and on the decisions other people make. In addition, you will be paid \$5 for participation. Everyone will be paid in private and you are under no obligation to tell others how much you earned.

Please do not communicate with each other during the experiment. If you have a question, feel free to raise your hand, and an experimenter will come to help you.

Roles: This experiment has 8 participants, four of whom are player As and the other four are player Bs. Your assigned role will be the same for all the games. Therefore, if you are a player A, you will always be a player A. Similarly, if you are a player B, you will always be a player B.

Matching: In each of the four rounds, a player A will be matched with a player B. You will never be matched with the same player twice.

Procedure: In each of the four rounds, both players A and B will make decisions on each of five games. The outcome of each game depends on the decisions of both players.

For instance, in the Example for Review Questions on the next page, player A moves first, by choosing A1 or A2. After A makes a decision, A will be asked to guess what B will choose.

Without knowing A's decision, player B will be asked to first guess what player A has chosen. Then player B decides whether to choose B1 or B2 under each of two scenarios: (1) Player A chooses A1; (2) Player A chooses A2.

Payoff for each game is determined by both players' decisions. For example, if player A chooses A1, and player B's decision is B2 if A chooses A1, and B1 if A chooses A2, the outcome of the game is (A1, B2), with payoffs 40 for A and 30 for B. Note that all of A's decisions and payoffs are in red, while B's are in blue.

In addition, a player earns 2 points for each correct guess. For example, if player A's guess is that B will choose B2. If it turns out to be correct, A will get 2 points. Otherwise, A will get zero point.

Feedback: You will not get any feedback after each game. At the very end of the experiment, you will be shown a history screen, with your decisions, your match's decisions, the accuracy of your guesses, and your payoff for each of the twenty games.

Total Payoffs: In each of the four rounds, your payoff will be the sum of your payoffs in all five games. Your total payoff will be the sum of your payoffs in all four rounds, i.e., in all 20 games. Your earnings are given in points. At the end of the experiment you will be paid based on the following exchange rate:

\$1 = 8 points.

In addition, you will be paid \$5 for participation, and 25 cents for answering each of the review questions correctly.

Review Questions: To help you understand the game, we will go over a number of review questions about the following made-up example. Each correct question is worth 2 points.

1. If Player A chooses A1, and player B chooses B1 when A chooses A1, A's payoff is _____, and B's payoff is _____.

2. If Player A chooses A1, and player B chooses B2 when A chooses A1, A's payoff is _____, and B's payoff is _____.
3. If Player A chooses A2, and player B chooses B1 when A chooses A2, A's payoff is _____, and B's payoff is _____.
4. If Player A chooses A2, and player B chooses B2 when A chooses A2, A's payoff is _____, and B's payoff is _____.
5. Player B guessed that Player A had chosen A1.
If Player A actually chooses A1, Player B's payoff from her guess is _____ points.
If Player A actually chooses A2, Player B's payoff from her guess is _____ points.
6. True or False: you are always matched with the same player throughout the Experiment.
 - (a) True
 - (b) False

Please raise your hand if you are finished with the review questions. An experimenter will come over and grade it. Please check that you have written down your name and ID number on the first page.

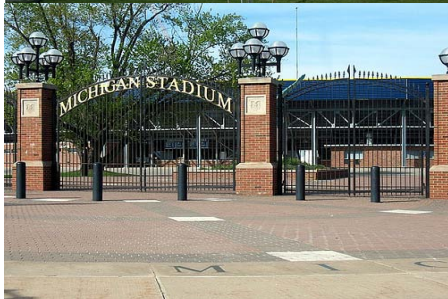


Pictures in the control



Pictures in the ethnic identity treatment

Figure 3: Priming Pictures: Control/Ethnic Priming



Pictures in the UM identity treatment



Pictures in the ULCA identity treatment

Figure 4: Priming Pictures: School Priming

Appendix C: Post-experiment Questionnaire

1. Please write five statements in answer to the question: “ Who am I?”
2. Gender
 - (a) Male (UM: 43.1%) (UCLA: 44.2%)
 - (b) Female (UM: 56.9%) (UCLA: 55.8%)
3. Ethnicity:
 - (a) African (UM: 0.9%) (UCLA: 0%)
 - (b) Asian (UM: 48.3%) (UCLA: 50.8%)
 - (c) European (UM: 48.3%) (UCLA: 35.8%)
 - (d) Hispanic (UM: 0%) (UCLA: 0%)
 - (e) Native (UM: 1.7%) (UCLA: 0%)
 - (f) other (UM: 0.9%) (UCLA: 13.3%)

if it is other, please specify: _____
4. From which countries did you family originate?
5. What do you think is the experiment about?
6. How common do you think these stereotypes are in society?
 - (a) Asian Americans are strategic (UM: *Mean 5.1, Std Dev 1.4, Median 5, Min 1, Max 7*) (UCLA: *Mean 4.7, Std Dev 1.6, Median 5, Min 1, Max 7*)
 - (b) Asian Americans are trustworthy (UM: *Mean 4.0, Std Dev 1.4, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.1, Std Dev 1.4, Median 4, Min 1, Max 7*)
 - (c) Asian Americans are cooperative (UM: *Mean 4.3, Std Dev 1.7, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.3, Std Dev 1.5, Median 4, Min 1, Max 7*)
 - (d) Asian Americans are naive (UM: *Mean 3.5, Std Dev 1.6, Median 3, Min 1, Max 7*) (UCLA: *Mean 3.8, Std Dev 1.6, Median 4, Min 1, Max 7*)
 - (e) Asian Americans are sneaky (UM: *Mean 3.8, Std Dev 1.5, Median 4, Min 1, Max 7*) (UCLA: *Mean 3.9, Std Dev 1.6, Median 4, Min 1, Max 7*)
 - (f) Asian Americans are competitive (UM: *Mean 5.9, Std Dev 1.4, Median 6, Min 1, Max 7*) (UCLA: *Mean 5.6, Std Dev 1.4, Median 6, Min 1, Max 7*)
 - (g) European Americans are strategic (UM: *Mean 4.0, Std Dev 1.8, Median 4, Min 1, Max 7*) (UCLA: *Mean 5.0, Std Dev 1.6, Median 5, Min 1, Max 7*)
 - (h) European Americans are trustworthy (UM: *Mean 4.2, Std Dev 1.6, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.2, Std Dev 1.6, Median 4, Min 1, Max 7*)

- (i) European Americans are cooperative (UM: *Mean 4.3, Std Dev 1.5, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.4, Std Dev 1.5, Median 4, Min 1, Max 7*)
 - (j) European Americans are naive (UM: *Mean 3.4, Std Dev 1.6, Median 3.5, Min 1, Max 7*) (UCLA: *Mean 3.7, Std Dev 1.6, Median 4, Min 1, Max 7*)
 - (k) European Americans are sneaky (UM: *Mean 3.4, Std Dev 1.5, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.0, Std Dev 1.6, Median 4, Min 1, Max 7*)
 - (l) European Americans are competitive (UM: *Mean 4.8, Std Dev 1.3, Median 5, Min 1, Max 7*) (UCLA: *Mean 5.2, Std Dev 1.6, Median 5, Min 1, Max 7*)
7. Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?
- (a) Always trusted (UM: *3.5%*) (UCLA: *1.7%*)
 - (b) Usually trusted (UM: *69.8%*) (UCLA: *68.3%*)
 - (c) Usually not trusted (UM: *24.1%*) (UCLA: *25.8%*)
 - (d) Always not trusted (UM: *2.6%*) (UCLA: *4.2%*)
8. How many siblings do you have: _____
(UM: *Mean 1.3, Std Dev 1.3, Median 1, Min 0, Max 7*) (UCLA: *Mean 1.3, Std Dev 1.0, Median 1, Min 0, Max 6*)
9. How trusting are you?
- (a) Always trusting (UM: *16.4%*) (UCLA: *10%*)
 - (b) Usually trusting (UM: *66.4%*) (UCLA: *65%*)
 - (c) Usually not trusting (UM: *16.4%*) (UCLA: *25%*)
 - (d) Always not trusting (UM: *0.9%*) (UCLA: *0%*)
10. There should be diversity programs to level the playing field for people from minority groups
- (a) Agree (UM: *73.3%*) (UCLA: *45%*)
 - (b) Disagree (UM: *26.7%*) (UCLA: *55%*)
11. We should not allow special treatment based on race or gender. Merit should be the sole criteria
- (a) Agree (UM: *67.2%*) (UCLA: *79.2%*)
 - (b) Disagree (UM: *32.8%*) (UCLA: *20.8%*)
12. Please write down the *Last *Name of your ten friends:
13. How strong is your University of Michigan (UCLA) school spirit?(UM: *Mean 5.3, Std Dev 1.8, Median 6, Min 1, Max 7*) (UCLA: *Mean 4.7, Std Dev 1.9, Median 5, Min 1, Max 7*)

14. During the experiment, how much did you pay attention to who your partner was? (UM: *Mean 3.0, Std Dev 2.0, Median 2, Min 1, Max 7*) (UCLA: *Mean 2.9, Std Dev 1.7, Median 3, Min 1, Max 7*)
15. During the experiment, I tried to maximize my own payoffs. (UM: *Mean 5.7, Std Dev 1.7, Median 6, Min 1, Max 7*) (UCLA: *Mean 5.5, Std Dev 1.6, Median 6, Min 1, Max 7*)
16. During the experiment, I tried to maximize joint payoffs. (UM: *Mean 3.7, Std Dev 1.9, Median 4, Min 1, Max 7*) (UCLA: *Mean 4.0, Std Dev 1.9, Median 4, Min 1, Max 7*)
17. For player As, during the experiment, if I chose A1 (the more generous option), I hoped player B would see it as a sign of trust and reciprocate.
- (a) Agree (UM: *56.7%*) (UCLA: *68.3%*)
 - (b) Disagree (UM: *20.0%*) (UCLA: *13.3%*)
 - (c) Not applicable as I never chose A1(UM: *23.3%*) (UCLA: *18.3%*)
18. For player Bs, during the experiment, if player A chose A1 (the more generous option), I felt I needed to reciprocate
- (a) Agree (UM: *38.3%*) (UCLA: *40.0%*)
 - (b) Disagree (UM: *53.3%*) (UCLA: *53.3%*)
 - (c) Not applicable as A never chose A1(UM: *8.3%*) (UCLA: *6.7%*)
19. Do you know any participants in today's experiment
- (a) Yes (UM: *69.0%*) (UCLA: *19.2%*)
 - (b) No (UM: *31.0%*) (UCLA: *80.8%*)
20. If so, please write down their last name: _____
(UM only)
21. What do you think is the ethnicity of the person with this name? (UM only)
- (a) Chen
 - i. Asian
 - ii. European
 - iii. Other
if it is other, please specify: _____
 - iv. I don't know
- (UM: *overall accuracy 91%; ingroup 85%; outgroup 97%.*)

Acknowledgements:

We thank Jim Andreoni, Robert Gazzale, Uri Gneezy, Nancy Kotzian, Jeff MacKie-Mason, Robert Sandy, Mark Wilhelm, and seminar participants at IUPUI, the University of Michigan, UCSD and the International Meetings of the Economic Science Association (2010 Copenhagen, 2011 Chicago) for helpful discussions and comments, and Brian MacKie-Mason for excellent research assistance. The financial support from the National Science Foundation through grant no. SES-0720943 is gratefully acknowledged.

References

- Allen, Vernon L. and David A. Wilder**, “Categorization, belief similarity, and intergroup discrimination,” *Journal of Personality and Social Psychology*, 1975, 32, 971–977.
- Andreoni, James and Ragan Petrie**, “Public goods experiments without confidentiality: a glimpse into fund-raising,” *Journal of Public Economics*, 2004, 88 (7-8), 1605 – 1623.
- Aronson, Joshua, Diane M. Quinn, and Steven Spencer**, “Stereotype threat and the academic underperformance of minorities and women,” in Janet K. Swim and Charles Stangor, eds., *Prejudice: The targets perspective*, New York: Academic Press, 1998.
- Ball, J R**, “‘Space missions’ Focus on Team Building,” *The Greater Baton Rouge Business Report*, March 1999, 17 (15), 31.
- Bargh, John A.**, “What have we been priming all these years? On the development, mechanisms, and ecology of nonconscious social behavior,” *European Journal of Social Psychology*, 2006, 36, 147168.
- and **Tanya L. Chartrand**, “The unbearable automaticity of being,” *American Psychologist*, 1999, 54, 462–479.
- Bargh, John, Mark Chen, and Lara Burrows**, “Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action,” *Journal of Personality and Social Psychology*, 1996, 71, 230–244.
- Benbow, Camilla Persson**, “Sex differences in mathematical reasoning ability in intellectually talented preadolescents: Their nature, effects, and possible causes,” *Behavioral and Brain Sciences*, 1995, 11, 169–232.
- Benjamin, Daniel J., James J. Choi, and A. Joshua Strickland**, “Social Identity and Preferences,” *American Economic Review*, September 2010, 100 (4), 1913–1928.
- Blatt, Ruth and Carl T. Camden**, “Positive relationships and cultivating community,” in Jane E. Dutton and Belle Rose Ragins, eds., *Exploring positive relationships at work: Building a theoretical and research foundation*, Mahwah, NJ: Lawrence Erlbaum Associates, 2006, pp. 243–264.
- Borjas, George**, “The economics of immigration,” *Journal of Economic Literature*, 1994, 32, 1667–1717.
- , “The economic analysis of immigration,” in Orley Ashenfelter and David E. Card, eds., *Handbook of Labor Economics*, Amsterdam: North Holland, 1999.
- Brewer, Marilyn B.**, “Ingroup bias in the minimal intergroup situation: A cognitive-motivational analysis,” *Psychological Bulletin*, 1979, 86, 307–324.
- , “The Psychology of Prejudice: Ingroup Love and Outgroup Hate?,” *Journal of Social Issues*, 1999, 55 (3), 429–444.

- Camerer, Colin F. and Ulrike Malmendier**, “Behavioral Organizational Economics,” in Peter Diamond and Hannu Vartiainen, eds., *Behavioral Economics and Its Applications*, Princeton and Oxford: Princeton University Press, 2007.
- Charness, Gary, Luca Rigotti, and Aldo Rustichini**, “Individual behavior and group membership,” *American Economic Review*, September 2007, 97, 1340 – 1352.
- Chatman, Jennifer A., Jeffrey T. Polzer, Sigal G. Barsade, and Margaret A. Neale**, “Being different yet feeling similar: The influence of demographic composition and organizational culture on work processes and outcomes,” *Administrative Science Quarterly*, 1998, 43, 741–780.
- Chen, Mark and John A. Bargh**, “Nonconscious behavioral confirmation processes: The self-fulfilling consequences of automatic stereotype activation,” *Journal of Experimental Social Psychology*, 1997, 33, 541–560.
- Chen, Roy and Yan Chen**, “The Potential of Social Identity for Equilibrium Selection,” *American Economic Review*, October 2011, 101 (6), 2562–2589.
- Chen, Yan and Sherry Xin Li**, “Group Identity and Social Preferences,” *American Economic Review*, March 2009, 99 (1), 431–457.
- Cheryan, Sapna, Victoria C. Plaut, Paul G. Davies, and Claude M. Steele**, “Ambient belonging: How stereotypical cues impact gender participation in computer science,” *Journal of Personality and Social Psychology*, December 2009, 97 (6), 1045–1060.
- Cox, James and Wafa Orman**, “Immigrant Assimilation, Trust and Social Capital,” 2010. IZA Discussion Paper No. 5063.
- Croizet, Jean-Claude and Theresa Claire**, “Extending the concept of stereotype threat to social class: The intellectual underperformance of students from low socioeconomic backgrounds,” *Personality and Social Psychology Bulletin*, 1998, 24, 588–594.
- Crosby, Faye, Stephanie Bromley, and Leonard Saxe**, “Recent unobtrusive studies of black and white discrimination and prejudice: a literature review,” *Psychological Bulletin*, 1980, 87, 546–563.
- Croson, Rachel T. A., Melanie B. Marks, and Jessica Snyder**, “Groups Work for Women: Gender and Group Identity in the Provision of Public Goods,” *Negotiation Journal*, October 2008, 24 (4), 411–427.
- Cunningham, George B.**, “The importance of a common in-group identity in ethnically diverse groups,” *Group Dynamics: Theory, Research and Practice*, 2005, 9, 251–260.
- Deaux, Kay**, “Social Identification,” in E. Tory Higgins and Arie W. Kruglanski, eds., *Social Psychology: Handbook of Basic Principles*, New York: The Guilford Press, 1996.
- Dovidio, John F., Samuel L. Gaertner, and Tamar Saguy**, “Commonality an the complexity of we: Social attitudes and social change,” *Personality and Social Psychology Review*, 1980, 13, 3–20.
- Eckel, Catherine C. and Philip J. Grossman**, “Managing Diversity by Creating Team Identity,” *Journal of Economic Behavior & Organization*, November 2005, 58 (3), 371–392.
- Fehr, Ernst and Simon Gächter**, “Cooperation and punishment in public goods experiments,” *American Economic Review*, 2000, 90, 980–994.
- Fershtman, Chaim and Uri Gneezy**, “Discrimination in a Segmented Society: An Experimental Approach,” *Quarterly Journal of Economics*, February 2001, 116 (1), 351–377.
- Fischbacher, Urs**, “z-Tree: Zurich Toolbox for Ready-made Economic Experiment,” *Experimental Economics*, 2007, 10 (2), 171–178.

- Friesen, Jane, Jasmina Arifovic, Andreas Ludwig, Stephen C. Wright, Lisa Giamo, and Gamze Baray**, “Ethnic Identity and Discrimination among Children,” 2011. Simon Fraser University Working Paper.
- Gaertner, Samuel L. and John F. Dovidio**, *Reducing intergroup bias: The common ingroup identity model*, Philadelphia, P.A.: The Psychology Press, 2000.
- Goette, Lorenz, David Huffman, and Stephan Meier**, “The Impact of Group Membership on Cooperation and Norm Enforcement: Evidence Using Random Assignment to Real Social Groups,” *American Economic Review*, May 2006, 96 (2), 212–216.
- Gruenfeld, Deborah H., Elizabeth A. Mannix, Katherine Y. Williams, and Margaret A. Neale**, “Group composition and decision making: How member familiarity and information distribution affect process and performance,” *Organizational Behavior and Human Decision Processes*, 1996, 67, 1–15.
- Hargreaves Heap, Shaun P. and Daniel John Zizzo**, “The Value of Groups,” *American Economic Review*, 2009, 99, 295–323.
- Healy, Paul J.**, “Group Reputations, Stereotypes, and Cooperation in a Repeated Labor Market,” *American Economic Review*, 2007.
- Hedges, Larry V. and Amy Nowell**, “Sex differences in mental test scores, variability, and numbers of high-scoring individuals,” *Science*, 1995, 269, 41–45.
- Hewstone, Miles**, “Contact and categorization: Social psychological interventions to change intergroup relations,” in Neil Macrae, Charles Stangor, and Miles Hewstone, eds., *Stereotypes and stereotyping*, New York: Guilford Press, 1996, p. 323368.
- Hong, Lu and Scott E. Page**, “Problem Solving by Heterogeneous Agents,” *Journal of Economic Theory*, 2001, 97, 123–163.
- Li, Sherry Xin, Angela de Oliveira, and Catherine Eckel**, “Common Identity and Provision of Public Goods: An Experimental Investigation,” 2010. University of Texas at Dallas CBEES Working Paper.
- Nemeth, Charlan J.**, “The differential contributions of majority and minority influence,” *Psychological Review*, 1986, 93, 23–32.
- Pelled, Lisa H., Kathleen M. Eisenhardt, and Katherine R. Xin**, “Exploring the black box: An analysis of work group diversity, conflict and performance,” *Administrative Science Quarterly*, 1999, 44, 1–28.
- Perdue, Charles W., John F. Dovidio, Michael B. Gurtman, and Richard B. Tyler**, “Us and them: Social categorization and the process of ingroup bias,” *Journal of Personality and Social Psychology*, 1990, 59, 475–486.
- Shih, Margaret, Todd L. Pittinsky, and Amy Trahan**, “Domain-specific effects of Stereotypes on Performance,” *Self and Identity*, 2006, 5, 1–14.
- ___, ___, and **Nalini Ambady**, “Stereotype Susceptibility: Identity Salience and Shifts in Quantitative Performance,” *Psychological Science*, 1999, 10 (1), 81–84.
- Simpson, Brent**, “Social Identity and Cooperation in Social Dilemmas,” *Rationality and Society*, 2006, 18 (4), 443–470.
- Spencer, Steven, Claude M. Steele, and Diane M. Quinn**, “Stereotype threat and women’s math performance,” *Journal of Experimental Social Psychology*, 1999, 35, 4–28.
- Steele, Claude M. and Joshua Aronson**, “Stereotype threat and the intellectual test performance of African-Americans,” *Journal of Personality and Social Psychology*, 1995, 69, 797–811.
- Steen, Lynn Arthur**, “Mathematics education: A predictor of scientific competitiveness,”

Science, 1987, 237, 251–253.

Tajfel, Henri and John Turner, “An Integrative Theory of Intergroup Conflict,” in Stephen Worchel and William Austin, eds., *The Social Psychology of Intergroup Relations*, Monterey, CA: Brooks/Cole, 1979.

Tushman, Michael L., “Special boundary roles in the innovation process,” *Administrative Science Quarterly*, 1977, 22, 587–605.

Van Der Zee, Karen and Paul Paulus, “Social psychology and modern organizations: Balancing between innovativeness and comfort,” in Linda Steg, Abraham P. Buunk, and Talib Rothengatter, eds., *Applied social psychology: Understanding and managing social problems*, New York: Cambridge University Press, 2008, p. 271290.

West, Tessa V., Adam R. Pearson, John F. Dovidio, J. Nicole Shelton, and Thomas E. Trail, “Superordinate identity and intergroup roommate friendship development,” *Journal of Experimental Social Psychology*, 2009, 45, 1266–1272.

Wilder, David A., “Social categorization: Implications for creation and reduction of intergroup bias,” in Leonard Berkowitz, ed., *Advances in experimental social psychology*, Vol. 19, New York: Academic Press, 1986, p. 291355.

Yamagishi, Toshio and Toko Kiyonari, “The Group as the Container of Generalized Reciprocity,” *Social Psychology Quarterly*, June 2000, 63 (2), 116–132.