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Tam Kiet Vuong; Chan, Ho Fai; Torgler, Benno

# Working Paper Competing social identities and intergroup discrimination: Evidence from a framed field experiment with high school students in Vietnam

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# Competing Social Identities and Intergroup Discrimination: Evidence from a Framed Field Experiment with High School Students in Vietnam

Working Paper No. 2021-02

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# Competing Social Identities and Intergroup Discrimination: Evidence from a Framed Field Experiment with High School Students in Vietnam

Tam Kiet Vuong<sup>1,2\*</sup>, Ho Fai Chan<sup>1,2</sup>, and Benno Torgler<sup>1,2,3</sup>

<sup>1</sup> School of Economics and Finance, Queensland University of Technology, Brisbane, Australia

<sup>3</sup> CREMA – Center for Research in Economics, Management and the Arts, 8008 Zurich, Switzerland

#### Abstract

We conducted a framed field experiment to explore a situation where individuals have potentially competing social identities to understand how group identification and socialization affect ingroup favoritism and out-group discrimination. The Dictator Game and the Trust Game were conducted in Vietnam's Ho Chi Minh City on two groups of high school students with different backgrounds, i.e., French bilingual and monolingual (Vietnamese) students. We find strong evidence for the presence of these two phenomena: our micro-analysis of within- and betweenschool effects show that bilingual students exhibit higher discriminatory behavior toward nonbilinguals within the same school than toward other bilinguals from a different school, implying that group identity is a key factor in the explanation of intergroup cooperation and competition.

#### JEL codes: C93, C70, D74

*Keywords:* socialization, in-group favouritism, out-group discrimination, cooperation, trust, trustworthiness, fairness, altruism, risk preference.

<sup>&</sup>lt;sup>2</sup> Centre for Behavioural Economics, Society and Technology, Queensland University of Technology, Brisbane, Australia

<sup>\*</sup> Corresponding author. School of Economics and Finance, Queensland University of Technology, 2 George St, Brisbane QLD 4000, Australia.

*Email addresses*: <u>vuongt@qut.edu.au</u> (T.K. Vuong), <u>hofai.chan@qut.edu.au</u> (H.F. Chan), <u>benno.torgler@qut.edu.au</u> (B. Torgler)

Where shall I turn, divided to the vein? I who have cursed The drunken officer of British rule, how choose Between this Africa and the English tongue I love? Betray them both, or give back what they give? How can I face such slaughter and be cool? How can I turn from Africa and live?

Last part of Derek Walcott's poem "A Far Cry from Africa"

### **1** Introduction

Identity is a source of pride and joy, confidence and strength – but identity can also kill, as a strong and exclusive sense of belonging to a specific group can lead to a perception of distance to other groups or individuals (Sen, 2006)<sup>1</sup>. Both in-group favoritism and its opposite, out-group discrimination, are deeply rooted in human nature (Jordan et al., 2014). As Christakis (2019) argues, the "preference for one's own in-group is a cultural universal" (p. 266). Whereas in-group favoritism is a tendency to behave more favorably toward those of the same social group, who often share similar values, interests, personal attributes, and characteristics (Tomasello, 2016; Smith, 1998; Doney and Cannon, 1997; Yamagishi and Mifune, 2009), out-group discrimination is the withholding of such favoritism from those with whom the individual does not identify. In particular, in-group members may grant each other special privileges that they do not concede to outsiders (Tajfel and Turner, 1979; Shamdasani and Jung, 2011). Two fundamentals crucial to in-group membership are familial and kinship networks, which serve to enhance sociability and sympathy while eliciting tolerance, fair play, and reciprocal obligations toward the well-being of

<sup>&</sup>lt;sup>1</sup> Sen refers to, for example, the deadly Hindu-Muslim riots in the 1940s: "The political instigators who urged the killing (on behalf of what they respectively called "our people") managed to persuade many otherwise peaceable people of both communities to turn into dedicated thugs. They were made to think of themselves only as Hindus or only as Muslims (who must unleash vengeance on 'the other community') and as absolutely nothing else: not Indians, not sub-continentals, not Asians, not members of a shared human race" (p. 172).

others. Identification is an important factor for living in a society (Sen, 2006). Group members may feel they have a shared fate, a sense of togetherness and expectation of mutual aid or mutualfate control (Christakis, 2019). A large number of experimental studies have shown ingroup biases since the pioneering work by Henri Tajfel and his co-authors in the 1970s (e.g., Tajfel et al., 1971) or the famous Robbers Cave camp experiment by Muzafer Sherif and his colleagues that powerfully demonstrated how intergroup hostility can emerge when groups are united against a common enemy (Sherif et al., 1961). Within such a context, previous experimental studies indicate that the willingness to adopt another person's attitudes and beliefs is strongly influenced by other members' in-group-out-group status (see, e.g., Abrams and Hogg, 1990; Haslam, 1997; Oakes et al., 1994; Mackie et al., 1990; Turner, 1991, 1995). However, less well explored is that individuals have also *competing* identities. People constantly need to decide on the relative importance to attach to the respective identities (Sen, 2006).

To explore the impact of competing identities, we will use a field experiment that allows us to observe individuals' choices when deciding on the relative importance to attach to various groups to which she or he belongs. Exploring their level of cooperation allows identification of the priority given by individuals to their various simultaneous identities. In general, the acceptance of a social identity can have traditional or cultural roots, but can also be shaped by daily activities, reorientation, and individual discovery. We therefore take advantage of a naturally unique setting in Vietnam providing a cultural dualism that is particularly visible at the school level through two different teaching streams: French bilingual versus non-bilingual. Whereas all students share the same national Vietnamese curriculum, the French bilingual students are required to attend extra classes, participate in extracurricular activities, and sit extra examinations prior to Grade 1 and at the end of Grades 5, 9, and 12. French bilinguals are part of linguistic minority group. The French bilingual community in Vietnam is culturally, linguistically and socially distinguishable compared with other groups of students and carries high entry and exit barriers to its programs (see more details in Section 3). In addition, French bilinguals not only share the same curriculum but also socialize and participate in extra-curricular activities together on a regular basis. We therefore explore whether the bilingual students cooperate to the same or different degree with fellow bilingual members (from the same school and from a different school) and non-bilingual members within the same school. We predict that bilingual students exhibit stronger in-group favoritism and out-group discrimination due to the minority status of the group, which is consistent with the

history of tribal welfare and ethnic conflict suggesting that the tighter the community, the less value its members assign to the humanity of strangers (Wilson, 1993, p.47). However, strangeness is not an element in our setting, as we explore students' cooperative behavior within students at the same school, with familiarity between students due to daily encounters and social interactions. However, to explore the linguistic or status signaling (level of prestige of the language track) aspect in more detail, we analyze not only how students within the same school (bilinguals and non-bilinguals) cooperate, but also how those students cooperate with bilingual students from another school.

Our study contributes to the literature on in-group biases as well as the literature on socialization and social influence. Social influence has been extensively investigated in previous literature, exploring various dimensions of attitudes and beliefs; for example, stereotypes, prejudice, and political beliefs (Moscovici, 1976; Mugny et al., 1995; Mugny and Perez, 1998; Newcomb, 1943; Sherif, 1936; Turner, 1991; Wood et al., 1994). However, less empirical attention has been given to the question of whether and how socialization has a significant impact on intergroup relations (Levine and Moreland, 1994; Levine et al., 1998). Group socialization means that individuals adopt norms, beliefs, values, and attitudes shared between members of that particular group (Guimond, 1994; Bush and Simmons, 1981; Moreland and Levine, 1982; Turner et al., 1987). In our setting, we study adolescents as they are in the process of learning how to become a member of a society. Young people in particular may find reasons to endorse or reject past traditions. They are required to make choices regarding their relevant identities and weight the relative importance of these different identities, with potential for conflicting loyalties and priorities (Sen, 2006), for example, in our case of the same commitments to the linguistic program or the same school. Previous literature suggests that such a learning process depends on the categorization of self, which involves three main psychological stages of group formation: "(1) individuals define themselves as members of a distinct social category, (2) they form or learn the stereotypical norms of that category..., (3) they assign these norms to themselves...and thus their behavior becomes more normative" (Turner et al., 1987, pp. 72-73). From this perspective, social identification - that is, the extent to which individuals define themselves as members of a group plays a central role in the psychological process of group socialization (Harris, 1995).

Despite a wide-ranging body of research on intergroup discrimination and its economic

implications conducted in diverse societies and vast arrays of dimensions (e.g., race, gender, religion, language), the number of studies on how cooperative and competitive behaviors develop in children and adolescents is still limited (Angerer et al., 2016; although, the body of work examining cooperation in children and adolescents is growing see, e.g., Sally and Hill, 2006; Fan, 2000; Harbaugh and Krause, 2000; Cárdenas et al., 2014). It is useful to increase knowledge in this area as an effective policy implementation, allowing discriminatory behavior to be addressed before it becomes internalized (Hewstone et al., 2002). Current insights indicate that school-aged children seem to show more empathy for, expect more loyalty from, and grant more special favors to their in-group peers, while expecting disloyalty from out-group opponents (Killen et al., 2013; Misch et al., 2014; Rhodes and Chalik, 2013). Given that trust toward strangers is an essential element in facilitating exchanges that boost economic development and prosperity (Algan and Cahuc, 2013; Banfield, 1958; Putman et al., 1994; Guiso et al., 2006; Bigoni et al., 2013), in-group biases can have substantial implications to a society in terms of stability - due in part to its characteristic of durability – particularly in areas such as ethnicity or language. As Sen (2006) argues, "if, for example, she was to favor her own ethnic group in making public decisions, this could rightly be seen as a case of shady nepotism rather than an example of shining excellence of morality and ethics" (p. 32).

The remainder of the paper is structured as follows. Section 2 provides a brief historical background demonstrating the importance of the French language in Vietnam, after which Section 3 clarifies the study context by describing characteristics of the two schools and sample groups. Section 4 then explains the experimental design, Section 5 reports the empirical results and Section 6 provides discussion and limitation. Finally, some concluding remarks are offered in Section 7.

### 2 Historical Background

#### 2.1 French in Vietnam

Vietnam and France's long-standing history began in the 17<sup>th</sup> century when Alexandre de Rhodes imported both the Roman alphabet and Christianity. From 1887 to 1940, under the French colonial *mission civilisatrice* ("civilizing mission"), French was established as Vietnam's official language for education and social mobility. When Vietnam gained its independence from France on September 2, 1945, Vietnamese became the official national language, but French remained in use throughout French-controlled urban areas (Kirkpatrick and Liddicoat, 2017; Tyler, 2014; Dahm, 1999). During the eight years of the resistance (1946–1954), new Vietnamese curricula were created and used in schools operating in demilitarized areas (Lattman, 2008). By 1954, Vietnam had become completely independent from France, and the government began preparing for education reform aimed at reducing the number of years spent on general education (Kelly, 2000).

Although only 0.5% of Vietnamese individuals still speak French today, the language's status lies in the two nations shared cultural and historical heritage (Normand-Marconnet, 2013). For instance, many Vietnamese words are direct loanwords from French, while some famous Vietnamese dishes, such as *pho* or *banh mi*, combine the signatures of the two cuisines. Not only is Vietnam a member of the International Organization of the Francophonie (OIF), but France was also one of the first Western countries to support Vietnam's renewal policy (over a 20-year period). On September 25, 2013, the two nations signed a declaration of strategic partnership aimed at strengthening their relationship in all areas, including political, defense, economic, educational, and cultural (Ministry for Europe and Foreign Affairs. France and Vietnam, 2017).

#### 2.2 French in the Education System

According to the French Embassy in Vietnam, the Vietnamese education system offers French teaching curricula on four distinct levels: major, intensive, minor, and bilingual classes (see Appendix Table A1). This Vietnamese French bilingual education began in Vietnam in 1994 following the signing of international agreements between the governments of the former Indochina (Cambodia, Laos, and Vietnam), France, and the OIF (Sénat, 1997). These bilingual classes, taught in Vietnamese and French, require students to complete both 12-year curricula

simultaneously (Normand-Marconnet, 2013). Hence, to graduate from the bilingual program, students must sit two different examinations at the end of Grade 12: the Vietnamese National Baccalaureate and the French Bilingual Baccalaureate, which is recognized and accepted by the Francophone community. This type of bilingual education thus remains compatible with the traditional schooling system while providing cultural dualism (Baker, 2011; Akkari, 1998).

# **3** School and Subject Characteristics

#### 3.1 Schools' characteristics

Ho Chi Minh City (commonly known as Saigon) is a center of commerce located in southern Vietnam. The city, which played a significant role during the Vietnam War, is also known for its French colonial landmarks, including the Notre-Dame Cathedral and the 19<sup>th</sup> century Central Post Office (see Table A2 for city statistics). Currently, however, only three public high schools in Ho Chi Minh City offer a bilingual program: *Marie Curie, Minh Khai*, and *Le Hong Phong*. Because *Le Hong Phong* is targeted specifically to gifted children, who are likely to have specific goals and unique characteristics, its inclusion in the study would lead to selection bias. We therefore focus only on the first two schools, *Marie Curie* and *Minh Khai*, both built by the French in the last century and among the oldest high schools in the city. Both institutions are located in District 3 (see Appendix Fig. A1), which places them only a 6-minute drive (1.1 km) away from each other and an 18-minute drive (3.8 km) away from District 1, the center of Ho Chi Minh City. Because of this geographic proximity, the students at both schools tend to share similar socio-demographic and socio-economic backgrounds.

The focus of our study is the *Marie Curie* High School (known as *Lycée Marie Curie* in French and *Truong Trung Hoc Pho Thong Marie Curie* in Vietnamese), initially established by the French colonial government as an all-girls school and named after the female Polish-French Nobel Laureate<sup>2</sup>. At that time, all classes were conducted in French, with the majority of students being girls from French families and only a few local Vietnamese from wealthy or government employee families likely to enroll. The curriculum thus often specialized in subjects popular in Europe but undeveloped in Vietnam. After finally admitting boys in 1970, the school was handed over to Ho Chi Minh City Education and Training Development in 1975, at which time the French teachers returned home. In 1997, the school was changed to a semi-public model and, with over 5,000 students per year, was once the largest high school in Vietnam. In the past 20 years, however, it has reduced its enrollment to increase the quality of its education. Our comparison school *Minh Khai*, founded in 1913, is also a public high school that began as an all-girls school (42 female

<sup>&</sup>lt;sup>2</sup> See <u>https://en.m.wikipedia.org/wiki/Marie\_Curie\_High\_School</u>, <u>http://mariecurie.biz/Marie-Curie-de-Saigon/historique.htm</u>, <u>https://saigoneer.com/old-saigon/old-saigon-categories/11068-photos-lyc%C3%A9e-marie-curie-the-highschool-that-stands-the-test-of-time.</u>

students on its 1915 opening) with all classes conducted in French. After becoming coeducational in 1978, it has increased its enrolment numbers over the years through the inclusion of boarders and students from other provinces.

#### 3.2 Students characteristics

Each year, the French bilingual program offers a limited number of admissions to its future students. For instance, only 315 grade 1 bilingual students in Ho Chi Minh City were recruited in 2018, compared with over 90,000 grade 1 non-bilingual students<sup>3</sup>. At the end of grades 5, 9 and 12, bilingual students usually swap schools depending on their academic performance in the final examinations. Additionally, the French-language students not only study, but also socialize and participate in extra-curricular activities together, which are mainly hosted by IDECAF – an organization which specializes in promoting French culture, lifestyle, language and cinematography to the Vietnamese community. Furthermore, as part of the Vietnam-France relations, bilingual teachers and students receive significant support from the French Embassy in Vietnam, including professional training, scholarships, annual festivals, and exchange programs<sup>4</sup>.

According to the Embassy of France in Vietnam, 100% of French bilingual students obtain the Vietnamese National Baccalaureate, and 90% of them pass the National University Entrance Examination for admission, compared with 30% of single-language stream students who pass the admission exam. In addition, statistics collected from the University Agency of La Francophonie (AUF) surveys indicate that most of the Francophone students find employment in their first year of entering the labor market. For example, PFIEV - a high quality engineering training first launched in France in the early 1990s - has now been transferred to Vietnam in order to continue teaching and training high-qualified engineers. Students in this program can choose to learn French via an intensive mode in order to further advance their study in France. Around 60% of PFIEV graduates find work within 3 months. Furthermore, Vietnam-France cooperation in the health sector is also given priority and prominence among collaborative projects, including professional competence and use of French language<sup>5</sup>.

<sup>&</sup>lt;sup>3</sup> [Ho Chi Minh City: Grade 1 Bilingual Program Recruitment]: <u>https://thanhnien.vn/giao-duc/tphcm-tuyen-sinh-lop-1-chuong-trinh-tieng-phap-song-ngu-970075.html</u>

<sup>&</sup>lt;sup>4</sup> [IDECAF: Functions and Responsibilities]: <u>http://idecaf.gov.vn/vn/item/gioi-thieu/chuc-nang-nhiem-vu/</u>

<sup>&</sup>lt;sup>5</sup> [Challenges and Orientations in language cooperation]: <u>https://vn.ambafrance.org/Thach-thuc-va-dinh-huong-trong-hop-tac-ngon-ngu</u>

Table 1 presents characteristics of Marie Curie bilingual versus non-bilingual students from our post-experimental survey. We find that there are statistically significant differences in gender, religion and level of Westernization between the two groups of participants. First, 81% of nonbilinguals are female, as compared to 49% in the case of bilingual subjects. In addition, singlelanguage children in this study are more religious than their bilingual counterparts (73% versus 55%). In order to estimate subjects' level of Westernization, we asked if they have been on exchange to France and whether they are planning to study overseas after graduate. The results indicate statistically significant differences between the two groups, with 20% of bilingual students going on exchange to France, as compared to only 3% for non-bilingual subjects. Furthermore, 54% of bilingual subjects reported planning to go overseas, whereas it was only 7% in the case of their counterparts. Even though we find no difference in average family income between the two studied groups, having plans to study overseas could be a significant indicator of a bilingual subject's social-economic background, as only 0.1% of the Vietnamese population could afford to study abroad<sup>6</sup> (According to statistics reported from HSBC in 2016).

<sup>&</sup>lt;sup>6</sup> [HSBC: 110,000 Vietnamese students in 47 countries spend \$US3 billion a year]:

https://tinnhanhchungkhoan.vn/xa-hoi/hsbc-110000-du-hoc-sinh-viet-nam-tai-47-quoc-gia-tieu-moi-nam-3-ty-usd-154802.html

	Bilingual (BC) participants		Non-Biling partic				
	Mean	Std. Err.	Mean	Std. Err.	Diff.	z- stat.	
Born in 2001	0.45	0.06	0.56	0.06	-0.11	-1.27	
Female (%)	0.49	0.06	0.81	0.05	-0.32***	-3.99	
Atheism (%)	0.45	0.06	0.27	0.05	0.18*	2.18	
Marie Curie Pride (Scale 1-7)	5.48	0.17	5.34	0.15	0.14	0.65	
Family Attachment (Scale 1-7)	5.060	0.220	5.460	0.200	-0.400	-1.36	
AVERAGE FAMILY INCOME (%)							
"Above Average"	0.03	0.02	0.03	0.02	0	0.01	
"Average"	0.83	0.05	0.81	0.05	0.01	0.18	
"Below Average"	0.14	0.04	0.16	0.04	-0.01	-0.2	
				$\chi^2$	(2) = 0.04, p	0 = 0.93	
AVERAGE POCKET MONEY (%)							
"Below VND300,000"	0.16	0.04	0.34	0.06	-0.18*	-2.4	
"VND300 - 500,000"	0.49	0.06	0.29	0.05	0.21*	2.5	
"VND500,000 - 1MIL"	0.12	0.04	0.19	0.05	-0.07	-1.1:	
"Above 1MIL"	0.23	0.05	0.19	0.05	0.05	0.67	
				$\chi^2$	(3) = 9.95, p =	= 0.01	
LEVEL OF WESTERNIZATION (%Yes/No)							
"France exchange - Yes"	0.2	0.05	0.07	0.03	0.13*	2.26	
"Study overseas after graduate -	0.54	0.06	0.07	0.05	-0.16*	-1.9	

Table 1: Characteristics of bilingual versus non-bilingual students

Notes: The symbols  $\dagger$ , \*, \*\*, \*\*\* represent statistical significance at the 10%, 5%, 1%, and 0.1% levels, respectively. Test of proportion (z-test) performed on all variables except for *Marie Curie Pride* and *Family Attachment*, for which the Mann-Whitney test was used. Sample size equals to N<sub>BC</sub> = 69 and N<sub>NC</sub> = 70.

# 4 Experimental Design

#### 4.1 Game Selection

Our assessment tool is a set of Dictator and Trust Games that measure how group affiliation changes the participants' behaviors toward their in-group versus out-group members. In the construction of our experimental design, we were inspired by the specializations in two previous studies: Fershtman and Gneezy (2001) and Cox (2004). Both used Trust and other games to measure discrimination and thus answered the question of whether the trust allocations were due to taste-based component or statistical component (beliefs about trustworthiness). The concept of trust has been documented in various papers using participants from Asian regions (see Chang and Chu, 2006; Tan and Tambyah, 2011; Tokuda and Inoguchi, 2017; Batt and Rexha, 2000; Young and Wilkinson, 1989; Ward et al., 2014). In one of the relevant studies, Tan and Tambyah (2011) measured trust in institutions and generalized trust by using the data from the 2006 AsiaBarometer survey and a two-item scale method in seven Confucian Asian countries including Vietnam, China, Japan, Singapore, South Korea, Taiwan, and Hong Kong. The results showed that among the studied regions, Vietnamese individuals exhibited the least trusting behaviors towards outsiders, where less than one out of five Vietnamese think people could be trusted.

#### 4.2 Subject Pool

To facilitate identification/adherence of in-group versus out-group behavioral patterns, our subject pool consists of 70 *Marie Curie* bilingual students (BC), 72 *Marie Curie* non-bilingual students (NC), and 67 *Minh Khai* bilingual students (BK). In both schools, each bilingual class has around 23-35 students and there are 2 classes per grade. For *Marie Curie* students, we selected four classes in which to distribute the invitations to participate: two bilingual and two non-bilingual groups in Grades 11 and 12 (ages from 16 to 17) who had the same timetable for extracurricular activities and sports. On the other hand, *Minh Khai* students only participated as *Receivers* (in the Dictator Game) or *Trustees* (in the Trust Game). As we had very limited access to the second school, we sent out invitations and conducted experiments in three bilingual classes (also in Grades 11 and 12) in which all invited students agreed to participate during break time<sup>7</sup>.

<sup>&</sup>lt;sup>7</sup> Minh Khai bilingual classes have smaller numbers of students (23 per class) as compared to Marie Curie bilingual classes. Thus, we covered the majority of the available population.

#### 4.3 Treatments

The first treatment, PURE IN-GROUP, includes only two in-group cases (BC-BC and NC-NC) at Marie Curie. Designed to measure the levels of in-group cooperation within two different streams at the same school, this treatment serves as a benchmark for the out-group treatments. The second treatment, IN-GROUP STRANGER, explores the first out-group condition by asking Marie Curie participants to interact with members of different language streams, including two bilinguals to non-bilingual cases (BC-NC/NC-BC) in which first the bilingual participants (BC-NC) and then the non-bilingual participants (NC-BC) are the first movers in the Trust and Dictator Games. This treatment thus encompasses in-group and out-group elements, with non-bilingual participants serving as an out-group to the Marie Curie bilingual group while still being students at the same school, a condition that should promote a certain level of closeness and familiarity. The third treatment, OUT-GROUP, conducted with bilingual students from Marie Curie and Minh Khai (BC-BK), assesses whether in-group-out-group bias stems from the strong identification between members of the French bilingual groups. That is, although Marie Curie bilingual students might see Minh Khai bilingual students as an out-group from a different school, the two groups share certain in-group elements as members of the same bilingual community. In this treatment, therefore, the Marie Curie bilingual students acted as Senders/Trustors and the Minh Khai students as Receivers/Trustees.

#### 4.4 Game Structure

Our experiment was approved by the QUT University Human Research Ethics Committee (QUT Ethics Approval Number 1700000762). The experiment proceeded as described below, using a game structure and experimental protocol very close to that employed by Cameron et al. (2015) in their study of cultural integration versus convergence. Specifically, the protocol consisted of four common games played using plain pen and paper: a Dictator Game, a Trust Game, a Risk Game, and a Competition Game<sup>8</sup>.

<sup>&</sup>lt;sup>8</sup> Although our experiment included the Competition game used by Cameron et al. (2015) and Niederle and Vesterlund (2007), only around 10% of the participants chose the competitive rate (see Appendix C), so we do not explore those results in this study.

#### 4.4.1 Dictator Game

In this game, participants were paired randomly, with each pair having a *Sender* (Player 1) and a *Receiver* (Player 2). The *Sender* received an initial endowment of VND  $60,000^9$  and had to decide how much of it (in x whole numbers) to keep and how much to send to an anonymous receiver. The *Receiver* had no decision to make but simply accepted the amount awarded by the *Sender*, with final payoffs of 60,000 - x and x for the *Sender* and *Receiver*, respectively. Whereas BK students only participate as *Receiver*, each BC and NC participant played as both *Sender* and *Receiver* in the first two treatments (Burks et al., 2003; Chaudhuri and Gangadharan, 2007; Bonein and Serra, 2009), meaning that each made an allocation decision to one (anonymous) partner and received an allocation from a different (anonymous) partner. No two participants were paired twice during the entire experiment in order to preserve the one-period nature of the game<sup>10</sup>.

#### 4.4.2 Trust Game

Each pair in this game was made up of an *Allocator/Trustor* (Player A) whose behavior indicated level of trust, and a *Recipient/Trustee* (Player B), whose behavior indicated level of perceived trustworthiness. Each *Allocator* was endowed with VND 40,000<sup>11</sup> and had the option of keeping everything or sending a certain amount *x* to an anonymous *Recipient* (where  $0 \le x \le 40,000$ ). The amount that Player A sent to a recipient was tripled by the experimenter before being given to Player B. Player B then had the opportunity to keep all of the money (sent from Player A) or send some or the entire amount *y* back to Player A (where  $0 \le y \le 3x$ ). The payoffs for Players A and B were therefore 40,000-x + y and 3x-y, respectively. As in the Dictator Game, each BC and NC player in the first two treatments made decisions as both *Allocator* and *Recipient*, whereas BK participants serve as *Recipients*. No two participants were paired twice during the experiment. *4.4.3 Risk Game* 

The Risk Game was played by each *Marie Curie* participants to control for risk preferences when analyzing the Trust experiment<sup>12</sup>. Following Gneezy et al. (2009) and Cameron et al. (2015),

<sup>&</sup>lt;sup>9</sup> 10,000 Vietnamese Dong (VND) equals approximately to \$0.06 AUD. VND 60,000 = AUD \$3.45.

<sup>&</sup>lt;sup>10</sup> BC students played it three times: with BC, NC, and BK students (as Sender). NC played it twice: with BC and other NC students, and BK once (as Receiver with BC students).

<sup>&</sup>lt;sup>11</sup> VND 40,000 = AUD\$2.30

<sup>&</sup>lt;sup>12</sup> The Risk Game was played once in each session following the Trust Game. Interestingly, decisions made the second time were identical to the first instance, which may indicate the validity of such a risk measurement due to its consistency. It may also indicate that subjects are able to recall information.

each participant was endowed with VND 20,000<sup>13</sup> and had to decide how much (from zero to all) to risk on an investment. The probability of tripling the amount invested was 50% but with a corresponding 50% chance of losing everything. The outcome was decided at the end of the experiment by flipping a coin.

#### 4.5 Experimental Procedure

The sessions at Marie Curie were conducted from 2:00PM to 3:30PM (Vietnam time) on September 12, 2017, with participants seated in a large conference room, assigned a unique ID number (which was randomly assigned), and provided with a set of general instructions prior to participation (see Appendix B). At the start of the first two treatments, all subjects were verbally informed that they would be paired with an anonymous member from the same and different language stream within Marie Curie High School, respectively. The third treatment only applied to bilingual students and they were told that they would be interacting anonymously with another fellow bilingual from Minh Khai High School. For the bilingual participants from Minh Khai High School, they were aware that they are paired anonymously with bilingual students from Marie Curie High School. The instructions were read aloud by the experimenter while the participants read along. Before engaging in the experiment, the participants were informed that they would play four tasks (numbered 1 through 4 as part of the within-subject design). For Marie Curie High School students, they were also informed that the four tasks would repeat for three (BC students) or two (NC students) times, due to the experimental design. In addition to receiving general instructions for the experiment, before each game, the students were given envelopes containing a set of specific game instructions and forms for recording their decisions (see the Appendix B). Issuing and collecting these forms in envelopes minimized self-presentation (for a discussion, see Cameron et al., 2015). After the game instructions had been read out loud, the participants began completing the comprehension questions on their forms and recording their decisions<sup>14</sup>. Once all students had finished, the envelopes were collected before those for the next game were distributed. Finally, a post-experiment survey was distributed that had to be completed before any game payouts could be made.

<sup>&</sup>lt;sup>13</sup> VND 20,000 = AUD\$1.15.

<sup>&</sup>lt;sup>14</sup> The instructions were in Vietnamese. No indication of language difficulties were identified, as all subjects share one native language, namely Vietnamese. Also, they were asked to complete the comprehension questions to ensure they understood the instructions before proceeding to the Game.

The overall payments consisted of a VND 50,000<sup>15</sup> show-up fee, in addition to the amount earned during the experiment. At the beginning of the experiment, *Marie Curie* participants were informed that the outcome of one of the games is chosen as the final payment, decided at the end of the session by a roll of the dice. If the Dictator Game or the Trust Game was selected, a coin was tossed to determine which role would be paid out (amount obtained as the *Sender* or *Receiver*). If the Risk Game was chosen, a coin toss determined the outcome: if heads, the participant received three times the amount invested, if tails, he or she lost the entire investment<sup>16</sup>. The show-up fee was made at the start of the experiment, while the experimental incentives were paid the next day using the assigned ID numbers as verification<sup>17</sup>.

The experimental session at *Minh Khai* took place in a spare classroom during school recess from 2:00PM to 2:30PM (Vietnam time) on September 19, 2017. In both the Dictator and Trust Games, these participants served only as *Receivers* of the envelopes in which the *Marie Curie* bilingual students had recorded their *Sender* decisions. Hence, in the Dictator Game, the *Minh Khai* participants simply had to accept any amount sent by the *Marie Curie* bilinguals, but in the Trust Game, they had the opportunity to decide whether to keep the entire amount or send some back to an anonymous partner from the *Marie Curie* bilingual group. Prior to the experiment, the *Minh Khai* bilingual participants were informed that they would be paid VND 30,000 as a show-up fee in addition to any amount earned during the experiment. As with the *Marie Curie* session, the show-up fees were paid at the beginning of the experiment, while the incentive payments were made the following day based on ID numbers. In this treatment, the *Minh Khai* participants took home any amount received in the Dictator Game and any amount not sent back in the Trust Game.

<sup>&</sup>lt;sup>15</sup> VND 50,000 = \$AUD 2.90

<sup>&</sup>lt;sup>16</sup> If the Competition Game was chosen for payment, the payoff was determined depending on the option chosen and actual performance.

<sup>&</sup>lt;sup>17</sup> The random selection process led to the pay-out of the Risk Game.

<sup>&</sup>lt;sup>18</sup> *Minh Khai* students received a lower show-up fee due to lower commitments in time and efforts: 30 minutes as compared to one and half hour for *Marie Curie* students.

### **5** Results

#### 5.1 Dictator Game Allocation

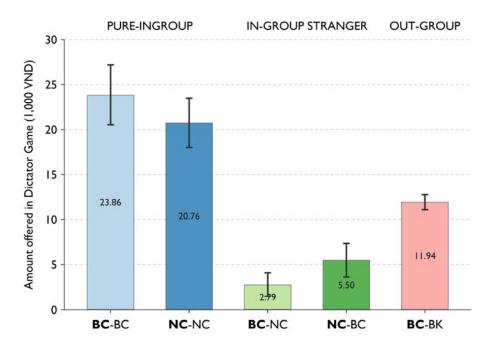
We find substantial evidence of in-group favoritism and out-group discrimination exist in both the bilingual and non-bilingual student groups. As indicated in Figure 1 and Table 2, we find that participants were more generous to their peers from the same language stream than to those from the other language stream within same school (pooled sample paired *t*-test: two-tailed p < 0.001), with the mean difference in amount offered of VND 18,037 (out of VND 60,000). Such difference is evident in both bilingual (mean difference = VND 21,071, p < 0.001) and non-bilingual (mean difference = VND 15,000, p < 0.001) participants<sup>19</sup>. While the symmetry in behavior is remarkable as both groups discriminate against each other substantially, bilingual students also showed stronger out-group discrimination than non-bilingual students. In particular, while the amount offered to peers within the same group (PURE IN-GROUP treatment) do not differ significantly between bilinguals and non-bilinguals (p = 0.153), bilingual participants offered significantly less to the non-bilingual counterparts (p = 0.019, IN-GROUP STRANGER treatment)<sup>20</sup>. The larger paired differences among bilinguals in the amount offered between the two groups (p = 0.015, PURE IN-GROUP minus IN-GROUP STRANGER) also shows that bilingual students are relatively less generous towards out-group, i.e., exhibiting more discriminatory behavior compared to non-bilingual students. Interestingly, however, the bilingual Marie Curie students were also more generous to the bilingual Minh Khai students than to their non-bilingual peers from the same school (BC-NC vs BC-BK: mean difference of VND 12,239, p < 0.001; also, only 3% of the transfers to BK were zero), which may indicate that the language stream acts as a stronger in-group social identifier than the school.

<sup>&</sup>lt;sup>19</sup> We show the pairwise mean comparison between sessions in Table C1 with *p*-values adjusted for multiple comparison (Bonferroni's method). Table C1 also shows the results with Wilcoxon rank-sum tests. <sup>20</sup> Additionally, the overall amount of transfer to NC students were also less than that to BC students (mean difference VND 2,777, p = 0.09).

Treatment	Mean	SD	Min	Max	Ν
PURE IN-GROUP:					
BC-BC	23.86	13.94	0	60	70
NC-NC	20.76	11.65	0	60	72
IN-GROUP STRANGER:					
BC-NC	2.79	5.49	0	30	70
NC-BC	5.50	7.86	0	40	70
OUT-GROUP:					
BC-BK	11.94	3.48	0	20	67

Table 2. Summary statistics of the amount offered in Dictator Game, by treatment and session.

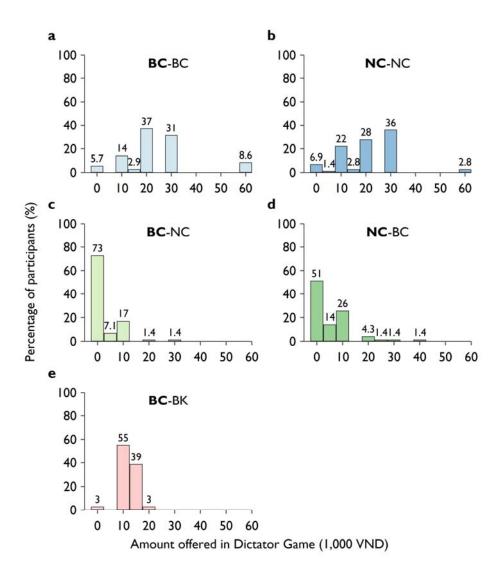
Note: Initial endowment of VND 60,000 (~AUD \$3.45). Sender (Player 1) in bold.





*Notes*: Bar height indicates the average amount offered to Player 2. Error bars represent 95% confidence intervals. *Sender* (Player 1) in bold.

In addition, as Figure 2 shows, whereas *Marie Curie* bilingual students transferred nothing to non-bilingual students in as many as 73% of cases (panel c), they sent zero to bilingual peers in less than 6% of cases (panel a), and only 19.9% (panel c) of non-bilinguals received an amount over VND 5,000 compared with 94.3% (panel a) and 97% (panel e) of *Marie Curie* and *Minh Khai* bilinguals, respectively. Conversely, whereas *Marie Curie* non-bilinguals sent more than or equal to VND 20,000 (one-third of the initial endowment) to about 66.8% (panel b) of their non-bilingual school peers, non-bilinguals allocated such a sum to only 8.5% (panel d) of their bilingual co-players.



**Figure 2.** Distribution of amount offered in Dictator Game, by treatment and session. *Note*: Bin width of VND 5,000. Panels **a** and **b**: PURE IN-GROUP treatment; Panels **c** and **d**: IN-GROUP STRANGER treatment; Panel **e**: OUT-GROUP: treatment. *Sender* (Player 1) in bold.

#### 5.2 Trust Game

The results for the Trust Game show similar favoritism and discrimination between groups (see Tables 3 and Figure 3). Overall, we find both bilingual and non-bilingual *Marie Curie* students transfer a larger sum to their peers within the same language stream than to the other stream (mean difference of VND 25,678, p < 0.001). Specifically, *Marie Curie* non-bilingual students show more trust in their non-bilingual peers (M = VND 27,986) than in bilingual students at their own

institution (M = VND 2,643). Similarly, *Marie Curie* bilinguals exhibiting the higher trust in their school language peers (M = VND 28,428) than non-bilingual students (M = VND 2,357). Similar to the outcome of the Dictator Game, we also find that *Marie Curie* bilinguals placed more trust to *Minh Khai* bilinguals (M = VND 6,418) than their non-bilingual peers. It should also be noted that all within-subject paired differences mentioned above are statistically significant at the 1% level. The difference in the amount transferred between treatments is also striking as about half of the students transferred the efficient amount (all VND 40,000) to their peers (Figure 4a and 4b) while no students made such choice when they are faced with students from different language stream (Figure 4c and 4d) or school (Figure 4e).

Nevertheless, the degree of (dis)trust to peers within the same language stream relative to the other language stream is similar across *Marie Curie* bilinguals and non-bilinguals, as we did not find the amount transferred differ significantly between the two in both the PURE IN-GROUP (BC-BC versus NC-NC) and IN-GROUP STRANGERS treatments (BC-NC versus NC-BC)<sup>21</sup>. The *difference* in the amount transferred to Player 2 between in-group and out-group peers within the same school is also not statistically significant different between *Marie Curie* bilingual and non-bilingual students (p = 0.731), which contrast to the finding of larger degree of favoritism and discrimination among *Marie Curie* bilingual students in the Dictator Game.

With respect to *Trustees*, *Marie Curie* bilingual students sent more money back to their language program counterparts (M = VND 33,929) than to their non-bilingual peers from their school (Table 3), even keeping the entire endowment for themselves when interacting with non-bilinguals (except for 1 who returned VND 5,000 among the 35 students who received a non-zero amount in the first stage). Similarly, whereas non-bilingual students returned no money to their bilingual peers at the same school<sup>22</sup>, most of them transferred money back to Player 1 when faced with other non-bilingual students (M = VND 41,250 for those who received non-zero amount). Interestingly, while the amount entrusted to same language stream peers within the same school do not differ across the two language streams, non-bilinguals seem to return a slightly larger share of amount received (43.6% of the tripled sum) to their peers than do bilingual students (38.8% of

<sup>&</sup>lt;sup>21</sup> See full pairwise comparisons between sessions (*t*-test and rank sum test) in Table C2 with *p*-values adjusted for multiple comparisons.

<sup>&</sup>lt;sup>22</sup> While about half of the students transfer money to other participants from a different language program, the maximum amount transferred among these transactions was only 5,000 VND (smallest possible non-zero amount), it is thus not unreasonable to see that both groups (as Player 2) kept the full amount for herself or himself.

the tripled sum), although the statistically significance of the difference is above the 10% threshold (p = 0.107). Comparatively, about 73% of the *Minh Khai* bilinguals (who received a non-zero sum) did send money back to their bilingual counterparts at the other school (M = VND 7,917, about 29% of the tripled sum).

Mean	SD	Min	Max	Ν
28.43	12.23	5	40	70
27.99	14.16	0	40	72
2.36	2.51	0	5	70
2.64	2.51	0	5	70
6.42	5.35	0	20	67
33.93 (33.93)	24.66 (24.66)	0 (0)	70 (70)	70 (70)
38.96 (41.25)	23.15 (21.72)	0(0)	60 (60)	72 (68)
× /	× /			
0.07 (0.14)	0.6 (0.85)	0 (0)	5 (5)	70 (35)
0 (0)	0 (0)	0(0)	0(0)	70 (38)
	28.43 27.99 2.36 2.64 6.42 33.93 (33.93) 38.96 (41.25) 0.07 (0.14)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

**Table 3.** Summary statistics of the amount sent and returned in Trust Game, by treatment and session.

<i>OUT-GROUP</i> BC <b>-BK</b> *	5.67 (7.92)	7.48 (7.78)	0 (0)	40 (40)	67 (48)
Percentage returned by Player 2	0.07 (7.52)	,	0 (0)	()	07 (10)
PURE IN-GROUP					
BC-BC	38.89%	20.01	0%	77.78%	70
NC-NC	43.64%	13.66	0%	66.67%	68
IN-GROUP STRANGER					
BC-NC	0.95%	5.6	0%	33.33%	35
NC-BC	0%	0	0%	0%	0
OUT-GROUP					
BC- <b>BK</b> *	28.99%	24.31	0%	100%	67
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*Notes*: \* Amount sent back by *Minh Khai* students (BK). Statistics on amount returned given receiving non-zero amount are in parentheses.

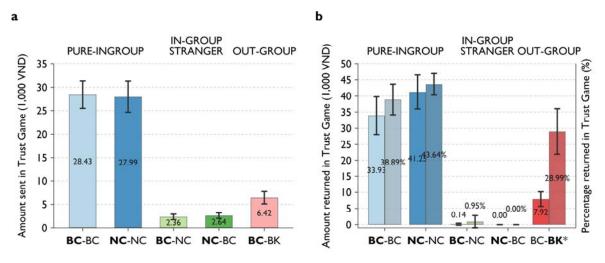


Figure 3. Amount transferred in the Trust Game, by treatment and session.

*Notes*: Bar height indicates the average amount sent by Player 1 (panel **a**) and average amount returned (lighter bars) and percentage returned (darker bars) by Player 2 given non-zero amount received (panel **b**). Error bars represent 95% confidence intervals. \* Transfer by *Minh Khai* students (BK).

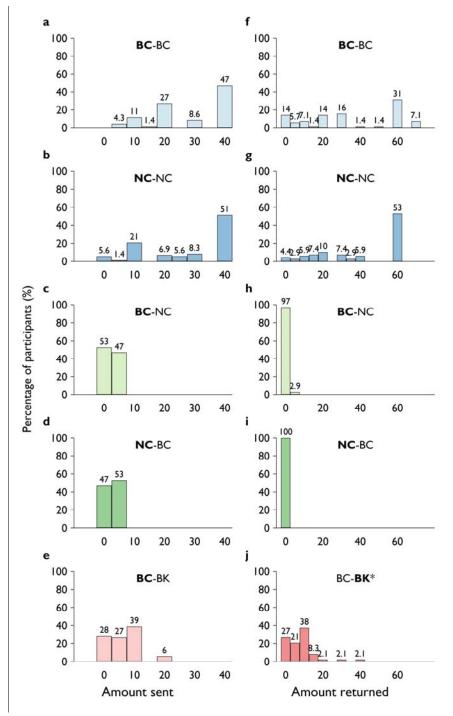


Figure 4. Distribution of amount offered and returned in the Trust Game, by treatment and session.

*Notes*: Amount sent by Player 1 (panel **a** to **e**) and returned by Player 2 given non-zero amount received (panel **f** to **j**). \* Amount sent back by *Minh Khai* students (BK).

#### 5.3 Decomposing other-regarding preferences and trust

In the Dictator Game, Player 2 cannot make any decision other than to accept the amount offered by Player 1, whereas in the Trust Game, Player 2 has the opportunity to decide how much to return (any part of the tripled amounts sent to them); thus, Player 1's Trust Game choice could be motivated by trust or strategic decision making (i.e., hoping that Player 2 will return some amount (depending also on the amount sent) and altruistic reasons (other-regarding preferences), whereas trust does not play a role in the Dictator Game (Cox, 2004). As we are able to observe the same subjects playing the Dictator as well as the Trust Game, we examine the percentage difference in the amounts transferred by Player 1 between the two games to elicit the motivating reasons behind choices in different sessions of the experiment<sup>23</sup>. We present the results in Table 4.

We find that the percentage amount transferred by Player 1 is substantially higher in the Trust Game than in the Dictator game, for both bilingual (**BC**-BC) interactions (difference: 31.3 percentage points, p < 0.001) and non-bilingual (**NC**-NC) ones (difference: 35.4 percentage points, p < 0.001). This indicates that trust or strategic elements matter beyond unconditional otherregarding preferences, a pattern that does not differ between the two homogenous language streams (p = 0.503). In contrast, we did not find any statistically significant differences in the percentage of money offered when comparing the Dictator and Trust Game in mixed settings; this was the case for both the bilingual (**BC**-NC, p = 0.352) and the non-bilingual (**NC**-BC, p = 0.133) students<sup>24</sup>, which confirms that in those interactions, students do not demonstrate enough trusting behaviour. There is a small difference of -3.81 percentage points between the two groups (statistically significant at 10% level, p = 0.078), which may suggest that non-bilingual students report slightly higher distrust when trying to isolate other-regarding preferences. In addition, when Marie Curie bilinguals are faced with students from the Minh Khai school's bilingual language program (**BC**-BK), they transferred slightly more (3.86 percentage points) in the Dictator Game

<sup>&</sup>lt;sup>23</sup> We use percentage of amount transferred because of the different endowment amounts in the Dictator Game and Trust Game, VND 60,000 and VND 40,000, respectively. For example, if a player sent 20,000VND (33.3% of 60,000VND) to the receiver in the Dictator Game and 20,000VND (50% of 40,000VND) to the trustee in the Trust Game, the percentage difference in amount transferred in the two Games is equal to -16.7 percentage points. The comparison is performed within subject and treatment (e.g., percentage amount transferred in Dictator and Trust Game from BC to NC).

<sup>&</sup>lt;sup>24</sup> Considering that most of the offers in both Games were very low in this treatment, the insignificant results may be attributed to the lower bound problem in the form of distrust *and* absence of other-regarding attitudes towards the other group.

than in the Trust Game (p = 0.036) which shows that altruistic preferences are the dominant factor in that interaction.

Treatment	Mean	SD	Min	Max	Ν	t-stat.	p-value
Percentage difference in amounts offered by Player 1 between the Dictator Game and Trust Game							
PURE IN-GROUP							
BC-BC	-31.31	35.81	-100	75	70	-7.32	< 0.001
NC-NC	-35.36	36.01	-100	50	72	-8.33	< 0.001
Between BC and NC	4.05				142	0.67	0.503
IN-GROUP STRANGER							
BC-NC	-1.25	11.16	-12.5	50	70	-0.94	0.352
NC-BC	2.56	14.07	-12.5	54.17	70	1.52	0.133
Between BC and NC	-3.81				140	-1.78	0.078
OUT-GROUP							
BC-BK	3.86	14.73	-33.33	33.33	67	2.14	0.036

Table 4. Difference in money offered by Player 1 between the Dictator Game and Trust Game

#### 5.4 Regression Analysis

In Table 5, we report the results of the Tobit model regressions (left censored at 0) analyzing the interactions among *Marie Curie* students in the Dictator Game (in terms of percentage of initial endowment transferred as Player 1) and Trust Game (percentage of initial endowment transferred as Player 1 and percentage of money returned as Player 2). Specifically, we examine the difference in decisions made between *Marie Curie* bilingual (BC) and non-bilingual (NC) students towards peers from the same and different language stream, while controlling for socio-demographic and socio-economic factors. For the Trust Game decisions, we also control for the share of money received in Dictator Game as it was played prior to the Trust Game. Here, the *IN-GROUP STRANGER* variable indicates decisions made by participants *towards students from the other language stream* (**BC**-NC and **BC**-BC), with **BC**-BC and **NC**-NC (*PURE IN-GROUP*) as the reference group.

On average, and holding other factors constant, the *Marie Curie* participants gave 42.3% less to members of different language streams than to those in their own language stream at their own institution in the Dictator Game (specification (1)). Bilingual *Marie Curie* students also tended to

give less on average than non-bilingual Marie Curie students, although the coefficient is not statistically significant. In specification (2), we include an interaction term to assess whether Marie Curie bilingual students (BC) are more likely than non-bilinguals to discriminate against other language streams, explicitly document that bilinguals sent 17.1% less to other language stream members than did non-bilinguals, indicating higher levels of out-group discrimination. However, when the standard errors were clustered by classes instead of the individual level, we no longer observe a statistically significant interaction effect<sup>25</sup>. We did not find a gender difference in the amount transferred in the Dictator Game, nor do the effect of participants age and religious belief is statistically significant. However, the fact that NC has a larger female composition (as opposed to the more gender balanced bilingual class) would mean that in the IN-GROUP STRANGER treatment, BC students would expect to be paired with a NC female student 80% of the time while NC would expect to encounter either gender randomly when pairing with BC. This also means that in the PURE IN-GROUP treatment, NC would expect to be paired with another female NC more frequently than BC. Thus, the interaction effect between BILINGUAL BC and IN-GROUP STRANGER might capture partially the effect in which women gives significantly less to other women while men's decisions are less dependent to the recipient.<sup>26</sup> Nevertheless, in an unreported regression including additional interaction term with female (i.e., triple interaction terms between BILINGUAL BC, IN-GROUP STRANGER, and female), we did not find evidence that female and male BC students discriminate NC students statistically differently, while female NC made less transfer towards other NC students (relative to male NC and BC students) and slightly more towards students from the other language stream. Furthermore, we find that students with less than average family income are more generous in the Dictator Game than the reference group (Average) while pocket money has no significant effect.

To isolate the effect of *Trustor*'s trust beliefs (i.e., whether the amount entrusted would be returned) from their risk attitudes in the decision to send money to a *Trustee* in the Trust Game, in specifications (3) and (4) we include a control for risk behavior (the % of amount invested in the Risk Game). Additionally, we also include their decision made as Player 1 in the Dictator Game

<sup>&</sup>lt;sup>25</sup> This indicates that the decisions are likely to be correlated within some classes.

<sup>&</sup>lt;sup>26</sup> For example, while women are more generous than men in Dictator Game in general (e.g., Eckel and Grossman, 1998), some studies find that the gender difference is absent when the recipient is male or of unknown gender while female offer less to other females (e.g., Ben-Ner et al., 2004; Houser and Schunk, 2009). See Croson and Gneezy (2009) for an overview of the literature on gender difference in preferences.

to control for participant's altruistic preference towards the Trustee from the same group. We also included the amount participants received as Player 2 in the Dictator Game. The results are very similar: trustees in the BC-NC and NC-BC treatments received around 68% less money than in the in-group settings (BC-BC, NC-NC). BC participants again sent less on average than NC students (around 6.8%, statistically significant only at 10% level); however, they did not seem to discriminate more (place less trust) against individuals from the other language stream than do NC participants (i.e., the interaction effect is not statistically significant). Expectedly, altruistic attitudes are positively related to decisions to transfer more as Trustor, for instance, for every tenpercentage point additional transferred in the Dictator Game, Trustor sent 2.7 percentage points more in the Trust Game. Surprisingly, risk attitude shows a negative effect on the amount sent in the Trust Game, which is in contrast to the findings of previous studies where no relationship was found between risk aversion and decisions in investment games (e.g., Houser et al., 2010; Eckel and Wilson 2004; Fehr, 2009) or positive relationship (e.g., Schechter 2007). We do not know why this might be the case. The share of amount received in the Dictator Game do not seem to influence participants' trusting behavior. Moreover, we find that female participants sent less money to the Trustee in general, which is in line with some studies in the literature that male place more trust than female (e.g., Buchan et al., 2008)<sup>27</sup>. Similarly, we did not find age nor atheism being a significant factor in determining trusting behavior.

Lastly, specifications (5) and (6) examine the participants' return behavior in the Trust Game (see variable Trust (% Returned), which takes a value from 0 to 100). Because the amount returns equals to zero for all participants receiving a non-zero amount from Player 1 in the IN-GROUP STRANGER treatment (i.e., NC-BC and only 1 exception for BC-NC), we exclude all observations from the IN-GROUP STRANGER treatment and focus on the difference in amount returned to peers from same language stream between BCs and NCs. The result shows that BC participants gave less to in-group members, albeit the coefficients are not statistically significant, even controlling for the amount received by the *Trustor* (specification (6)). In line with the extensive literature on the importance of reciprocity (see, e.g., Bowles and Gintis, 2011), receiving more from the *Trustor* is associated with trustees returning more money to the trustors (on average

<sup>&</sup>lt;sup>27</sup> As suggested by the literature (e.g., Buchan et al., 2008), gender of the responder is not likely to affect the level of trust is placed between men and women in the Trust Game, therefore, by controlling for gender, the main interaction term (between BC and the treatment variable) should not be cofounded by the gender effect.

around 18% of the money received). While the proportions returned by female is higher, the effect is not statistically significant.<sup>28</sup> Interestingly, we find that older participants return significantly more to the sender. Although all participants are in Grades 11 and 12 (ages from 16 to 17), the coefficients indicate that students in Grade 12 (age 17) return around 8 percentage points more than their younger counterpart. Lastly, we did not find statistically significant effect to trustworthiness with regards to religious belief, amount received in the dictator game, and both socio-economic factors.

	(1) Dictator (% Sent)	(2) Dictator (% Sent)	(3) Trust (% Sent)	(4) Trust (% Sent)	(5) Trust (% Returned)	(6) Trust (% Returned)
IN-GROUP STRANGER	-42.3***	-34.0***	-69.5***	-69.6***		
	(3.59)	(4.00)	(5.24)	(6.53)		
BILINGUAL BC	-2.48	4.80	-6.32†	-6.38	-4.14	-3.28
	(3.05)	(4.16)	(3.51)	(5.09)	(3.52)	(3.47)
BILINGUAL BC * IN-GROUP STRANGER		-17.1**		0.13		
		(6.45)		(7.04)		
FEMALE	2.41	2.42	-11.4***	-11.4***	2.24	1.04
	(3.24)	(3.27)	(3.36)	(3.35)	(3.64)	(3.77)
AGE	-1.07	-1.35	0.17	0.17	$6.68^{*}$	7.86**
	(2.40)	(2.42)	(3.25)	(3.25)	(2.97)	(2.86)
ATHEISM	2.63	2.65	3.61	3.60	-3.18	-2.90
	(3.13)	(3.15)	(3.42)	(3.44)	(3.33)	(3.11)
FAMILY INCOME:						
BELOW AVERAGE	22.8***	22.7***	0.24	0.23	2.55	2.58
	(6.79)	(6.80)	(10.8)	(10.8)	(4.93)	(4.09)
ABOVE AVERAGE	-0.61	-0.60	-3.75	-3.75	5.24	3.23
	(4.76)	(4.74)	(4.49)	(4.50)	(4.37)	(4.43)
POCKET MONEY:						
BELOW 300k	-5.00	-4.74	-14.6**	-14.6**	-0.35	-0.43
	(3.47)	(3.44)	(4.40)	(4.40)	(4.03)	(3.79)
500k-1 MILLION	3.91	4.21	-11.6*	-11.6*	-1.45	1.64
	(4.21)	(4.21)	(4.69)	(4.69)	(3.07)	(3.07)
ABOVE 1 MIL	2.66	2.81	-11.1*	-11.1*	-9.49†	-9.56*

Table 5. Within-school interaction (I	BC and NC)
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<sup>&</sup>lt;sup>28</sup> Difference in gender composition among senders between BC and NC is not likely to affect the results as sender's gender is not a significant factor in determining reciprocal behavior (Buchan et al., 2008).

	(3.87)	(3.90)	(4.62)	(4.61)	(5.08)	(4.82)
RISK (% INVESTED)			-0.13*	-0.13*		
, , , , , , , , , , , , , , , , , , ,			(0.058)	(0.058)		
DICTATOR (% SENT)			0.30**	0.30**		
			(0.11)	(0.11)		
DICTATOR (% RECEIVED)			-0.071	-0.071		-0.059
			(0.11)	(0.11)		(0.11)
TRUST (% RECEIVED)						0.18**
						(0.057)
CONSTANT	52.5	53.3	86.5	86.5	-66.9	-97.2*
	(40.8)	(40.8)	(53.7)	(53.7)	(49.5)	(48.9)
Observations	276	276	276	276	135	135
N (cluster)	139	139	139	139		
Pseudo $R^2$	0.089	0.093	0.132	0.132	0.014	0.025
Prob. $> F$	0.000	0.000	0.000	0.000	0.116	0.000

*Notes*: Columns (1)–(6) report the coefficients in the Tobit estimations. Standard errors are in parentheses; Standard errors are clustered over subjects for (1)–(4) and robust for (5)–(6). For specifications (5) and (6), trust return equals 0 for both IN-GROUP STRANGER treatments (BC–NC and NC–BC), so the regression excludes these observations. The reference groups are "Average" for family income and "300k-500k" for pocket money. Female and Atheism are dummy variables.  $\dagger p < .10$ ;  $\ast p < .05$ ;  $\ast \ast p < .01$ ;  $\ast \ast \ast p < .001$ .

Next, in Table 6, we examine the results for between-school interactions, focusing particularly on the behavior of bilingual students (with BC–NC session as the reference group). All factors held constant, in the Dictator Game, BC participants sent 47.5 percentage points more of the initial endowment to BC students than to NC students and 27.6 percentage points more to bilingual students from *Minh Khai* (BK). These observations, which clearly suggest stronger in-group identification with language stream than with school attended, are confirmed by the results for the Trust Game in which bilingual *Marie Curie* participants (BC) sent 15.9% more on average to *Minh Khai* bilinguals (BK) than to *Marie Curie* non-bilinguals (NC)<sup>29</sup>.

<sup>&</sup>lt;sup>29</sup> While BC students have no information on the gender composition of the group of BK students (one might expect the ratio to be similar as BCs), the difference between the Dictator Game (altruistic) transfers to NC and BK could also be attributed to female-to-female discrimination (Ben-Ner et al., 2004). Nevertheless, this should not explain the difference observed in the Trust Game.

	(1) Dictator %Sent	(2) Trust % Sent	(3) Trust % Sent
BC-BC	47.5***	75.6***	$68.4^{***}$
	(5.18)	(4.36)	(6.75)
BC-BK	27.6***	15.9***	12.8**
	(3.67)	(3.78)	(4.33)
FEMALE	5.16†	-5.58	-6.35 <sup>†</sup>
	(2.63)	(3.47)	(3.57)
AGE	-6.92**	-1.54	-0.48
	(2.65)	(3.48)	(3.58)
ATHEISM	1.39	3.21	3.74
	(2.70)	(3.37)	(3.28)
FAMILY INCOME:			
BELOW AVERAGE	11.5	5.32	7.87
	(11.3)	(7.22)	(5.96)
ABOVE AVERAGE	-0.13	-5.57	-5.88
	(4.02)	(6.65)	(6.34)
POCKET MONEY:			
BELOW 300k	-0.23	-2.88	-5.18
	(4.24)	(4.87)	(4.54)
500k-1 MILLION	7.57*	0.14	-1.69
	(3.18)	(4.73)	(4.99)
ABOVE 1MIL	-0.88	-5.86	-7.36†
	(2.90)	(4.16)	(4.28)
RISK (% INVESTED)			-0.13*
			(0.061)
DICTATOR (% SENT)			0.21
			(0.16)
CONSTANT	$102.2^{*}$	24.3	17.3
	(43.3)	(57.9)	(59.8)
Observations	204	204	204

# Table 6. Between-school effects

N (cluster)	69	69	69
Pseudo $R^2$	0.108	0.128	0.132
Prob. $> F$	0.000	0.000	0.000
37 01 (1) (1)			

Notes: Columns (1)– (5) report the coefficients in the Tobit estimations. Standard errors, given in parentheses, are clustered over subjects. The reference groups are BC–NC for (1) to (3) and BC–BK in (4) and (5), "Average" for family income and "300k-500k" for pocket money. Female and Atheism are dummy variables.  $\dagger p < .05$ ;  $\ast p < .05$ ;  $\ast p < .01$ ;  $\ast \ast p < .001$ .

#### 6 Discussion

The findings of this paper provide evidence to support the role of group socialization in intergroup cooperation and competition. On the basis of the self-categorization theory which suggests that self-defining social categorization is a fundamental precondition involved in the psychological process of group affiliation (Guimond, 2000), such perceptions toward insiders as "us" and outsiders as "them" lead to discrimination in favor of the in-group (Billig and Tajfel, 1973; Tajfel, 1970; Tajfel et al., 1971). That is, when subjects define themselves as members of the group, they tend to internalize the shared attitudes and beliefs during their socialization process and also, involve 'private acceptance of a norm which defines a group in which subjects include themselves and with which they identify' (Abrams and Hogg, 1990, p.207). As expected, the French bilingual members succeeded in maintaining a strong and separate group identity, where they displayed greater in-group favoritism to fellow bilinguals from a different school, as compared to the non-bilingual schoolmates. The findings of this paper are also aligned with previous studies, which indicate that individuals are more positively attractive to outsiders that share the same beliefs, values or personality characteristics than outsiders that are dissimilar to their own (Allen and Wilder, 1979; Simard, 1981; Diehl, 1988; Hendrick et al., 1971).

Several reasons led us to believe that Marie Curie French bilingual subjects cooperate differently with respect to fellow bilingual students than with non-bilingual members. First, the significant magnitude of the observed discrimination may account, in part, for the longevity of the French history in Vietnam and its apparent success at maintaining common-pool resources. Generally stated, the French bilingual members selectively adjusted their cooperativeness according to the in-group characteristics of the person with whom they interacted. In the second (*IN-GROUP STRANGER*) and third (*OUT-GROUP*) treatment, the Marie Curie bilingual subjects displayed the tendency to be less favorable toward the non-bilingual schoolmates than to the Minh Khai bilingual members. From the shared experience and frequent interactions, the bilingual

subjects might have learned that cooperation tends to be reciprocated. Hence, even though they all remained anonymous throughout the experiments, the willingness to cooperate with fellow bilinguals whom they share a common fate – a fate that is dependent on cooperation, was greater than the interaction with non-bilinguals.

Second, the role of group socialization has a significant effect on intergroup attitudes and beliefs. The French bilingual students are often perceived as holding more prestige than other groups of students, particularly with respect to higher socio-economic background and academic performance. This may contribute to the relatively stronger discriminatory choices observed among French bilingual students in the Dictator Game, compared to their peers in the non-bilingual program. Furthermore, as the chosen age groups are from 16 to 17 years old (grade 11 and 12), these bilingual participants consider their fellow members as a primary social group in the sense of Akerlof and Kranton (2000) and are expected to exhibit the strongest group conformity due to their longest time associated with the group (from school-age to adolescent development stages).

A third explanation for the discriminatory behavior is that we might have observed the bilingual subjects playing a super-game. As the two studied schools are very close to each other, the participants might be concerned about how their decisions would impact on future interactions with fellow bilingual members, and thus adjusted their cooperativeness accordingly. This concern did not exist when paired with a non-bilingual member.

Finally, another interesting result was drawn outside of the bilinguals' behavioral tendencies. In the second treatment *IN-GROUP STRANGER*, the symmetry in behaviors was remarkable, which presented evidence that both studied groups discriminated against each other equally although to a slight varying degree in the Dictator Game. In other words, this was not only the case of high-status students discriminating against the others but could also be explained by the differences in perspectives of minority versus majority groups (e.g., see Guimond, 2000). Therefore, we see a number of potential avenues for future research. First, extending the investigation by adding another out-group condition (e.g., NC – NK) and across different age groups (as in Angerer et al., 2016) would help to examine another layer of intergroup discrimination dynamic and thus, help to understand the driving forces behind discriminatory behavior. Second, it would be interesting to explore a bilingual-centric variation, in order to examine whether the in-group favoritism shared among bilingual subjects is consistent when paired with fellow bilingual members from a different city (e.g., Northern versus Southern

Vietnam). In addition, information from the survey can be used for further research, such as exploring how in-group-out-group trust questions, child qualities or Big 5 personality traits could affect favoritism and discrimination. Finally, it should also be mentioned that not using a strategic method when eliciting trustworthiness of Receivers comes at a cost. It reduces the possibility of assessing whether the level of trustworthiness differs depending on whether subjects respond to bilingual or non-bilingual senders, and thus whether some of the differences in trust may reflect accurate expectations of differences in trustworthiness. The issue is that, given that Senders transfer very different amounts to bilingual and non-bilingual receivers, receivers then start with very different endowments and thus could be comparing amounts sent back. Finally, one should be careful in generalizing from exploring data from one single school, as the importance of a particular identity depends on the social context. For example, different schools may be characterized by different levels of teachers reinforcing the higher status of bilingual educational tracks.

# 7 Concluding Remarks

The core innovation in this study is to identify a setting in which competing identities are expected, and then to identify the level of in-group favoritism and out-group discrimination among school-aged children, along with a broader set of social preferences including altruism, trust, and trustworthiness. We applied a framed field experiment exploiting the unique language and cultural background of Ho Chi Minh City, Vietnam, to conduct an analysis of within-school and between-school effects among French bilingual versus non-bilingual high school students. With respect to the intergroup discrimination dynamics, we present two important findings. First, the symmetry in behavior is remarkable as both groups discriminate against each other equally, and thus very low levels of sharing and trusting were recorded. Second, the bilingual students exhibit higher levels of discriminatory behavior toward non-bilinguals within the same school (*Marie Curie*) than to other bilinguals from a different school (*Minh Khai*). Such consistent differences (regardless of their reasons) may indicate a potential for disharmony. History is full of examples of campaigns attempting to emphasize singular identities; triggering such in-group biases can lead to atrocities, making even old friends into new enemies.

In general, cultural diversity can bring benefits to society by providing ample variety of

experiences to enjoy, but cultural diversity does not mean support for cultural conservatism (Sen, 2006) that may enhance ingroup biases or reduce cultural freedom. As Sen (2006) points out, the "merit of diversity must thus depend on precisely *how* that diversity is brought about and sustained" (p. 116). He emphasizes that even if certain basic cultural attitudes and beliefs influence the nature of reasoning, they cannot invariably determine it fully (p. 34). Thus, giving people an opportunity for exercising freedom is important. The violation of freedom can result in a lack of knowledge and understanding of other cultures and alternative lifestyles. The fact that in-group biases are seen at the school provides further support for the need to discuss human identities at the school level; according to Sen (2006), this is where schools can play a critical role: "There is ... the important recognition that human identities can take many distinct forms and that people have to use reasoning to decide on how to see themselves, and what significance they should attach to having been born a member of a particular community... a person may well decide that her ethnic or cultural identity is less important to her than, say, her political convictions, or her professional commitments, or her literary persuasions. It is a choice for her to make, no matter what her place is in the strangely imagined 'federation of cultures'" (pp. 119, 159).

# **Appendix A: School Characteristics**

Table A1: French teaching curricula in Vietnam

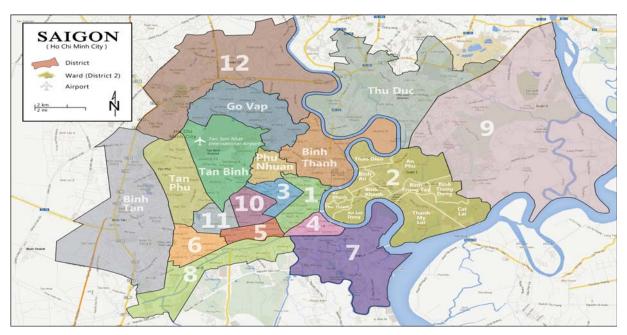
	Hours per	Number of	Number of	Location
	year	years	enrolled	
			students	
French (major)	100 - 150	7	51,672	All over the country
French (intensive)	200 - 350	3	1605	All over the country
French (minor)	75	3	45,262	20 provinces
French bilingual classes	250	7-12	14,630	18 provinces

Source: Data adapted from French Embassy in Vietnam – 2010.

Table A2: General statistics of Ho Chi Minh City versus Vietnam

STATISTICS IN 2016	HO CHI MINH CITY	VIETNAM
Area (Km <sup>2</sup> )	2,061Km <sup>2</sup>	331,231Km <sup>2</sup>
Average population	8,298 million	92,695 million
Population density where the	4,025	280
students live (per km <sup>2</sup> )		
In-migration rate (2005 - 2016)	19.40%	4.60%
Out-migration rate (2005 - 2016)	7.70%	4.60%
Sex ratio of population in HCMC	91.8	97.3
(Males per 100 females)		
Salary per capita (per year)	\$AUD 2,196	\$AUD2,314
Source: Data adapted from General St	tatistics Office of Vietnam – 2016)	

Source: Data adapted from General Statistics Office of Vietnam – 2016)



**Fig. A1:** Districts map – Ho Chi Minh City, Vietnam. Source: <u>http://www.jaydtravelphotog.com/welcome-to-district-9-saigon-no-not-the-movie/</u>

#### **Appendix B: Experimental Instructions**

#### **GENERAL EXPLANATIONS FOR PARTICIPANTS**

As part of today's experiment, we will be performing some tasks. The funding for this research has been provided by the *Queensland University of Technology* and any money that you end up with will be yours to take home. You will be paid for one of the tasks. I will throw a dice at the end of the tasks in front of everyone to determine which task you will be paid for. In addition to any earnings, you might have in this task, you will be given **VND 50,000** as a participation fee.

We are about to begin the first task. Please listen carefully. It is important that you understand the rules of the task properly. If you do not understand, you will not be able to participate effectively. We will explain the task and go through some examples together. There is to be no talking or discussion of the task amongst you. There will be opportunities to ask questions to be sure that you understand how to perform each task. At any time whilst you are waiting during this experiment, please wait at your seat and do not do anything unless instructed by the experimenter. Also do not look at other's responses at any time during this experiment. If at any time you decide that you are not happy with the task you have been invited to perform, you can decide not to participate.

After we have completed all the tasks, I would like you to answer some questions about yourself. Please take your time and answer honestly and as accurately as possible. You will not be identified, and your survey answers will only be used for this experiment and will only be used by the researcher(s) involved in this project.

Finally, stapled behind this page is a slip of paper with your ID# on it. Please keep this page with the stapled ID# with you at all times. Do not show this ID# to anyone or allow it to be visible to anyone during or after this experiment. You will need to present this page with the stapled ID# to the cashier at the end of the experiment in order to receive your payment. If you are ready, then we will proceed. Please turn the page and follow along with the experimenter.

#### **TASK #1 INSTRUCTIONS**

This task is played by pairs of individuals. Each pair is made up of a Player 1 and a Player 2. Each of you will play this task with someone from this group. However, none of you will know exactly with whom you are playing. You will never find this out.

Each Player 1 has VND 60,000. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Player 1 must decide how to divide this money between him or herself and Player 2. Player 1 must allocate between VND0 and the total VND 60,000 to Player 2. Player 2 takes home whatever Player 1 allocates to him/her, and Player 1 takes home whatever he or she does not allocate to Player 2.

Let's go through an example:

Imagine that Player 1 chooses to allocate VND 30,000 to Player 2. Then, Player 2 will go home with VND 30,000 (VND 30,000 given). Player 1 will go home with VND 30,000 (VND 60,000 minus 30,000 equals 30,000).

Note that this is an example only. The actual decision is up to you.

Each of you will play as both Player 1 and Player 2 in this task. Each of you will be paired with two different individuals. The important thing to remember is that you will NOT be paired with the same person twice and you will always remain anonymous to each other. No-one will be told who they are paired with.

We will hand out all forms that you will record your decisions on throughout this experiment in envelopes to ensure this. If this task is chosen for payment, I will then toss a coin to determine which pairing you will be paid for. So, for any given toss of the coin, half of you will go home with what you kept as Player 1, half of you will go home with what the Player 1s have given you.

Are there any questions? If you are ready, we will proceed. You will convey your decision using the form provided. There is an example question and a table for you to record your decision. Please complete the example question first and then fill in Boxes A and B of the table. Once done, please place your form back into the envelope, raise your hand and we will collect the form from you.

Player ID #:

Paired Player ID # (For experimenter use only): \_\_\_\_\_

## FORM FOR RECORDING DECISIONS FOR TASK #1

Before you fill out this form, please complete the example below:

1. Say you are Player 1 and you have 60,000. You choose to give 20,000 to Player 2.
How much will you have and how much will Player 2 have? Player
1(yourself): \_\_\_\_\_ Player 2: \_\_\_\_\_

**2.** When you have completed the example above, please enter the amount, in dollars, that you wish to keep and the amount that you wish to give to Player 2 in the table below.

	Total amount	60,000
А	Amount I wish to keep	
В	Amount I wish to send to anonymous Player 2	

When you have made your decision as Player 1, your task is complete. Please place your form back into the envelope, raise your hand and we will collect the form from you.

#### **TASK #2 INSTRUCTIONS**

We are about to begin the second task. Please listen carefully to the instructions. This task is performed by pairs of individuals. Each of you will play this task with someone from this group. Each pair is made up of a Player A and a Player B. Each Player A has VND 40,000. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Each Player A will have the opportunity to keep all of 40,000 to himself/herself or allocate some or all of it to a Player B. However, each VND 1000 that Player A sends to Player B will be *tripled* by the experimenter and given to player B.

Player B will then have an opportunity to keep all of the money sent to him/her from Player A or to send some or all of it back to Player A. This time the money will *not* be tripled again. The experiment ends at this point.

Player B takes home whatever money that he/she does not give to Player A. Player A takes home whatever he/she did not give to Player B and whatever money Player B gave back.

Here are 2 examples of what could happen:

1) Say Player A gives Player B 10,000. This will be tripled, and it will be 30,000 when it reaches Player B. Then Player B sends back to Player A 10,000. Then Player A will have 40,000 (40,000 minus the 10,000 sent to Player B and plus the 10,000 sent back by Player B). Player B will have 20,000 (30,000 minus the 10,000 sent back to Player A).

2) Say Player A gives Player B 30,000. This will be tripled, and it will be 90,000 when it reaches Player B. Then Player B sends back to Player A 40,000. Then Player A will have 50,000 (40,000 minus the 30,000 sent to Player B and plus the 40,000 sent back by Player B). Player B will have 50,000 (90,000 minus the 40,000 sent back to Player A).

Note that these are only examples. The actual decisions are up to you. Each of you will play as both Player A and Player B in this task. Each of you will be paired with two different individuals. In one pair you will be Player A and in the other pair you will be Player B. So you will play this task once as Player A and once as Player B. The important thing to remember is that you will NOT be paired with the same person twice and you will always remain anonymous to each other. No-one will be told who they are paired with. If this task is chosen for payment, I will then toss a coin to determine which pairing you will be paid for. So for any given toss of the coin, half of you will go home with what you kept as Player A, half of you will go home with what the Player As have given you.

Are there any questions? If you are ready, we will proceed. You will convey your decisions using the form provided. Please turn over the page and look at the form that you will record your decision on. I will read through the form first. Please do not write anything until instructed to.

Player ID #:\_\_\_\_\_

Paired Player ID # (For experimenter use only): \_\_\_\_\_

# FORM FOR RECORDING DECISIONS FOR TASK #2

# Part A

Before you fill out this form, please complete the example below:

**1.** You are Player A and you have 40,000. You choose to give 10,000 to Player B. How much will Player B have? VND\_\_\_\_\_ x \_\_\_ = \_\_\_\_ Player B decides to send 15,000 back. How much will you have in total and how much will Player B have in total?

Player A: \$\_\_\_\_\_- \$\_\_\_\_+\$\_\_\_\_= \_\_\_\_ Player B: \$\_\_\_\_\_-\$\_\_\_\_= \_\_\_\_

When you have completed the example above, please fill out Boxes A, B and C of the table below. When you have made your decision as Player A, your task as Player A is done at this point. Once you have completed Boxes A, B and C, raise your hand and I will collect the form from you. You will be informed of how much the Player B gave back to you at the end of the experiment when you collect your payment.

2.

Your decision as Player A						
	Starting amount	40,000				
А	Amount I wish to keep as Player A					
В	Amount I wish to send to anonymous Player B					
С	Amount that Player B will receive (Box B x 3)					

When you have completed Part A, please read the instructions for Part B over page.

# FORM FOR RECORDING DECISIONS FOR TASK #2

# Part B

Recall that you will also be a Player B in another pairing. I will record how much Player A in this pairing has sent to you in Box D when I collect your forms after you fill in Boxes A, B and C. The amount in Box D will already be tripled. I will then return the form to you and you will then decide how much money to keep and how much to send back to Player A. You will need to fill in Boxes E and F.

When you have read the above paragraph, place your form for Task #2 into the envelope, raise your hand and I will collect your form from you.

3	
-	•

Your decision as Player B						
D	Amount received from Player A (already tripled)	[pre-filled by the				
		experimenter]				
Е	Amount I wish to keep					
F	Amount I wish to send back to Player A					

Once you have completed boxes E and F, your task is done. Please place this form into your envelope, raise your hand, and I will collect the form from you.

#### **TASK #3 INSTRUCTIONS**

We are about to begin the third task. Please listen carefully to the instructions.

In this task, you will be given 20,000. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for. You have the opportunity to invest a portion of this amount (between 0 and 20,000).

The investment: There is an equal chance that the investment will fail or succeed. If the investment fails, you lose the amount you invested. If the investment succeeds, you receive 3 times the amount invested.

How do we determine outcome of investment: After you have chosen how much you wish to invest, you will toss a coin to determine whether you win or lose if this task is chosen for payment. If the coin comes up heads, you win three times the amount you chose to invest. If it comes up tails, you lose the amount invested. You will toss the coin when you come to collect your payment at the end of the experiment.

Here are some examples:

- 1. You choose to invest nothing. You will get 20,000 for sure if this task is chosen for payment.
- 2. You choose to invest all of the 20,000. Then if the coin comes up heads, you get 60,000. If the coin comes up tails, you get 0.
- 3. You choose to invest 10,000. Then if the coin comes up heads, you get 40,000 (10,000  $\times$  3 + 10,000 = 40,000). If the coin comes up tails, you get 10,000.

Do you have any questions? If you are ready, we will proceed. Please fill in the amount that you would like to invest in the form on the other side of the page and raise your hand when you are done. I will then collect the forms.

Player ID #:\_\_\_\_\_

## FORM FOR RECORDING DECISION FOR TASK #3

Amount I wish to invest		

#### **TASK #4 INSTRUCTIONS**

We are about to begin the fourth task. Please listen carefully to the instructions. All the money that you earn from this task is yours to keep and will be given to you at the end of this experiment if this task is chosen as the one that you will be paid for.

For Task 4, you will be asked to calculate the sum of five randomly chosen two-digit numbers. *For example:* 

You will be given 5 minutes to do as many sums as possible and you must complete the sums in order. You cannot use a calculator to calculate the sums, however you are welcome to make use of the provided scratch paper. Your answers to the problems are anonymous. You can choose one of two payment options for this task.

#### **Option 1:**

If you choose this option, you get 5,000 for each problem that you solve correctly in the 5 minutes. Your payment does not decrease if you provide an incorrect answer to a problem.

#### **Option 2:**

If you choose this option, you will be randomly paired with someone and your payment depends on your performance relative to that of the person that you are paired with. If you solve more problems correctly than the person you are paired with, you will receive 10,000 per correct answer. If you both solve the same number of problems, you will receive 5,000 per correct answer. If you solve less than the person you are paired with, you will receive 5,000 per correct answer. If you solve less than the person you are paired with, you will receive 5,000 per correct answer. If you solve less than the person you are paired with, you will receive \$0.

Note that what you will earn does not depend on the decision of the person that you are paired with; it only depends on your own choice of payment, your performance and their performance. Here are some examples of what could happen:

- You choose option 1. You complete 10 sums correctly. You will receive 10 x 5,000
   = 50,000.
- 2. You choose option 2. You complete 8 sums correctly. The person that you are paired with completes 7 sums correctly. You will receive  $8 \ge 10,000 = 80,000$ .

Note that these are examples only. The actual decision is up to you.

Are there any questions before we begin? If you are ready, we will proceed. Before we begin the task, please fill out the questions on the form over page and raise your hand when you are done.

Player ID #: \_\_\_\_\_

Paired Player ID # (For experimenter use only):

#### **QUESTIONS FOR TASK #4**

Please answer the following questions:

1. Suppose you choose Option 1. You complete 11 sums correctly at the end of 5 minutes. How much money do you receive? \_\_\_\_\_ x VND\_\_\_\_ =

2. Suppose you choose Option 2. You complete 7 sums correctly. The person you are paired with completes 6 sums correctly. How much money do you receive?
\_\_\_\_\_ x VND\_\_\_\_\_ = \_\_\_\_\_

3. How many sums do you think you can complete correctly in 5 minutes?

4. If we were to rank everyone's performance in the group from best to worst, where do you think you would fall compared to the average person? *Please place a tick next to the rank that you think applies to you.* (very above average) (above average) (above average) (very below average) (below average) (very below average)

5. We now ask you to choose how you want to be paid: according to option 1 or option 2?

6. What was your decision based on?

7. If you chose Option 1, did your decision depend on the payment rate under Option 2? If so, what payment rate would have convinced you to choose Option 2?

Please place the form back into the envelope when you are done, raise your hand and I will collect the form from you. When I have collected everyone's forms, I will then hand out the sums sheets. Please do not talk while you are waiting and do not turn over the sheets. Raise your hand if you have any questions.

Player ID #: \_\_\_\_\_

Paired Player ID # (For experimenter use only): \_\_\_\_\_

# FORM FOR RECORDING ANSWERS FOR TASK #4

Add up the numbers in each row and record your answer in the blank box at the end

20				
18	59	79	35	
52	41	47	22	
10	59	81	78	
58	40	49	53	
61	53	49	41	
98	27	38	78	
25	75	50	64	
58	98	89	45	
19	59	40	37	
41	47	36	54	
68	68	55	67	
90	30	84	35	
67	20	45	44	
92	11	87	16	
21	96	53	65	
69	26	45	13	
37	54	94	41	
14	17	50	67	
13	98	66	21	
83	64	52	91	
93	55	69	89	
80	32	52	28	
61	96	58	21	
	52         10         58         61         98         25         58         19         41         68         90         67         92         21         69         37         14         13         83         93         80	18 $59$ $52$ $41$ $10$ $59$ $58$ $40$ $61$ $53$ $98$ $27$ $25$ $75$ $58$ $98$ $19$ $59$ $41$ $47$ $68$ $68$ $90$ $30$ $67$ $20$ $92$ $11$ $21$ $96$ $69$ $26$ $37$ $54$ $14$ $17$ $13$ $98$ $83$ $64$ $93$ $55$ $80$ $32$	18 $59$ $79$ $52$ $41$ $47$ $10$ $59$ $81$ $58$ $40$ $49$ $61$ $53$ $49$ $98$ $27$ $38$ $25$ $75$ $50$ $58$ $98$ $89$ $19$ $59$ $40$ $41$ $47$ $36$ $68$ $68$ $55$ $90$ $30$ $84$ $67$ $20$ $45$ $92$ $11$ $87$ $21$ $96$ $53$ $69$ $26$ $45$ $37$ $54$ $94$ $14$ $17$ $50$ $13$ $98$ $66$ $83$ $64$ $52$ $93$ $55$ $69$ $80$ $32$ $52$	18 $59$ $79$ $35$ $52$ $41$ $47$ $22$ $10$ $59$ $81$ $78$ $58$ $40$ $49$ $53$ $61$ $53$ $49$ $41$ $98$ $27$ $38$ $78$ $25$ $75$ $50$ $64$ $58$ $98$ $89$ $45$ $19$ $59$ $40$ $37$ $41$ $47$ $36$ $54$ $68$ $68$ $55$ $67$ $90$ $30$ $84$ $35$ $67$ $20$ $45$ $44$ $92$ $11$ $87$ $16$ $21$ $96$ $53$ $65$ $69$ $26$ $45$ $13$ $37$ $54$ $94$ $41$ $14$ $17$ $50$ $67$ $13$ $98$ $66$ $21$ $83$ $64$ $52$ $91$ $93$ $55$ $69$ $89$ $80$ $32$ $52$ $28$

95	56	47	10	30	
98	24	32	83	53	
87	24	78	75	61	
11	30	84	19	12	
29	91	52	70	88	
19	32	26	46	10	
48	44	87	21	20	
81	71	47	84	33	
80	34	83	96	22	
33	15	24	33	22	
54	41	79	18	89	
46	71	87	39	12	
34	18	44	72	57	
95	86	52	24	32	
72	86	34	12	77	
11	69	26	45	13	

#### **TASK #1 INSTRUCTIONS\***

This task is played by bilingual students ONLY and performed by pairs of individuals. Each pair is made up of a Player 1 and a Player 2. Each of you will play this task with <u>a bilingual student from Minh Khai High School</u>. However, none of you will know exactly with whom you are playing. You will never find this out.

Each Player 1 has VND 60,000. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Player 1 must decide how to divide this money between him or herself and Player 2. Player 1 must allocate between VND0 and the total VND 60,000 to Player 2. Player 2 takes home whatever Player 1 allocates to him/her, and Player 1 takes home whatever he or she does not allocate to Player 2.

Let's go through an example:

Imagine that Player 1 chooses to allocate VND 30,000 to Player 2. Then, Player 2 will go home with VND 30,000 (VND 30,000 given). Player 1 will go home with VND 30,000 (VND 60,000 minus 30,000 equals 30,000).

Note that this is an example only. The actual decision is up to you.

Each of you will **only be played as Player 1** in this task. We will hand out all forms that you will record your decisions on throughout this experiment in envelopes to ensure this. If this task is chosen for payment, you will go home with what you kept as Player 1.

Are there any questions? If you are ready, we will proceed. You will convey your decision using the form provided. Please turn over the page and look at the form that you will record your decision on. There is an example question and a table for you to record your decision. Please complete the example question first and then fill in Boxes A and B of the table. Once done, please place your form back into the envelope, raise your hand and we will collect the form from you.

#### **TASK #2 INSTRUCTIONS\***

We are about to begin the second task. Please listen carefully to the instructions. **This task is also played by bilingual students ONLY** and performed by pairs of individuals. Each of you will play this task with <u>a bilingual student from Minh Khai</u> <u>High School</u>. However, you will always remain anonymous to each other. No-one will be told who they are paired with.

Each pair is made up of a Player A and a Player B. Each Player A has VND 40,000. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Each Player A will have the opportunity to keep all of 40,000 to himself/herself or allocate some or all of it to a Player B. However, each VND 1000 that Player A sends to Player B will be *tripled* by the experimenter and given to player B.

Player B will then have an opportunity to keep all of the money sent to him/her from Player A or to send some or all of it back to Player A. This time the money will *not* be tripled again. The experiment ends at this point.

Player B takes home whatever money that he/she does not give to Player A. Player A takes home whatever he/she did not give to Player B and whatever money Player B gave back.

Here are 2 examples of what could happen:

1) Say Player A gives Player B 10,000. This will be tripled, and it will be 30,000 when it reaches Player B. Then Player B sends back to Player A 10,000. Then Player A will have 40,000 (40,000 minus the 10,000 sent to Player B and plus the 10,000 sent back by Player B). Player B will have 20,000 (30,000 minus the 10,000 sent back to Player A).

2) Say Player A gives Player B 30,000. This will be tripled, and it will be 90,000 when it reaches Player B. Then Player B sends back to Player A 40,000. Then Player A will have 50,000 (40,000 minus the 30,000 sent to Player B and plus the 40,000 sent back by Player B). Player B will have 50,000 (90,000 minus the 40,000 sent back to Player A).

Note that these are only examples. The actual decisions are up to you. Each of you will **only be played as Player A** in this task. If this task is chosen for payment, you will go home with what you kept as Player A and whatever amount sent back by Player B.

Are there any questions? If you are ready, we will proceed. You will convey your decisions using the form provided. Please turn over the page and look at the form that you will record your decision on. I will read through the form first. Please do not write anything until instructed to.

# **Appendix C: Results**

Group 1		Group 2	Mean diff.	t-stat.	p-value	Z-stat.	p-value
NC-NC	vs.	BC-BC	-3.09	-1.97	0.499	-0.92	1
NC-BC	VS.	BC-NC	2.71	1.71	0.874	1.64	-0.5016
BC-NC	VS.	BC-BC	-21.07	-13.31***	< 0.001	-10.77***	< 0.001
BC-NC	VS.	NC-NC	-17.98	-11.44***	< 0.001	-9.93***	< 0.001
NC-BC	VS.	BC-BC	-18.36	-11.59***	< 0.001	-9.13***	< 0.001
NC-BC	VS.	NC-NC	-15.26	-9.71***	< 0.001	-8.27***	< 0.001
BC-BK	VS.	BC-BC	-11.92	-7.44***	< 0.001	-4.41***	< 0.001
BC-BK	VS.	BC-NC	9.15	5.72***	< 0.001	6.24***	< 0.001
BC-BK	VS.	NC-BC	6.44	4.02**	0.001	4.62***	< 0.001
BC-BK	VS.	NC-NC	-8.82	-5.55***	< 0.001	-3.53**	0.0021

**Table C1:** Mean comparison *t*-test and Wilcoxon rank-sum test exploring amount

 allocated between groups in the Dictator Game

*Notes*: Mean difference = Group 1 minus Group 2. The symbols \*\* and \*\*\* represent statistical significance at the 1%, and 0.1% levels, respectively. Both *p*-values are adjusted for multiple comparison using the Bonferroni method.

**Table C2:** Mean comparison *t*-test and Wilcoxon rank-sum test exploring difference in amount sent between sessions in the Trust Game

Group 1		Group 2	Mean diff.	t-stat.	p-value	Z-stat.	p-value
NC-NC	vs.	BC-BC	-0.44	-0.3	1	-0.48	1
NC-BC	vs.	BC-NC	0.29	0.19	1	0.32	1
<b>BC-</b> NC	vs.	BC-BC	-26.07	-17.31***	< 0.001	-10.95***	< 0.001
<b>BC-</b> NC	vs.	NC-NC	-25.63	-17.13***	< 0.001	-10.54***	< 0.001
NC-BC	vs.	BC-BC	-25.79	-17.12***	< 0.001	-10.63***	< 0.001
NC-BC	vs.	NC-NC	-25.34	-16.94***	< 0.001	-10.22***	< 0.001
BC-BK	vs.	BC-BC	-22.01	-14.45***	< 0.001	-7.47***	< 0.001
BC-BK	vs.	BC-NC	4.06	2.67†	0.08	3.36**	0.0038
BC-BK	vs.	NC-BC	3.78	2.48	0.137	3.05*	0.0114
BC-BK	vs.	NC-NC	-21.57	-14.26	< 0.001	-7.04***	< 0.001

*Notes*: Mean difference = Group 1 minus Group 2. The symbols  $\dagger$ , \*, \*\* and \*\*\* represent statistical significance at the 10, 5%, 1%, and 0.1% levels, respectively. Both *p*-values are adjusted for multiple comparison using the Bonferroni method.

in amount returned between sessions in the Trust Game							
Group 1		Group 2	Mean diff.	t-stat.	p-value	Z-stat.	p-value
NC-NC	VS.	BC-BC	5.03	1.92	0.556	0.88	1
NC-BC	VS.	BC-NC	-0.07	-0.03	1	-0.09	1
NC-BC	VS.	BC-BC	-33.93	-12.87***	< 0.001	-10.22***	< 0.001
NC-BC	vs.	NC-NC	-38.96	-14.88***	< 0.001	-11.17***	< 0.001
BC-NC	VS.	BC-BC	-33.86	-12.84***	< 0.001	-10.13***	< 0.001
BC-NC	vs.	NC-NC	-38.89	-14.85***	< 0.001	-11.07***	< 0.001
BC- <b>BK</b>	VS.	BC-BC	-28.26	-10.6***	< 0.001	-5.99***	< 0.001
BC-BK	vs.	NC-BC	5.67	2.13	0.341	4.12***	< 0.001
BC- <b>BK</b>	VS.	BC-NC	5.60	2.1	0.364	4.03***	< 0.001
BC- <b>BK</b>	VS.	NC-NC	-33.29	-12.57***	< 0.001	-6.89***	< 0.001

**Table C3:** Mean comparison *t*-test and Wilcoxon rank-sum test exploring difference in amount returned between sessions in the Trust Game

*Notes*: The symbol \*\*\* represents statistical significance at the 0.1% level. Both *p*-values are adjusted for multiple comparison using the Bonferroni method.

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