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Three Essays on Education Policy, Intergroup Relations, and Human Capital Accumulation

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Three Essays on Education Policy, Intergroup Relations, and Human Capital Accumulation

by
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ABSTRACT OF THE DISSERTATION

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The impact of education on fostering the development of human capital and molding sociopolitical attitudes from an early age is a well-explored topic in the field of social sciences. This dissertation takes a broader approach by delving into the consequences of two critical components of the education system: (1) the language used for instruction, and (2) citizenship education. To accomplish this, I employ a combination of observational and experimental research methods to disentangle the causal effects of these educational factors within the contexts of Malaysia and Singapore. Chapter 2 delves into the ramifications of adopting a non-native language of instruction on students' educational outcomes, specifically examining the consequences of a language reform in Malaysia. In Chapter 3, I investigate the impact of the same language reform in Malaysia and how bilingual instruction might alleviate ethnic discrimination against outgroups by encouraging perspective-taking. The final chapter explores the influence of citizenship education on promoting ethnic tolerance through a cross-national analysis and a case study of a citizenship education reform in Singapore.

Chapter 1: Introduction

The influence of education on promoting human capital formation and shaping sociopolitical attitudes from an early age is a subject of extensive scholarly inquiry in the realm of social sciences. Previous research has generated a plethora of evidence underlining that educational attainment serves as a strong and robust predictor of various social, economic, and political outcomes that significantly impact our lives. These include the cultivation of outgroup tolerance (e.g., Carvacho et al., 2013; Meeusen, de Vroome, & Hooghe, 2013; Napier & Jost, 2008), the encouragement of political participation (e.g., Mayer, 2011; Paulsen, Scheve, & Stasavage, 2023; Persson, 2015b), and the acquisition of knowledge, skills, and abilities that can be harnessed to generate economic value for the broader community (e.g., Akresh, Halim, & Kleemans, 2023; Psacharopoulos & Patrinos, 2018; Wantchekon, Klašnja, & Novta, 2015). Given this substantial body of supportive evidence for the positive impacts of education, Converse (1972, p. 324) asserts that "the higher the education, the greater the 'good' values of the variable."

However, more recent research has revealed that the effects of education may not be as unequivocally beneficial as previously thought. In a review article by Willeck and Mendelberg (2022), the authors succinctly describe the current state of research on the connection between education and political participation: "For every positive finding, null results abound" (p. 90). For example, Milligan et al. (2004) and Marshall (2019) investigate dropout age laws in the US but arrive at divergent conclusions: the former observes a positive relationship between education and voter turnout, whereas the latter reports null results. Furthermore, concerning education's impact on intergroup tolerance, some studies suggest that education may not necessarily serve as a panacea for reducing prejudice; under certain conditions, it might even exacerbate exclusionary tendencies towards outgroups (e.g., Ganzach & Schul, 2021; Henry & Napier, 2017).

This realization that higher educational attainment may not consistently lead to positive changes stems from two key challenges. The first challenge is based on the implicit assumption that individuals with the same educational qualifications share similar experiences throughout their educational journeys. However, in reality, there are important spatial and temporal differences with regard to the content of these experiences. For instance, in Myanmar, the education system heavily emphasizes an ethnocentric vision that upholds the dominance of the *Bamar* majority while marginalizing other minority groups in the country (Fink, 2018). In contrast, in Singapore, school materials and extracurricular activities often prioritize the values of interracial harmony and respect among the diverse ethnic groups within the country (J. B.-Y. Sim, 2011). Additionally, it is worth stressing that significant temporal variations can occur even within the same geographic region, as school curricula undergo periodic revisions and changes. As such, various cohorts of students may encounter different educational content over time (e.g., Lee, 2023). Fundamentally, this implies that education represents a bundle of experiences inside and outside the classroom, and each individual may not be exposed to the same set of experiences in school.

The second challenge revolves around the issue of causal identification, where the same background variables that influence one's educational achievement also affect subsequent outcomes. For example, parents' social status not only influences their children's school performance but also shapes their children's political interest and engagement (Jennings, Stoker, & Bowers, 2009; Scholzman & Verba, 2005). Put simply, education may also serve as a proxy through which parents transmit their values, social networks, and wealth to the next generation. Therefore, it is crucial to employ a methodologically rigorous framework to disentangle and pinpoint the impact of a particular aspect of the education experience while accounting for other potential confounding variables.

In response to these two challenges, this dissertation adopts a more expansive approach by investigating the impacts of two key aspects of the education system: (1) language of instruction, and (2) citizenship education. To achieve this, I utilize a combination of observational and experimental

research designs to unbundle the causal effects of these educational factors in the contexts of Malaysia and Singapore. Situated in one of the most culturally diverse regions in the world, these two countries are home to over a hundred ethnic and indigenous groups who subscribe to a variety of religious beliefs and who converse in more a hundred different languages. Moreover, there exists significant variation between the two countries, in terms of how the issue of ethnic diversity is confronted in schools, the types of cleavages that are manifested on the political front, and their levels of educational development. Although the Malaysian education system is deeply segregated along ethnic lines, this phenomenon does not apply to Singapore. Political parties in Malaysia are organized primarily by ethnic heritage, while neither race nor religion drives political competition in Singapore. The levels of intergroup prejudice also differ between the two countries, from "the polite expressions of ethnic concern in Singapore's press" (Brown, 1996, p. xi) to the use of derogatory terms such as *pendatang* (or "immigrants" in *Bahasa Melayu*) by Malaysian politicians to refer to the non-Malay population in the country. Finally, Singaporean students regularly rank among the top three countries globally in Mathematics and Science test scores, while students in Malaysia often struggle with solving more complex mathematical and scientific problems (Ng et al., 2012). Indeed, one can make a strong argument that Southeast Asia is a microcosm of the world, a region that comprises a mixture of authoritarian and democratic regimes, highly developed and emerging economies, and amicable versus hostile intergroup relations.

The next chapter investigates the impact of bilingual instruction on short-term educational outcomes. A critical component of bilingual instruction is that a substantial portion of a student's educational experience occurs in a language that is not their native tongue. Consequently, this medium of instruction may inevitably impede their ability to absorb content taught in a non-native language. Empirically, I examine the impact of an education reform in Malaysia, where English replaced the native language, *Bahasa Melayu*, as the language of instruction for Mathematics and Science in all public schools since 2003. What makes this investigation particularly unique is that the duration of exposure to English instruction could be identified by students' birth years, offering

a valuable opportunity to examine the correlation between the lengths of exposure to a non-native language of instruction and proficiency in Mathematics and Science. Analyzing data from more than 500,000 students in the Trends in International Mathematics and Science Study (TIMSS), the findings indicate that the reform in Malaysia resulted in lower Mathematics and Science test scores among the affected cohorts, with the largest reduction observed among those who had the longest exposure to the non-native language of instruction.

Chapter 3 continues the empirical investigation of bilingual instruction, with a specific focus on its influence on ethnic outgroup discrimination. Drawing on insights from psychology and cognitive science research, I argue that bilingual education reduces ethnic outgroup discrimination through perspective-taking. Fundamentally, this hypothesis is based on the assumption that the process of transitioning between multiple languages mirrors the cognitive process of shifting between different individuals' perspectives. In other words, individuals who engage in frequent language switching are anticipated to excel in perspective-taking. I test my expectations in three distinct studies. In Study 1, cross-national analyses reveal that bilingual speakers are more sensitive to the unequal treatment of other ethnic communities in their country than monolinguals. Study 2 leverages a quasi-experimental variation in the language of instruction in Malaysian schools and finds that individuals who received bilingual education display more inclusive attitudes than those exposed to monolingual instruction. In Study 3, results from a survey experiment show that bilingual exposure, specifically those who alternated between two languages during the survey, is linked to a reduction in outgroup discrimination.

The final empirical chapter delves into the impact of citizenship education on ethnic tolerance. While current research has devoted much attention towards understanding its effects on political participation, it remains uncertain whether citizenship education affects ethnic tolerance from an early age. I argue that the classroom environment plays an instrumental role in this regard. Specifically, I posit that citizenship education improves ethnic tolerance when delivered in an open classroom climate. I test this claim through (1) an analysis of cross-national data from

the International Civic and Citizenship Education Study, and (2) an examination of a reform in Singapore that quasi-randomly assigned students to receive citizenship education. Overall, the findings indicate that the benefits of citizenship education in promoting ethnic tolerance are only realized in open classroom settings, while its effects are negligible in restrictive environments. These results underscore the importance of open teaching methods in ameliorating ethnic intolerance within citizenship education.

Chapter 2: Bilingual Instruction and Human Capital Accumulation

Globally, a substantial proportion of individuals are proficient in more than one language. As of 2022, it is estimated that almost half of the world's population is fluent in more than one language (Eberhard, Simons, & Fennig, 2022). The percentage of multilingual speakers is even more pronounced in certain countries and regions, such as Canada (55%) and Europe (67%), further underscoring the prevalence of multilingualism (Luk, 2017). This phenomenon can be attributed, at least in part, to the widespread adoption of bilingual instruction in many countries worldwide. For instance, a study conducted by (Albaugh, 2014) examined language policies in 49 African countries and found that more than three-quarters of them had incorporated some form of bilingual instruction into their school curricula by 2010. This diversity in language instruction reflects the global recognition of the value of multilingualism and the importance of accommodating linguistic diversity within education systems.

To clarify, I define bilingual instruction as the use of two languages to teach content subjects (Liu, 2011). For example, in many Gulf countries, bilingual education involves instruction in both Arabic and English or French, with Arabic as the medium of instruction for subjects like Islamic Studies and Social Studies, and English or French used for subjects such as Mathematics and Science. Importantly, a critical aspect of bilingual education involves students learning certain subjects in a language that is not their mother tongue. This aspect has sparked significant debate among education policymakers and researchers. Critics argue that employing a non-native language as the medium of instruction in the classroom hampers the development of human capital. This is because it places a considerable learning burden and cost on the majority of the population who may lack prior proficiency in the non-native language, making it difficult for them to grasp the

instructional content effectively (e.g., Eriksson, 2014; Jain, 2017; Laitin & Ramachandran, 2016, 2022). Conversely, other studies suggest that exposure to a non-native language of instruction, especially one widely used globally like English or French, can enhance human capital, broaden employment opportunities, and lead to improved job market outcomes (e.g., Angrist & Lavy, 1997; Ginsburgh & Prieto-Rodriguez, 2011; Wang, Smyth, & Cheng, 2017).

This chapter exploits a language policy shift in Malaysia to study the impact of employing a non-native language of instruction in schools on students' learning capabilities. What sets the Malaysia case apart from previous empirical research is the unique opportunity it provides to investigate the connection between the duration of exposure to the non-native language and educational outcomes. Due to the staggered nature of the policy implementation, different student cohorts experienced varying lengths of exposure to the non-native language. Furthermore, there is diversity in terms of the timing of the introduction of the non-native language of instruction: some students encountered the language change during their secondary school years, some only during their primary school years, while others were exposed to it throughout their entire educational journey.

To empirically evaluate the impact of the language reform on different student cohorts in Malaysia, I analyze cross-national data from the Trends in International Mathematics and Science Study (TIMSS). This dataset comprises six waves of Mathematics and Science test scores data (i.e., between 1999 and 2019) from over 500,000 eighth-grade students across 17 countries, including Malaysia. Employing a generalized difference-in-differences approach, the findings reveal a statistically significant decline in Mathematics and Science test scores by approximately 35% of a standard deviation following the shift in the language of instruction in Malaysia. Importantly, this decrease is most pronounced among students with lengthier exposure to English instruction, indicating that students faced substantial challenges in comprehending Mathematics and Science content in a non-native language. Overall, the empirical evidence underscores the tangible and adverse consequences associated with the transition from a native to a non-native language of instruction within the Malaysian educational context.

2.1 Current Research: Language Reforms & Human Capital

The implementation of major language reforms is a widespread practice observed in numerous countries across the globe. These reforms are often motivated by a variety of factors, including the desire to enhance educational outcomes, promote linguistic diversity, address cultural or identity issues, or improve access to education for marginalized or minority populations (e.g., Clots-Figueras & Masella, 2013; Eriksson, 2014; Laitin & Ramachandran, 2016). Furthermore, these reforms can manifest in various ways, such as transitioning from a native to a non-native tongue (typically in the form of a colonial language like English or French) as the medium of instruction, or vice versa. Yet, despite the substantial body of research dedicated to this topic and the availability of many natural experiments for empirical scholars to investigate, the prevailing consensus in current research is that many language reforms exhibit limited influence on students' academic performance.

When examining cases in which educational reforms have shifted the language of instruction to a *non-native tongue* like English or French in sub-Saharan Africa, one might expect that such a change would impede the formation of human capital, primarily due to the substantial learning challenges and costs imposed on many citizens who may not possess prior proficiency in the non-native language. For example, Jain (2017) studied the impact of official language policies on education in India. In colonial provinces, there were districts where the official language aligned with the district's language and others where it did not. In districts with linguistic mismatches, there was a notable decline in literacy rates by 18.8% and a substantial decrease in college graduation rates by 27.6%. A similar empirical approach was employed in Laitin and Ramachandran (2016), where they discovered a robust and significant negative relationship between an official language that is distant from the local indigenous languages and human capital and health outcomes. Ivlevs and King (2014) conducted a study to investigate the impact of transitioning from Russian as the language of instruction to a combination of Latvian and Russian instruction in schools catering to minority populations in Latvia, where the majority of students' mother tongue was Russian. By analyzing centralized exam results for all Latvian secondary schools from 2002 to 2011, they

observed a significant decline in performance in minority schools during the initial years following the reform. It is worth noting, however, that there are some conflicting findings regarding the impact of a non-native language of instruction on students' learning outcomes. Lleras-Muney and Shertzer (2015) assessed the impact of US laws that mandated English as the language of instruction on school enrollment, literacy, and English proficiency of immigrant children between 1910 and 1930. Their findings indicated that the English-only statutes had a moderate positive effect on literacy rates among specific groups of foreign-born children, particularly those residing in urban areas or whose parents were not proficient in English.

On the flip side of this review, there exist several empirical studies that have explored the consequences of using a *native language of instruction* in schools. In this context, there is a prevailing conjecture that these policies would enhance students' learning, as classes are conducted in a language that is easily accessible to the majority of the population. Indeed, this expectation aligns with the research conducted by Eriksson (2014), who examined the consequences of South Africa's 1955 Bantu Education Act, which extended mother-tongue instruction from four to six years. The study's findings indicated positive effects on reading and writing skills, educational attainment, and English language proficiency in predominantly English-speaking areas. Similar conclusions have also been reached in other studies investigating the impact of mother tongue instruction in sub-Saharan Africa (e.g., Laitin & Ramachandran, 2022; Laitin, Ramachandran, & Walter, 2019; Ramachandran, 2012).

However, there are also instances of negative findings for similar language reform policies. For instance, Angrist and Levy (1997) conducted a study on the language reform in Morocco, which entailed a transition from French to Arabic as the language of instruction for grade six and above beginning in 1983. Their research uncovered a substantial decrease in both test scores and earnings as a result of this change, significantly reducing the educational and economic benefits for those affected by the reform. A similar conclusion is arrived at by Chakraborty and Kapur Bakshi (2016) in India, where the communist government in the state of West Bengal eliminated English

instruction at the primary level in public schools. The authors show that a 1% reduction in the likelihood of acquiring English language skills led to a 1.6% decrease in weekly wages, with a significant portion of this decline attributed to the policy shift.

Table 2.1: **Current Research on Language of Instruction and Human Capital Formation**

Effect	Native Language	Non-Native Language
Positive	**(Eriksson, 2014); (Laitin & Ramachandran, 2022); (Laitin, Ramachandran, & Walter, 2019); (Ramachandran, 2012)**	(Lleras-Muney & Shertzer, 2015)
Negative	(Angrist & Lavy, 1997); (Chakraborty & Bakshi, 2016)	**(Jain, 2017); (Laitin & Ramachandran, 2016); (Ivlevs & King, 2014)**

Notes: Table entries in **bold** are those that are consistent with the conventional wisdom that native (or non-native) language of instruction should have positive (or negative) effects on students' learning and human capital accumulation.

Taken together, the preceding discussion highlights the absence of a scholarly consensus regarding the impact of native versus non-native language of instruction on students' learning outcomes (see Table 2.1). One significant factor contributing to this lack of consensus is the variability in the timing of language reform implementation across different cases. For instance, in Morocco, the shift to native language instruction occurs at the secondary school level, specifically starting from grade six and above (Angrist & Lavy, 1997). In contrast, in South Africa, the transition to native language instruction takes place at the primary school level (Eriksson, 2014). This variation in the timing and context of language reforms makes direct comparisons challenging and contributes to the diversity of findings in this area of research. Additionally, another challenge arises from the fact that most studies focus on only one type of transition, either from a native to a non-native tongue or vice versa. However, as we will explore in the next section, the Malaysian case study presents a unique empirical opportunity to address both of these challenges simultaneously.

2.2 Education Reforms in Malaysia

Since its independence in 1957, the Malaysian education landscape has remained deeply segregated. At the primary level, public schools are classified into two official types: (1) "national schools" (*Sekolah Kebangsaan*) that use *Bahasa Melayu* as their main medium of instruction, and (2) "national-type schools" (*Sekolah Jenis Kebangsaan*) that adopt either Mandarin or Tamil as the medium. While English and *Bahasa Melayu* are compulsory subjects for all primary school students, Mathematics and Science were taught in accordance with the school's vernacular language before the 2003 reform – i.e., *Bahasa Melayu*, Mandarin, or Tamil. On the other hand, *Bahasa Melayu* was the sole language of instruction in all public secondary schools before 2003, though there also exists several Chinese independent high schools that are privately funded and that offer a Mandarin-based curriculum for their students. Similarly, English and *Bahasa Melayu* are compulsory subjects in both private and public secondary schools in Malaysia.

On May 6, 2002, then Prime Minister of Malaysia, Mahathir Mohamad, announced that English would replace the three vernacular languages as the sole medium of instruction for Mathematics and Science in all public primary and secondary schools from 2003. This policy (known in *Bahasa Melayu* as *Pengajaran dan Pembelajaran Sains dan Matematik Dalam Bahasa Inggeris* or PPSMI) was implemented in a staggered fashion. Beginning 2003, Mathematics and Science would be taught in English for all year one (i.e., grade one), form one (i.e., grade seven), and lower form six (i.e., grade twelve) students. For instance, year two students in 2003 would continue their Mathematics and Science training in their respective vernacular languages, but would switch to English when they promote to form one in 2008.

More importantly, this reform significantly increased the number of English-based teaching hours in schools. While their predecessors' exposure to English-medium classes was limited to just two hours per week, affected students spent at least 13 hours per week learning Mathematics and Science in English, in addition to their English and vernacular language classes (Gill, 2013). Under the reform, about 40 percent of the teaching time was dedicated to English instruction, with the

remaining 60 percent being taught in *Bahasa Melayu*. This was corroborated by evidence on the ground: according to a 2008 survey of 1,700 ethnic Malay students, more than 90 percent indicated that their teachers used either an English-only approach or a combination of English and *Bahasa Melayu* instruction to teach Mathematics and Science (Isahak et al., 2008).

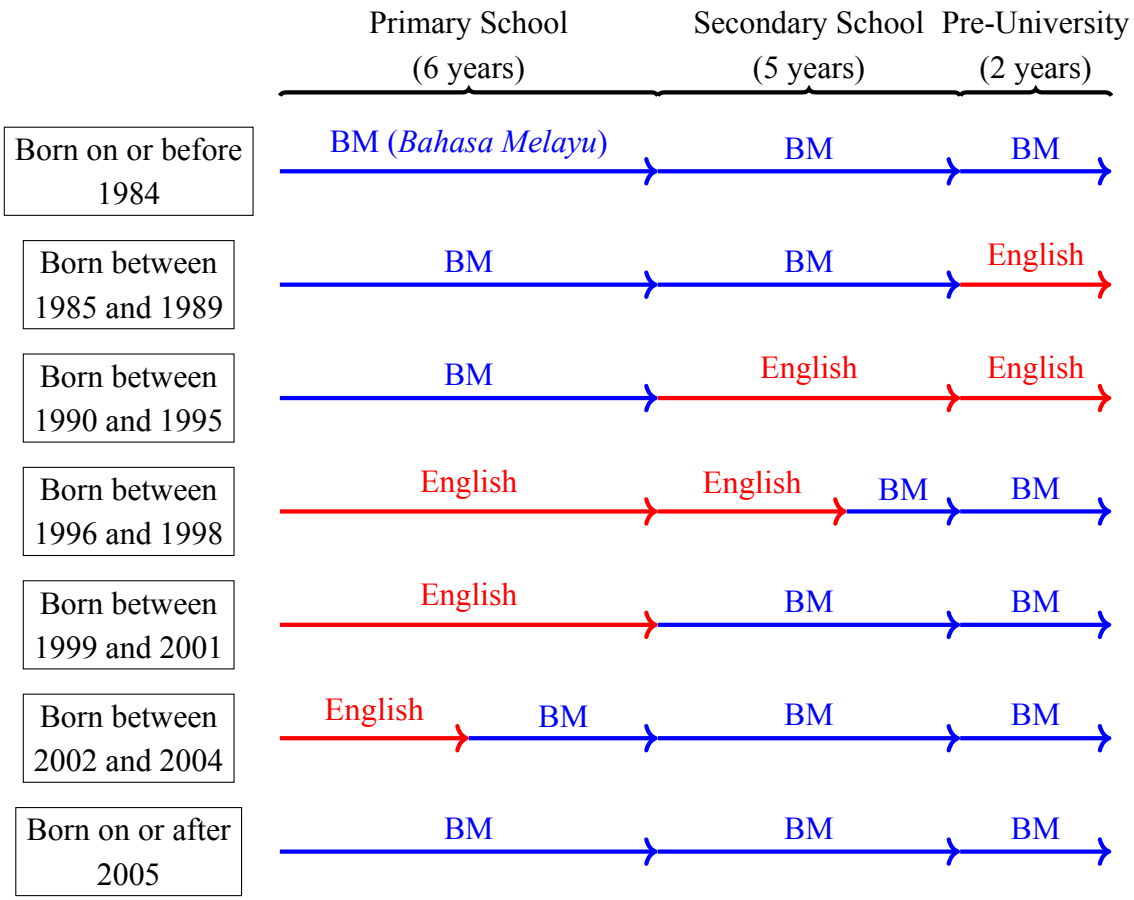
However, amid mounting opposition from various sectors such as the coalition of Malay intellectuals under the banner of *Gerakan Mansuhkan PPSMI* (or Movement to Abolish PPSMI in *Bahasa Melayu*), the Malaysian cabinet decided in 2008 that PPSMI would be abolished. From 2012, the teaching of Mathematics and Science would be reverted to the pre-2003 format: that is, both subjects would be taught in one of the three ethnic languages in primary schools – depending on the school's vernacular – whereas *Bahasa Melayu* would be used to teach both subjects at all public secondary schools. This policy reversal would also be implemented in stages. All year one, year four, form one, and form four students in 2012 would be affected by the policy reversal, while the rest would continue with English as the medium of instruction for Mathematics and Science until their promotion to one of the four grades. For example, form two students in 2012 would switch from English to *Bahasa Melayu* when they advance to form four in 2014.

One primary justification for the policy reversal in 2012 was that the reform had a deleterious impact on Mathematics and Science test scores, as many students did not possess the linguistic competency to learn STEM content in English (Rashid, Abdul Rahman, & Yunus, 2017). One study for instance found that 70 percent of their student respondents could not understand the teaching of Mathematics and Science in English (Isahak et al., 2008). On the other hand, some observers note that the reform had improved students' Mathematics, Science, and English test scores (Gill, 2012). Indeed, the policy reversal received significant opposition from the Malaysian public: one opinion poll reported that almost 60 percent of the 1,060 respondents wanted to keep the reform, while only 32 percent agreed with the government's decision to roll back the policy. An online poll that was administered by former Prime Minister Mahathir Mohamad ($N = 9{,}024$) also found that 74 percent of the respondents voted against the abolition of PPSMI, while only 26 percent supported

the government's initiative (Gill, 2013). Some observers have also noted that the policy reversal may be politically motivated (Gill, 2013).

Given that Malaysian children typically begin their primary education at the age of seven as well as the fact that the education system is structured on a 6 + 5 + 2 model, we can identify how the introduction and subsequent reversal of the language reform affected different cohorts of ethnic Malay students. This is illustrated in Figure 2.1. For instance, the pioneer batch of primary one students who were affected by the 2003 language reform would be born in 1996; however, this same group of students would have also experienced the policy reversal when they began their form four education in 2012, hence they received two years of *Bahasa Melayu* instruction for STEM (i.e., Science, Technology, Engineering, and Mathematics) subjects during their secondary education.

Figure 2.1: **Language of Instruction for Mathematics & Science Based on Students' Birth Years in Malaysia**



2.3 Empirical Strategy

To investigate the impact of the language reform on students' test scores in Malaysia, I analyze data from six consecutive waves of the Trends in International Mathematics and Science Study (TIMSS), spanning from 1999 to 2019. TIMSS is conducted by the International Association for the Evaluation of Educational Achievement (IEA) and offers insights into student performance across various countries. My empirical analysis focuses on the test scores of eighth-grade students in Mathematics and Science. I include students from Malaysia and sixteen other countries that did not experience any language policy changes during this timeframe. These countries, forming the comparison sample, are Australia, Taiwan, Hong Kong SAR, Hungary, Iran, Israel, Italy, Japan, Jordan, South Korea, Lithuania, Morocco, Russia, Singapore, the USA, and England.

Additionally, due to the typical four-year cycles of the TIMSS assessment, we can precisely identify the cohorts of eighth-grade students in Malaysia who were impacted by the reform. Specifically, Table 2.2 outlines five treatment categories based on students' birth years in Malaysia: (1) a control group comprising participants from the 1999 and 2003 TIMSS waves who were not affected by the reform, (2) a "secondary-only" exposure where participants in Malaysia received two years of English instruction during their seventh and eighth grades, (3) a "full" exposure to English instruction where participants received a total of eight years of English instruction, (4) a "primary-only" exposure period where participants received English instruction between grades one and six, and (5) a "reversal" exposure where participants who belong to this group return to the pre-2003 format where Mathematics and Science are taught in *Bahasa Melayu*. Subsequently, I specify two predictor variables. The first is *Reform*, which is a binary variable that equals one if the student is from Malaysia and had participated in the 2007, 2011, and 2015 waves of the TIMSS. The second is *Reform (Categorical)*, which comprises the five categories – i.e., "Control," "Secondary-only," "Full," "Primary-only," and "Reversal" as presented in Table 2.2. The latter predictor allows for a more meaningful comparison of how varying durations of English instruction impacted Mathematics and Science test scores.

Table 2.2: **Alignment Between TIMSS Waves and Affected Cohorts in Malaysia**

Category Labels	TIMSS Wave	Birth Year	Length of English Instruction for Mathematics and Science by Grade 8
Control	1999	1985	Unaffected
Control	2003	1989	Unaffected
Secondary-only	2007	1993	Grades 7-8
Full	2011	1997	Grades 1-8
Primary-only	2015	2001	Grades 1-6
Reversal	2019	2005	Unaffected (policy reversal)

The outcome variables for this study consist of students' test scores in both Mathematics and Science. TIMSS employs a multiple imputation technique referred to as "plausible values" to estimate students' proficiency in these subjects. Specifically, each student is assigned five plausible values for their Mathematics score and an additional five for their Science achievement score. Plausible values are utilized because each student was tested on only a subset of items in the assessment. Therefore, a plausible value serves as an estimate of how a given student would have performed on a test that included all potential assessment items. Additionally, each set of plausible values has been standardized to have a mean of 500 and a standard deviation of 100 across all six waves for all participating countries in the dataset. This ensures comparability between the countries and across different time periods. Considering the methodology used by the TIMSS, I construct two outcome variables – i.e., *Mathematics* and *Science* – and each variable corresponds to the average of the five plausible values for each subject.

I also incorporate various covariates at both the student and school levels into the regression models. However, it is worth stressing that not all questions from the questionnaires were consistently answered across all six waves. Therefore, I only include the background questions that were consistently answered in Malaysia and the other 16 comparison countries. The first student level covariate is *Girl*, which equals one if the student identifies as a girl and zero otherwise. Next, I include two parental background variables: the highest level of education attained by the student's

parents (*Parents' Education*) and whether at least one parent was not born in the country where the test was administered (*Immigrant Parent*). I also code three separate background variables that assess the students' learning environment, both at home and in school. These variables include the approximate number of *Books* in their home (measured on an ordinal scale), the presence of a *Computer* at home, and the frequency with which teachers assign homework in Mathematics (*Math Homework*) and in Science (*Science Homework*). Collectively, these variables are expected to have an impact on students' learning outcomes. Finally, I construct the variable *Language of Test* as a measure of how often the student speaks the language of test at home.

I consider several background factors at the school level. The first variable is *Urbanity*, which measures the level of urbanization in the school's vicinity. *Instructional Hours* quantifies the total number of hours allocated to teaching in a typical school day, excluding breaks. Furthermore, I assess the school's capacity to allocate resources for teaching purposes using several variables. Larger values in these variables indicate greater challenges in obtaining the necessary goods and services for teaching. These include shortages of *Instructional Materials* like textbooks, insufficient *Supplies* such as paper and pencils, concerns about inadequate *School Buildings*, shortages of *Fittings and Fixtures* like lighting and heating, and a lack of *Instructional Space* such as classrooms. These school level covariates are included in the regression models to account for the school environment's potential impact on students' learning outcomes. Detailed descriptions and summary statistics of the variables can be found in section A.1.1 of the Appendix.

In the empirical analysis, I utilize a generalized difference-in-differences approach to estimate the causal impact of the language reform in Malaysia on students' Mathematics and Science test scores. The formal model is expressed as:

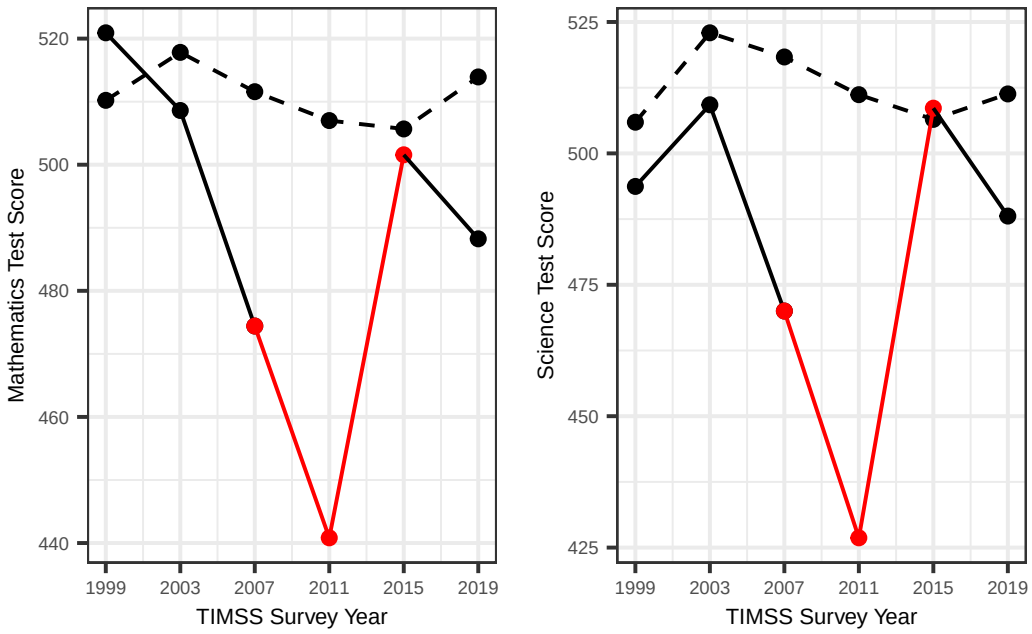
$$Y_{ijt} = \alpha_j + \lambda_t + \tau \text{Reform}_{ijt} + \beta X_{ijt} + \gamma Z_{jt} + \epsilon_{ijt}$$

Here, Y_{ijt} represents the test score of student i in country j at time t, α_j are country fixed effects, λ_t are time fixed effects, τ is the treatment effect of interest (i.e., the impact of the language reform), X_{ijt} represents student-level covariates, and Z_{jt} are the school-level covariates.

2.4 Results

To evaluate how students' achievement scores have evolved over time, I compute the average Mathematics and Science test scores for each country in each TIMSS wave. This is visually depicted below in Figure 2.2. Notably, the introduction of the language reform in Malaysia appears to have resulted in a significant decline in students' Mathematics and Science test scores, as indicated by the red lines and data points. Specifically, the most substantial drop occurred among eighth-grade students during the 2011 wave, which corresponds to students who experienced English instruction throughout their educational journey. Interestingly, the policy reversal did not yield any major improvements in students' learning, as the Mathematics and Science test scores during the 2019 wave did not show significant gains. Instead, they remain lower than the pre-reform test scores. This might be attributed to the sudden shift back to *Bahasa Melayu* instruction, as the cohort of eighth-graders in the 2019 wave was the first group of students to experience the policy reversal.

Figure 2.2: **Mean Mathematics and Science Test Scores By Country (1999-2019)**



Notes: The figure illustrates the mean Mathematics and Science test scores for Malaysia (solid line) and the other 16 comparison countries (dashed line) in each wave of the dataset. The red lines and points indicate the years when the language of instruction for Mathematics and Science in Malaysia switched to English.

Next, I estimate the causal impact of the reform on students' test scores using the generalized difference-in-differences approach, as previously discussed. The results are detailed in Table 2.3. A consistent observation across all four model specifications is that the language reform had a significant negative effect on students' performance in Mathematics and Science. This negative impact remains robust even after controlling for a variety of student and school levels covariates and incorporating sampling weights into the regression models. Notably, the effect sizes resulting from the shift from a native to a non-native language of instruction are substantial, ranging between a 17.7% and a 37.3% standard deviation decrease in students' achievement scores. This indicates that students encountered significant challenges in comprehending and mastering Mathematics and Science content when instructed in a non-native language. Additionally, these findings closely align with those of a previous study by Ivlevs and King (2014), which explored a similar context in Latvia. Latvia underwent a transition from monolingual instruction to bilingual instruction in minority schools, a situation somewhat akin to Malaysia's language reform.

Table 2.3: **Effect of Language Reform on Mathematics and Science Test Scores in Malaysia**

DV =	Mathematics		Science	
	(1)	(2)	(3)	(4)
Reform	−25.051**	−37.315**	−17.717**	−31.335**
	(3.506)	(3.875)	(3.487)	(3.814)
N	269,094	269,094	269,094	269,094
Covariates	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sampling Weights	No	Yes	No	Yes

Notes: Table entries are standardized coefficient estimates. Columns (1) and (2) report the estimated impact of the language reform in Malaysia on Mathematics test scores, while (3) and (4) display the coefficient estimates for the reform's impact on Science test scores. Robust standard errors clustered by school are displayed in parentheses. Covariates include students' gender, parental birthplace, parents' highest educational attainment, number of books at home, the presence of a computer at home, the frequency with which teachers assign homework in Mathematics and in Science, the urbanity of the school's location, the number of teaching hours in a day, and the school's capacity to allocate a variety of resources for teaching purposes. Full regression results are reported in Table A.3 of the Appendix. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table 2.4: **Effect of Varying Exposure to English Instruction on Mathematics and Science Test Scores in Malaysia**

DV =	Mathematics		Science	
	(5)	(6)	(7)	(8)
Reform (Categorical): Secondary-only	−34.318**	−38.866**	−24.621**	−28.323**
	(5.208)	(5.214)	(5.553)	(5.464)
Reform (Categorical): Full	−68.376**	−70.085**	−66.091**	−69.668**
	(5.675)	(5.936)	(6.176)	(6.310)
Reform (Categorical): Primary-only	−17.200**	−53.335**	10.022*	−24.279**
	(4.586)	(5.033)	(4.272)	(4.957)
Reform (Categorical): Reversal	−36.311**	−62.162**	−10.784*	−32.753**
	(4.974)	(5.232)	(4.427)	(4.973)
N	269,094	269,094	269,094	269,094
Covariates	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sampling Weights	No	Yes	No	Yes

Notes: Table entries are standardized coefficient estimates. Columns (5) and (6) report the estimated impacts of varying durations of English instruction on Mathematics test scores, while (7) and (8) display the coefficient estimates on Science test scores. The baseline category for *Reform (Categorical)* is the control group, comprising students who were not affected by the reform. Robust standard errors clustered by school are displayed in parentheses. Covariates include students' gender, parental birthplace, parents' highest educational attainment, number of books at home, the presence of a computer at home, the frequency with which teachers assign homework in Mathematics and in Science, the urbanity of the school's location, the number of teaching hours in a day, and the school's capacity to allocate a variety of resources for teaching purposes. Full regression results are reported in Table A.4 of the Appendix. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Finally, I investigate whether the duration of English instruction had an impact on students' capacity to grasp Mathematics and Science content in Malaysia. The results are presented in Table 2.4, with coefficient estimates compared to those students who were not influenced by the language reform, namely eighth-grade students from the 1999 and 2003 waves. The most substantial decrease in test scores is observed among students who received English instruction from grades 1 to 8 (i.e., the "Full" exposure group). Substantively speaking, this reduction ranges from 66.1% to 70.1% of a standard deviation, which is more than twice the magnitude observed in the previous

findings from Table 2.3. The decline in Mathematics and Science achievement scores is smaller for the "Secondary-only" and "Primary-only" groups, but it remains statistically significant at the conventional level. As for those who experienced the policy reversal, there is also a decline in students' learning of Mathematics and Science, though it is still too early to determine whether the test scores will return to the pre-2003 achievement levels. Overall, this empirical analysis of the language reform in Malaysia highlights the detrimental impact that using a non-native language of instruction can have on students' learning outcomes. Additionally, it suggests that the most pronounced effect occurs among students with the longest exposure to a non-native language, placing a significant burden on them to comprehend content in an unfamiliar language.

2.5 Conclusion

In this chapter, I leverage a language policy change in Malaysia to investigate the consequences of implementing a non-native language of instruction on students' academic achievements. To accomplish this, I compile students' Mathematics and Science test scores from the TIMSS and demonstrate that the language reform had an adverse impact on students' capacity to comprehend Mathematics and Science content in schools. Notably, this negative effect is most prominent among students with the longest exposure to English instruction, suggesting that students may have encountered substantial challenges in understanding the content in a language that is alien to them. As a follow-up to this research, I plan to collect socioeconomic data, including information on income, occupations, and health outcomes, to more comprehensively investigate the long-term impacts of such a reform on the generation of Malaysian students who experienced the language reform. It is conceivable that although students may face a short-term decline in educational outcomes, they may benefit from improved employment opportunities as they acquire a higher level of English proficiency, which is a global lingua franca.

The findings presented in this chapter offer two significant contributions. First, they enrich the extensive empirical research on the relationship between the language of instruction and the

accumulation of human capital (Angrist & Lavy, 1997; Ivlevs & King, 2014; Laitin & Ramachandran, 2016). While bilingual instruction has been shown to have substantial positive effects on children's cognitive development, a point that will be elaborated on in the subsequent chapter, these findings underscore the sacrifices and challenges that students may face when trying to comprehend classes delivered in a non-native language. This highlights the importance of carefully considering the language of instruction in educational settings.

Second, the findings also hold relevance for education policymakers, providing them with valuable insights and prompting reflection when contemplating the implementation of significant reforms in educational institutions. They underscore the need for policymakers to consider the potential short-term and long-term consequences of language-related reforms, as well as the potential impact on students' academic performance and overall learning outcomes. These findings suggest that a thorough assessment of the implications of such reforms is essential to make informed decisions that will ultimately shape the educational experiences and outcomes of students.

Chapter 3: Bilingual Education Reduces Outgroup Discrimination Through Perspective-Taking

Ethnic outgroup discrimination and ingroup favoritism are pervasive issues that plague many diverse societies. Past research has shown that citizens generally prefer to vote for coethnic candidates (Adida, 2015; Ferree, 2006), while politicians often implement policies that benefit their own ethnic groups (Ejdemyr, Kramon, & Robinson, 2018; Kramon & Posner, 2016). This interplay between ethnic identities and political behavior further exacerbates the under-representation of ethnic minorities, which in turn raises the likelihood of political violence (Buhaug, Cederman, & Gleditsch, 2014). Hence, considerable attention has been paid to the remedies that reduce intergroup prejudice and discrimination. These include institutional reforms such as the use of quotas to improve minority representation (Chauchard, 2017; Dunning & Nilekani, 2013), and non-institutional factors including cross-ethnic contact and networks (e.g., Adida et al., 2016; C. M. Weiss, 2021). However, the inclusionary impacts of many proposed interventions are either mixed or short-lived (Paluck et al., 2021). This may be because political attitudes are deeply ingrained during childhood and are resistant to change in adulthood (Sears & Funk, 1999; Tesler, 2015). It might therefore be more fruitful to focus on interventions during a person's formative years, such as their education experiences (Ostwald, Ong, & Gueorguiev, 2019), to better understand what shapes intergroup prejudice.

In this chapter, I consider whether bilingual education, as an early life intervention, is able to mitigate the political discrimination of ethnic outgroups. Bilingual instruction refers to the use of two languages to teach content subjects, such as History or Mathematics (see Liu, 2011). Drawing on insights from the bilingualism and perspective-taking research in psychology and cognitive science (e.g., Galinsky, Ku, & Wang, 2005; Grundy, Anderson, & Bialystok, 2017), I argue that this type

of instructional method facilitates second language acquisition (Reljić, Ferring, & Martin, 2015), thereby creating bilingual speakers who are better at understanding other individuals' motives and actions – i.e., they are better at perspective-taking (e.g., Javor, 2016; Schroeder, 2018). In general, bilinguals can adapt to various linguistic demands by switching to a language that the listener can understand. This process of alternating between multiple languages – i.e., code-switching – mirrors the cognitive process of switching from one person's perspective to another (Bialystok, 2005). Due to the higher rate of code-switching at home and/or at school, bilinguals are therefore subconsciously trained to curtail their own predispositions and biases while shifting their attention toward the mental state of the perspective-taking target. Put simply, bilingualism fosters the cognitive development of perspective-taking. Finally, prior works show that this ability to take the positions of others helps decrease exclusionary political attitudes toward a variety of social outgroups, such as immigrants and refugees (e.g., Adida, Lo, & Platas, 2018; Kalla & Broockman, 2020).

I conduct three separate studies that employ a variety of data sources and empirical approaches to test my claims. In Study 1, I investigate whether bilingualism is linked to a reduction in outgroup discrimination through a cross-national analysis of the Asian Barometer Survey (2017). As expected, bilingual speakers display a heightened awareness of the unequal treatment of other ethnic communities in their country when compared to monolingual individuals. Additionally, a series of placebo tests suggests that the effects of bilingualism are largely confined to outcomes that explicitly evoke ethnic perspective-taking.

While Study 1 demonstrates an association between bilingualism and ethnic attitudes, Study 2 seeks to uncover the causal relationship between bilingual instruction and outgroup discrimination. Specifically, I analyze the impact of an education reform in Malaysia, where English replaced the ethnic majority language, *Bahasa Melayu*, as the language of instruction for Mathematics and Science in all public secondary schools since 2003. Consequently, ethnic Malays born after the cutoff experienced a combination of English and *Bahasa Melayu* instruction during their secondary school education, whereas those born before the cutoff were taught exclusively in *Bahasa Melayu*. Through

an original survey of over 2,000 ethnic Malay respondents, I find that those who received bilingual instruction display less political discrimination against ethnic outgroups than those who received monolingual instruction. The main results are also robust to various model specifications and alternative explanations, such as interethnic contact. I further validate the mechanisms underlying this empirical pattern by showing that bilingual instruction improves perspective-taking.

Finally, Study 3 examines whether the inclusionary effects of bilingual education stem from the practice of code-switching, a common feature in bilingual classrooms and households. I administered a survey experiment in Malaysia, where bilingual participants were randomly assigned to either a single-language condition (monolingual) or a condition that involved alternating between two languages during the survey (bilingual). The results indicate that individuals in the bilingual condition exhibited a significant reduction in outgroup discrimination compared to those in the monolingual condition. Throughout the three studies, the evidence suggests that a bilingual environment can significantly influence how people perceive individuals from different ethnic backgrounds.

This chapter makes three contributions. First, it builds on the rich literature that the development of political norms and values can be traced to a person's early upbringing in school (Campbell & Niemi, 2016; Cavaille & Marshall, 2019; Neundorf, Niemi, & Smets, 2016). Specifically, I argue that the socializing impact of education extends beyond the acquisition of civic skills and political knowledge (Finkel & Ernst, 2005; Nelsen, 2021a; Niemi & Junn, 1998). Education also influences our cognitive ability to accept members of ethnic outgroups. Second, this chapter highlights the importance of studying political attitudes and behavior through a psycholinguistic lens. Previous works have shown that the language we speak can influence our outlook on a variety of salient issues, such as climate change, protection of minority rights, and gender equality (Liu et al., 2018; Pérez & Tavits, 2022). This research underscores the cognitive impact of bilingualism on intergroup tolerance by enhancing peoples' ability to put themselves in the shoes of others. Lastly, this chapter speaks to the burgeoning scholarship on perspective-taking and prejudice reduction (Adida, Lo, & Platas, 2018; Kalla & Broockman, 2020). Unlike previous studies, I show that perspective-taking

is a cognitive ability that can be cultivated during a person's formative years. As such, bilingual education may represent a more durable solution to the challenge of reducing intergroup prejudice in modern societies.

3.1 Bilingual Education, Perspective-Taking & Outgroup Attitudes

I argue that bilingual education has important consequences on intergroup relations. Specifically, individuals who were exposed to bilingual instruction in school should display more inclusive social and political attitudes than those who received monolingual instruction. This theoretical claim stems from three insights. First, bilingual instruction promotes bilingualism – i.e., the ability to speak two languages. Second, bilinguals possess better perspective-taking ability than monolinguals. Third, the ability to understand other individuals' motives and actions should be linked to lower levels of political discrimination against ethnic outgroups.

One immediate consequence of bilingual education is an increase in the number of hours that a student will have to read, write, and speak in a second language. I focus on the effects of language as a *medium of instruction* for content subjects such as History and Mathematics,[1] as opposed to language as an elective course such as Spanish classes. While single-language courses can also be important for language acquisition, bilingual instruction provides a more immersive experience for students by creating a classroom context where two languages are used for specific purposes, such as learning Mathematics content or reading history textbooks, thereby increasing exposure to both languages simultaneously (Dalton-Puffer, Nikula, & Smit, 2010). This increases the likelihood that students will develop into bilingual speakers in the future (Reljić, Ferring, & Martin, 2015).

By improving their proficiency in two languages, students develop into bilinguals whose perspective-taking ability is widely considered to be superior to monolinguals (see Díaz, 2022,

[1]This is more commonly referred to as Content and Language Integrated Learning (CLIL) programs in the field of education research. See (Dalton-Puffer, Nikula, & Smit, 2010) for a review of CLIL programs.

for a review of the literature). There are three dominant accounts from cognitive science and psychology that explain why bilinguals excel in understanding the intentions and actions of others (Schroeder, 2018). First, bilingualism improves executive functioning such as attention control, working memory, and inhibition abilities – i.e., cognitive functions that are crucial for perspective-taking (Bialystok & Viswanathan, 2009). Due to the process of frequently switching between two languages and the suppression of one medium to use the other, bilingual speakers are subconsciously trained to control and down-weigh their prior beliefs and knowledge while "up-regulating" and shifting their attention toward understanding another person's mental state (Schroeder, 2018; Zhang et al., 2015). A second set of explanations focuses on bilinguals' heightened sense of metalinguistic awareness, defined as the ability to dissect and reflect on the properties of a language (Bialystok & Barac, 2012). The recognition that a single concept has multiple labels across different languages might be translated into a more general understanding that two people may interpret and react to the same event differently. Lastly, the socio-pragmatic account postulates that the ability to switch between multiple languages allows bilinguals to operate more effectively in multicultural settings. This leads to a greater appreciation that different language speakers may subscribe to different sets of beliefs and values, as well as an improved ability to consider another person's thoughts and actions (Fan et al., 2015; Goetz, 2003).

Taken together, the above explanations suggest that the ability to take the perspectives of others can be improved when individuals are constantly forced to alternate between two (or more) languages – i.e., code-switching.[2] Specifically, the process of code-switching mirrors the cognitive process of switching and taking the perspectives of others (Bialystok & Viswanathan, 2009). For instance, when an English-French bilingual is conversing with someone who only understands French, the bilingual speaker suppresses their inclination to speak in English and instead focuses their attention on speaking in French. Similarly, when someone takes the perspectives of others, they have to downplay their own mental states while diverting their attention towards the perspective-taking

[2]Indeed, the above mechanisms can also be generalized to multilingual contexts where people can speak and understand more than two languages.

target. Indeed, this intuition is supported by brain imaging research, which revealed that specific brain regions associated with perspective-taking become active when individuals are engaged in translation activities (Kobayashi, Glover, & Temple, 2006; Szpak, Alves, & Buchweitz, 2020). When bilingual individuals switch from one language to another, they are (subconsciously) training their cognitive flexibility to switch from their own personal thoughts to another person's mental state. The higher the rate of code-switching, the better the ability to take the perspectives of others. This might therefore explain why multiple studies have shown that bilingual children and adults are better perspective-takers than monolinguals, given the higher rate of code-switching in the former (e.g., Fan et al., 2015; Greenberg, Bellana, & Bialystok, 2013).

Moreover, the fact that perspective-taking effects are observed among diverse language pairs, such as Arabic-Hebrew speakers in Israel (Bekerman & Horenczyk, 2004), English-Tamil bilinguals in India (Bialystok & Viswanathan, 2009), and Hungarian-Serbian bilinguals in Serbia (Javor, 2016), suggests that the link between bilingualism and perspective-taking ability may be applicable across a wide variety of linguistic and country contexts. In other words, these findings are robust to whether the first or second language spoken by the bilingual is an ethnic minority language (e.g., Arabic in Israel) or a colonial tongue (e.g., English in India). Although it is conceivable that the strength of the relationship may vary across different types of languages,[3] the baseline expectation of this chapter is that perspective-taking effects should still be observed in settings where the first or second language spoken by the bilingual individual is not native to any ethnic groups in the country.

This ability to display greater sensitivity toward another person's mental state in turn reduces bilinguals' susceptibility to discriminate against ethnic outgroups. By incorporating the other in the self, perspective-takers develop a sense of connectedness with the perspective-taking target (Galinsky, Ku, & Wang, 2005). Taking the perspective of an ethnic outgroup member who, for instance, has been denied entry into a university because of their ethnic membership, may also lead to a more general realization that this predicament extends to other members of the target's ethnic

[3]For example, speaking a minority tongue may induce more perspective-taking than a non-ethnic language by facilitating intergroup conversations (see Wright & Tropp, 2005).

group as well (Todd, Bodenhausen, & Galinsky, 2012). Notwithstanding its salutary influence on ethnic attitudes, perspective-taking is linked to more inclusive opinions and behavior toward a variety of ostracized social groups, such as refugees and immigrants (Adida, Lo, & Platas, 2018; Kalla & Broockman, 2020), the LGBTQ+ community (Broockman & Kalla, 2016), and former perpetrators of political violence (Bilali & Vollhardt, 2013).

In summary, the primary expectation of this chapter is that individuals who received bilingual instruction should display less discrimination against ethnic outgroups than those who received monolingual instruction. Exposure to bilingual education increases the frequency of code-switching and the likelihood that an individual develops into a bilingual speaker who is more adept at seeing things from other individuals' vantage points. The resulting improvement in perspective-taking ability should in turn reduce bilinguals' propensity to discriminate against ethnic outgroups.

3.2 Research Design

I test my claims through three studies. Study 1 serves to affirm the main finding in psychology literature: compared to monolinguals, bilinguals are better at perspective-taking and should therefore possess a heightened level of awareness toward the challenges faced by other marginalized ethnic communities. To validate and expand upon this assertion across multiple country contexts, I conduct a cross-national analysis using Wave 4 of the Asian Barometer Survey (ABS, 2017), which includes data from over 15,000 participants representing more than 10 East and Southeast Asian countries.

In Study 2, I exploit the exogenous introduction of an education reform in Malaysia to tease out the causal effects of bilingual instruction on ethnic outgroup discrimination. Malaysia is an ideal case for testing my theory for several reasons. First, Malaysia is a multi-ethnic country where ethnicity is a salient political issue (M. L. Weiss, 1999). It comprises three main ethnic groups: Malays and other indigenous peoples (67.4%), Chinese (24.6%), and Indians (7.3%). Since its independence in 1957, the Prime Minister has always come from the ethnic majority group. Political parties are also organized primarily along ethnic lines. Moreover, the constitution contains provisions that

grant a "special position" to Malays while the rights of other ethnic minorities are marginalized. The introduction of the New Economic Policy in 1971 exacerbated the unequal treatment of ethnic minorities through the use of pro-Malay quotas for admission into public universities, civil service employment, business licenses, and so on. These policies continue to garner widespread support within the majority Malay population. According to one survey, 59 percent of Malay respondents agreed or strongly agreed that Malays should continue to enjoy special rights and privileges because they are the original inhabitants of the country (Merdeka Center for Opinion Research, 2010). Hence, Malaysia provides an interesting case to examine whether the reform had any impact in promoting more inclusive political attitudes among members of an ethnic majority group.

The second reason relates to the nature of the education reform in Malaysia. Given that the second language – i.e., English – was only used to deliver STEM (i.e., Science, Technology, Engineering, and Math) content, it is reasonable to expect that the amount of second language immersion in Malaysian schools should be lower than, for instance, the use of the second language to teach humanities such as History. However, if we can still observe significant effects in the Malaysia case, then it stands to reason that these effects should be considerably larger when bilingual education is practiced in disciplines that require a more intensive use of the second language. As such, the Malaysia case represents a hard empirical test of my theoretical expectations.

Third, the Malaysia case provides a unique natural experimental setting that helps avoid several empirical challenges for causal inference. This is important because it is difficult to test the proposed hypothesis empirically. For one, the language of instruction received may be confounded by other pretreatment factors, such as parents' ethnic attitudes (Huddy & Sears, 1995). Hence, ethnic outgroup discrimination among individuals who received monolingual instruction may simply be a reflection of their parents' outgroup biases. Moreover, analyzing the political effects of bilingual education through an experimental framework may pose ethical concerns for participants, as the language of instruction used in schools can have significant future repercussions on the development of human capital and labor outcomes (Laitin & Ramachandran, 2016).

Study 3 is a survey experiment designed to address two outstanding concerns from the previous study: (1) whether the reduction in ethnic outgroup discrimination is linked to code-switching – i.e., the practice of alternating between two languages, and (2) whether the findings in Study 2 are explained by the use of English or bilingual instruction in schools. I recruited over 800 bilingual participants in Malaysia, and they were randomly assigned to complete a survey in one language (i.e., monolingual condition) or a mixture of English and *Bahasa Melayu* (i.e., bilingual condition). Among those in the monolingual condition, respondents were further split into an English-only or a *Bahasa Melayu*-only condition. Put simply, the experiment seeks to replicate two types of language environments: a monolingual one (i.e., English-only or *Bahasa Melayu*-only) and a bilingual setting.

3.3 Study 1: Cross-National Analysis

Unlike most global and regional surveys such as the World Values Survey,[4] one benefit of analyzing the ABS is that the survey asked respondents whether they speak only local language, only official language, or a mixture of local and official languages at home. This allows for the construction of the first predictor variable in the cross-national analysis – i.e., *Bilingual (Home)*, which equals one if a respondent speaks a mixture of local and official languages at home, and zero otherwise. Additionally, ABS enumerators coded whether the interview was conducted in the respondent's mother tongue. As such, I create a second binary measure, *Bilingual (Interview)*, which equals 1 if the interview was not administered in the respondent's native language. This measure serves as a good proxy for identifying bilingual individuals who may not have been captured by the first measure. This is because some respondents may primarily speak their mother tongue at home but use another in professional settings. Lastly, *Bilingual* takes on the value of 1 whenever either *Bilingual (Home)* or *Bilingual (Interview)* equals 1. Substantively speaking, *Bilingual* is a measure of whether a respondent speaks two languages inside or outside their home.

[4]Indeed, the latest wave of the World Values Survey (Haerpfer et al., 2022) specifically requests interviewers to only code one answer to the question "What language do you normally speak at home?"

The primary outcome of interest is *Ethnic Inequality*, which is based on a question that asked whether respondents strongly agreed (1), agreed (2), disagreed (3), or strongly disagreed (4) with the statement that "all citizens from different ethnic communities in your country are treated equally by the government." I anticipate that bilinguals should exhibit a stronger disagreement with this statement (i.e., positive coefficient), given their heightened sensitivity to the challenges faced by other ethnic outgroups in their country. Additionally, I include several demographic, social, and economic indicators as control variables in my regression models: *Female*, *Age*, *Education*, *Employed*, *Income*, *Internet*, *Urban*, and *Ethnic Majority*.[5] It is worth stressing the potential confounding effect of the last control variable, *Ethnic Majority*, which equals one if a respondent belongs to the ethnic majority group in their country. Specifically, I expect that respondents from ethnic minority groups are more likely to be bilingual and perceive greater government discrimination against them. The regression analyses also include country fixed effects, given that the proportions of bilingual participants vary across the countries in the ABS sample. Notably, in 7 out of the 10 countries included in the analysis, more than half of the respondents are coded as bilinguals (i.e., $Bilingual = 1$).

3.3.1 Results

Table 3.1 presents the results from a series of ordinary least squares (OLS) models where *Ethnic Inequality* is regressed on each of the three bilingualism measures and other covariates. Consistent with my expectation, bilingual respondents are more likely to perceive that some ethnic communities are treated unfairly by the government when compared to their monolingual counterparts. Though the effect sizes are relatively modest (i.e., around a 4.2-5.4% standard deviation increase in *Ethnic Inequality* for bilingual participants),[6] the coefficient estimates for the three bilingualism measures are statistically significant at the conventional level. Above all, these findings are novel. To my knowledge, this study is among the first to uncover an empirical connection between bilingualism

[5]Section B.1.1 of the Appendix provides a detailed description (Table B.1) and summary statistics (Table B.2) of the variables used in the cross-national analysis.

[6]The standard deviation of *Ethnic Inequality* is 0.856.

and ethnic perspective-taking on a cross-national scale.

Table 3.1: **Bilinguals Display More Sensitivity Towards Other Ethnic Communities**

DV =	Ethnic Inequality		
Bilingual (Home)	0.046*		
	(0.023)		
Bilingual (Interview)		0.036*	
		(0.018)	
Bilingual			0.039*
			(0.019)
Ethnic Majority	−0.085**	−0.089**	−0.085**
	(0.021)	(0.020)	(0.021)
Covariates	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
N	11799	12449	11993

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. The values for *Ethnic Inequality* range between 1 and 4. The larger the *Ethnic Inequality*, the stronger the respondent feels that different ethnic groups are treated unfairly by the government. Control variables include gender, age, education, employment, income, internet access, urbanity, and whether the respondent belongs to an ethnic majority group in the country. Country fixed effects are also included in the models. Full results are reported in Table B.3. $^{**}p < 0.01$; $^{*}p < 0.05$.

Notably, the findings in Table 3.1 remain consistent even after accounting for the variable *Ethnic Majority*. As anticipated, respondents from ethnic majority groups tend to be less attuned to the challenges faced by other ethnic communities in their country. Additionally, the main results remain robust when employing an ordinal logit model as an alternative model specification (refer to Table B.4). Furthermore, I undertake a series of placebo tests to demonstrate that bilingualism does not influence attitudes beyond taking the perspectives of other ethnic outgroups. Specifically, I replace the primary outcome of interest, *Ethnic Inequality*, with three different placebo outcomes and replicate the regression models. These placebo outcomes are (1) individual support for democratic norms (*Democracy Best*), (2) national identification (*National Pride*), and (3) respondents' views towards China's influence in their country (*China Influence*). Accordingly, the three bilingualism measures fail to predict all three placebo outcomes at the standard significance level (see Table B.5).

This suggests that the effects of bilingualism primarily pertain to outcomes that directly involve intergroup dynamics within a country.

Taken together, the results from Study 1 corroborate the underlying claim that bilingual speakers possess an elevated awareness of the difficulties and challenges faced by other ethnic communities, especially minority groups, in their environment. This provides greater confidence in the potential of bilingual education to reduce ethnic outgroup discrimination – a subject that will be investigated more extensively in the next section.

3.4 Study 2: Education Reform in Malaysia

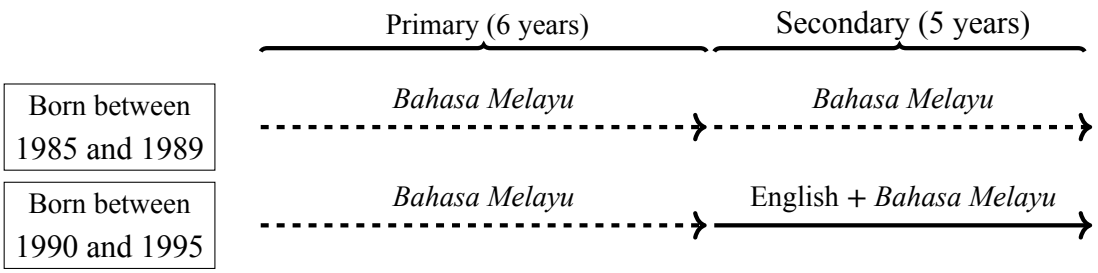
Concerned about the general lack of English literacy among ethnic Malays, the Malaysian government announced on May 6, 2002, that Mathematics and Science would be taught in English in all public primary and secondary schools from 2003. As part of the nationwide reform, students who were beginning their form one education in 2003 (or the equivalent of Grade 7) and subsequent cohorts received English instruction for STEM subjects. This meant that Malay students who were affected by the reform were exposed to bilingual instruction during their five-year secondary school education – i.e., Mathematics and Science in English while non-STEM classes in *Bahasa Melayu*. In contrast, the reform did not apply to secondary school students who had already advanced to form two or higher in 2003; hence these students continued to receive *Bahasa Melayu* instruction for all subjects including Mathematics and Science – i.e., monolingual instruction.

Given that children in Malaysia typically begin their formal education at the age of seven as well as the fact that the education system is structured on a $6 + 5 + 2$ model,[7] we can identify how the reform affected different birth year cohorts of Malay students (Figure 3.1). The pioneer cohort of form one students who received bilingual instruction were born in 1990 – i.e., they would have turned thirteen years old in 2003. In contrast, Malay students who were born in 1989 and earlier

[7]Students in Malaysia generally receive six years of primary school education, five years of secondary school education, and two years of pre-university training.

studied both STEM and non-STEM subjects in *Bahasa Melayu* – i.e., they would have advanced to form two or higher in 2003 thereby missing the cutoff to study STEM subjects in English. Given the narrow timeline between the announcement date (i.e., May 6, 2002) and the implementation of the reform (i.e., January 2003), it is also unlikely that students manipulated the likelihood of receiving English or *Bahasa Melayu* instruction. Grade skipping and repetition are also uncommon in Malaysian schools. Finally, besides the language reform in 2003, there were no major curricular changes that occurred during this period. Overall, these observations imply the quasi-randomized nature of the reform in assigning the language of instruction in Malaysian schools.

Figure 3.1: **Language of Instruction in Malaysian Public Schools for Ethnic Malays**



There are also several reasons to think that the reform was successful in improving second language proficiency among affected students in Malaysia. First, the reform substantially increased the number of teaching hours dedicated to second language instruction: about 40 percent of the teaching time was dedicated to English instruction, with the remaining 60 percent being taught in *Bahasa Melayu* (Gill, 2013). According to a 2008 survey of 1,700 ethnic Malay students, more than 90 percent indicated that their teachers used either an English-only approach or a combination of English and *Bahasa Melayu* instruction to teach Math and Science (Isahak et al., 2008). This suggests that affected Malay students, when compared to their predecessors, experienced a higher rate of code-switching between their mother tongue and English in the classrooms. Second, the reform affected intermediate learners who had already acquired a basic level of English literacy since English is a compulsory course at the elementary level, thereby making the transition from monolingual to bilingual instruction less onerous.[8] Third, the government put in place additional

[8]However, it must be emphasized that students did not spend a significant amount of time learning English at the

measures to ensure that teachers were properly trained to deliver STEM classes in English. These include the introduction of a national re-training program for STEM teachers and a buddy support system that matched STEM teachers with their English counterparts (M. Tan, 2011).

3.4.1 Survey Design & Empirical Strategy

I fielded a survey comprising more than 2,000 participants in March 2022.[9] The survey was administered in *Bahasa Melayu* to ensure consistency in the interpretation of the questions and to eliminate any language effects that might contaminate the findings (Pérez, 2017).

The sampling frame of the survey comprised individuals who (1) are ethnic Malays, (2) were born between 1985 and 1995, and (3) had completed their secondary school graduation examination (*Sijil Pelajaran Malaysia*, SPM). On the first requirement, I excluded other ethnic minorities, given that most ethnic Malays enrolled in public secondary schools that were not immune from the reform in 2003.[10] Second, I did not sample ethnic Malays who were born before 1985 or after 1995 as they were exposed to a different set of language regimes. The final prerequisite – i.e., secondary school graduation – ensures that the main reason why a participant received bilingual or monolingual instruction during their secondary education can be explained by their birth year.[11]

I define ethnic outgroup political discrimination as an individual's propensity to deny ethnic outgroups from participating in a country's political process (see Sorens, 2010). Specifically, individual displays of political discrimination on the basis of ethnic identity may be manifested

primary school level since a majority of the classes were still delivered in their native tongue.

[9]Section B.2.1 of the Appendix provides details on the survey design, variable measurements, and descriptive statistics. The survey received approval from the author's institution's IRB on February 17, 2022 (IRB ID#202201122) and preregistered on EGAP. An anonymized version of the preregistration report is accessible via the following link: https://osf.io/w37q8/?view_only=9b54ac99307e484d896865f3b4778f44.

[10]Only one percent of the respondents indicated that they had attended private secondary schools. Responses from these participants were dropped from the empirical analyses. I also excluded ethnic Chinese due to their preference to enroll into Chinese independent high schools that were exempted from the reform.

[11]For instance, some individuals received neither monolingual nor bilingual instruction because they did not enroll in a secondary school. This requirement also excluded people who did not receive the full extent of monolingual or bilingual instruction because they had dropped out of secondary school. It should also be pointed out that only 7.8 percent of the population of interest – i.e., ethnic Malays who were born between 1985 and 1995 – did not complete secondary school education, according to the 2010 Malaysian census data.

through a person's (1) choice of local political representative, (2) preference toward the country's chief executive, (3) views on the political rights of non-coethnic members in the country, and (4) opinions regarding the role of ethnic identities in shaping interparty competition in the country. The first aspect relates to an individual's preference in relation to the ethnicity of their political representative. Each respondent was presented with a pair of hypothetical politicians who are competing to be the Member of Parliament (MP) in the district (Table 3.2).[12] To mitigate the likelihood of eliciting socially desirable responses, I randomized the "Ethnicity" attribute between "Chinese" (non-coethnic) and "Malay" (coethnic) while the other features were not varied (see Butler & Tavits, 2021).[13] The first outcome measure is *Coethnic MP*, which is a binary variable indicating whether a respondent selected the coethnic (= 1) or non-coethnic candidate (= 0).

Table 3.2: **Hypothetical Profiles of Political Candidates in Malaysia Survey**

	Hypothetical Candidate Profiles	
Attributes	A	B
Malaysian citizen	Yes	Yes
Age	53 years old	61 years old
Marital status	Married	Married
Number of children	3	1
Occupation	Civil servant	Business owner
Ethnicity	**Chinese/Malay**	**Chinese/Malay**
Gender	Female	Male
Highest education	Bachelor's Degree	Doctoral Degree

The second dimension measures an individual's preference toward the ethnicity of the country's chief executive. *Coethnic PM* refers to a Malay respondent's level of agreement regarding the statement, "The Prime Minister of Malaysia should always be a Malay." Third, *Ethnic Rights* asked respondents if they strongly disagreed, disagreed, agreed, or strongly agreed with the view that "People should be treated and given the same rights in Malaysia regardless of race or religion." The

[12]Malaysian MPs are elected in single-member districts using plurality rule.

[13]Table B.8 demonstrates that the reform, language of instruction, and other demographic variables such as gender are balanced across the two hypothetical profiles.

last aspect, *Ethnic Party*, pertains to opinions about the ethnicized nature of party competition in Malaysia. Respondents read the following statement: "There should be no race-based parties in Malaysia." A higher level of disagreement reflects greater support for the continued presence of ethnic parties to safeguard Malay interests. Responses to the four outcome questions were measured using a 4-point Likert scale and recoded so that larger values reflect greater political discrimination against non-coethnics.

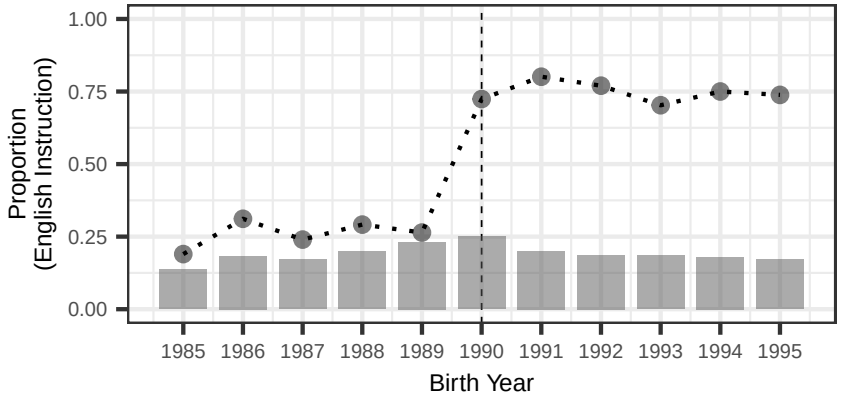
Additionally, the survey featured two sets of questions designed to ascertain the presence of the theoretical mechanisms. To measure second language proficiency, the survey asked participants the following question: "In your opinion, how well do you know English?" *English Proficiency* was coded on a 5-point Likert scale, ranging from "Do not know the language at all" (= 1) to "Fluent" (= 5). Next, perspective-taking was measured using the perspective-taking sub-scale from the Interpersonal Reactivity Index (IRI, see Davis, 1983). Specifically, participants read a total of seven statements that measure their perspective-taking ability (e.g., "If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.") and answer on a 5-point Likert scale ranging from "Does not describe me well" (= 1) to "Describes me very well" (= 5). Responses were averaged to create a composite score of a respondent's *Perspective-Taking* ability.

To verify if the education reform coincided with participants' birth years, respondents were also prompted to specify the language that was used to teach STEM subjects during their secondary education. Recall that the language of instruction for STEM classes should be English for Malays born between 1990 and 1995, and *Bahasa Melayu* for those born between 1985 and 1989. Figure 3.2 shows that the reform should be regarded as an encouragement intervention, by increasing the probability that a respondent who was born between 1990 and 1995 received English instruction for STEM classes in their schools.[14]

Notwithstanding, there are two possible reasons why we do not observe perfect compliance with the reform. First, some observers have noted that the short timeframe between the policy

[14]I also provide additional evidence that the reform significantly predicts the type of language of instruction used in Malaysian schools through both linear and logit regression models (Table B.10).

Figure 3.2: **Respondents' Birth Years & Language of Instruction for STEM Subjects**



Notes: The vertical bars reflect the frequency distribution of the respondents by their birth years. Each point refers to the proportion of individuals in a cohort who reported that English was used to teach STEM subjects at the secondary school level. The vertical dashed line refers to the cutoff year at 1990.

announcement and implementation posed a daunting challenge for many Math and Science teachers in rural schools, who were already accustomed to teaching in *Bahasa Melayu*, to adjust to the new language regime (Gill, 2013; M. Tan, 2011). Second, even if teachers were confident in their ability to teach in English, many felt compelled to conduct their classes in *Bahasa Melayu* out of concern that many Malay students, especially those in rural areas, might struggle to grasp the content in a non-native language (Isahak et al., 2008). Collectively, these two factors appear to have a disproportionate impact on compliance rates among students who attended rural schools (see Table B.10). To this end, I incorporate additional covariates in the regression models, including whether a respondent attended an urban secondary school (*Urban School*), whether they speak more than one language at home (*Bilingual (Home)*), and other socioeconomic indicators.

Fundamentally, Figure 3.2 implies the use of a fuzzy regression discontinuity design (RDD) to estimate the causal effects of bilingual instruction on ethnic attitudes. *Reform* is an instrument that equals one if a respondent's date of birth falls between 1990 and 1995, and zero otherwise. The main predictor is *Bilingual Instruction*, which equals one if a respondent reported that English was used to teach STEM subjects during their secondary education, and zero otherwise. Note that individuals who received English instruction for STEM subjects also received *Bahasa Melayu* instruction for

non-STEM subjects – hence, bilingual instruction. In contrast, those who reported *Bahasa Melayu* instruction for STEM classes received the same language of instruction for non-STEM subjects – hence monolingual instruction. The running variable is defined as the difference in the number of days between a respondent's date of birth and January 1, 1990, i.e., Date of Birth – January 1, 1990.

Finally, this empirical strategy is valid insofar as four assumptions are satisfied. First, Figure 3.2 shows that the reform significantly predicts the likelihood of receiving bilingual instruction (relevance). Second, Table B.9 indicates that respondents on either side of the cutoff are similar in most aspects, less the probability of receiving bilingual instruction (independence). Third, it is unlikely that individuals made a conscious effort to do the exact opposite of what they were supposed to do before or after the reform ("no-defiers"), especially in light of the narrow timeline. Lastly, the reform only affected ethnic discrimination through its effect on *Bilingual Instruction* (exclusion restriction). I address the last concern next.

3.4.2 Results

I estimate the local average treatment effects (LATEs) of bilingual instruction on ethnic outgroup political discrimination using a two-stage least-squares regression model with a quadratic function of the running variable. Additionally, I implement an optimal bandwidth selection procedure following (Calonico, Cattaneo, & Farrell, 2020), with larger triangular kernel weights assigned to observations that are closer to the cutoff at January 1, 1990.

Figure 3.3 reports the effects of bilingual instruction on ethnic outgroup attitudes (left plot). By and large, the results provide support for the chapter's main prediction: bilingual education reduces political discrimination against ethnic outgroups. The point estimates for *Bilingual Instruction* are negative across all four outcome variables, though it is insignificant for *Ethnic Rights*.[15] In particular, bilingual instruction is associated with a decreased likelihood of selecting a coethnic

[15]It is worth stressing that there may be a possibility of a floor effect for *Ethnic Rights*, due to the large proportion of respondents who agree or strongly agree with the statement that "People should be treated and given the same rights in Malaysia, regardless of race or religion" (= 76.7%).

candidate (*Coethnic MP*), lower levels of support for a coethnic Prime Minister (*Coethnic PM*) and the presence of ethnic parties in Malaysia (*Ethnic Party*). Moreover, the effect sizes are substantively meaningful. For instance, the probability of choosing a coethnic candidate reduces by 0.23 among respondents who received bilingual instruction. The coefficient estimates and their statistical significance also remain unperturbed when utilizing a linear function of the running variable (Table B.12). Additionally, the main findings remain fairly robust when considering various alternative specifications, such as different kernel weights (Tables B.13, B.14, and B.15), and different bandwidths and sample sizes (Tables B.16 and B.17). I also find that *Bilingual Instruction* fails to predict the outcome variables when I introduce placebo cutoffs occurring one and two years before January 1, 1990 (Tables B.18 and B.19).

Next, I investigate whether the findings stem from improvements in second language literacy and perspective-taking ability among individuals who received bilingual education. Specifically, I replace the outcome variable with *English Proficiency* or *Perspective-Taking* in the regression models. In line with this chapter's theory, the right plot in Figure 3.3 indicates that respondents who were exogenously assigned to bilingual instruction report higher levels of English literacy and are better at taking the perspectives of others. In addition, exposure to bilingual instruction had sizeable effects on self-reported English proficiency (mean = 3.98, sd = 0.85) and perspective-taking ability (mean = 3.73, sd = 0.65), amounting to a 37% and 53% standard deviation improvement among affected respondents.

Finally, I consider the possibility that intergroup contact might (1) pose a challenge to the exclusion restriction assumption, and/or (2) offer an alternative explanation for the patterns above.[16]

[16]In substantive terms, the first concern is illustrated by the causal pathway diagram on the left while the second scenario is depicted on the right. The left diagram shows that intergroup contact is an alternative channel through which the instrument, *Reform*, affects outcome. In contrast, the right diagram indicates that the effect of the main predictor, *Bilingual Instruction*, on the outcome is mediated by intergroup contact.

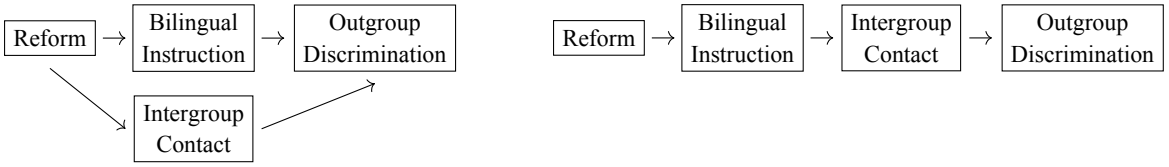
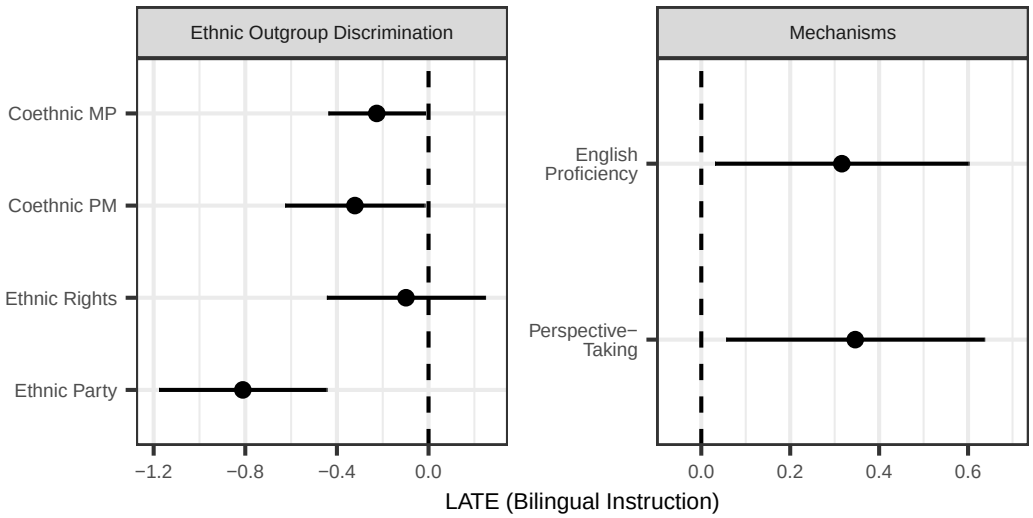


Figure 3.3: **Local Average Treatment Effects of Bilingual Instruction on Ethnic Outgroup Discrimination, English Proficiency, and Perspective-Taking**



Notes: The figure illustrates the LATEs of *Bilingual Instruction* on the four outcome measures of ethnic outgroup political discrimination (left plot) and the proposed mechanisms (right plot). Effect sizes are estimated using two-stage least-squares regression models, with *Reform* as the instrument. Each horizontal line is the 95% confidence interval of the point estimate (robust standard errors). *Coethnic MP* equals 1 if a Malay candidate was selected, and 0 otherwise. *Coethnic PM*, *Ethnic Rights*, and *Ethnic Party* are measured on a 4-point Likert scale, with larger values reflecting more discrimination. Scores for *English Proficiency* and *Perspective-Taking* range between 1 and 5, and larger values reflect higher levels of English literacy and perspective-taking ability. *Bilingual Instruction* equals 1 if a respondent reported studying Math and Science in English, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Full results for the left and right plots are reported in Tables B.11 and B.20, respectively.

Regarding the former scenario, it is conceivable that the transition from *Bahasa Melayu* to English instruction could have persuaded more ethnic Chinese parents to enroll their children in public secondary schools. This, in turn, might have facilitated greater interethnic contact and reduced discrimination.[17] However, Table B.21 shows that the reform does not predict the frequency and quality of interethnic interactions, thus mitigating the plausibility of this alternative channel. In the second scenario, bilingual instruction may facilitate interethnic contact by offering a shared language – i.e., English – for different ethnic groups to communicate with each other, leading to

[17]It should be noted that ethnic Chinese parents in Malaysia generally prefer to send their children to Chinese independent high schools instead of public secondary schools.

more favorable outgroup evaluations (Wright & Tropp, 2005). To assuage this concern, I regress the frequency and quality of interethnic contact on *Bilingual Instruction*, with *Reform* as the instrument. Interestingly, I find that bilingual instruction is associated with a *reduction* in the quantity and quality of intergroup contact (Table B.22), thereby ruling it out as a potential explanation for the decrease in outgroup discrimination among respondents who received bilingual instruction.

Overall, the results are remarkable for two reasons. First, they demonstrate the enduring effects of bilingual education in fostering more inclusive political attitudes. The fact that we can detect significant and substantial differences in ethnic outgroup attitudes among participants who had left school for more than a decade underscores the idea that intergroup prejudice can be reliably and durably reduced during a person's formative years. Second, it is notable that the study found A statistically significant connection between bilingual instruction and perspective-taking, given that the survey did not introduce any vignettes or information that would induce participants – especially those who received bilingual instruction in the past – to think in the shoes of others.

3.5 Study 3: Code-Switching and Ethnic Outgroup Discrimination

The preceding study examined the causal impact of bilingual instruction on ethnic attitudes by leveraging the educational context in Malaysia, where students born after the cutoff were taught in English for STEM subjects and *Bahasa Melayu* for non-STEM subjects, whereas those born before the cutoff received *Bahasa Melayu* instruction for all classes. As such, one could interpret the previous findings as a consequence of increased English language instruction in schools, as opposed to the chapter's expectation that bilingual instruction and code-switching promotes politically inclusive ethnic attitudes. Additionally, it is plausible that increased English literacy may be associated with more tolerant attitudes. For instance, individuals affected by the policy reform in Malaysia can access a broader range of and English-medium information that does not consistently

portray other ethnic outgroups in a negative light (see Hu & Liu, 2020). The primary goal of Study 3, then, was to establish a more direct connection between bilingual exposure – operationalized as the use of two languages interchangeably – and ethnic outgroup attitudes.

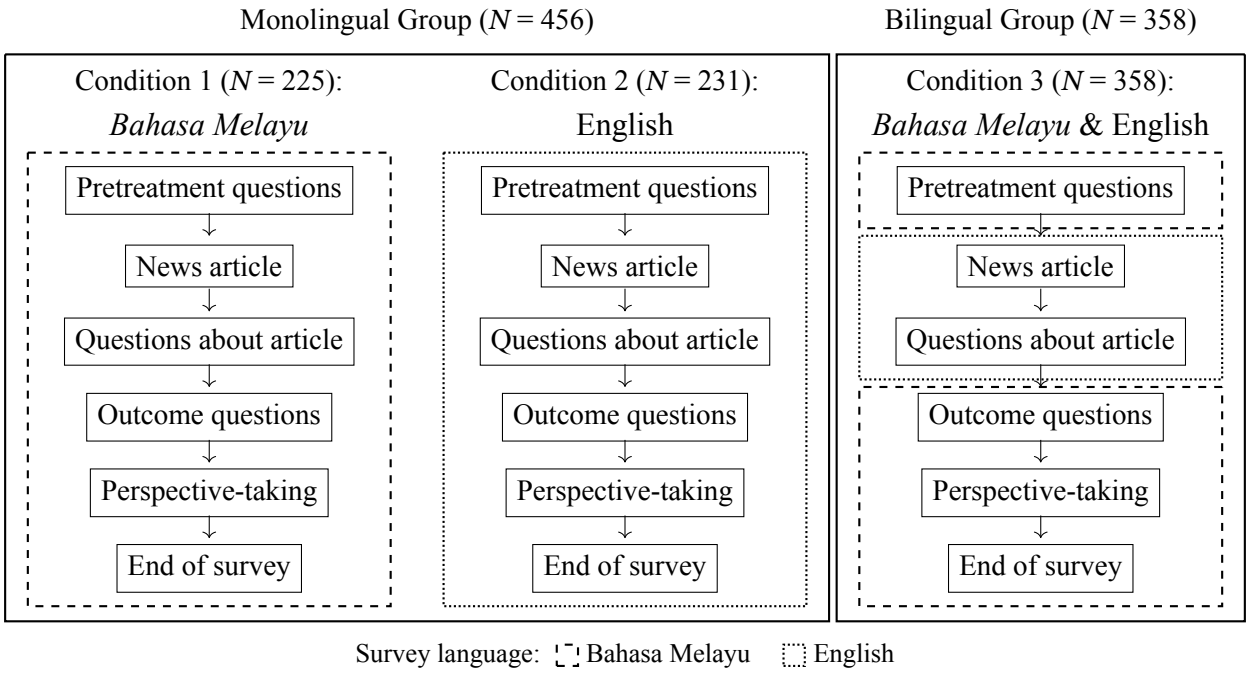
Building on the language experiments first introduced by (Pérez & Tavits, 2022), I conducted an IRB-approved, pre-registered survey experiment in August 2023.[18] The participant pool included over 800 individuals who identified as ethnic Malays and possessed bilingual proficiency in both English and *Bahasa Melayu*. To clarify, bilinguals were defined as those who indicated that they "can understand, speak, and write" or are "fluent" in both languages. Subsequently, shortlisted participants were assigned to complete the survey in one of three conditions: (1) *Bahasa Melayu*, (2) English, or (3) a mixture of *Bahasa Melayu* and English.[19] Figure 3.4 provides an overview of the survey experiment. Substantively, conditions 1 and 2 can be collectively referred to as the *Monolingual* group, as participants in the two conditions completed the survey in one language. In contrast, participants in condition 3 initially responded to pretreatment questions in *Bahasa Melayu*, then read a news article and answered questions related to the article in English, and finally answered the outcome and perspective-taking questions in *Bahasa Melayu*. As such, condition 3 replicates a *Bilingual* environment where participants were forced to code-switch between two languages.

All participants read a non-political news article about a tourist destination in Malaysia. They then answered two questions related to the article. For participants in conditions 1 and 2, this part of the survey was administered in *Bahasa Melayu* and English, respectively. On the other hand, participants in condition 3, who had been answering the survey in *Bahasa Melayu* prior to this section, read the article and answered the questions in English. These questions served as a manipulation check, and the results revealed that at least 92% of respondents across all three

[18]I provide details on the recruitment process, survey design, variable measurements, and descriptive statistics in Appendix section B.3.1. The survey experiment received approval from the author's institution's IRB on August 4, 2023 (IRB#202307062). The anonymized preregistration report is available via the following link: https://osf.io/4axzq/?view_only=f5af6008a999444399b70871e156e0f9.

[19]Table B.26 demonstrates that multiple pretreatment covariates (e.g., age, education, and gender) are balanced across the three experimental conditions.

Figure 3.4: **Survey Experiment Flow**



conditions answered both questions correctly (Table B.26).

Next, I included three of the four outcome measures used in Study 2. These were *Coethnic PM* ("The Prime Minister of Malaysia should always be a Malay"), *Ethnic Rights* ("People should be treated and given the same rights in Malaysia regardless of race or religion"), and *Ethnic Party* ("There should be no race-based parties in Malaysia"). However, *Coethnic MP* was excluded from Study 3 for two reasons. First, although the previous study indicated that bilingual instruction reduced the likelihood of selecting a *Coethnic MP*, this finding may more accurately reflect a reduction in ingroup favoritism than a decrease in outgroup discrimination, the latter of which is the main focus of the theory. Second, it is worth emphasizing the null effect for *Ethnic Rights* in the previous study (Figure 3.3), especially considering the expectation that bilingual instruction should have a substantial impact in reducing outgroup discrimination at the individual level through perspective-taking. As such, there was a desire to incorporate an outcome measure that was less susceptible to socially desirable responses, as this might have affected how respondents answered the *Ethnic Rights* question in the previous study. With this concern in mind, I included a question that

solicited respondents' opinions on the ratification of the International Convention on the Elimination of All Forms of Racial Discrimination (ICERD) in Malaysia.[20] This question, labeled *Oppose ICERD*, asked respondents whether they strongly support, somewhat support, somewhat do not support, or strongly do not support ICERD being ratified in Malaysia. Similar to Study 2, responses to *Coethnic PM*, *Ethnic Rights*, *Ethnic Party*, and *Oppose ICERD* were recoded so that larger values correspond to stronger political discrimination against ethnic outgroups. Finally, I administered the same set of perspective-taking items used in Study 2, and *Perspective-Taking* represents the mean response value to the seven items.

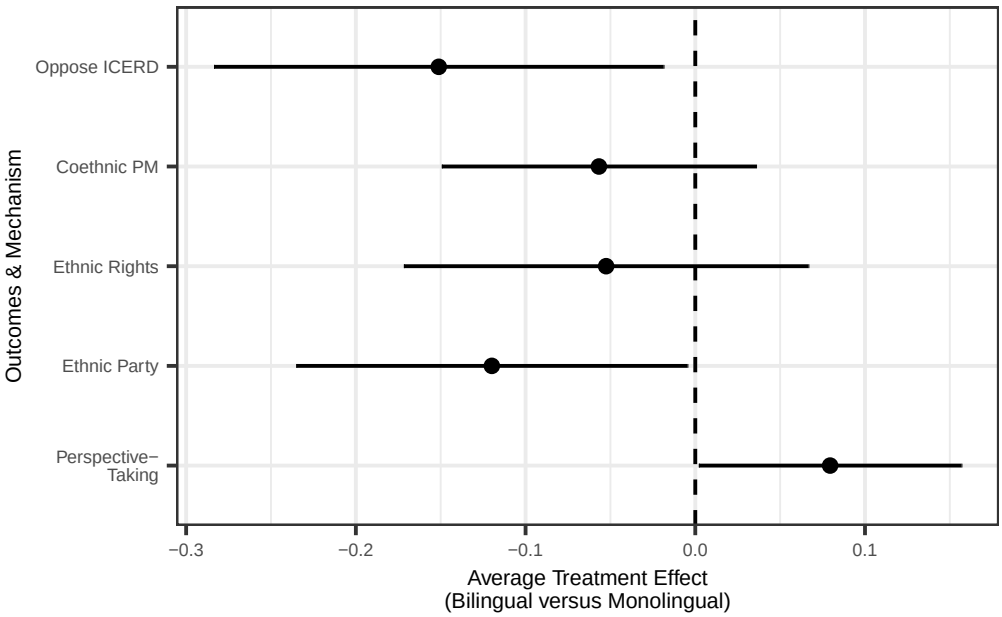
3.5.1 Results

I first examine whether bilingual exposure resulted in less political discrimination against ethnic outgroups. As a reminder, a key theoretical argument of this chapter is that the act of switching between two (or more) languages closely parallels the cognitive process of shifting between individuals' perspectives. A higher rate of code-switching should enhance an individual's propensity to adopt the viewpoints of others, thereby reducing their inclination to discriminate against ethnic outgroup members. As such, I expect that participants in the *Bilingual* group should exhibit lower levels of ethnic outgroup discrimination compared to those in the *Monolingual* group (i.e., conditions 1 and 2 combined).

As indicated in Figure 3.5, participants in the *Bilingual* group, on average, displayed lower levels of ethnic outgroup discrimination than those in the *Monolingual* group. All the point estimates are negative, with the reduction being statistically significant at the conventional level for two of the four outcome variables. Specifically, *Bilingual* exposure was linked to a decrease in respondents'

[20]ICERD is a United Nations convention which commits its members to eradicate racial discrimination and promote interracial understanding. In late 2018, ICERD became a highly contentious and politically charged issue in Malaysia when the government expressed its intention to ratify the treaty. In response, an estimated 55,000 people, predominantly ethnic Malays, staged a rally in the country's capital, urging the government to withdraw its support. They expressed concerns that ratifying ICERD would lead to the loss of special privileges for Malays. Subsequently, the government announced they would not ratify the convention. As of the time of writing, Malaysia remains one of 14 countries that have not ratified ICERD.

Figure 3.5: **Average Treatment Effects of Bilingual Exposure on Ethnic Outgroup Discrimination and Perspective-Taking**



Notes: The figure illustrates the average treatment effects of bilingual exposure on the four outcome measures of ethnic outgroup political discrimination (first four outcomes from the top) and perspective-taking. Effect sizes are estimated using ordinary least squares regression models. Each horizontal line is the 95% confidence interval of the point estimate (robust standard errors). All four outcome variables are measured on a 4-point Likert scale, with larger values reflecting more discrimination. Scores for *Perspective-Taking* range between 1 and 5, and larger values reflect better perspective-taking ability. Covariates include age, education, gender, and income. Full results are report in Table B.27.

propensity to oppose the ratification of ICERD in Malaysia and to support the continuation of ethnicized interparty competition in the country. Additionally, the fact that a significant difference was detected for the outcome variable *Oppose ICERD* but not *Ethnic Rights*, despite both measuring the same dimension (i.e., ethnic discrimination at the individual level), suggests that participants may have been providing responses that were less susceptible to social desirability bias in the former question.[21] Finally, Figure 3.5 also provides evidence that aligns with the expectation that code-switching heightens the tendency to consider the perspectives of others, as indicated by a

[21]This is supported by the fact that a large majority of respondents either agreed or strongly agreed to the statement that "People should be treated and given the same rights in Malaysia, regardless of race or religion" (76.5%), whereas the responses to the *Oppose ICERD* question showed a less skewed distribution, with a significant proportion falling in the middle values.

positive and statistically significant point estimate for *Perspective-Taking*. Overall, these findings underscore the cognitive impact of code-switching in enhancing one's inclination to consider the perspectives of others as well as reducing ethnic outgroup discrimination, even among bilingual individuals.

I further assess the robustness of the findings in three ways. First, I verified that the main results remained consistent when applying an ordinal logit model (Table B.28). Second, I confirm the findings' robustness by excluding respondents who failed the manipulation check questions from the analysis (Table B.29). Finally, I extended the analysis by using a three-category treatment variable, with *Bilingual* exposure as the reference category, to explore whether participants in the *Bilingual* condition consistently exhibited the lowest levels of ethnic outgroup discrimination when compared to the other two *Monolingual* conditions separately (i.e., conditions 1 and 2 in Figure 3.4). As displayed in Table B.30, this indeed appears to be the case. In general, respondents in the *Bilingual* condition displayed reduced levels of ethnic outgroup discrimination when compared to the English and *Bahasa Melayu* conditions separately. For instance, when compared to participants in the *Bilingual* condition, those in the English condition were inclined to oppose the ratification of ICERD, while those in the *Bahasa Melayu* condition displayed greater support for the notion that the chief executive of Malaysia should always come from the country's ethnic majority group.

3.6 Conclusion

In this article, I show that differences in ethnic outgroup attitudes can be traced to an individual's bilingual exposure in school through three empirical studies. First, I present cross-national evidence from the ABS in Study 1, which offer preliminary support for the link between bilingualism and inclusive political attitudes toward ethnic outgroups. Second, Study 2 demonstrates the causal effects of bilingual education on ethnic outgroup discrimination by leveraging the as-if random assignment of the language of instruction in Malaysian schools due to the sudden introduction of an education reform in 2003. Specifically, I find that ethnic Malays who received bilingual instruction displayed

less political discrimination against ethnic outgroups. The empirical analyses also provide suggestive evidence that this relationship might be mediated by increases in second language proficiency and perspective-taking ability among affected students. Finally, I triangulate the evidence from Studies 1 and 2 with a direct examination of the effects of code-switching on ethnic attitudes in Study 3. As expected, bilingual exposure, specifically participants who alternated between two languages during the survey experiment, was linked to a decrease in outgroup discrimination and an improvement in perspective-taking ability.

The findings from this chapter make several important contributions. First, this study expands the traditional understanding that education influences political attitudes and behavior primarily through the acquisition of civic skills and political knowledge. I demonstrate that education also improves our cognitive ability to assume the vantage points of ethnic outgroup members in our midst. More broadly, the findings indicate that a person's education represents a bundle of experiences inside and outside the classroom, from the language of instruction used to the types of extracurricular activities offered. Hence, unpacking this bundle of experiences – through a rigorous analysis of other facets of the education system – represents an important step for future scholars to resolve some of the theoretical issues that remain unsolved in the education literature (Cavaille & Marshall, 2019; Persson, 2015b).

Second, this article contributes to the more general understanding that the language(s) we speak can influence our social and political outlooks. The finding that bilingual instruction promotes the development of perspective-taking ability and lowers intergroup prejudice in Malaysia speaks to recent calls for a wider investigation of language's effects on affective, cognitive, and behavioral political outcomes (Pérez & Tavits, 2022). To my knowledge, this research is also one of the first that uncovers an empirical connection between bilingualism and outgroup tolerance at a cross-national level. Admittedly, the statistical tests are not perfect, primarily because we lack a good empirical measure of a person's linguistic diversity at home and/or outside. As such, future iterations of cross-national surveys should allow respondents to freely specify the language(s) they speak at

home and outside, thereby enabling future researchers to test this phenomenon more robustly.

Finally, the results also bear lessons for what types of policy interventions might have long-lasting impacts on prejudice reduction. The fact that this study was able to detect significant differences in perspective-taking ability and ethnic attitudes among Malays who had left school for more than a decade underscores the persistent influence of pre-adult factors in shaping a person's later-life political attitudes. Hence, a more durable solution to the problem of intergroup prejudice may not lie in inducing one-off perspective-taking by reading about marginalized groups, but in cultivating perspective-taking ability through early life interventions such as bilingual education. Future works should devote attention toward investigating the efficacy of other agents of political socialization and how these inclusionary effects might also apply to other ostracized groups such as the LGBT community.

Chapter 4: Citizenship Education Does Not Improve Ethnic Tolerance

Political scientists and education researchers alike have devoted significant attention towards understanding the behavioral and attitudinal effects stemming from civic and citizenship education (e.g., Galston, 2001; Niemi & Junn, 1998; Torney-Purta et al., 2001).[1] In particular, a recurring finding within this body of research is that civic education exposure strengthens political participation, efficacy and knowledge among youths and adults, both in established (Campbell & Niemi, 2016; Niemi & Junn, 1998) and nascent democracies (Blair, 2003; Finkel, Horowitz, & Rojo-Mendoza, 2012; Gottlieb, 2016). Additionally, recent empirical works have shown that civics classes can compensate for the absence of parental political socialization, thereby reducing what (Levinson, 2012) calls the 'civic empowerment gap,' with the largest effects being observed among racial minorities and other marginalized groups (Finkel, Neundorf, & Rascón-Ramírez, 2023; Nelsen, 2021b; Neundorf, Niemi, & Smets, 2016).

Considering its salutary impact on political engagement, it seems reasonable to expect that civic and citizenship education should also promote ethnic tolerance. Among democratic regimes, a common theme found in many civic education programs is a deliberate focus on instilling civic values in the classroom, such as human rights and respect for diversity (e.g., Bromley, 2011; Finkel, Horowitz, & Rojo-Mendoza, 2012; Finkel & Smith, 2011). As such, it is hypothesized that students who attended civics classes would internalize these norms and exhibit greater tolerance towards ethnic outgroup members in their daily lives. Likewise, in some hybrid and autocratic regimes, such as Singapore and China, there is a strong emphasis on cultivating a cohesive national identity that transcends ethnic and other parochial identities through early-life exposure to citizenship

[1]Throughout this paper, the terms "civic education" and "citizenship education" are used interchangeably.

education (Cantoni et al., 2017; T. W. Tan & Chew, 2008).[2] Hence, citizenship education may also contribute to increased intercommunal tolerance by recategorizing individuals of diverse ethnic groups into a broader and more inclusive national ingroup (see Gaertner et al., 1994). However, despite these intuitions, it remains empirically unclear whether exposure to citizenship education can result in increased ethnic tolerance. Among the limited number of existing studies investigating this relationship, results are mixed: some observe a positive relationship (Finkel, 2003; Finkel & Smith, 2011), while others report null effects (Cantoni et al., 2017; Denver & Hands, 1990; Finkel, Horowitz, & Rojo-Mendoza, 2012).

In this article, I propose a theoretical explanation that highlights the moderating impact of open classrooms on the relationship between citizenship education and ethnic tolerance. While prior research has shown that an open classroom climate can independently enhance outgroup tolerance (e.g., Carrasco & Torres Irribarra, 2018; Miklikowska, Rekker, & Kudrnac, 2022; Munniksma et al., 2023; C. M. Weiss, Ran, & Halperin, 2023), I argue that such an environment is especially crucial when teaching civic education. First, an open classroom atmosphere improves the effectiveness of citizenship education by allowing students to discuss contemporary issues that pertain to, but beyond the scope of, many civic education curricula. These may include subtle forms of outgroup prejudice, such as racial profiling in public service provision (Avery, Levy, & Simmons, 2013). Put simply, an open classroom climate complements citizenship education by delivering additional content not covered in many existing textbooks. Second, an open classroom facilitates the sharing of diverse opinions and experiences, allowing students to gain insights into other viewpoints not covered in the textbooks while improving their cognitive ability to take the perspectives of others (Miklikowska, Rekker, & Kudrnac, 2022). Taken together, I anticipate that the positive connection between citizenship education and ethnic tolerance will be most pronounced among students who experienced open classroom environments.

Empirically, I test my argument through two distinct studies. In the first study, I analyze

[2]It is worth stressing that not all nondemocratic societies prioritize inclusivity in their educational curricula (see e.g., Ahmad, 2008; İnce, 2012); rather, this point seeks to underscore the fact that inclusive visions of national identity are not solely confined to citizenship education in democratic regimes.

cross-national data from the 2016 International Civic and Citizenship Education Study (ICCS, Schulz et al., 2018), which sampled approximately 90,000 eighth-grade students from 24 different countries worldwide. Consistent with my expectation, the results indicate that the positive impact of citizenship education on ethnic tolerance was only observed among students who reported high levels of open classroom discussions. In contrast, citizenship education had a negligible effect on ethnic tolerance among eighth-graders who sat in classrooms where student-led discussions and open-ended exploration were not prioritized.

Second, I investigate the causal effects of citizenship education by examining an education reform in Singapore, which resulted in students born after the cutoff date receiving citizenship education while those born before the cutoff did not. Additionally, this case offers a unique opportunity to test the boundaries of my argument. Specifically, it enables an examination of whether citizenship education can still have a positive impact on ethnic tolerance within a closed classroom setting, even when its curriculum places an explicit emphasis on promoting interracial tolerance and cultivating a more inclusive national identity (J. B.-Y. Sim, 2011). Through an original survey involving more than 2,400 respondents in Singapore, I find that citizenship education exposure did not improve ethnic tolerance. In some analyses, citizenship education even appeared to exacerbate intolerance towards ethnic outgroups. Overall, my findings underscore the pivotal role that open classrooms play in amplifying the positive effects of citizenship education on ethnic tolerance, and that the pedagogical underpinnings of citizenship education might be more influential than the content itself.

This article makes two important theoretical and policy contributions. First, it advances our understanding of the political socialization effects of civic and citizenship education by delineating the conditions under which such programs are effective in mitigating outgroup animus (e.g., Cantoni et al., 2017; Finkel, Horowitz, & Rojo-Mendoza, 2012; Finkel & Smith, 2011; Lee, 2023). In particular, the findings emphasize the centrality of open instructional methods in civic education – as opposed to traditional top-down instruction – for promoting intergroup acceptance, an aspect that has not received sufficient attention in the existing political science literature (but see Nelsen,

2021b). Second, the results from this research have practical implications for education policymakers working in ethnically divided societies (Martens & Gainous, 2013). While many civic and citizenship education programs are designed with the best intentions to counteract biases against ethnic outgroups from a young age, my findings indicate that their efficacy is often linked to the extent to which an open classroom climate – such as conversations about current political issues or discussions between students with different opinions – is integrated into the learning environment.

4.1 Open Classrooms in Civic & Citizenship Education

I propose that citizenship education is most effective in promoting ethnic tolerance when it is taught in an open and inclusive setting. This argument stems from two insights. First, an open classroom allows students to discuss and reflect on a broader set of contemporary ethnic issues that are often excluded from standard citizenship education curricula, such as covert racism and the persistence of ethnic stereotyping in modern societies. This expanded coverage can heighten students' awareness and understanding of these issues, ultimately leading to greater empathy towards ethnic outgroups. Second, an open classroom environment facilitates the sharing of diverse viewpoints, providing students with ample opportunities to practice their cognitive skills in taking the perspectives of others during civics classes.

Following (Torney-Purta et al., 2001, p. 137), an open classroom is characterized as an environment where 'students experience their classrooms as places to investigate issues and explore their opinions and those of their peers.' Previous research has identified two defining features that constitute such environments. The first is *openness in content*, in which students and teachers can introduce and deliberate on contemporary political events within the classroom. Second, open classrooms are also defined by their *openness towards diverse viewpoints*, where teachers present varied perspectives on current issues while students are free to offer contrasting opinions on those topics (see Campbell, 2008; Carrasco & Torres Irribarra, 2018; Miklikowska, Rekker, & Kudrnac, 2022; Persson, 2015a; C. M. Weiss, Ran, & Halperin, 2023).

Regarding the first feature – i.e., openness in content, an open classroom environment complements citizenship education by allowing students to explore beyond the content of their textbooks. To be precise, I define citizenship education as the acquisition of knowledge and skills vital for being a 'good' citizen in one's country (see Banks, 2014). Although the concept of 'good' citizenship varies across countries and regime types, it is widely observed that citizenship education curricula in many countries often neglect to address ethnic issues adequately. In the United States, for instance, (Nelson & Pang, 2014, p. 208) opine that 'the social studies curriculum often does a poor job of examining ... the pervasiveness of racialization in everyday life.' Consequently, many Americans do not readily connect their civic education experiences with ethnic issues. One study finds that only 9% of the participants felt that their civic education emphasized topics related to 'racism and other forms of injustice in the American system' (Levine & Lopez, 2004). Moreover, these anecdotes are not limited to the US, as several scholarly evaluations of citizenship education curricula in other regions also note a deliberate avoidance of mentioning ethnicity in the classroom (e.g., Astiz & Mendez, 2006; Fox, 2003; Freedman et al., 2008; Weinstein, Freedman, & Hughson, 2007). Even among textbooks that touch upon ethnic issues, many citizenship education materials may neglect to incorporate a broader spectrum of contemporary ethnic concerns, such as the persistence of covert and institutional racism (see e.g., Engel, 2014; Gillborn, 2006; Lerch, Russell, & Ramirez, 2017). Furthermore, descriptions of ethnic relations in some citizenship education curricula may inadvertently perpetuate traditional ethnic stereotypes. This is particularly evident in the documentation of Asian Americans in the US, where certain history courses in schools highlight the academic and economic successes of Asian Americans in ways that reinforced the model minority stereotype (Suh, An, & Forest, 2015).

An open classroom can therefore enhance the relevance of citizenship education to current ethnic concerns by facilitating the discussion of contemporary sociopolitical issues within the classroom. Specifically, this approach promotes the exchange of novel ideas and experiences that challenge preexisting ethnic stereotypes and highlight the multifaceted nature of ethnic discrimination in

everyday life (Miklikowska, Rekker, & Kudrnac, 2022; C. M. Weiss, Ran, & Halperin, 2023). As such, students have the opportunity to reflect on and gain new insights into these salient yet often overlooked issues during their civics classes. Echoing this sentiment, a student who participated in an open classroom initiative as part of the *Deliberating in a Democracy* project remarked that the process of deliberation with other students 'helped me open my mind more about all sorts of issues' (Avery, Levy, & Simmons, 2013, p. 111). Open classrooms have also been linked to increased civic knowledge among students, encompassing topics both within and beyond the standard citizenship education curricula (e.g., Campbell, 2008; Persson, 2015a; Treviño et al., 2017). Taken together, an open classroom environment has the potential to enhance the effectiveness of citizenship education in promoting ethnic tolerance. Through open discussions, students can learn and gain awareness of ethnic-related topics that might not be a salient component in many citizenship education curricula.

The second aspect of open classrooms – i.e., openness towards diverse viewpoints – should also amplify the positive influence of citizenship education on ethnic tolerance. In addition to teaching students how to amicably resolve conflicts stemming from differing political opinions (Campbell, 2008; Torney-Purta et al., 2001), this feature may also cultivate a deeper appreciation that people can hold multiple perspectives on the same topic. As such, an open classroom environment may enhance students' cognitive capacity to consider the perspectives of others, which, in turn, should lead to increased levels of acceptance and tolerance towards members of ethnic outgroups. Indeed, this conjecture is corroborated by several empirical studies, which found that classroom deliberations on contentious public issues led to increased levels of perspective-taking abilities among students (e.g., Avery, Levy, & Simmons, 2013, 2014; Hess, 2009; C. M. Weiss, Ran, & Halperin, 2023; Wen et al., 2023). For example, one study reported that students exposed to an open classroom setting and who did not believe their school should mandate school uniforms were more likely to provide more reasons why someone might *support* such a policy (Avery, Levy, & Simmons, 2014). This suggests that open classrooms can foster empathic understanding even when students may disagree on certain issues. Furthermore, findings from a field experiment conducted in Israel

revealed that constructive classroom engagement led to a heightened appreciation for understanding the plights and concerns of other outgroup members, which, in turn, improved intergroup attitudes and pro-diversity behavior among Jewish Israelis (C. M. Weiss, Ran, & Halperin, 2023).

Overall, my argument hypothesizes that an open classroom climate should exert a positive moderating effect on the relationship between citizenship education and ethnic tolerance, by (1) expanding students' knowledge and awareness of ethnic-related topics and (2) improving perspective-taking among students. However, in the absence of an open classroom environment, can citizenship education still have a positive impact on ethnic tolerance, albeit to a lesser extent? This scenario seems unlikely for two reasons. First, without open classroom engagement, students, particularly those from dominant groups, are less likely to recognize their privileged positions and become attuned to the subtle forms of racism experienced by members of marginalized groups (see Flynn, 2012). Moreover, in countries that advocate for an exclusive national identity, the lack of classroom openness could lead students to internalize a narrow and monolithic understanding of ethnic relations based on their citizenship education textbooks, which can further exacerbate their exclusionary tendencies towards different ethnic outgroups (see Lee, 2023). Second, the absence of an open classroom climate reduces the likelihood that students will encounter and confront diverse perspectives on sociopolitical topics in their citizenship education classes, which, in turn, weakens their ability to empathize with other ethnic outgroups in their midst. Taken together, I anticipate that the effect of citizenship education on ethnic tolerance should be negligible in more restrictive classroom environments.

4.2 Research Design

I test my claims through two separate studies. In Study 1, I analyze cross-national data from the 2016 International Civic and Citizenship Education Study (ICCS, Schulz et al., 2018). This dataset contains responses from students and school administrators regarding their attitudes, perceptions, and activities related to civics and citizenship. Importantly, the ICCS collected information from

90,000 students representing 24 democratic and nondemocratic countries spanning Europe, Asia, North and South Americas. This diversity therefore lends external validity to the findings presented in this study.

Study 2 investigates the causal impact of an education reform in Singapore, where students born after the cutoff were exposed to a new citizenship education course, while those born before the cutoff did not. There are several reasons why Singapore is an ideal setting to test my claims. Theoretically, the Singapore case represents a unique example in which the curriculum of the new citizenship education course prominently highlights the importance of preserving interracial harmony, yet the classes are largely delivered within a restrictive learning environment (Ho, 2010; J. B.-Y. Sim, 2011). This case therefore offers a more rigorous test of my theoretical arguments. Specifically, it asks whether the presence of inclusive ethnic content in citizenship education *alone* can improve ethnic tolerance, even in the absence of diverse viewpoints and critical discussions in the classrooms. Put differently, this case provides the best opportunity – or a 'most-likely case' (see Levy, 2008) – to discern a positive link between citizenship education and ethnic tolerance within a closed classroom environment.

Empirically, the Singapore case provides a more robust testing ground due to its distinct educational landscape. Given the highly centralized nature of the education system in the country (J. B.-Y. Sim, 2011; T. W. Tan & Chew, 2004, 2008), the curriculum and instructional methods for the new citizenship education course are standardized across all schools. This uniformity implies that those impacted by the reform likely had similar experiences with the new subject. Additionally, the new citizenship education subject, or known locally as 'Social Studies,' is mandatory and taught over a two-year period at the upper secondary level (or the equivalent of Grades 9 and 10), culminating in its assessment at the national admission exam for pre-tertiary institutions in Singapore. As such, this mitigates the possibility that any potential null effects between citizenship education and ethnic tolerance could be explained by a lack of exposure to the new subject.

4.3 Study 1: Cross-National Evidence from ICCS

The ICCS dataset offers a rich resource to investigate the relationship between citizenship education and ethnic tolerance. It includes both student and school levels information on a variety of civics-related topics, such as students' perceptions of classroom openness, pedagogical approaches towards civic and citizenship education, ethnic tolerance, and other socioeconomic indicators. Using a stratified two-stage probability design, the ICCS first sampled schools from each of the 24 participating countries based on their student population size. Subsequently, a full class of eighth-grade students from each school was chosen to participate in the survey. In total, the ICCS dataset contains 90,000 student level observations from 3,500 schools spread across 24 countries.[3] The following paragraphs describe the variables and empirical strategy for this study.[4]

4.3.1 Dependent Variable: Ethnic Tolerance

The primary outcome of interest is *Ethnic Tolerance*. This is a composite variable derived from factor analyzing students' responses to five questions in the ICCS. Specifically, students rated their level of agreement using a 4-point Likert scale on five statements that revolve around the equitable treatment of various ethnic groups in their country. These statements are (1) 'All ethnic groups should have an equal chance to get a good education,' (2) 'All ethnic groups should have an equal chance to get good jobs,' (3) 'Schools should teach students to respect members of all ethnic groups,' (4) 'Members of all ethnic groups should be encouraged to run in elections for political office,' and (5) 'Members of all ethnic groups should have the same rights and responsibilities.' The five items collectively yield a Cronbach's alpha coefficient of 0.84, thereby indicating a high level of internal consistency and their cohesiveness in measuring the degree of ethnic tolerance among students. I compute the Barlett factor scores and these values are standardized to have a mean of zero and a standard deviation of one. Higher values correspond to greater ethnic tolerance.

[3]Subsection C.1.1 of the Online Appendix (OA) provides a detailed breakdown of the numbers of schools and students by each country in the ICCS.

[4]See C.1.2, C.1.3 and C.1.4 for detailed descriptions and the summary statistics of the key variables.

4.3.2 Predictor & Moderator: Citizenship Education and Classroom Openness

The preceding theoretical discussion primarily focused on classroom-based citizenship education and its impact on ethnic tolerance. However, it is important to recognize that schools employ a variety of teaching methods for civic and citizenship education, and this diversity is evident in the ICCS dataset. I code three school level variables to distinguish between these pedagogical approaches related to civic and citizenship education. Moreover, these three predictors are not mutually exclusive, as it is fairly common to find schools implementing more than one approach to teaching citizenship education.

The main predictor, *Citizenship Education (Classroom)*, serves as an indicator of whether citizenship education was taught inside the classroom. It takes on a value of one if a student attended a school where citizenship education was taught as a standalone subject or as a component within other humanities or social sciences subjects (e.g., social studies and history), and zero otherwise. Unsurprisingly, this method stands out as the most popular choice for teaching citizenship education, with more than 88% of schools in the dataset using this approach. Next, *Citizenship Education (Extra-Curricular)* is a binary variable that equals one if a student went to a school where citizenship education was provided outside the classroom as a form of extracurricular activity (e.g., debating groups, political clubs). Lastly, *Citizenship Education (Integrated)* is another binary variable that considers whether citizenship education content was integrated into all aspects of a student's school experience.

To gauge the level of *Classroom Openness*, I rely on six items from the ICCS that solicited students' opinions regarding the dynamics of classroom discussions on political and social issues. Broadly speaking, these items speak to the two key features of open classrooms identified in the existing literature: (1) openness in content, and (2) openness towards diverse viewpoints. For instance, regarding the first feature, the ICCS inquired about how frequently students had the opportunity to initiate discussions on current political events in the classroom. On the second

feature, students were asked to evaluate the frequency with which teachers encouraged them to engage in conversations with peers who hold different viewpoints, whether students had the freedom to express their personal opinions even when they differed from the majority, and how often teachers presented multiple perspectives of an issue in the classroom. The responses are factor analyzed to produce a standardized composite variable (Cronbach's alpha = 0.79), where larger values indicate a greater level of *Classroom Openness*. It is worth noting that this variable provides a broad measure of students' perceptions regarding the openness of classroom discussions, irrespective of whether *Citizenship Education (Classroom)* was incorporated into the school's curriculum. For instance, a significant proportion of students (52%) reported above-average levels of open classroom discussions, even when their school did not offer any classroom-based citizenship education courses.

4.3.3 Control Variables

I also incorporate several covariates at the student and school levels into the regression models. The first covariate, *Female*, equals one if the student is female and zero otherwise. Additionally, I include a number of parental background covariates, such as whether the student's parents were born in the country and their highest level of educational attainment: i.e., *Mother (Native)*, *Father (Native)*, *Mother (Education)*, and *Father (Education)*. These variables should have an impact on students' attitudes towards ethnic outgroups and their likelihood of enrolling in a school that offers citizenship education with a focus on more open teaching methods. The final student level control variable is *Civic Organization*, which equals one if the student had previously participated in activities of at least one civic organization (e.g., political party youth wing, animal rights group, etc.), and zero otherwise.

In general, there are two types of school level covariates. The first group of variables pertains to the school's characteristics, including whether the school is situated in an urban area (*Urban*), the (logged) size of the school's student population (*School Size*), and the school's gender composition, quantified as the percentage of male students (*Male Students*). The next set of covariates measures

the degree of social tension and unrest in the immediate vicinity of the school. This includes factors such as the salience of intergroup conflicts along religious and ethnic lines in the neighborhood (*Tension (Intergroup)*), the prevalence of poverty and unemployment in the area (*Tension (Poor)*), and the frequency of criminal activities (*Tension (Crime)*).

4.3.4 Empirical Strategy

I employ two sets of regression models for my empirical analyses. The first set of models involves the use of multilevel regression to investigate the associations between citizenship education, classroom openness, and ethnic tolerance. This approach takes into account the hierarchical structure of the data, where students are nested within schools, and schools are nested within the 24 participating countries in the ICCS. As such, the multilevel models include random intercepts at the school and country levels.

As an additional test of robustness, I also implement a series of ordinary least squares (OLS) models with country fixed effects to assess the consistency of the findings across different model specifications. Given the manner in which schools and students were sampled in the ICCS dataset, I compute standard errors clustered at the school level for the OLS models. Finally, I incorporate student level weights in both the multilevel and OLS models. These weights are necessary for the estimation strategy, as they account for varying selection probabilities in the sample and adjust for potential bias resulting from non-participation of the sampled units (see Schulz et al., 2018).

4.3.5 Study 1 Results

Table 4.1 presents the regression results. First, I assess the impact of each of the three pedagogical approaches to citizenship education on *Ethnic Tolerance* in models (1) and (2). Although each of the three methods is linked to an increase in *Ethnic Tolerance*, the estimates do not achieve statistical significance at the conventional level in the OLS and multilevel models (i.e., $p > 0.05$). In contrast, the coefficients for *Classroom Openness* are substantively larger and statistically significant

across the two models. A one standard deviation increase in *Classroom Openness* corresponds to a 0.17-0.19 standard deviation improvement in *Ethnic Tolerance* among students in the ICCS dataset. Remarkably, these effect sizes are comparable to those reported in prior empirical research (e.g., Janmaat & Mons, 2011). The findings presented in columns (1) and (2) are therefore consistent with previous empirical studies, that citizenship education programs *alone* are not very effective in fostering ethnic tolerance (Cantoni et al., 2017; Finkel, Horowitz, & Rojo-Mendoza, 2012). Conversely, an open classroom environment significantly improves ethnic tolerance among students (e.g., Janmaat & Mons, 2011; Miklikowska, Rekker, & Kudrnac, 2022; C. M. Weiss, Ran, & Halperin, 2023).

In models (3) and (4), I investigate whether the effect of *Citizenship Education (Classroom)* on *Ethnic Tolerance* depends on the level of *Classroom Openness* perceived by students. Both models yield positive coefficient estimates for the interaction term, indicating that an open classroom environment amplifies the positive impact of classroom-based citizenship education on ethnic tolerance. To provide a more comprehensive analysis of the effect size and statistical significance at various levels of *Classroom Openness*, I present the conditional marginal effects of *Citizenship Education (Classroom)* on *Ethnic Tolerance* in Figure 4.1. The left and right plots in Figure 4.1 depict the conditional marginal effects computed from models (3) and (4), respectively. Among students who reported low levels of open classroom discussions, the effect of classroom-based citizenship education on ethnic tolerance is negligible in both plots, which are consistent with the patterns observed earlier. However, as *Classroom Openness* increases, the positive effect of classroom-based citizenship education becomes more pronounced. At the highest level of *Classroom Openness*, or about 1.5 standard deviations above its mean, classroom-centered citizenship education has a positive and statistically significant impact on students' ethnic tolerance in the OLS model (β = 0.12 SD, p = 0.041) and the multilevel model (β = 0.07 SD, p = 0.027).

To put this effect size into context, consider the ICCS item that asks whether students agree with the statement, 'Members of all ethnic groups should be encouraged to run in elections for

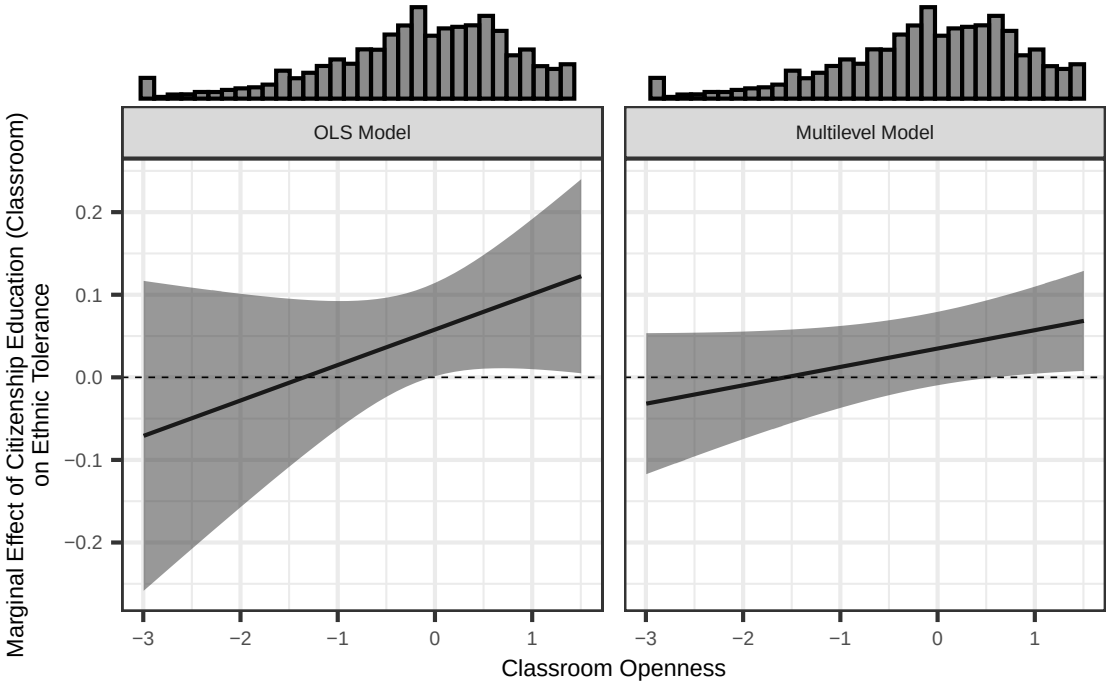
Table 4.1: **Effects of Civic Education & Classroom Openness on Ethnic Tolerance**

DV =	Ethnic Tolerance			
Models	OLS	Multilevel	OLS	Multilevel
	(1)	(2)	(3)	(4)
Classroom Openness	0.190**	0.175**	0.150**	0.155**
	(0.009)	(0.004)	(0.030)	(0.012)
Citizenship Education (Classroom)	0.054†	0.032	0.058*	0.035
	(0.029)	(0.023)	(0.029)	(0.023)
Citizenship Education (Extra-Curricular)	0.002	0.007	0.002	0.007
	(0.024)	(0.017)	(0.024)	(0.017)
Citizenship Education (Integrated)	0.033†	0.019	0.033†	0.019
	(0.019)	(0.014)	(0.019)	(0.014)
Citizenship Education (Classroom) × Classroom Openness			0.043	0.022†
			(0.032)	(0.013)
N	72,462	72,462	72,462	72,462
Covariates	Yes	Yes	Yes	Yes
Country FE	Yes	No	Yes	No

Notes: Table entries are standardized coefficient estimates. In models (1) and (3), robust standard errors clustered at the school level are shown in parentheses, while models (2) and (4) display conventional standard errors. Both *Ethnic Tolerance* and *Classroom Openness* values are standardized with a mean of zero and a standard deviation of one. Higher values of *Ethnic Tolerance* and *Classroom Openness* indicate greater tolerance towards ethnic outgroups and a stronger perception of open classroom discussions, respectively. Control variables include gender, parental birthplace and education level, civic organization participation, neighborhood social tensions, school urbanity, school student population size (logged), and school gender composition. Full results are reported in Table C.8. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

political office.' The standard deviation of students' responses to this item is 0.8. This implies that, at the highest level of *Classroom Openness*, classroom-based citizenship education would result in a modest increase of about 0.06-0.10 in responses to this item on a 4-point Likert scale. Additionally, it should be highlighted that the mean response to this item was 3.08 out of a maximum of 4. Therefore, the fact that we can detect statistically significant differences, even in the presence of a potential ceiling effect, underscores the crucial role of open classroom instruction in generating a positive moderating influence on the relationship between classroom-based citizenship education

Figure 4.1: **Conditional Marginal Effects of Civic Education on Ethnic Tolerance**



Notes: The figure presents the marginal effects of *Citizenship Education (Classroom)* on *Ethnic Tolerance* at various levels of *Classroom Openness*, together with their corresponding 95% confidence intervals. The effect sizes and statistical significance for the left and right plots are computed from models (3) and (4) in Table 4.1, respectively. The vertical bars reflect the frequency distribution of students' perceived *Classroom Openness*.

and ethnic tolerance.

Lastly, I explore whether the observed empirical patterns can be attributed to an improvement in students' civic knowledge.[5] Specifically, open classrooms provide a conducive environment for students to acquire additional knowledge and awareness of various social and political topics that go beyond the content covered in their textbooks, thus contributing to an improvement in civic knowledge. This heightened awareness, in turn, may lead students to develop a greater appreciation of the complex nature of ethnic and racial discrimination experienced by marginalized groups in the country. As such, if open classrooms amplify the impact of classroom-based citizenship education on ethnic tolerance, then we should expect a similar pattern where open classrooms also enhance the positive influence of citizenship education on students' civic knowledge.

[5]Regrettably, the ICCS dataset did not include questions to evaluate students' perspective-taking abilities.

To this end, I measure students' *Civic Knowledge* by using a composite index generated by the ICCS. This index is constructed from a battery of items in a civic knowledge test that evaluated students' understanding of various citizenship-related domains, including the country's political institutions, voting processes, and community participation, among other topics. For ease of interpretation, I standardize this variable to have a mean of zero and a standard deviation of one. Subsequently, I conduct a regression analysis of *Civic Knowledge* using the same set of variables as outlined in models (3) and (4) from Table 4.1. The results, as presented in Table C.9 and Figure C.1 of the Appendix, reveal a similar trend. A positive and statistically significant association between *Citizenship Education (Classroom)* and *Civic Knowledge* is observed exclusively among students who perceive higher levels of *Classroom Openness* (β = 0.10-0.16 SD, $p < 0.05$). Conversely, no significant effects are found among students who experienced lower levels of *Classroom Openness*. These findings provide greater confidence that the main results may be attributed to improvements in students' civic knowledge.

Overall, the results from this study offer a nuanced understanding of the connection between citizenship education and ethnic tolerance. Citizenship education initiatives, whether implemented within or outside the classroom, seem to have a limited impact in promoting ethnic tolerance among students. At the same time, the findings also shed light on the importance of integrating open and inclusive discussions into the classroom environment to enhance the positive effects of citizenship education on ethnic tolerance.

4.4 Study 2: Citizenship Education Reform in Singapore

Study 2 investigates the causal impact of an education reform in Singapore, where some students received citizenship education while others did not. Singapore is a multi-ethnic country that consists of three main ethnic groups: Chinese (75.9%), Malays (15%), and Indians (7.5%). Following its separation from Malaysia in 1965, education has assumed an important role in the nation-building process, with a specific focus on promoting intergroup tolerance within a society marked by ethnic,

religious and linguistic diversity (Judd, 2005).

Although the government had implemented various forms of citizenship education programs in the past, there was a growing concern in the late 1990s that many young Singaporeans lacked knowledge and interest in their country's history and political development (J. B.-Y. Sim, 2005). In response, the Ministry of Education introduced Social Studies as a compulsory subject for all upper secondary students (i.e., between Grades 9 and 10), starting in 2001. This marked a significant departure from previous citizenship education initiatives, as Social Studies is now a mandatory and testable subject at the General Certificate of Education Ordinary Level (GCE O'Level) examination, a prerequisite for admission to pre-tertiary schools in Singapore. All Grade 9 (or 15-year-old) students are required to study this new subject for a minimum of 2 years, typically with two 35-minute classes per week (J. B.-Y. Sim, 2005). Additionally, given that the academic year in Singapore follows the calendar year, students born on or after January 1, 1986 were likely mandated to study Social Studies, while those born before the cutoff date were not, which is a crucial detail for the causal identification strategy employed in this study.

4.4.1 Salience of Race & Ethnicity in Social Studies Curriculum

One of the primary goals of Social Studies is to nurture students into empathetic citizens who would engage responsibly in a multi-ethnic society and embrace a strong sense of national identity (Ministry of Education, 2003, p. 4). Although there have been several revisions to the Social Studies textbooks since its introduction in 2001 (see J. B.-Y. Sim, 2011), my analysis focuses on the content of the first edition. This choice is consistent with my empirical strategy, which is centered around the initial cohorts of students impacted by this reform.

A qualitative examination of the textbooks reveals that race and national identity are salient topics. For instance, when discussing the separation between Singapore and Malaysia in 1965, the second chapter provides a detailed account of the United Malays National Organization's (UMNO)[6]

[6]UMNO is a Malaysian political party that claims to represent the interests of ethnic Malays.

attempts at inciting communal violence between the Malay and Chinese communities in Singapore, and the significance of preserving racial and religious harmony in light of these historical flare-ups. A passage from this chapter neatly encapsulates how the race riots in the 1960s reinforced the importance of racial harmony in Singapore:

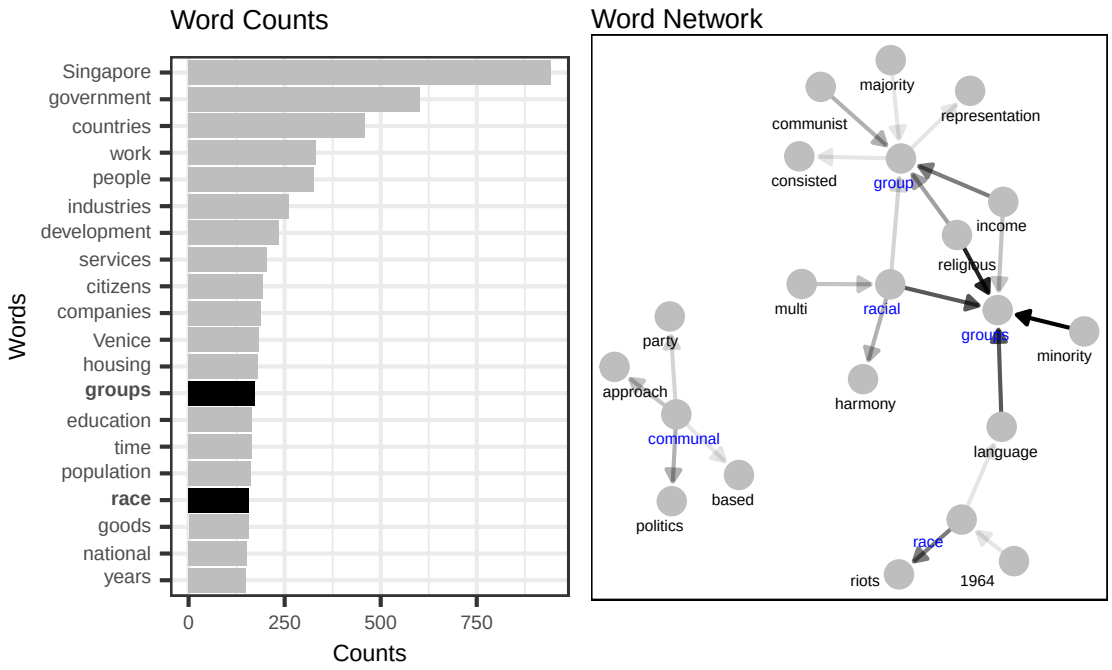
> The July 1964 and September 1964 riots showed the danger of communal politics in a multi-racial Singapore. Racial harmony was affected because of fiery speeches and statements that played up communal feelings. It resulted in a loss of lives, destruction of property and a breakdown in peace and order (p. 38).

Building on this theme, the subsequent two chapters delve into the subject of intergroup relations in Sri Lanka, Northern Ireland, and Switzerland. The first two examples are used to highlight the perils of racial and religious discord. For example, the textbook provides a comprehensive overview of the various forms of institutional discrimination faced by Sri Lankan Tamils, who constitute a significant minority in the country. It also explains how these factors led to the emergence of the Tamil Tigers and the prolonged armed conflict in Sri Lanka. Conversely, the Swiss example serves as a model of interethnic respect. The textbook highlights that Singaporeans can gain valuable insights into managing majority-minority relations from this case study:

> The Swiss are very tolerant people. For example, the German-speaking Swiss exercise tolerance and patience towards the minority groups. Likewise, the minority groups are also careful not to be demanding or unreasonable. All groups practise mutual respect and understanding. Singaporeans of different racial and religious groups can also continue to show similar respect and understanding towards each other (p. 95).

The quantitative text analysis in Figure 4.2 confirms the qualitative description that race is a prominent topic in the textbooks. In addition to terms usually linked to civics-related topics (e.g., 'government,' 'citizens'), words related to intergroup relations like 'groups' and 'race' are featured among the top 20 most frequently used words in the Social Studies textbooks (left plot). To better understand the context in which the words 'race' and 'groups' are used in the textbooks, the right plot in Figure 4.2 depicts a word network graph that illustrates the common words that come before or after these key terms. For instance, the word 'groups' is often preceded by 'minority,' 'language,'

Figure 4.2: **Descriptive Text Analysis of Social Studies Textbooks**



Notes: The figure displays the frequency of the top 20 most common words in the Social Studies textbooks and the words that precede or follow the terms in blue: i.e., 'race,' 'racial,' 'communal,' 'group,' and 'groups.' The direction and tone of the arrows indicate whether a word comes before or after another word, and the frequency of occurrence for each pair of words in the text.

'religious,' and 'racial,' while 'race' tends to be followed by 'riots.' These patterns suggest that the Social Studies textbooks place a significant emphasis on helping students recognize the importance of interracial harmony to prevent the recurrence of past racial discord in Singapore.

4.4.2 Social Studies in a Restrictive Learning Environment

It should be pointed out that another key objective outlined in the Social Studies curriculum is to foster independent inquiry and critical thinking skills among students (Ministry of Education, 2003). However, the reality is that many Social Studies teachers do not prioritize open discussions in their classes. This can be attributed, in part, to the subject's high-stakes nature, as students must pass it in the GCE O'level examination in order to advance and gain entry to pre-tertiary institutions. Coupled with pressure from school administrators and parents, many teachers hesitate to allocate

time for classroom discussions or topics not included in the curriculum, while prioritizing content delivery or 'teaching to the test.' Consequently, this approach limits opportunities for open-ended exploration and discussions on current sociopolitical issues not covered in the textbooks (Baildon & Sim, 2009).

Additionally, teachers often refrain from presenting a variety of diverse perspectives when addressing ethnic-related topics found in the textbooks. For instance, despite the curriculum's focus on numerous instances of institutional racism in Sri Lanka and Northern Ireland, (Ho, 2010) reports that none of the teachers in their study encouraged students to contemplate whether similar forms of institutional privilege or covert racism might exist in Singapore. Consequently, none of the interviewed students felt that there was a need to address instances of institutional or systemic factors contributing to racial inequality in Singapore (Ho, 2010), even though past research has demonstrated the persistence of institutional and subtle racism in the country, such as discriminatory hiring practices and ethnic stereotyping in various media (see Chew, Young, & Tan, 2019; Velayutham, 2017).

More generally, this reluctance to initiate open classroom discussions among teachers stems from a genuine fear of broaching topics deemed too sensitive or potentially disruptive to societal order, which could have an adverse effect on their professional careers (Baildon & Sim, 2009; Chua & Sim, 2015; Ho et al., 2017). Additionally, many teachers view themselves as loyal civil servants whose responsibility is to faithfully convey the official narratives presented in the textbooks and adhere closely to the curriculum choices mandated by the education ministry, while avoiding any substantial deviation from the prescribed course guidelines (Baildon & Sim, 2009; J. B. .-. Sim, Chua, & Krishnasamy, 2017). One teacher summarizes this perspective on the role of open discussions in Social Studies classes:

> [A]s civil servants, teachers must be good and responsible, executing and implementing the policies initiated by the MOE [Ministry of Education] in their lessons ... [T]eachers shouldn't evoke ... a critical approach in social studies especially in sensitive issues relating to race and religion ... [W]e don't want a racial riot to break out from such debates during social studies lessons (cited in Baildon & Sim, 2009, p. 417).

Taken together, the approach to teaching citizenship education in Singapore can be characterized as a unique combination of delivering ethnically salient content within a constrained learning environment. While the curriculum emphasizes the importance of preserving intergroup harmony in Singapore, classroom discussions on controversial ethnic-related topics and dissenting viewpoints are discouraged. As one observer points out, students are often treated as passive 'subjects' rather than engaged citizens, who are expected to unquestioningly accept the official narratives presented in the textbooks (J. B.-Y. Sim, 2011).

4.4.3 Causal Identification Strategy & Observational Survey

Considering that Social Studies was introduced in 2001 for all Grade 9 (or 15-year-old) students and that the school year in Singapore starts on January 1, the initial cohort of students exposed to this reform would have been born in 1986. This presents an opportunity for a regression discontinuity (RD) design to investigate differences in ethnic outgroup tolerance between individuals who were just born into the new education requirement (i.e., January 1, 1986) and those who narrowly missed the reform (i.e., December 31, 1985).

To this end, I conducted an observational survey involving 2,300 respondents in October 2022. The survey was administered in English, as it serves as a lingua franca among the various ethnic groups and is spoken by over 96% of the citizen population in Singapore (Department of Statistics, 2021). In order to increase the statistical power of this study, I specifically targeted Singapore citizens born between 1976 and 1995 to ensure a greater proportion of individuals born near the January 1, 1986 cutoff date. Subsection C.2.1 provides detailed information regarding the sampling design and survey protocols.

A significant concern for the RD design arises if students can manipulate their exposure to the new citizenship education course through methods other than their birthdates. In the Singapore context, this implies that students might choose to skip a grade to evade the new requirement (e.g., moving from Grade 8 in 2000 to Grade 10 in 2001) or remain in the same grade to ensure exposure to

the new subject (e.g., staying in Grade 9 in 2000 and continuing in Grade 9 in 2001). However, the former scenario is improbable, as the education ministry grants grade-skipping on a very selective basis, with only seven children having skipped a grade level since 2000 (Long, 2013). Likewise, the latter scenario is unlikely because grade retention would necessitate an extra year in school.

To maintain consistency, I fielded the same set of ICCS questions and answer choices pertaining to ethnic tolerance in the survey. I then constructed the composite variable, *Ethnic Tolerance*, by performing factor analysis on participants' responses to these questions. The scores are standardized to have a mean of zero and a standard deviation of one. The Cronbach's alpha coefficient for the five items, while lower, is still deemed acceptable at 0.63. Next, the main predictor in the analysis is *Reform*, which equals one if a respondent is born on or after January 1, 1986, and zero otherwise. The *Running* variable is defined as the difference in the number of days between a respondent's date of birth and January 1, 1986, i.e., Date of Birth – January 1, 1990. Finally, I include other covariates in the regression models, such as respondent's gender, ethnicity, whether their parents were born in Singapore, and their education tracks.[7] Subsection C.2.2 offers a more comprehensive description of the variables used in this study, along with their summary statistics.

4.4.4 Study 2 Results

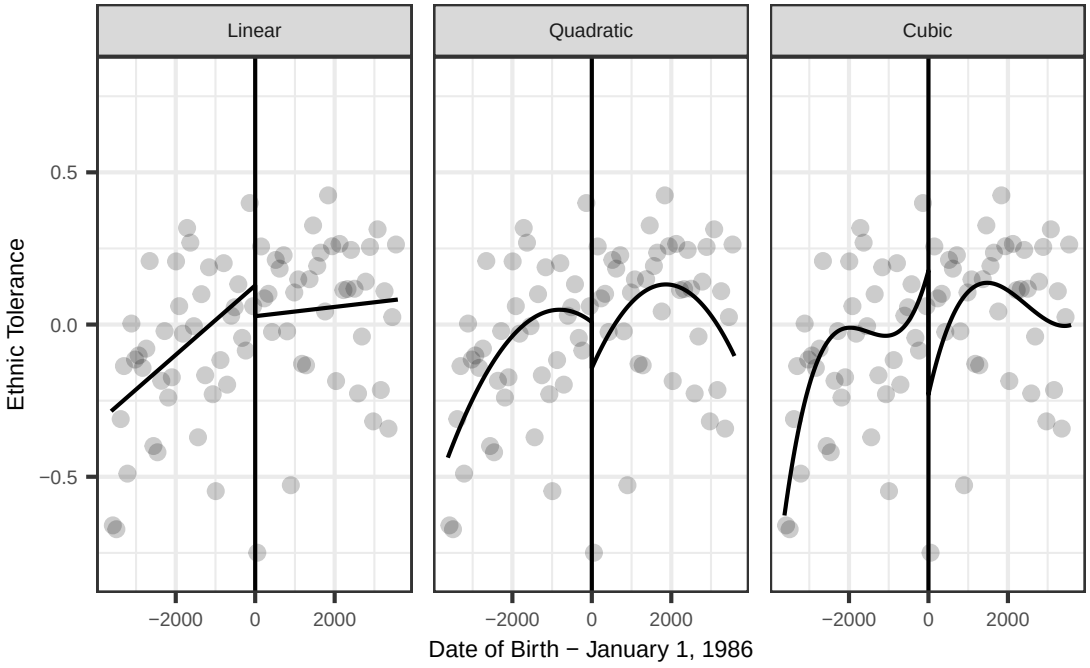
Does citizenship education influence the level of ethnic tolerance in Singapore? As a reminder, a key theoretical argument of this paper is that the relationship between citizenship education and ethnic tolerance should be most pronounced among students who experienced open classroom environments. Conversely, in the absence of such an open environment, citizenship education is not expected to enhance ethnic tolerance, as students may remain unaware of the various forms of institutional and covert racism in their country, and they are unlikely to encounter diverse perspectives that could help improve their ability to empathize and understand different viewpoints. Consequently, I expect that exposure to Social Studies should not lead to an improvement in ethnic

[7]In Singapore, students are placed into three different secondary education tracks based on their primary school examination results: 'Express,' 'Normal (Academic),' or 'Normal (Technical).'

tolerance in Singapore.

Figure 4.3 visualizes the discontinuity in *Ethnic Tolerance* among the survey participants. The horizontal axis represents the *Running* variable, with the vertical line denoting the implementation cutoff point of the Social Studies reform in Singapore. There is a noticeable *decline* in *Ethnic Tolerance* scores when comparing individuals born immediately before and after the January 1, 1986 cutoff. Moreover, this discrepancy is observed in the linear, quadratic, and cubic polynomial plots.

Figure 4.3: **Effect of Citizenship Education on Ethnic Tolerance in Singapore**



Notes: The left and right plots are generated using the rdrobust package in R (see Calonico, Cattaneo, & Titiunik, 2015). The left plot displays varying linear slopes on both sides of the discontinuity at January 1, 1986, while the right plot illustrates the predicted varying quadratic slopes on both sides of the discontinuity. The gray dots represent the raw data, aggregated and averaged in bins of 94 days.

Next, Table 4.2 presents the local average treatment effect (LATE) of the Social Studies *Reform* on *Ethnic Tolerance*. This effect is estimated through local linear regressions using different bandwidths (i.e., columns 1 and 2) as well as a model incorporating a varying linear polynomial (i.e.,

column 3).[8] Across all three model specifications, the coefficient sign for *Reform* is consistently negative, indicating that exposure to Social Studies is linked to a reduction in ethnic tolerance among survey participants born immediately after the cutoff date at January 1, 1986. For instance, when restricting the sample to individuals born within a year from the cutoff date at January 1, 1986 (i.e., column 1), participants who were exposed to the reform exhibit a 1.48 SD decrease in *Ethnic Tolerance* compared to their counterparts born a year earlier ($p < 0.05$). This effect is also statistically significant at the conventional level ($p < 0.05$). The findings displayed in Table 4.2 suggest that the citizenship education reform in Singapore did not improve ethnic tolerance among individuals who were just born into the new education requirement. Even more concerning, in some analyses, the reform was associated with a noteworthy and statistically significant decline in ethnic tolerance.

Next, I perform several robustness tests, the details of which can be found in Subsection C.2.3. First, in Table C.12, I demonstrate that there is no statistical evidence of imbalance among respondents born within three years of the cutoff date. This is achieved through a series of balance tests on multiple covariates, such as gender and ethnicity. Moreover, I show that the main findings are robust to alternative model specifications. This includes the use of quadratic and cubic polynomials and varying bandwidths (Table C.13), as well as employing Epanechnikov and uniform kernel weights (Table C.14). Throughout all these robustness tests, the point estimates for *Reform* are consistently negative. Third, I validate the findings by conducting a placebo test, wherein I introduce 'fake' cutoffs for treatment instead of using the actual January 1, 1986 cutoff. This placebo test yields null results (Table C.15).

Before concluding, I explore whether the Social Studies reform in Singapore had any effect on participants' perspective-taking ability. Given the limited exposure to diverse opinions on

[8]Formally, the varying linear polynomial model is specified as:

$$\text{Ethnic Tolerance}_i = \beta_0 + \beta_1 \text{Reform}_i + \beta_2 \text{Running}_i + \beta_3 \text{Reform}_i \times \text{Running}_i + X_i + \epsilon_i$$

where X_i corresponds to the covariate values for survey participant i, and β_1 is the LATE of the Social Studies *Reform* on *Ethnic Tolerance*.

Table 4.2: **Effect of Social Studies Reform on Ethnic Tolerance in Singapore**

DV =	Ethnic Tolerance		
	(1)	(2)	(3)
Reform	-1.475*	-0.418†	-0.099
	(0.699)	(0.217)	(0.0872)
N	237	757	2212
Covariates	Yes	Yes	Yes
RD Bandwidth	365	1145	Full Sample
Kernel Weights	Triangular	Triangular	Triangular

Notes: Table entries are standardized coefficient estimates. Columns (1) and (2) report bias-corrected estimates using the rdrobust package in R. In column (2), the optimal bandwidth is estimated using a common mean squared error optimal (or MSE-optimal) bandwidth selector for the RD treatment effect estimator. Column 3 presents coefficients estimated using a varying linear slope model for the full sample. Robust standard errors displayed in parentheses. Covariates include respondents' gender, ethnicity, parental birthplace, respondents' education tracks during their secondary education, income, employment status, and highest educational attainment. **$p < 0.01$; *$p < 0.05$; †$p < 0.1$.

sociopolitical issues in the Singapore context, I anticipate that the reform should not influence participants' capacity to consider and empathize with different viewpoints. To evaluate this, I create a composite variable called *Perspective-Taking*, which is constructed by factor analyzing participants' responses to seven statements measuring their perspective-taking ability. These statements are sourced from the perspective-taking sub-scale of the Interpersonal Reactivity Index (IRI, see Davis, 1983). The results, presented in Table C.16, show that the Social Studies reform did not yield any significant effects on participants' perspective-taking ability. This lends credence to the argument that citizenship education is unlikely to impact perspective-taking when taught within a constrained learning environment.

These results highlight that the classroom environment plays a more important role in enhancing ethnic tolerance than citizenship education content. Despite the emphasis on promoting interracial harmony in the Social Studies curriculum, this reform did not result in a significant improvement in ethnic tolerance or the ability to take the perspectives of others. Crucially, I attribute these findings

to the absence of an open classroom environment in Singapore, as students exposed to the new subject were not afforded the opportunity for more open discussions on contemporary ethnic issues in the classroom, nor were they exposed to alternative viewpoints that could have deepened their understanding of the challenges and concerns faced by members of ethnic minority groups. Overall, I do not find any evidence to suggest that content focusing on intergroup harmony within citizenship education can improve ethnic tolerance in a constrained learning environment.

4.5 Conclusion

In this article, I offer a nuanced perspective on the relationship between citizenship education and ethnic attitudes by considering the moderating influence of open classrooms. In Study 1, I present cross-national findings from the ICCS, highlighting that the positive link between classroom-based citizenship education and ethnic tolerance is evident primarily among students who perceive high levels of classroom openness. In contrast, citizenship education did not enhance ethnic tolerance among students who experience more closed learning environments. In Study 2, I delve into the Singapore context to explore the possibility that citizenship education may still have a positive impact on ethnic tolerance within a closed classroom setting, provided that its curriculum contains ethnically salient content aimed at promoting cohesion and harmony among different ethnic groups. Consistent with my theory, I find that the Social Studies reform in Singapore did not improve ethnic tolerance or perspective-taking ability among individuals who were exposed to the new course.

The findings in this paper make two important contributions. First, they shed light on the specific conditions necessary for these programs to effectively reduce intolerance towards ethnic outgroups. The key insight is that merely including ethnically inclusive content in citizenship education curricula is insufficient to generate substantial changes in individuals' behavioral and attitudinal perspectives towards ethnic outgroups. To maximize the impact of such programs, they need to be supplemented with open instructional methods that encourage open discussions and diverse opinions.

Second, the findings of this research have significant implications for education policymakers and practitioners. While the idea of promoting an open classroom climate to enhance ethnic tolerance is not new, this study places particular emphasis on the vital role of such an environment within the context of citizenship education. It underscores that citizenship education cannot fully achieve its goal of improving ethnic tolerance among today's youths without the incorporation of open classroom discussions. This insight highlights the importance of fostering an inclusive and open learning environment to effectively implement citizenship education programs and achieve their desired outcomes.

References

Adida, C. L. (2015). Do African Voters Favor Coethnics? Evidence from a Survey Experiment in Benin. *Journal of Experimental Political Science*, *2*(1), 1–11. https://doi.org/10.1017/XPS.2014.26 (cited on p. 22).

Adida, C. L., Lo, A., & Platas, M. R. (2018). Perspective Taking Can Promote Short-Term Inclusionary Behavior Toward Syrian Refugees. *Proceedings of the National Academy of Sciences*, *115*(38), 9521–9526. https://doi.org/10.1073/pnas.1804002115 (cited on pp. 23, 24, 28).

Adida, C. L., Combes, N., Lo, A., & Verink, A. (2016). The Spousal Bump: Do Cross-Ethnic Marriages Increase Political Support in Multiethnic Democracies? *Comparative Political Studies*, *49*(5), 635–661. https://doi.org/10.1177/0010414015621080 (cited on p. 22).

Ahmad, I. (2008). The Anatomy of an Islamic Model: Citizenship Education in Pakistan. In D. L. Grossman, W. O. Lee, & K. J. Kennedy (Eds.), *Citizenship Curriculum in Asia and the Pacific* (pp. 97–109). Comparative Education Research Centre, Springer. (Cited on p. 51).

Akresh, R., Halim, D., & Kleemans, M. (2023). Long-Term and Intergenerational Effects of Education: Evidence from School Construction in Indonesia. *The Economic Journal*, *133*(650), 582–612. https://doi.org/10.1093/ej/ueac058 (cited on p. 1).

Albaugh, E. A. (2014). *State-Building and Multilingual Education in Africa*. Cambridge University Press. (Cited on p. 6).

Angrist, J. D., & Lavy, V. (1997). The Effect of a Change in Language of Instruction on the Returns to Schooling in Morocco. *Journal of Labor Economics*, *15*(1, Part 2), S48–S76. https://doi.org/10.1086/209856 (cited on pp. 7, 9, 10, 21).

Asian Barometer. (2017). *Asian Barometer Survey Wave 4*. Hu Fu Center for East Asia Democratic Studies, National Taiwan University. (Cited on pp. 23, 28).

Astiz, M. F., & Mendez, G. (2006). Education for Citizenship: The Argentine Case in Comparison. *Education, Citizenship and Social Justice*, *1*(2), 175–200. https://doi.org/10.1177/1746197906064678 (cited on p. 54).

Avery, P. G., Levy, S. A., & Simmons, A. M. M. (2013). Deliberating Controversial Public Issues As Part of Civic Education. *The Social Studies*, *104*(3), 105–114. https://doi.org/10.1080/00377996.2012.691571 (cited on pp. 51, 55).

Avery, P. G., Levy, S. A., & Simmons, A. M. M. (2014). Secondary Students and the Deliberation of Public Issues. *PS: Political Science & Politics*, *47*(4), 849–854. https://doi.org/10.1017/S1049096514001164 (cited on p. 55).

Baildon, M. C., & Sim, J. B.-Y. (2009). Notions of Criticality: Singaporean Teachers' Perspectives of Critical Thinking in Social Studies. *Cambridge Journal of Education*, *39*(4), 407–422. https://doi.org/10.1080/03057640903352481 (cited on p. 69).

Banks, J. A. (2014). Diversity, Group Identity, and Citizenship Education in a Global Age. *The Journal of Education*, *194*(3), 1–12 (cited on p. 54).

Bekerman, Z., & Horenczyk, G. (2004). Arab-Jewish Bilingual Coeducation in Israel: A Long-Term Approach to Intergroup Conflict Resolution. *Journal of Social Issues*, *60*(2), 389–404. https://doi.org/10.1111/j.0022-4537.2004.00120.x (cited on p. 27).

Berinsky, A. J., Margolis, M. F., & Sances, M. W. (2014). Separating the Shirkers from the Workers? Making Sure Respondents Pay Attention on Self-Administered Surveys. *American Journal of Political Science*, *58*(3), 739–753. https://doi.org/10.1111/ajps.12081 (cited on p. 126).

Bialystok, E. (2005). Consequences of Bilingualism for Cognitive Development. In J. F. Kroll & A. M. B. de Groot (Eds.), *Handbook of Bilingualism: Psycholinguistic Approaches* (pp. 417–432). Oxford University Press. (Cited on p. 23).

Bialystok, E., & Barac, R. (2012). Emerging Bilingualism: Dissociating Advantages for Metalinguistic Awareness and Executive Control. *Cognition*, *122*(1), 67–73. https://doi.org/10.1016/j.cognition.2011.08.003 (cited on p. 26).

Bialystok, E., & Viswanathan, M. (2009). Components of Executive Control With Advantages for Bilingual Children in Two Cultures. *Cognition*, *112*(3), 494–500. https://doi.org/10.1016/j.cognition.2009.06.014 (cited on pp. 26, 27).

Bilali, R., & Vollhardt, J. R. (2013). Priming Effects of a Reconciliation Radio Drama on Historical Perspective-Taking in the Aftermath of Mass Violence in Rwanda. *Journal of Experimental Social Psychology*, *49*(1), 144–151. https://doi.org/10.1016/j.jesp.2012.08.011 (cited on p. 28).

Blair, H. (2003). Jump-Starting Democracy: Adult Civic Education and Democratic Participation in Three Countries. *Democratization*, *10*(1), 53–76 (cited on p. 50).

Bromley, P. (2011). Multiculturalism and Human Rights in Civic Education: The Case of British Columbia, Canada. *Educational Research*, *53*(2), 151–164. https://doi.org/10.1080/00131881.2011.572363 (cited on p. 50).

Broockman, D., & Kalla, J. (2016). Durably Reducing Transphobia: A Field Experiment on Door-to-Door Canvassing. *Science*, *352*(6282), 220–224. https://doi.org/10.1126/science.aad9713 (cited on p. 28).

Brown, D. (1996). *The State and Ethnic Politics in Southeast Asia*. Routledge. (Cited on p. 3).

Buhaug, H., Cederman, L.-E., & Gleditsch, K. S. (2014). Square Pegs in Round Holes: Inequalities, Grievances, and Civil War. *International Studies Quarterly*, *58*(2), 418–431. https://doi.org/10.1111/isqu.12068 (cited on p. 22).

Butler, D., & Tavits, M. (2021). Shared Interests Foster Interethnic Cooperation Among Politicians. *Political Science Research and Methods*, *9*(3), 627–640. https://doi.org/10.1017/psrm.2019.60 (cited on p. 36).

Calonico, S., Cattaneo, M. D., & Farrell, M. H. (2020). Optimal Bandwidth Choice for Robust Bias-Corrected Inference in Regression Discontinuity Designs. *The Econometrics Journal*, *23*(2), 192–210. https://doi.org/10.1093/ectj/utz022 (cited on p. 39).

Calonico, S., Cattaneo, M. D., & Titiunik, R. (2015). Rdrobust: An R Package for Robust Nonparametric Inference in Regression-Discontinuity Design. *The R Journal*, *7*(1), 38–51 (cited on p. 72).

Campbell, D. E. (2008). Voice in the Classroom: How an Open Classroom Climate Fosters Political Engagement Among Adolescents. *Political Behavior*, *30*(4), 437–454. https://doi.org/10.1007/s11109-008-9063-z (cited on pp. 53, 55).

Campbell, D. E., & Niemi, R. G. (2016). Testing Civics: State-Level Civic Education Requirements and Political Knowledge. *American Political Science Review*, *110*(3), 495–511. https://doi.org/10.1017/S0003055416000368 (cited on pp. 24, 50).

Cantoni, D., Chen, Y., Yang, D. Y., Yuchtman, N., & Zhang, Y. J. (2017). Curriculum and Ideology. *Journal of Political Economy*, *125*(2), 338–392. https://doi.org/10.1086/690951 (cited on pp. 51, 52, 62).

Carrasco, D., & Torres Irribarra, D. (2018). The Role of Classroom Discussion. In A. Sandoval-Hernández, M. M. Isac, & D. Miranda (Eds.), *Teaching Tolerance in a Globalized World* (pp. 87–102). Springer. (Cited on pp. 51, 53).

Carvacho, H., Zick, A., Haye, A., González, R., Manzi, J., Kocik, C., & Bertl, M. (2013). On the Relation Between Social Class and Prejudice: The Roles of Education, Income, and Ideological Attitudes. *European Journal of Social Psychology*, *43*(4), 272–285. https://doi.org/10.1002/ejsp.1961 (cited on p. 1).

Cavaille, C., & Marshall, J. (2019). Education and Anti-Immigration Attitudes: Evidence from Compulsory Schooling Reforms across Western Europe. *American Political Science Review*, *113*(1), 254–263. https://doi.org/10.1017/S0003055418000588 (cited on pp. 24, 48).

Chakraborty, T., & Bakshi, S. K. (2016). English Language Premium: Evidence from a Policy Experiment in India. *Economics of Education Review*, *50*, 1–16. https://doi.org/10.1016/j.econedurev.2015.10.004 (cited on pp. 9, 10).

Chauchard, S. (2017). *Why Representation Matters: The Meaning of Ethnic Quotas in Rural India*. Cambridge University Press. (Cited on p. 22).

Chew, P. K. H., Young, J. L., & Tan, G. P. K. (2019). Racism and the Pinkerton Syndrome in Singapore: Effects of Race on Hiring Decisions. *Journal of Pacific Rim Psychology*, *13*, e16. https://doi.org/10.1017/prp.2019.9 (cited on p. 69).

Chua, S., & Sim, J. B.-Y. (2015). Crossing Boundaries: An Exploration of How Three Social Studies Teachers Understand and Teach Patriotism in Singapore. *Citizenship Teaching & Learning*, *10*(3), 79–93 (cited on p. 69).

Clots-Figueras, I., & Masella, P. (2013). Education, Language and Identity. *The Economic Journal*, *123*(570), F332–F357. https://doi.org/10.1111/ecoj.12051 (cited on p. 8).

Converse, P. E. (1972). Change in the American Electorate. In A. Campbell & P. E. Converse (Eds.), *The Human Meaning of Social Change* (pp. 263–337). Russell Sage Foundation. (Cited on p. 1).

Dalton-Puffer, C., Nikula, T., & Smit, U. (Eds.). (2010). *Language Use and Language Learning in CLIL Classrooms*. John Benjamins. (Cited on p. 25).

Davis, M. H. (1983). Measuring Individual Differences in Empathy: Evidence for a Multidimensional Approach. *Journal of Personality and Social Psychology*, *44*(1), 113–126. https://doi.org/10.1037/0022-3514.44.1.113 (cited on pp. 37, 74, 110, 132).

Denver, D., & Hands, G. (1990). Does Studying Politics Make a Difference? The Political Knowledge, Attitudes and Perceptions of School Students. *British Journal of Political Science*, *20*(2), 263–279 (cited on p. 51).

Department of Statistics. (2021, June). *Singapore Census of Population 2020, Statistical Release 1: Demographic Characteristics, Education, Language and Religion*. Ministry of Trade & Industry. (Cited on p. 70).

Díaz, V. (2022). Minds in Action: Evidence that Linguistic Diversity Helps Children build a Theory of Mind. *Bilingualism: Language and Cognition*, *25*(1), 70–80. https://doi.org/10.1017/S1366728921000109 (cited on p. 25).

Dunning, T., & Nilekani, J. (2013). Ethnic Quotas and Political Mobilization: Caste, Parties, and Distribution in Indian Village Councils. *American Political Science Review*, *107*(1), 35–56 (cited on p. 22).

Eberhard, D. M., Simons, G. F., & Fennig, C. D. (Eds.). (2022). *Ethnologue: Languages of the World* (Twenty-fifth). SIL International. (Cited on p. 6).

Ejdemyr, S., Kramon, E., & Robinson, A. L. (2018). Segregation, Ethnic Favoritism, and the Strategic Targeting of Local Public Goods. *Comparative Political Studies*, *51*(9), 1111–1143. https://doi.org/10.1177/0010414017730079 (cited on p. 22).

Engel, L. C. (2014). Global Citizenship and National (Re)formations: Analysis of Citizenship Education Reform in Spain. *Education, Citizenship and Social Justice*, *9*(3), 239–254. https://doi.org/10.1177/1746197914545927 (cited on p. 54).

Eriksson, K. (2014). Does the Language of Instruction in Primary School Affect Later Labour Market Outcomes? Evidence from South Africa. *Economic History of Developing Regions*, *29*(2), 311–335. https://doi.org/10.1080/20780389.2014.955272 (cited on pp. 7–10).

Fan, S. P., Liberman, Z., Keysar, B., & Kinzler, K. D. (2015). The Exposure Advantage: Early Exposure to a Multilingual Environment Promotes Effective Communication. *Psychological*

Science, *26*(7), 1090–1097. https://doi.org/10.1177/0956797615574699 (cited on pp. 26, 27).

Ferree, K. E. (2006). Explaining South Africa's Racial Census. *The Journal of Politics*, *68*(4), 803–815. https://doi.org/10.1111/j.1468-2508.2006.00471.x (cited on p. 22).

Fink, C. (2018). Dangerous Speech, Anti-Muslim Violence, and Facebook in Myanmar. *Journal of International Affairs*, *71*(1.5), 43–52 (cited on p. 2).

Finkel, S. E. (2003). Can Democracy Be Taught? *Journal of Democracy*, *14*(4), 137–151 (cited on p. 51).

Finkel, S. E., & Ernst, H. R. (2005). Civic Education in Post-Apartheid South Africa: Alternative Paths to the Development of Political Knowledge and Democratic Values. *Political Psychology*, *26*(3), 333–364. https://doi.org/10.1111/j.1467-9221.2005.00421.x (cited on p. 24).

Finkel, S. E., Horowitz, J., & Rojo-Mendoza, R. T. (2012). Civic Education and Democratic Backsliding in the Wake of Kenya's Post-2007 Election Violence. *The Journal of Politics*, *74*(1), 52–65. https://doi.org/10.1017/S0022381611001162 (cited on pp. 50–52, 62).

Finkel, S. E., Neundorf, A., & Rascón-Ramírez, E. (2023). Can Online Civic Education Induce Democratic Citizenship? Experimental Evidence from a New Democracy [Forthcoming]. *American Journal of Political Science*. https://doi.org/10.1111/ajps.12765 (cited on p. 50).

Finkel, S. E., & Smith, A. E. (2011). Civic Education, Political Discussion, and the Social Transmission of Democratic Knowledge and Values in a New Democracy: Kenya 2002. *American Journal of Political Science*, *55*(2), 417–435. https://doi.org/10.1111/j.1540-5907.2010.00493.x (cited on pp. 50–52).

Flynn, J. E. (2012). Critical Pedagogy With The Oppressed And The Oppressors: Middle School Students Discuss Racism and White Privilege. *Middle Grades Research Journal*, *7*(2), 95–110 (cited on p. 56).

Fox, C. (2003). No Place for Girls? Gender, Ethnicity and Citizenship Education in the Lao People's Democratic Republic. *Compare: A Journal of Comparative and International Education*, *33*(3), 401–412. https://doi.org/10.1080/03057920302593 (cited on p. 54).

Freedman, S. W., Weinstein, H. M., Murphy, K., & Longman, T. (2008). Teaching History after Identity□Based Conflicts: The Rwanda Experience. *Comparative Education Review*, *52*(4), 663–690. https://doi.org/10.1086/591302 (cited on p. 54).

Gaertner, S. L., Rust, M. C., Dovidio, J. F., Bachman, B. A., & Anastasio, P. A. (1994). The Contact Hypothesis: The Role of a Common Ingroup Identity on Reducing Intergroup Bias. *Small Group Research*, *25*(2), 224–249. https://doi.org/10.1177/1046496494252005 (cited on p. 51).

Galinsky, A. D., Ku, G., & Wang, C. S. (2005). Perspective-Taking and Self-Other Overlap: Fostering Social Bonds and Facilitating Social Coordination. *Group Processes & Intergroup Relations*, *8*(2), 109–124. https://doi.org/10.1177/1368430205051060 (cited on pp. 22, 27).

Galston, W. A. (2001). Political Knowledge, Political Engagement, and Civic Education. *Annual Review of Political Science*, *4*(1), 217–234. https://doi.org/10.1146/annurev.polisci.4.1.217 (cited on p. 50).

Ganzach, Y., & Schul, Y. (2021). Partisan Ideological Attitudes: Liberals Are Tolerant; The Intelligent Are Intolerant. *Journal of Personality and Social Psychology*, *120*(6), 1551–1566. https://doi.org/10.1037/pspi0000324 (cited on p. 1).

Gill, S. K. (2012). The Complexities of Re-reversal of Language-in-Education Policy in Malaysia. In A. Kirkpatrick & R. Sussex (Eds.), *English as an International Language in Asia: Implications for Language Education* (pp. 45–61). Springer. (Cited on p. 12).

Gill, S. K. (2013). *Language Policy Challenges in Multi-Ethnic Malaysia*. Springer. (Cited on pp. 11, 13, 34, 38).

Gillborn, D. (2006). Citizenship Education as Placebo: 'Standards', Institutional Racism and Education Policy. *Education, Citizenship and Social Justice*, *1*(1), 83–104. https://doi.org/10.1177/1746197906060715 (cited on p. 54).

Ginsburgh, V. A., & Prieto-Rodriguez, J. (2011). Returns to Foreign Languages of Native Workers in the European Union. *ILR Review*, *64*(3), 599–618. https://doi.org/10.1177/001979391106400309 (cited on p. 7).

Goetz, P. J. (2003). The Effects of Bilingualism on Theory of Mind Development. *Bilingualism: Language and Cognition*, *6*(1), 1–15. https://doi.org/10.1017/S1366728903001007 (cited on p. 26).

Gottlieb, J. (2016). Why Might Information Exacerbate the Gender Gap in Civic Participation? Evidence from Mali. *World Development*, *86*, 95–110. https://doi.org/10.1016/j.worlddev.2016.05.010 (cited on p. 50).

Greenberg, A., Bellana, B., & Bialystok, E. (2013). Perspective-Taking Ability in Bilingual Children: Extending Advantages in Executive Control to Spatial Reasoning. *Cognitive Development*, *28*(1), 41–50. https://doi.org/10.1016/j.cogdev.2012.10.002 (cited on p. 27).

Grundy, J. G., Anderson, J. A., & Bialystok, E. (2017). Neural Correlates of Cognitive Processing in Monolinguals and Bilinguals. *Annals of the New York Academy of Sciences*, *1396*(1), 183–201. https://doi.org/10.1111/nyas.13333 (cited on p. 22).

Haerpfer, C. W., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., Lagos, M., Norris, P., Ponarin, E., & Puranen, B. (Eds.). (2022). *World Values Survey: Round Seven - Country-Pooled Datafile*. JD Systems Institute & WVSA Secretariat. (Cited on p. 30).

Henry, P. J., & Napier, J. L. (2017). Education is Related to Greater Ideological Prejudice. *Public Opinion Quarterly*, *81*(4), 930–942. https://doi.org/10.1093/poq/nfx038 (cited on p. 1).

Hess, D. (2009). *Controversy in the Classroom: The Democratic Power of Discussion*. Routledge. (Cited on p. 55).

Ho, L.-C. (2010). "Don't Worry, I'm Not Going to Report You": Education for Citizenship in Singapore. *Theory & Research in Social Education*, *38*(2), 217–247. https://doi.org/10.1080/00933104.2010.10473423 (cited on pp. 57, 69).

Ho, L.-C., McAvoy, P., Hess, D., & Gibbs, B. (2017). Teaching and Learning about Controversial Issues and Topics in the Social Studies. In *The Wiley Handbook of Social Studies Research* (pp. 319–335). John Wiley & Sons, Ltd. (Cited on p. 69).

Hu, Y., & Liu, A. H. (2020). The Effects of Foreign Language Proficiency on Public Attitudes: Evidence from the Chinese-Speaking World. *Journal of East Asian Studies*, *20*(1), 1–23. https://doi.org/10.1017/jea.2019.41 (cited on p. 43).

Huddy, L., & Sears, D. O. (1995). Opposition to Bilingual Education: Prejudice or the Defense of Realistic Interests? *Social Psychology Quarterly*, *58*(2), 133–143. https://doi.org/10.2307/2787151 (cited on p. 29).

İnce, B. (2012). Citizenship Education in Turkey: Inclusive or Exclusive. *Oxford Review of Education*, *38*(2), 115–131. https://doi.org/10.1080/03054985.2011.651314 (cited on p. 51).

Isahak, H., Gapor, A. L. H., bin Masran, M. N., bin Ibrahim, A. H., & binti Mohamed Nor, M. (2008). *Kesan dasar pengajaran matematik dan sains dalam bahasa Inggeris di sekolah rendah [The Effects of the Teaching of Mathematics and Science in English in Primary Schools]*. Penerbit Universiti Pendidikan Sultan Idris. (Cited on pp. 12, 34, 38).

Ivlevs, A., & King, R. M. (2014). 2004 Minority Education Reform and pupil performance in Latvia. *Economics of Education Review*, *38*, 151–166. https://doi.org/10.1016/j.econedurev.2013.08.010 (cited on pp. 8, 10, 18, 21).

Jain, T. (2017). Common Tongue: The Impact of Language on Educational Outcomes. *The Journal of Economic History*, *77*(2), 473–510. https://doi.org/10.1017/S0022050717000481 (cited on pp. 7, 8, 10).

Janmaat, J. G., & Mons, N. (2011). Promoting Ethnic Tolerance and Patriotism: The Role of Education System Characteristics. *Comparative Education Review*, *55*(1), 056–081. https://doi.org/10.1086/657105 (cited on p. 62).

Javor, R. (2016). Bilingualism, Theory of Mind and Perspective-Taking: The Effect of Early Bilingual Exposure. *Psychology and Behavioral Sciences*, *5*(6), 143. https://doi.org/10.11648/j.pbs.20160506.13 (cited on pp. 23, 27).

Jennings, M. K., Stoker, L., & Bowers, J. (2009). Politics across Generations: Family Transmission Reexamined. *The Journal of Politics*, *71*(3), 782–799. https://doi.org/10.1017/s0022381609090719 (cited on p. 2).

Judd, M. (2005). Is Harmony Possible in a Multiracial Society? The Case of Singapore. In R. Pinxten & E. Preckler (Eds.), *Racism in Metropolitan Areas* (pp. 107–111). Berghahn Books. (Cited on p. 66).

Kalla, J. L., & Broockman, D. E. (2020). Reducing Exclusionary Attitudes through Interpersonal Conversation: Evidence from Three Field Experiments. *American Political Science Review*, *114*(2), 410–425. https://doi.org/10.1017/S0003055419000923 (cited on pp. 23, 24, 28).

Kobayashi, C., Glover, G. H., & Temple, E. (2006). Cultural and Linguistic Influence on Neural Bases of 'Theory of Mind': An fMRI Study with Japanese Bilinguals. *Brain and Language*, *98*(2), 210–220. https://doi.org/10.1016/j.bandl.2006.04.013 (cited on p. 27).

Kramon, E., & Posner, D. N. (2016). Ethnic Favoritism in Education in Kenya. *Quarterly Journal of Political Science*, *11*(1), 1–58. https://doi.org/10.1561/100.00015005 (cited on p. 22).

Laitin, D. D., & Ramachandran, R. (2016). Language Policy and Human Development. *American Political Science Review*, *110*(3), 457–480. https://doi.org/10.1017/S0003055416000265 (cited on pp. 7, 8, 10, 21, 29).

Laitin, D. D., & Ramachandran, R. (2022). Linguistic Diversity, Official Language Choice and Human Capital. *Journal of Development Economics*, *156*, 102811. https://doi.org/10.1016/j.jdeveco.2021.102811 (cited on pp. 7, 9, 10).

Laitin, D. D., Ramachandran, R., & Walter, S. L. (2019). The Legacy of Colonial Language Policies and Their Impact on Student Learning: Evidence from an Experimental Program in Cameroon. *Economic Development and Cultural Change*, *68*(1), 239–272. https://doi.org/10.1086/700617 (cited on pp. 9, 10).

Lee, B. (2023). Educational Content, Exclusive National Identity, and Anti-immigrant Attitudes. *The Journal of Politics*, *85*(4), 1182–1197. https://doi.org/10.1086/724965 (cited on pp. 2, 52, 56).

Lerch, J. C., Russell, S. G., & Ramirez, F. O. (2017). Wither the Nation-State? A Comparative Analysis of Nationalism in Textbooks. *Social Forces*, *96*(1), 153–180. https://doi.org/10.1093/sf/sox049 (cited on p. 54).

Levine, P., & Lopez, M. H. (2004). *Themes Emphasized in Social Studies and Civics Classes: New Evidence*. Center for Information; Research on Civic Learning; Engagement. (Cited on p. 54).

Levinson, M. (2012). *No Citizen Left Behind*. Harvard University Press. (Cited on p. 50).

Levy, J. S. (2008). Case Studies: Types, Designs, and Logics of Inference. *Conflict Management and Peace Science*, *25*(1), 1–18. https://doi.org/10.1080/07388940701860318 (cited on p. 57).

Liu, A. H. (2011). Linguistic Effects of Political Institutions. *The Journal of Politics*, *73*(1), 125–139. https://doi.org/10.1017/S0022381610000915 (cited on pp. 6, 22).

Liu, A. H., Shair-Rosenfield, S., Vance, L. R., & Csata, Z. (2018). Linguistic Origins of Gender Equality and Women's Rights. *Gender & Society*, *32*(1), 82–108. https://doi.org/10.1177/0891243217741428 (cited on p. 24).

Lleras-Muney, A., & Shertzer, A. (2015). Did the Americanization Movement Succeed? An Evaluation of the Effect of English-Only and Compulsory Schooling Laws on Immigrants. *American*

Economic Journal: Economic Policy, *7*(3), 258–290. https://doi.org/10.1257/pol.20120219 (cited on pp. 9, 10).

Long, S. (2013). Giving Bright Kids a Head Start. *The Straits Times* (cited on p. 71).

Luk, G. (2017). Bilingualism. In *The Cambridge Encyclopedia of Child Development* (2nd, pp. 385–391). Cambridge University Press. (Cited on p. 6).

Marshall, J. (2019). The Anti-Democrat Diploma: How High School Education Decreases Support for the Democratic Party. *American Journal of Political Science*, *63*(1), 67–83. https://doi.org/10.1111/ajps.12409 (cited on p. 1).

Martens, A. M., & Gainous, J. (2013). Civic Education and Democratic Capacity: How Do Teachers Teach and What Works? *Social Science Quarterly*, *94*(4), 956–976. https://doi.org/10.1111/j.1540-6237.2012.00864.x (cited on p. 53).

Mayer, A. K. (2011). Does Education Increase Political Participation? *The Journal of Politics*, *73*(3), 633–645. https://doi.org/10.1017/S002238161100034X (cited on p. 1).

Meeusen, C., de Vroome, T., & Hooghe, M. (2013). How Does Education Have An Impact on Ethnocentrism? A Structural Equation Analysis of Cognitive, Occupational Status and Network Mechanisms. *International Journal of Intercultural Relations*, *37*(5), 507–522. https://doi.org/10.1016/j.ijintrel.2013.07.002 (cited on p. 1).

Merdeka Center for Opinion Research. (2010). *Malaysian Political Values Survey* (tech. rep.). Merdeka Center for Opinion Research. (Cited on p. 29).

Miklikowska, M., Rekker, R., & Kudrnac, A. (2022). A Little More Conversation A Little Less Prejudice: The Role of Classroom Political Discussions for Youth's Attitudes toward Immigrants. *Political Communication*, *39*(3), 405–427. https://doi.org/10.1080/10584609.2022.2032502 (cited on pp. 51, 53, 55, 62).

Milligan, K., Moretti, E., & Oreopoulos, P. (2004). Does Education Improve Citizenship? Evidence from the United States and the United Kingdom. *Journal of Public Economics*, *88*(9), 1667–1695. https://doi.org/10.1016/j.jpubeco.2003.10.005 (cited on p. 1).

Ministry of Education. (2003). *2190 The Combined Humanities Suject (O Level)*. (Cited on pp. 66, 68).

Mohd A. Wahid, M. I. (2023, June). Panorama Pulau Lang Tengah menakjubkan [The Panorama at Pulau Lang Tengah is Amazing]. (Cited on p. 127).

Munniksma, A., Daas, R., Dijkstra, A. B., & Dam, G. t. (2023). Is Classroom Diversity Related to Citizenship Competences of Ethnic Minority and Majority Students? [Forthcoming]. *The Journal of Social Studies Research*. https://doi.org/10.1016/j.jssr.2023.01.001 (cited on p. 51).

Napier, J. L., & Jost, J. T. (2008). The "Antidemocratic Personality" Revisited: A Cross-National Investigation of Working-Class Authoritarianism. *Journal of Social Issues*, *64*(3), 595–617. https://doi.org/10.1111/j.1540-4560.2008.00579.x (cited on p. 1).

Nelsen, M. D. (2021a). Teaching Citizenship: Race and the Behavioral Effects of American Civic Education. *Journal of Race, Ethnicity, and Politics*, *6*(1), 157–186. https://doi.org/10.1017/rep.2019.19 (cited on p. 24).

Nelsen, M. D. (2021b). Cultivating Youth Engagement: Race & the Behavioral Effects of Critical Pedagogy. *Political Behavior*, *43*(2), 751–784. https://doi.org/10.1007/s11109-019-09573-6 (cited on pp. 50, 52).

Nelson, J. L., & Pang, V. O. (2014). Prejudice, Racism, and the Social Studies Curriculum. In E. W. Ross (Ed.), *The Social Studies Curriculum: Purposes, Problems, And Possibilities* (pp. 203–225). State University of New York Press. (Cited on p. 54).

Neundorf, A., Niemi, R. G., & Smets, K. (2016). The Compensation Effect of Civic Education on Political Engagement: How Civics Classes Make Up for Missing Parental Socialization. *Political Behavior*, *38*(4), 921–949. https://doi.org/10.1007/s11109-016-9341-0 (cited on pp. 24, 50).

Ng, K. T., Lay, Y. F., Areepattamannil, S., Treagust, D. F., & Chandrasegaran, A. (2012). Relationship Between Affect and Achievement in Science and Mathematics in Malaysia and Singapore. *Research in Science & Technological Education*, *30*(3), 225–237. https://doi.org/10.1080/02635143.2012.708655 (cited on p. 3).

Niemi, R. G., & Junn, J. (1998). *Civic Education: What Makes Students Learn*. Yale University Press. (Cited on pp. 24, 50).

Ostwald, K., Ong, E., & Gueorguiev, D. (2019). Language Politics, Education, and Ethnic Integration: The Pluralist Dilemma in Singapore. *Politics, Groups, and Identities*, *7*(1), 89–108. https://doi.org/10.1080/21565503.2017.1330216 (cited on p. 22).

Paluck, E. L., Porat, R., Clark, C. S., & Green, D. P. (2021). Prejudice Reduction: Progress and Challenges. *Annual Review of Psychology*, *72*(1), 533–560. https://doi.org/10.1146/annurev-psych-071620-030619 (cited on p. 22).

Paulsen, T., Scheve, K., & Stasavage, D. (2023). Foundations of a New Democracy: Schooling, Inequality, and Voting in the Early Republic. *American Political Science Review*, *117*(2), 518–536. https://doi.org/10.1017/S000305542200079X (cited on p. 1).

Pérez, E. O. (2017). The Origins and Implications of Language Effects in Multilingual Surveys: A MIMIC Approach with Application to Latino Political Attitudes. *Political Analysis*, *19*(4), 434–454. https://doi.org/10.1093/pan/mpr029 (cited on p. 35).

Pérez, E. O., & Tavits, M. (2022). *Voicing Politics: How Language Shapes Public Opinion*. Princeton University Press. (Cited on pp. 24, 43, 48, 125).

Persson, M. (2015a). Classroom Climate and Political Learning: Findings from a Swedish Panel Study and Comparative Data. *Political Psychology*, *36*(5), 587–601. https://doi.org/10.1111/pops.12179 (cited on pp. 53, 55).

Persson, M. (2015b). Education and Political Participation. *British Journal of Political Science*, *45*(3), 689–703. https://doi.org/10.1017/S0007123413000409 (cited on pp. 1, 48).

Psacharopoulos, G., & Patrinos, H. A. (2018). Returns to Investment in Education: A Decennial Review of the Global Literature. *Education Economics*, *26*(5), 445–458. https://doi.org/10.1080/09645292.2018.1484426 (cited on p. 1).

Ramachandran, R. (2012). Language Use in Education and Primary Schooling Attainment: Evidence from a Natural Experiment in Ethiopia. *Documents de treball IEB*, *34*, 1–49 (cited on pp. 9, 10).

Rashid, R. A., Abdul Rahman, S. B., & Yunus, K. (2017). Reforms in the Policy of English Language Teaching in Malaysia. *Policy Futures in Education*, *15*(1), 100–112. https://doi.org/10.1177/1478210316679069 (cited on p. 12).

Reljić, G., Ferring, D., & Martin, R. (2015). A Meta-Analysis on the Effectiveness of Bilingual Programs in Europe. *Review of Educational Research*, *85*(1), 92–128. https://doi.org/10.3102/0034654314548514 (cited on pp. 23, 25).

Scholzman, K. L., & Verba, S. (2005). Family Ties: Understanding the Intergenerational Transmission of Participation. In A. S. Zuckerman (Ed.), *The Social Logic of Politics: Personal Networks as Contexts for Political Behavior* (pp. 95–115). Temple University Press. (Cited on p. 2).

Schroeder, S. R. (2018). Do Bilinguals Have an Advantage in Theory of Mind? A Meta-Analysis. *Frontiers in Communication*, *3*, 36. https://doi.org/10.3389/fcomm.2018.00036 (cited on pp. 23, 26).

Schulz, W., Ainley, J., Fraillon, J., Losito, B., Agrusti, G., & Friedman, T. (2018). *Becoming Citizens in a Changing World: IEA International Civic and Citizenship Education Study 2016 International Report*. Springer. (Cited on pp. 52, 56, 61).

Sears, D. O., & Funk, C. L. (1999). Evidence of the Long-Term Persistence of Adults' Political Predispositions. *The Journal of Politics*, *61*(1), 1–28. https://doi.org/10.2307/2647773 (cited on p. 22).

Sim, J. B. .-., Chua, S., & Krishnasamy, M. (2017). "Riding the Citizenship Wagon": Citizenship Conceptions of Social Studies Teachers in Singapore. *Teaching and Teacher Education*, *63*, 92–102. https://doi.org/10.1016/j.tate.2016.12.002 (cited on p. 69).

Sim, J. B.-Y. (2005). Citizenship Education and Social Studies in Singapore: A National Agenda. *International Journal of Citizenship and Teacher Education*, *1*(1), 58–73 (cited on p. 66).

Sim, J. B.-Y. (2011). Social Studies and Citizenship for Participation in Singapore: How One State Seeks to Influence its Citizens. *Oxford Review of Education*, *37*(6), 743–761. https://doi.org/10.1080/03054985.2011.635103 (cited on pp. 2, 52, 57, 66, 70).

Sorens, J. (2010). The Politics and Economics of Official Ethnic Discrimination: A Global Statistical Analysis, 1950–2003. *International Studies Quarterly*, *54*(2), 535–560. https://doi.org/10.1111/j.1468-2478.2010.00598.x (cited on p. 35).

Suh, Y., An, S., & Forest, D. (2015). Immigration, Imagined Communities, and Collective Memories of Asian American Experiences: A Content Analysis of Asian American Experiences in

Virginia U.S. History Textbooks. *The Journal of Social Studies Research*, *39*(1), 39–51 (cited on p. 54).

Szpak, K. S., Alves, F., & Buchweitz, A. (2020). Perspective Taking in Translation: In Search of Neural Correlates of Representing and Attributing Mental States to Others. In R. Muñoz Martín & S. L. Halverson (Eds.), *Multilingual Mediated Communication and Cognition* (pp. 133–154). Routledge. (Cited on p. 27).

Tan, M. (2011). Mathematics and Science Teachers' Beliefs and Practices Regarding the Teaching of Language in Content Learning. *Language Teaching Research*, *15*(3), 325–342. https://doi.org/10.1177/1362168811401153 (cited on pp. 35, 38).

Tan, T. W., & Chew, L. C. (2004). Moral and Citizenship Education as Statecraft in Singapore: A Curriculum Critique. *Journal of Moral Education*, *33*(4), 597–606. https://doi.org/10.1080/0305724042000315644 (cited on p. 57).

Tan, T. W., & Chew, L. C. (2008). Political Pragmatism and Citizenship Training in Singapore. In D. L. Grossman, W. O. Lee, & K. J. Kennedy (Eds.), *Citizenship Curriculum in Asia and the Pacific* (pp. 147–161). Comparative Education Research Centre, Springer. (Cited on pp. 51, 57).

Tesler, M. (2015). Priming Predispositions and Changing Policy Positions: An Account of When Mass Opinion Is Primed or Changed. *American Journal of Political Science*, *59*(4), 806–824. https://doi.org/10.1111/ajps.12157 (cited on p. 22).

Todd, A. R., Bodenhausen, G. V., & Galinsky, A. D. (2012). Perspective Taking Combats the Denial of Intergroup Discrimination. *Journal of Experimental Social Psychology*, *48*(3), 738–745. https://doi.org/10.1016/j.jesp.2011.12.011 (cited on p. 28).

Torney-Purta, J., Lehmann, R., Oswald, H., & Schulz, W. (2001). *Citizenship and Education in Twenty-Eight Countries: Civic Knowledge and Engagement at Age Fourteen*. International Association for the Evaluation of Educational Achievement. (Cited on pp. 50, 53, 55).

Treviño, E., Béjares, C., Villalobos, C., & Naranjo, E. (2017). Influence of Teachers and Schools on Students' Civic Outcomes in Latin America. *The Journal of Educational Research*, *110*(6), 604–618. https://doi.org/10.1080/00220671.2016.1164114 (cited on p. 55).

Velayutham, S. (2017). Races without Racism?: Everyday Race Relations in Singapore. *Identities*, *24*(4), 455–473. https://doi.org/10.1080/1070289X.2016.1200050 (cited on p. 69).

Wang, H., Smyth, R., & Cheng, Z. (2017). The Economic Returns to Proficiency in English in China. *China Economic Review*, *43*, 91–104. https://doi.org/10.1016/j.chieco.2017.01.004 (cited on p. 7).

Wantchekon, L., Klašnja, M., & Novta, N. (2015). Education and Human Capital Externalities: Evidence from Colonial Benin *. *The Quarterly Journal of Economics*, *130*(2), 703–757. https://doi.org/10.1093/qje/qjv004 (cited on p. 1).

Weinstein, H. M., Freedman, S. W., & Hughson, H. (2007). School Voices: Challenges Facing Education Systems After Identity-Based Conflicts. *Education, Citizenship and Social Justice*, *2*(1), 41–71. https://doi.org/10.1177/1746197907072128 (cited on p. 54).

Weiss, C. M. (2021). Diversity in Health Care Institutions Reduces Israeli Patients' Prejudice Toward Arabs. *Proceedings of the National Academy of Sciences*, *118*(14), e2022634118. https://doi.org/10.1073/pnas.2022634118 (cited on p. 22).

Weiss, C. M., Ran, S., & Halperin, E. (2023). Educating for Inclusion: Diversity Education Programs Can Reduce Prejudice Toward Outgroups in Israel. *Proceedings of the National Academy of Sciences*, *120*(16), e2218621120. https://doi.org/10.1073/pnas.2218621120 (cited on pp. 51, 53, 55, 56, 62).

Weiss, M. L. (1999). What Will Become of Reformasi? Ethnicity and Changing Political Norms in Malaysia. *Contemporary Southeast Asia*, *21*(3), 424–450 (cited on p. 28).

Wen, Z., Lin, T.-J., Glassman, M., Kim, S., Tilak, S., Nagpal, M., & Ha, S. Y. (2023). The Development of Early Adolescents' Social Perspective Taking Through Small-Group Discussion. *The Journal of Early Adolescence*, *43*(9), 1129–1163. https://doi.org/10.1177/02724316221149630 (cited on p. 55).

Willeck, C., & Mendelberg, T. (2022). Education and Political Participation. *Annual Review of Political Science*, *25*(1), 89–110. https://doi.org/10.1146/annurev-polisci-051120-014235 (cited on p. 1).

Wright, S. C., & Tropp, L. R. (2005). Language and Intergroup Contact: Investigating the Impact of Bilingual Instruction on Children's Intergroup Attitudes. *Group Processes & Intergroup Relations*, *8*(3), 309–328. https://doi.org/10.1177/1368430205053945 (cited on pp. 27, 42).

Zhang, H., Kang, C., Wu, Y., Ma, F., & Guo, T. (2015). Improving Proactive Control with Training on Language Switching in Bilinguals. *NeuroReport*, *26*(6), 354–359. https://doi.org/10.1097/WNR.0000000000000353 (cited on p. 26).

Appendix A: Bilingual Instruction and Human Capital Accumulation

A.1 Study: Education Reform in Malaysia

A.1.1 Variables and Descriptive Statistics

Table A.1: **Description of Variables and Measurements**

Variables	Description and Measurements
Main Predictors	
Reform	0 = Otherwise 1 = Student is from Malaysia **AND** participated in TIMSS waves 2007, 2011, and 2015
Reform (Categorical)	1 = Otherwise 2 = Student is from Malaysia **AND** participated in TIMSS wave 2007 (i.e., "Secondary-only" group) 3 = Student is from Malaysia **AND** participated in TIMSS wave 2011 (i.e., "Full" exposure group) 4 = Student is from Malaysia **AND** participated in TIMSS wave 2015 (i.e., "Primary-only" group) 5 = Student is from Malaysia **AND** participated in TIMSS wave 2019 (i.e., "Reversal" group)

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Table A.1 – continued from previous page

Variables	Description and Measurements
Main Outcomes	
Mathematics	Average of five plausible values for Mathematics achievement in TIMSS
Science	Average of five plausible values for Mathematics achievement in TIMSS
Student Level Covariates	
Girl	Student's gender
	0 = Boy
	1 = Girl
Parents' Education	Highest education qualification among parents
	1 = Did not complete secondary and below (ISCED2 and below)
	2 = Finished secondary (ISCED3)
	3 = Postsecondary or vocational (ISCED4)
	4 = Some university or short cycle tertiary (ISCED5)
	5 = Finished university and above (ISCED6 and above)
Immigrant Parent	Whether at least one parent was not born in the country where the test was administered
	0 = Otherwise
	1 = At least one parent is not born in country of test
Books	Number of books at home
	1 = 0-10 books
	2 = 11-25 books
	3 = 26-100 books
	4 = 101-200 books
	5 = more than 200 books

Continued on next page

Table A.1 – continued from previous page

Variables	Description and Measurements
Computer	Whether student has a computer at home
	0 = No computer
	1 = Computer at home
Math Homework	Frequency in which teachers assign Mathematics homework to student
	1 = never
	2 = once in a while / less than once a week
	3 = pretty often / 1,2 times a week
	4 = almost always / every day, or 3,4 times a week
Science Homework	Frequency in which teachers assign Science homework to student
	1 = never
	2 = once in a while / less than once a week
	3 = pretty often / 1,2 times a week
	4 = almost always / every day, or 3,4 times a week
Language of Test	Frequency in which student speaks test language at home
	3 = always or almost always
	2 = sometimes
	1 = never
School Level Covariates	
Urbanity	Level of urbanization in the school's vicinity
	1 = a geographically isolated area / fewer than 3000 people
	2 = village or rural (farm) area / 3001 to 15000 people
	3 = one on the outskirts of a town/city / 15001 to 100000 people
	4 = one close to the center of a town / city / 100001-500000 or more than 500000 people

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Table A.1 – continued from previous page

Variables	Description and Measurements
Instructional Hours	Total number of teaching hours in a typical day 1 = 4 hours or less 2 = 4-5 hours 3 = 5-6 hours 4 = More than 6 hours
Instructional Materials	Is the school's capacity to provide instruction affected by a shortage or inadequacy of instructional materials (e.g., textbooks)? 1 = not at all 2 = a little 3 = some 4 = a lot
Supplies	Is the school's capacity to provide instruction affected by a shortage or inadequacy of supplies (e.g., pen and paper)? 1 = not at all 2 = a little 3 = some 4 = a lot
School Buildings	Is the school's capacity to provide instruction affected by a shortage or inadequacy of school buildings and grounds? 1 = not at all 2 = a little 3 = some 4 = a lot

Continued on next page

Table A.1 – continued from previous page

Variables	Description and Measurements
Fitting and Fixtures	Is the school's capacity to provide instruction affected by a shortage or inadequacy of heating/cooling/lighting? 1 = not at all 2 = a little 3 = some 4 = a lot
Instructional Space	Is the school's capacity to provide instruction affected by a shortage or inadequacy of instructional spaces (e.g., classroom)? 1 = not at all 2 = a little 3 = some 4 = a lot

Table A.2: **Descriptive Statistics of Variables Used in Study 1**

	N	Mean	SD	Median	Min	Max	Skew
Main Outcomes							
Mathematics	538370	509.25	107.23	512.45	38.59	872.97	-0.12
Science	538370	510.37	96.62	518.45	37.30	859.01	-0.38
Student Level Covariates							
Girl	534181	0.50	0.50	0.00	0.00	1.00	0.01
Books	530295	2.86	1.30	3.00	1.00	5.00	0.21
Parents' Education	418970	3.03	1.58	3.00	1.00	5.00	0.13
Immigrant Parent	521390	0.19	0.39	0.00	0.00	1.00	1.60
Language of Test	527918	2.79	0.49	3.00	1.00	3.00	-2.29
Computer	530292	0.81	0.39	1.00	0.00	1.00	-1.58
Math Homework	502454	3.48	0.81	4.00	1.00	4.00	-1.46
Science Homework	404251	2.88	0.97	3.00	1.00	4.00	-0.43
School Level Covariates							
Urbanity	511378	3.24	0.90	3.00	1.00	4.00	-0.94
Instructional Hours	489742	2.70	0.81	3.00	1.00	4.00	-0.03
Instructional Materials	513548	1.94	1.10	2.00	1.00	4.00	0.76
Supplies	509074	1.89	1.07	1.00	1.00	4.00	0.82
School Buildings	512776	2.17	1.10	2.00	1.00	4.00	0.38
Fitting and Fixtures	513415	1.97	1.05	2.00	1.00	4.00	0.67
Instructional Space	513965	2.20	1.12	2.00	1.00	4.00	0.37

A.1.2 Results

Table A.3: **Effect of Language Reform on Mathematics and Science Test Scores in Malaysia (Full Regression Results)**

DV =	Mathematics		Science	
	(1)	(2)	(3)	(4)
Reform	−25.051**	−37.315**	−17.717**	−31.335**
	(3.506)	(3.875)	(3.487)	(3.814)
Girl	−2.066**	−4.608**	−5.554**	−9.048**
	(0.516)	(0.624)	(0.496)	(0.601)
Books	16.126**	16.913**	16.546**	17.589**
	(0.173)	(0.238)	(0.162)	(0.226)
Parents' Education	10.714**	10.099**	10.134**	8.875**
	(0.163)	(0.227)	(0.153)	(0.208)
Immigrant Parent	6.438**	3.029*	4.325**	−4.509**
	(0.630)	(1.243)	(0.592)	(1.141)
Language of Test	5.340**	8.578**	14.629**	14.922**
	(0.706)	(0.848)	(0.704)	(0.834)
Computer	22.489**	19.457**	18.709**	15.021**
	(0.731)	(0.913)	(0.712)	(0.917)
Math Homework	11.167**	8.601**	8.694**	6.563**
	(0.381)	(0.494)	(0.344)	(0.464)
Science Homework	−4.692**	−4.307**	−2.306**	−2.430**
	(0.299)	(0.419)	(0.275)	(0.385)
Urbanity	6.028**	3.247**	3.009**	0.457
	(0.506)	(0.627)	(0.480)	(0.596)
Instructional Hours	1.717**	2.600**	2.578**	2.458**
	(0.640)	(0.868)	(0.606)	(0.792)
Instructional Materials	−1.415*	−1.834*	−0.726	−1.653*
	(0.614)	(0.760)	(0.597)	(0.735)
Supplies	−2.121**	−2.963**	−1.485*	−2.343**
	(0.630)	(0.794)	(0.617)	(0.785)
School Buildings	0.302	0.090	0.316	0.023
	(0.599)	(0.808)	(0.562)	(0.767)
Fittings and Fixtures	−1.793**	−1.073	−1.300*	−0.639
	(0.560)	(0.739)	(0.530)	(0.700)
Instructional Space	0.762	0.459	0.507	0.204
	(0.596)	(0.815)	(0.565)	(0.783)
N	269,094	269,094	269,094	269,094
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sampling Weights	No	Yes	No	Yes

Notes: Table entries are standardized coefficient estimates. Columns (1) and (2) report the estimated impact of the language reform in Malaysia on Mathematics test scores, while (3) and (4) display the coefficient estimates for the reform's impact on Science test scores. Robust standard errors clustered by school are displayed in parentheses. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table A.4: **Effect of Varying Exposure to English Instruction on Mathematics and Science Test Scores in Malaysia (Full Regression Results)**

DV =	Mathematics		Science	
	(5)	(6)	(7)	(8)
Reform (Categorical): Secondary-only	−34.318**	−38.866**	−24.621**	−28.323**
	(5.208)	(5.214)	(5.553)	(5.464)
Reform (Categorical): Full	−68.376**	−70.085**	−66.091**	−69.668**
	(5.675)	(5.936)	(6.176)	(6.310)
Reform (Categorical): Primary-only	−17.200**	−53.335**	10.022*	−24.279**
	(4.586)	(5.033)	(4.272)	(4.957)
Reform (Categorical): Reversal	−36.311**	−62.162**	−10.784*	−32.753**
	(4.974)	(5.232)	(4.427)	(4.973)
Girl	−2.097**	−4.635**	−5.522**	−9.047**
	(0.513)	(0.624)	(0.492)	(0.601)
Books	16.042**	16.890**	16.394**	17.559**
	(0.172)	(0.238)	(0.161)	(0.225)
Parents' Education	10.723**	10.092**	10.175**	8.887**
	(0.162)	(0.227)	(0.153)	(0.208)
Immigrant Parent	6.330**	2.845*	4.262**	−4.616**
	(0.628)	(1.236)	(0.590)	(1.138)
Language of Test	5.061**	8.532**	14.264**	14.868**
	(0.696)	(0.841)	(0.691)	(0.830)
Computer	22.188**	19.659**	17.685**	14.938**
	(0.721)	(0.911)	(0.699)	(0.915)
Math Homework	11.059**	8.535**	8.667**	6.526**
	(0.380)	(0.493)	(0.342)	(0.464)
Science Homework	−4.548**	−4.106**	−2.277**	−2.316**
	(0.298)	(0.418)	(0.275)	(0.385)
Urbanity	6.100**	3.291**	2.998**	0.464
	(0.501)	(0.626)	(0.470)	(0.595)
Instructional Hours	2.210**	2.978**	2.798**	2.768**
	(0.637)	(0.867)	(0.601)	(0.791)
Instructional Materials	−1.268*	−1.567*	−0.967†	−1.573*
	(0.606)	(0.759)	(0.584)	(0.735)
Supplies	−2.294**	−2.607**	−2.017**	−2.254**
	(0.626)	(0.799)	(0.607)	(0.791)
School Buildings	0.338	0.166	0.281	0.075
	(0.600)	(0.806)	(0.561)	(0.767)
Fittings and Fixtures	−1.678**	−1.209	−1.104*	−0.664
	(0.555)	(0.738)	(0.522)	(0.700)
Instructional Space	0.739	0.593	0.406	0.225
	(0.593)	(0.815)	(0.559)	(0.784)
N	269,094	269,094	269,094	269,094
Covariates	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sampling Weights	No	Yes	No	Yes

Notes: Table entries are standardized coefficient estimates. Columns (5) and (6) report the estimated impacts of varying durations of English instruction on Mathematics test scores, while (7) and (8) display the coefficient estimates on Science test scores. Robust standard errors clustered by school are displayed in parentheses. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Appendix B: Bilingual Education Reduces Outgroup Discrimination Through Perspective-Taking

B.1 Study 1: Cross-National Analysis

B.1.1 Variables and Descriptive Statistics

Table B.1: **Description of Variables and Measurements Used in Study 1**

Variables	Description and Measurements
Main Predictors	
Bilingual (Home)	SE11: What language do you speak the most at home?
	0 = Otherwise
	1 = A mixture of local and official languages
Bilingual (Interview)	IR10: Language in which interview was conducted
	0 = Native language or dialect (mother tongue) of the respondent
	1 = The main language of the country but not the native language or dialect (mother tongue) of the respondent **OR** The main language of the region/localities but not the native language or dialect (mother tongue) of the respondent
Bilingual	0 = Otherwise
	1 = *Bilingual (Home)* equals 1 **OR** *Bilingual (Interview)* equals 1

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Table B.1 – continued from previous page

Variables	Description and Measurements
Main Outcome	
Ethnic Inequality	Q105: Please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the following statement: All citizens from different ethnic communities in [Country X] are treated equally by the government. 1 = Strongly agree 2 = Somewhat agree 3 = Somewhat disagree 4 = Strongly disagree
Covariates	
Female	SE2: Respondent's gender 0 = Male 1 = Female
Age	SE3_2: Respondent's age
Employed	SE9: Are you currently employed? 0 = Not employed 1 = Employed
Income	SE14: Respondent's Annual or monthly household income 1 = Lowest quintile 2 = 2nd quintile 3 = 3rd quintile 4 = 4th quintile 5 = Highest quintile

Continued on next page

Table B.1 – continued from previous page

Variables	Description and Measurements
Ethnic Majority	SE11a: What is your racial or ethnic background? 0 = Does not belong to any of the ethnic groups listed below 1 = Belongs to an ethnic group listed below

Country	Ethnic Majority Group
Cambodia	Khmer
China	Han
Indonesia	Java
Malaysia	Malay
Mongolia	Khalkh
Myanmar	Bamar
Philippines	Cebuano, Tagalog
Singapore	Chinese
South Korea	Korean
Taiwan	Min-nan
Thailand	Thai
Vietnam	Kinh

Internet	Q47: Do you have Internet access at home? 0 = No 1 = Yes
Urban	IR13: Which of the following levels within the country the respondent live? 0 = Village or countryside 1 = Small city or town **OR** Regional center or other major cities **OR** Capital or Megacity

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Table B.1 – continued from previous page

Variables	Description and Measurements
Education	SE5: Respondent's highest educational attainment:
	1 = No formal education
	2 = Incomplete primary/elementary
	3 = Complete primary/elementary
	4 = Incomplete secondary/high school: technical/vocational type **OR** Incomplete secondary/high school
	5 = Complete secondary/high school: technical/vocational type **OR** Complete secondary/high school
	6 = Some university education
	7 = University education completed
	8 = Post-graduate degree
Placebo Outcomes	
Democracy Best	Q129: Do you agree or disagree with the following statement: "Democracy may have its problems, but it is still the best form of government."
	1 = Strongly agree
	2 = Agree
	3 = Disagree
	4 = Strongly disagree
National Pride	Q161: How proud are you to be a citizen of (COUNTRY)?
	1 = Very proud
	2 = Proud
	3 = Not very proud
	4 = Not proud at all

Continued on next page

Table B.1 – continued from previous page

Variables	Description and Measurements
China Influence	Q169: General speaking, the influence China has on our country is?
	1 = Very negative
	2 = Negative
	3 = Somewhat negative
	4 = Somewhat positive
	5 = Positive
	6 = Very positive

Table B.2: **Descriptive Statistics of Variables Used in Study 1**

	N	Mean	SD	Median	Min	Max	Skew
Main Predictors							
Bilingual (Home)	16066	0.12	0.33	0.00	0.00	1.00	2.29
Bilingual (Interview)	15835	0.54	0.50	1.00	0.00	1.00	-0.15
Bilingual	15210	0.60	0.49	1.00	0.00	1.00	-0.40
Main Outcome							
Ethnic Inequality	19525	2.20	0.86	2.00	1.00	4.00	0.38
Covariates							
Female	20663	0.51	0.50	1.00	0.00	1.00	-0.05
Age	20625	45.10	15.67	45.00	17.00	108.00	0.30
Education	20604	4.43	1.79	5.00	1.00	8.00	-0.21
Employed	20561	0.68	0.47	1.00	0.00	1.00	-0.77
Income	17542	2.63	1.27	3.00	1.00	5.00	0.35
Internet	20476	0.44	0.50	0.00	0.00	1.00	0.23
Ethnic Majority	18303	0.78	0.41	1.00	0.00	1.00	-1.37
Urban	20559	0.67	0.47	1.00	0.00	1.00	-0.72
Placebo Outcomes							
Democracy Best	18397	1.92	0.60	2.00	1.00	4.00	0.44
National Pride	20195	1.52	0.65	1.00	1.00	4.00	1.10
China Influence	14144	3.68	1.32	4.00	1.00	6.00	-0.36

B.1.2 Results

Table B.3: **Bilinguals Display Greater Sensitivity Towards Ethnic Outgroups (Full Results)**

DV =	Ethnic Inequality		
Bilingual (Home)	0.046*		
	(0.023)		
Bilingual (Interview)		0.036*	
		(0.018)	
Bilingual			0.039*
			(0.019)
Female	0.014	0.014	0.014
	(0.016)	(0.015)	(0.016)
Age	−0.001†	−0.001*	−0.001
	(0.001)	(0.001)	(0.001)
Education	0.019**	0.018**	0.018**
	(0.006)	(0.005)	(0.005)
Employed	0.063**	0.066**	0.065**
	(0.018)	(0.017)	(0.018)
Income	0.025**	0.024**	0.025**
	(0.006)	(0.006)	(0.006)
Internet	0.037†	0.039†	0.038†
	(0.021)	(0.020)	(0.021)
Ethnic Majority	−0.085**	−0.089**	−0.085**
	(0.021)	(0.020)	(0.021)
Urban	0.056**	0.059**	0.057**
	(0.020)	(0.020)	(0.020)
Country FE	Yes	Yes	Yes
N	11799	12449	11993

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. The values for *Ethnic Inequality* range between 1 and 4. The larger the *Ethnic Inequality*, the stronger the respondent feels that different ethnic groups are treated unfairly by the government. Country fixed effects are included in the models. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.4: **Bilinguals Display Greater Sensitivity Towards Ethnic Outgroups (Ordinal Logit)**

DV =	Ethnic Inequality		
Bilingual (Home)	0.106*		
	(0.053)		
Bilingual (Interview)		0.097*	
		(0.043)	
Bilingual			0.107*
			(0.045)
Ethnic Majority	−0.175**	−0.184**	−0.173**
	(0.046)	(0.044)	(0.045)
Country FE	Yes	Yes	Yes
Covariates	Yes	Yes	Yes
N	11799	12449	11993

Notes: Table entries are unstandardized coefficient estimates. Conventional standard errors are displayed in parentheses. The values for *Ethnic Inequality* range between 1 and 4. The larger the *Ethnic Inequality*, the stronger the respondent feels that different ethnic groups are treated unfairly by the government. Control variables include gender, age, education, employment, income, internet access, urbanity, and whether the respondent belongs to an ethnic majority group in the country. Country fixed effects are also included in the models. $^{**}p < 0.01$; $^{*}p < 0.05$.

Table B.5: **Study 1 Placebo Tests**

Placebo DV =	Democracy Best		
Bilingual (Home)	0.024		
	(0.017)		
Bilingual (Interview)		0.006	
		(0.014)	
Bilingual			0.021
			(0.015)
N	11277	11876	11447

Placebo DV =	National Pride		
Bilingual (Home)	0.004		
	(0.017)		
Bilingual (Interview)		−0.015	
		(0.014)	
Bilingual			−0.011
			(0.015)
N	12215	12871	12408

Placebo DV =	China Influence		
Bilingual (Home)	0.072†		
	(0.041)		
Bilingual (Interview)		0.0004	
		(0.034)	
Bilingual			0.038
			(0.035)
N	8438	9070	8636

Notes: Table entries are unstandardized coefficients. Robust standard errors are displayed in parentheses. The values for *Democracy Best* and *National Pride* range between 1 and 4, while the minimum and maximum values for *China Influence* are 1 and 6, respectively. The larger the *Democracy Best*, the stronger the respondent disagrees with the statement that "Democracy may have its problems, but it is still the best form of government." Larger values on *National Pride* correspond to less national pride, while larger values on *China Influence* indicate that the respondent thinks that China has a positive influence on their country. Covariates include gender, age, education, employment, income, internet access, urbanity, and whether the respondent belongs to an ethnic majority group in the country. Country fixed effects are also included in the models. $^{\dagger}p < 0.1$.

B.2 Study 2: Education Reform in Malaysia

B.2.1 Survey Design, Variables & Descriptive Statistics

Survey participants were recruited by Rakuten Insight through their consumer panel. Participants were then redirected to an online survey that was hosted at Qualtrics. The sampling frame consisted of individuals who (1) are ethnic Malays, (2) had completed their secondary school exit examinations, and (3) were born between the years of 1985 and 1995. All questions and answer choices were written in *Bahasa Melayu* to ensure consistency in the interpretation of the questions and choices. Tables B.6 and B.7 provide a description and the summary statistics of the variables used in the empirical analyses, respectively

Table B.6: **Description of Variables and Measurements Used in Study 2**

Variables	Description and Measurements
Instrumental Variable	
Reform	0 = Born before January 1, 1990
	1 = Born on or after January 1, 1990
Main Predictor	
Bilingual Instruction	During your secondary school education, what was the language used to teach Science and Mathematics?
	0 = *Bahasa Melayu*
	1 = English
Running Variable	
Running	Difference in the number of days between a respondent's date of birth and January 1, 1990

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Table B.6 – continued from previous page

Variables	Description and Measurements
Outcomes (larger values reflect more ethnic outgroup political discrimination)	
Coethnic MP	Which individual would you vote for as your MP? 0 = Chose Chinese candidate 1 = Chose Malay candidate
Coethnic PM	Can you tell us how strongly you agree or disagree with the following statement? "The Prime Minister of Malaysia should always be a Malay." 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree
Ethnic Rights	Can you tell us how strongly you agree or disagree with the following statement? "People should be treated and given the same rights in Malaysia regardless of race or religion." 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree
Ethnic Party	Can you tell us how strongly you agree or disagree with the following statement? "There should be no race-based parties in Malaysia." 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree

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Table B.6 – continued from previous page

Variables	Description and Measurements
Covariates	
Female	0 = Male
	1 = Female
Urban School	Where was your secondary school located at?
	0 = Countryside
	1 = City
Bilingual (Home)	What language(s) do you normally speak at home?
	0 = Selected only one language
	1 = Selected more than one language
Employed	What is your current employment status?
	0 = Student, homemaker, unemployed, or retired/pensioned
	1 = Full time employee, part-time employee, or self-employed
Education	What is the highest educational qualification that you have attained?
	1 = SPM or equivalent
	2 = STPM or equivalent
	3 = SKM, polytechnic/university certificate, or equivalent
	4 = DKM, DLKM, polytechnic/university diploma, or equivalent
	5 = Bachelor's degree
	6 = Master's degree or Doctoral degree
Married	What is your marital status?
	0 = Single, divorced, or others
	1 = Married

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Table B.6 – continued from previous page

Variables	Description and Measurements
Income	What is your monthly salary?
	0 = Less than RM1,000
	1 = RM1,000 - RM1,999
	2 = RM2,000 - RM2,999
	3 = RM3,000 - RM3,999
	4 = RM4,000 - RM4,999
	5 = RM5,000 - RM5,999
	6 = RM6,000 - RM6,999
	7 = RM7,000 - RM7,999
	8 = RM8,000 - RM8,999
	9 = RM9,000 - RM9,999
	10 = RM10,000 and above
Mechanisms	
English Proficiency	In your opinion, how well do you know English?
	1 = Do not know the language at all
	2 = Can understand a little, but cannot speak
	3 = Can understand and speak a little
	4 = Can understand, speak, and write
	5 = Fluent

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Table B.6 – continued from previous page

Variables	Description and Measurements
Perspective-Taking	Average of responses to seven items from the Interpersonal Reactivity Index's perspective-taking sub-scale (Davis, 1983), with each item measured on a 5-point Likert scale ranging from 1 ("Does not describe me well") to 5 ("Describes me very well"): • I sometimes find it difficult to see things from the "other guy's" point of view. (*reverse coded*) • I try to look at everybody's side of a disagreement before I make a decision. • I sometimes try to understand my friends better by imagining how things look from their perspective. • If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (*reverse coded*) • I believe that there are two sides to every question and try to look at them both. • When I'm upset at someone, I usually try to "put myself in his shoes" for a while. • Before criticizing somebody, I try to imagine how I would feel if I were in their place.
Alternative Explanations	
Contact Quality	To what extent would you describe your experiences with members of a different race as positive? Values range from 1 ("Not at all positive") to 7 ("Very positive")

Continued on next page

Table B.6 – continued from previous page

Variables	Description and Measurements
Contact Quantity	How often do you engage in informal conversations with members of a different race? 1 = Never 2 = At least once a year 3 = Once every few months 4 = At least once a month 5 = At least once a week 6 = Daily

Table B.7: **Descriptive Statistics of Variables Used in Study 2**

	N	Mean	SD	Median	Min	Max	Skew
Instrumental Variable							
Reform	2445	0.61	0.49	1.00	0.00	1.00	-0.43
Main Predictor							
Bilingual Instruction	2096	0.53	0.50	1.00	0.00	1.00	-0.14
Running Variable							
Running	2445	296.94	1102.32	338.00	-1820.00	2188.00	-0.12
Outcomes							
Coethnic MP	2095	0.67	0.47	1.00	0.00	1.00	-0.71
Coethnic PM	2093	3.40	0.82	4.00	1.00	4.00	-1.24
Ethnic Rights	2092	1.88	0.87	2.00	1.00	4.00	0.63
Ethnic Party	2093	1.94	0.87	2.00	1.00	4.00	0.58
Covariates							
Female	2447	0.57	0.50	1.00	0.00	1.00	-0.26
Urban School	2096	0.68	0.47	1.00	0.00	1.00	-0.77
Bilingual (Home)	2447	0.40	0.49	0.00	0.00	1.00	0.42
Employed	2117	0.90	0.30	1.00	0.00	1.00	-2.73
Education	2447	4.46	1.35	5.00	1.00	6.00	-1.32
Married	2116	0.67	0.47	1.00	0.00	1.00	-0.72
Income	1861	3.77	2.37	3.00	1.00	10.00	1.01
Mechanisms							
English Proficiency	2112	3.87	0.90	4.00	1.00	5.00	-0.62
Perspective-Taking	2083	3.71	0.66	3.71	1.00	5.00	-0.09
Alternative Explanations							
Contact Quantity	2074	5.17	1.18	6.00	1.00	6.00	-1.64
Contact Quality	2074	5.92	1.23	6.00	1.00	7.00	-1.24

B.2.2 Balance Checks

In this subsection, I report two sets of balance checks results. First, I regress the two hypothetical candidate profiles on the set of social and economic covariates using linear and logit models (see

Table B.8). Accordingly, all variables, including the key predictor variable *Bilingual Instruction*, appear to be balanced across the two hypothetical profiles.

Table B.8: **Balance Checks for Randomized Hypothetical Profiles**

DV =	Candidate Profile (A = Chinese, B = Malay)	
Model =	OLS	Logit
Bilingual Instruction	0.003	0.010
	(0.028)	(0.111)
Reform	−0.016	−0.066
	(0.027)	(0.109)
Female	0.007	0.028
	(0.024)	(0.097)
Urban School	0.047†	0.190†
	(0.026)	(0.105)
Bilingual (Home)	−0.017	−0.069
	(0.024)	(0.098)
Education	0.013	0.054
	(0.011)	(0.044)
Married	0.044†	0.176†
	(0.026)	(0.106)
Employed	0.016	0.065
	(0.070)	(0.283)
Income	−0.007	−0.028
	(0.006)	(0.023)
N	1832	1832

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. The outcome variable is binary, where one equals the pair of profiles where candidate A is Chinese and B is Malay, and zero equals the pair of profiles where candidate A is Malay and B is Chinese. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Next, I consider whether respondents, on either side of the discontinuity, are significantly different on their covariate values. Given that most of the regression discontinuity (RD) models reported in subsection B.2.4 analyze cohorts that are close to the cutoff at January 1, 1990, I limit the analysis to respondents who were born between 1988 and 1991 (both years inclusive). Table B.9

reports the covariate group means for respondents who were born in 1988 and 1989 (i.e., Reform = 0), those born in 1990 and 1991 (Reform = 1), the *F*-statistic, and the corresponding *p*-values. Notwithstanding *Bilingual Home*, the other covariates appear balanced at the cutoff.

Table B.9: **Balance Checks for Respondents Born Close to Cutoff**

Covariates	Reform = 0	Reform = 1	F Statistic	Prob > F
Employed	0.912	0.897	0.618	0.432
	(0.283)	(0.305)		
Female	0.533	0.577	1.764	0.184
	(0.499)	(0.495)		
Education	4.602	4.507	1.323	0.25
	(1.246)	(1.283)		
Bilingual Home	0.462	0.392	4.749	0.03
	(0.499)	(0.489)		
Married	0.667	0.688	0.425	0.514
	(0.472)	(0.464)		
Income	4.016	3.937	0.216	0.643
	(2.346)	(2.4)		
Urban School	0.664	0.638	0.643	0.423
	(0.473)	(0.481)		

Notes: The "Reform = 0" and "Reform = 1" columns correspond to the group means for each covariate. For instance, 91.2% of respondents who were born in 1988 and 1989 are employed, while 89.7% of those born between 1990 and 1991 are employed. The next column reflects the *F*-statistic, and the last column shows the *p*-value.

B.2.3 Probability of Bilingual Instruction

To verify whether the reform significantly predicts monolingual or bilingual instruction, I regress *Bilingual Instruction* on *Reform*, and other covariates (i.e., *Female*, *Bilingual (Home*, *Urban School*, *Education*, *Married*, *Income*, and *Employed*) using both linear and logit models (Table B.10). Survey respondents who were born on or after the cutoff date at January 1, 1990 were more likely to study STEM subjects in English and non-STEM subjects in *Bahasa Melayu*, while those who were born before the cutoff received monolingual instruction. The coefficient estimates for *Reform* are also statistically significant at the $p < 0.05$ level. Overall, the results from Table B.10 indicate that the relevance assumption is satisfied.

Table B.10: **Reform Increases Probability of Bilingual Instruction**

DV =	Bilingual Instruction	
	OLS	Logit
Reform	0.459**	2.179**
	(0.038)	(0.216)
Running	0.00000	0.00004
	(0.00002)	(0.0001)
Female	−0.001	−0.006
	(0.021)	(0.117)
Bilingual (Home)	0.096**	0.533**
	(0.021)	(0.115)
Urban School	0.078**	0.442**
	(0.021)	(0.113)
Education	0.054**	0.298**
	(0.009)	(0.051)
Married	−0.038†	−0.193
	(0.022)	(0.120)
Income	0.021**	0.120**
	(0.005)	(0.030)
Employed	0.016	0.123
	(0.052)	(0.290)
N	1832	1832

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. Both the main predictor (i.e., *Reform*) and the outcome variables (i.e., *Bilingual Instruction*) are binary. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

B.2.4 Results

Table B.11: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Full Results)**

DV =	Coethnic MP	Coethnic PM	Ethnic Rights	Ethnic Party
Bilingual Instruction	−0.226*	−0.321*	−0.099	−0.811**
	(0.108)	(0.155)	(0.176)	(0.187)
Running	0.0003**	0.0003*	0.001**	0.001**
	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Running^2	−0.00000	0.00000**	0.00000	0.00000
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Female	−0.073**	−0.008	−0.158**	−0.104**
	(0.018)	(0.031)	(0.027)	(0.032)
Education	−0.004	0.024	0.027†	0.087**
	(0.010)	(0.017)	(0.014)	(0.016)
Married	0.048*	0.064	0.181**	−0.141**
	(0.023)	(0.040)	(0.034)	(0.040)
Income	−0.001	−0.051**	−0.092**	0.002
	(0.004)	(0.007)	(0.007)	(0.008)
Bilingual (Home)	0.041**	−0.228**	−0.036	−0.098**
	(0.015)	(0.025)	(0.024)	(0.028)
Employed	−0.242**	0.089	0.785**	0.279**
	(0.040)	(0.099)	(0.070)	(0.085)
Urban School	0.123**	0.081*	−0.096†	0.133**
	(0.025)	(0.040)	(0.049)	(0.040)
Region FE	Yes	Yes	Yes	Yes
N	507	516	440	563
Bandwidth	[-476,476]	[-486,486]	[-387,387]	[-563,563]
Kernel	Triangular	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other three outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. The *Running* variable is the difference in the number of days between a respondent's date of birth and January 1, 1990. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.12: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Linear Specification of Running Variable)**

DV =	Coethnic MP	Coethnic PM	Ethnic Rights	Ethnic Party
Bilingual Instruction	−0.553**	−0.644**	−0.103	−0.786**
	(0.114)	(0.152)	(0.173)	(0.165)
Covariates	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
N	417	459	430	486
Bandwidth	[-359,359]	[-405,405]	[-375,375]	[-442,442]
Kernel	Triangular	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other three outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.13: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Epanechnikov Kernel Weights)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.427**	−0.462**	−0.491**
	(0.099)	(0.138)	(0.162)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	417	459	486
Bandwidth	[-359,359]	[-405,405]	[-442,442]
Kernel	Epanechnikov	Epanechnikov	Epanechnikov

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.14: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Quartic Kernel Weights)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.427**	−0.462**	−0.491**
	(0.099)	(0.138)	(0.162)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	417	459	486
Bandwidth	[-359,359]	[-405,405]	[-442,442]
Kernel	Quartic	Quartic	Quartic

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.15: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Cosine Kernel Weights)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.477**	−0.482**	−0.502**
	(0.105)	(0.142)	(0.163)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	417	459	486
Bandwidth	[-359,359]	[-405,405]	[-442,442]
Kernel	Cosine	Cosine	Cosine

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.16: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Bandwidth ± 400)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.440**	−0.514**	−0.535**
	(0.106)	(0.150)	(0.156)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	449	449	448
Bandwidth	[-400,400]	[-400,400]	[-400,400]
Kernel	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.17: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Bandwidth ± 600)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.116	−0.275†	−0.780**
	(0.105)	(0.153)	(0.182)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	598	598	597
Bandwidth	[-600,600]	[-600,600]	[-600,600]
Kernel	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.18: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Cutoff = −365 Days)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−0.330	−1.176	−1.311
	(1.070)	(1.734)	(1.244)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	506	510	596
Bandwidth	[-476,476]	[-486,486]	[-563,563]
Kernel	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Conventional standard errors are displayed in parentheses. Reform cutoff is set at 365 days before the actual cutoff date on January 1, 1990. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.19: **Bilingual Instruction Reduces Ethnic Outgroup Discrimination (Cutoff = −730 Days)**

DV =	Coethnic MP	Coethnic PM	Ethnic Party
Bilingual Instruction	−1.316	−0.158	−9.335
	(2.080)	(2.389)	(12.344)
Covariates	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
N	447	452	533
Bandwidth	[-476,476]	[-486,486]	[-563,563]
Kernel	Triangular	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Conventional standard errors are displayed in parentheses. Reform cutoff is set at 730 days before the actual cutoff date on January 1, 1990. *Coethnic MP* equals 1 if a respondent selected a Malay candidate, and 0 otherwise. The other two outcomes are measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.20: **Bilingual Instruction Improves English Proficiency and Perspective-Taking (Full Results)**

DV =	English Proficiency	Perspective-Taking
Bilingual Instruction	0.316*	0.346*
	(0.146)	(0.148)
Running	−0.0004**	−0.0003*
	(0.0001)	(0.0001)
Running^2	−0.00000*	0.00000†
	(0.00000)	(0.00000)
Female	−0.121**	0.058*
	(0.027)	(0.024)
Education	0.222**	0.051**
	(0.015)	(0.015)
Married	−0.083**	0.070*
	(0.030)	(0.034)
Income	0.020**	−0.010†
	(0.006)	(0.006)
Bilingual (Home)	0.360**	0.100**
	(0.022)	(0.019)
Employed	0.826**	0.285**
	(0.086)	(0.069)
Urban School	0.006	−0.166**
	(0.031)	(0.032)
Region FE	Yes	Yes
N	592	519
Bandwidth	[-582,582]	[-506,506]
Kernel	Triangular	Triangular

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. Scores for *English Proficiency* and *Perspective-Taking* range between 1 and 5, and larger values reflect higher levels of English literacy and perspective-taking ability. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Region fixed effects are also included in the models. The bandwidths are coverage error-rate (CER) optimal. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.21: **Reform Does Not Predict Frequency and Quality of Interethnic Contact**

DV =	Contact Quantity	Contact Quality
Reform	−0.024	−0.027
	(0.050)	(0.056)
Covariates	Yes	Yes
Region FE	Yes	Yes
N	1,800	1,800

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. The values for *Contact Quantity* range between 1 ("Never") and 6 ("Daily"), whereas the minimum and maximum values for *Contact Quality* are 1 ("Not at all positive") and 7 ("Very positive") respectively. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.22: **Bilingual Instruction Reduces Frequency and Quality of Interethnic Contact**

DV =	Contact Quantity	Contact Quality
Bilingual Instruction	−0.447*	−1.005**
	(0.224)	(0.257)
Covariates	Yes	Yes
Region FE	Yes	Yes
N	1,800	1,800

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. The values for *Contact Quantity* range between 1 ("Never") and 6 ("Daily"), whereas the minimum and maximum values for *Contact Quality* are 1 ("Not at all positive") and 7 ("Very positive") respectively. The instrument is *Reform*, which equals 1 if a respondent is born on or after January 1, 1990, and 0 otherwise. Covariates include the running variable and its squared term, gender, age, marital status, education, employment, income, bilingual exposure at home, and whether a respondent attended an urban school. Region fixed effects are also included in the models. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

B.3 Study 3: Code-Switching and Ethnic Outgroup Discrimination

B.3.1 Recruitment and Survey Design

Study 3 was administered as an online survey experiment. Participants were recruited by Rakuten Insight through their consumer panel, and then redirected to our online survey that was hosted at Qualtrics. We specifically targeted ethnic Malay individuals, age 18 and above, who can speak English and *Bahasa Melayu*. On the latter requirement, participants were asked about their ability to read, write and understand English and *Bahasa Melayu* at the beginning of the survey. The questions and answer choices were delivered in both languages:

- In your opinion, how well do you know English?
    1. Do not understand the language at all
    2. Can understand a little, but cannot speak
    3. Can understand and can speak a little
    4. Can understand, speak, and write
    5. Fluent
- In your opinion, how well do you know *Bahasa Melayu*?
    1. Do not understand the language at all
    2. Can understand a little, but cannot speak
    3. Can understand and can speak a little
    4. Can understand, speak, and write
    5. Fluent

I follow the approach outlined in (Pérez & Tavits, 2022), which involves identifying bilinguals by shortlisting respondents who rated themselves as either "4" or "5" on both items. However, it is possible that participants may have overrated their language proficiencies. In such a scenario, we

would expect a substantial proportion of respondents to fail the two manipulation check questions later in the survey. However, more than 93% of respondents answered both manipulation check questions correctly. Furthermore, there is no significant difference in the accuracy of responses to the manipulation check questions across the three experimental conditions (Table B.26). Additionally, I conducted robustness tests by replicating the regression models without participants who failed the manipulation check questions, and the key findings remain unchanged (see Table B.29).

After providing answers to the linguistic proficiency questions, shortlisted participants were randomly assigned to one of three possible groups and read the following prompt, which were shown in English and *Bahasa Melayu*:

> Based on your previous answers, you had indicated that you can read, write, and speak in both Malay and English. Next, you will complete the rest of the survey in **Malay** / **English** / **Malay and English**. Please click next when you are ready.

During the survey, I also included an attention check question that was adapted from (Berinsky, Margolis, & Sances, 2014). Participants who selected **Economic News** and **Sports News** advanced to complete the survey, while the rest were screened out.

- The purpose of this survey is to gauge people's preference for news sources because what news people watch affects their judgments on many issues. However, in this question, we only want to test whether you pay attention to the questions. Hence, regardless of what you are interested in, please choose Economic News and Sports News.

    1. Political News
    2. Local News
    3. International News
    4. Economic News
    5. News Interviews
    6. Investigative Journalism
    7. Entertainment News

8. Technology News
9. Stock Market News
10. Sports News
11. All of the above
12. None of the above

All respondents read a news article about a little-known tourist destination in Malaysia, Pulau Lang Tengah, in the state of Terengganu. For those in the monolingual group (i.e., *Bahasa Melayu* and English conditions), they completed this portion of the survey in the language that they were originally assigned to. In contrast, participants in the bilingual group (i.e., condition 3), who had been answering the questions in *Bahasa Melayu* prior to this section, read the article and answered questions related to the article in English. An additional prompt was provided to participants in the bilingual group (in *Bahasa Melayu*), to alert them about the language change:

> Next, you will read a news article and answer questions about the article in English.

We intentionally chose an accessible and non-political article to mitigate the possibility that the article's content may induce respondents to display more (or less) ethnic discrimination, as well as to ensure that participants can comprehend the content easily. The news article was originally published in *Bahasa Melayu* and appeared in a local newspaper, *Berita Harian* (Mohd A. Wahid, 2023). The lengths of the article in *Bahasa Melayu* and in English are 156 words and 179 words, respectively. The English version of the news article is shown below:

> Pulau Lang Tengah, Terengganu is located between Pulau Redang, Kuala Nerus and Pulau Perhentian, Besut. It takes approximately 45 minutes to reach the island by boat from a jetty stop in Merang, Setiu.
>
> Some tourists consider Pulau Lang Tengah as an exclusive and isolated island compared to the other two neighbouring islands.
>
> The popularity of Pulau Redang and Pulau Perhentian, which are well-known and favoured by visitors, makes Pulau Lang Tengah a third option.

Those who have visited here find its attractions more appealing than the other islands in Terengganu.

In addition to having fewer crowds of visitors, this island is calmer due to the limited accommodations available for tourists and the absence of a large community settlement which can be found in Pulau Redang.

One of the fascinating locations in Pulau Lang Tengah is the coastline of Pantai Pasir Air, where beautiful panorama of white fine sand and crystal-clear emerald green water can be enjoyed during the daytime.

Visitors will definitely be dazzled by the gorgeous view, and it would be an unfulfilled experience without an overnight stay.

After reading the article, respondents answered the following two questions relating to the article in *Bahasa Melayu* (i.e., those in the *Bahasa Melayu*-only condition) or English (i.e., those in the bilingual and English-only conditions):

- What do you think the title of the news article is?
    1. Worm infection affects emotions, slows down children's growth.
    2. 6 ways to strengthen memory, prevent dementia.
    3. The stunning views at Pulau Lang Tengah
    4. Monitor blood pressure regularly.
- Where is Pulau Lang Tengah located at?
    1. Johor
    2. Terengganu
    3. Kedah
    4. Perlis

After answering the above questions, the bilingual group will resume the rest of the survey in *Bahasa Melayu*.

B.3.2 Variables and Descriptive Statistics

Table B.23: **Description of Variables and Measurements Used in Study 3**

Variables	Description and Measurements
Treatment Variables	
Bilingual	0 = Monolingual (i.e., English-only + *Bahasa Melayu*-only conditions)
	1 = Bilingual
Language	Categorical variable where *Bilingual* = 1 is the reference category
	0 = Bilingual
	1 = English-only
	2 = *Bahasa Melayu*-only
Outcomes (larger values reflect more ethnic outgroup political discrimination)	
Oppose ICERD	To what extent do you support or oppose ICERD to be ratified in Malaysia?
	1 = Strongly support
	2 = Somewhat support
	3 = Somewhat do not support
	4 = Strongly do not support
Coethnic PM	Can you tell us how strongly you agree or disagree with the following statement? "The Prime Minister of Malaysia should always be a Malay."
	1 = Strongly disagree
	2 = Disagree
	3 = Agree
	4 = Strongly agree

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Table B.23 – continued from previous page

Variables	Description and Measurements
Ethnic Rights	Can you tell us how strongly you agree or disagree with the following statement? "People should be treated and given the same rights in Malaysia regardless of race or religion." 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree
Ethnic Party	Can you tell us how strongly you agree or disagree with the following statement? "There should be no race-based parties in Malaysia." 1 = Strongly agree 2 = Agree 3 = Disagree 4 = Strongly disagree
Covariates	
Female	0 = Male 1 = Female
Education	What is the highest level of school you have completed? 1 = Primary school (e.g., UPSR) 2 = Secondary school (e.g., SPM) 3 = High school, polytechnic, or community college (e.g., STPM, certificate, diploma) 4 = University (Bachelor, Master, PhD)
Check	0 = Otherwise 1 = Answered both manipulation check questions correctly

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Table B.23 – continued from previous page

Variables	Description and Measurements
Age	2023 – Respondent's birth year
Income	Please indicate your monthly household income.
	1 = Less than RM2,000
	2 = RM2,000 - RM3,999
	3 = RM4,000 - RM5,999
	4 = RM6,000 - RM7,999
	5 = RM8,000 - RM9,999
	6 = RM10,000 and above
Mechanism	

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Table B.23 – continued from previous page

Variables	Description and Measurements
Perspective-Taking	Average of responses to seven items from the Interpersonal Reactivity Index's perspective-taking sub-scale (Davis, 1983), with each item measured on a 5-point Likert scale ranging from 1 ("Does not describe me well") to 5 ("Describes me very well"): • I sometimes find it difficult to see things from the "other guy's" point of view. (*reverse coded*) • I try to look at everybody's side of a disagreement before I make a decision. • I sometimes try to understand my friends better by imagining how things look from their perspective. • If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (*reverse coded*) • I believe that there are two sides to every question and try to look at them both. • When I'm upset at someone, I usually try to "put myself in his shoes" for a while. • Before criticizing somebody, I try to imagine how I would feel if I were in their place.

Table B.24: **Descriptive Statistics of Variables Used in Study 3**

	N	Mean	SD	Median	Min	Max	Skew
Treatment Variables							
Bilingual	814	0.44	0.50	0.00	0.00	1.00	0.24
Language (Bilingual)	814	0.44	0.50	0.00	0.00	1.00	0.24
Language (English)	814	0.28	0.45	0.00	0.00	1.00	0.96
Language (Bahasa Melayu)	814	0.28	0.45	0.00	0.00	1.00	1.00
Outcomes							
Oppose ICERD	805	2.60	0.96	3.00	1.00	4.00	-0.09
Coethnic PM	810	3.52	0.67	4.00	1.00	4.00	-1.22
Ethnic Rights	810	1.92	0.86	2.00	1.00	4.00	0.61
Ethnic Party	811	1.96	0.83	2.00	1.00	4.00	0.43
Covariates							
Female	803	0.63	0.48	1.00	0.00	1.00	-0.55
Education	812	3.46	0.69	4.00	1.00	4.00	-0.91
Age	805	33.48	9.64	32.00	18.00	72.00	0.64
Income	814	3.01	1.55	3.00	1.00	6.00	0.52
Check	814	0.94	0.24	1.00	0.00	1.00	-3.56
Mechanism							
PT	799	3.64	0.56	3.57	1.00	5.00	0.12

B.3.3 Balance Checks

Table B.25: **Balance Checks for Study 3 (Bilingual versus Monolingual)**

Covariates	Bilingual = 0	Bilingual = 1	F Statistic	Prob > F
Age	33.856	32.989	1.607	0.205
	(9.658)	(9.601)		
Manipulation Check	0.941	0.93	0.378	0.539
	(0.236)	(0.255)		
Education	3.421	3.503	2.774	0.096
	(0.71)	(0.673)		
Female	0.638	0.629	0.067	0.796
	(0.481)	(0.484)		
Income	3.013	3.014	0	0.994
	(1.563)	(1.533)		

Notes: The "Bilingual = 0" and "Biligual = 1" columns correspond to the covariate group means for those (1) in the English-only and *Bahasa Melayu*-only conditions combined, and (2) in the bilingual condition, respectively. For instance, 94.1% of respondents who were in English-only and *Bahasa Melayu*-only conditions answered the manipulation check questions correctly, while 93% in the bilingual condition answered the questions correctly. The next column reflects the F-statistic, and the last column shows the p-value.

Table B.26: **Balance Checks for Study 3 (Three Experimental Conditions)**

Covariates	Bilingual	English-only	*Bahasa Melayu*-only	F Statistic	Prob > F
Age	32.989	34.545	33.136	2.017	0.134
	(9.601)	(10.009)	(9.245)		
Manipulation Check	0.93	0.926	0.956	0.998	0.369
	(0.255)	(0.262)	(0.207)		
Education	3.503	3.385	3.458	2.01	0.135
	(0.673)	(0.73)	(0.687)		
Female	0.629	0.639	0.636	0.035	0.965
	(0.484)	(0.481)	(0.482)		
Income	3.014	3.009	3.018	0.002	0.998
	(1.533)	(1.577)	(1.553)		

Notes: The "Bilingual," "English-only," and *Bahasa Melayu*-only columns correspond to the covariate group means for the three experimental conditions. For instance, 92.6% of respondents who were in English-only condition, 95.6% of those in the *Bahasa Melayu*-only condition, and 93% in the bilingual condition answered the manipulation check questions correctly. The next column reflects the F-statistic, and the last column shows the p-value.

B.3.4 Results

Table B.27: **Bilingual Exposure Reduces Ethnic Outgroup Discrimination**

DV =	Oppose ICERD	Coethnic PM	Ethnic Rights	Ethnic Party
Bilingual	−0.151*	−0.057	−0.053	−0.120*
	(0.068)	(0.047)	(0.061)	(0.059)
Age	0.016**	0.010**	0.016**	0.012**
	(0.004)	(0.003)	(0.003)	(0.003)
Education	0.028	−0.023	0.085*	0.053
	(0.049)	(0.033)	(0.043)	(0.042)
Female	−0.043	−0.110*	0.055	−0.031
	(0.072)	(0.049)	(0.064)	(0.065)
Income	0.007	−0.012	−0.001	−0.008
	(0.021)	(0.017)	(0.020)	(0.020)
N	789	794	794	795

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Oppose ICERD*, *Coethnic PM*, *Ethnic Rights*, and *Ethnic Party* were measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. **p < 0.01; *p < 0.05; †p < 0.1.

Table B.28: **Bilingual Exposure Reduces Ethnic Outgroup Discrimination (Ordinal Logit Models)**

DV =	Oppose ICERD	Coethnic PM	Ethnic Rights	Ethnic Party
Bilingual	−0.268*	−0.209	−0.140	−0.263*
	(0.131)	(0.146)	(0.134)	(0.133)
Covariates	Yes	Yes	Yes	Yes
N	789	794	794	795

Notes: Table entries are unstandardized coefficient estimates. Conventional standard errors are displayed in parentheses. *Oppose ICERD*, *Coethnic PM*, *Ethnic Rights*, and *Ethnic Party* were measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. Covariates include age, education, gender, and income. **p < 0.01; *p < 0.05; †p < 0.1.

Table B.29: **Bilingual Exposure Reduces Ethnic Outgroup Discrimination (Exclude Respondents Who Failed Manipulation Checks)**

DV =	Oppose ICERD	Coethnic PM	Ethnic Rights	Ethnic Party
Bilingual	−0.174*	−0.049	−0.045	−0.119*
	(0.070)	(0.049)	(0.062)	(0.060)
Covariates	Yes	Yes	Yes	Yes
N	740	745	745	746

Notes: Table entries are unstandardized coefficient estimates. Robust standard errors are displayed in parentheses. *Oppose ICERD*, *Coethnic PM*, *Ethnic Rights*, and *Ethnic Party* were measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. Covariates include age, education, gender, and income. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Table B.30: **Bilingual Exposure Reduces Ethnic Outgroup Discrimination (Comparison Among Three Experimental Conditions)**

DV =	Oppose ICERD	Coethnic PM	Ethnic Rights	Ethnic Party
English	0.248**	−0.008	0.016	0.106
	(0.076)	(0.058)	(0.069)	(0.071)
Bahasa Melayu	0.050	0.123*	0.090	0.134†
	(0.085)	(0.054)	(0.076)	(0.072)
Covariates	Yes	Yes	Yes	Yes
N	789	794	794	795

Notes: Table entries are unstandardized coefficient estimates, and are benchmarked against the reference category, *Bilingual*, that is, participants who were assigned to complete the survey in a mixture of English and *Bahasa Melayu*. Robust standard errors are displayed in parentheses. *Oppose ICERD*, *Coethnic PM*, *Ethnic Rights*, and *Ethnic Party* were measured on a 4-point Likert scale, with larger values reflecting more outgroup discrimination. Covariates include age, education, gender, and income. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Appendix C: Citizenship Education Does Not Improve Ethnic Tolerance

C.1 Study 1: Cross-National Evidence from ICCS

C.1.1 Sampling Design

Table C.1: **Breakdown of Sample Sizes By Each Country**

Country	Students	Schools
Belgium (Flemish)	2711	149
Bulgaria	2928	145
Chile	4528	158
Colombia	4819	128
Denmark	6113	180
North Rhine-Westphalia (Germany)	1237	50
Dominican Republic	3596	127
Estonia	1798	105
Finland	3071	174
Hong Kong SAR	2558	88
Croatia	3839	172
Italy	3292	163
South Korea	2601	93
Lithuania	3631	182
Latvia	2909	136
Mexico	5526	213
Malta	3764	47
Netherlands	2350	103
Norway	6019	142
Peru	5166	206
Russia	7289	352
Slovenia	2659	135
Sweden	2992	141
Taiwan	3905	140
Total	89301	3529

Notes: The second column, "Schools," represents the total number of schools sampled in each of the 24 participating countries in the 2016 ICCS dataset. The third column, "Students," indicates the total number of students sampled in each country.

C.1.2 Dependent Variable: Ethnic Tolerance

Table C.2: **Description of Dependent Variable and Individual Items**

Variables	Description and Measurements
Ethnic Tolerance	Composite measure of a student's ethnic tolerance by factor analyzing five items from ICCS. Larger values correspond to greater ethnic tolerance.
Individual Items of Ethnic Tolerance	
Ethnic Tolerance (Education)	How much do you agree or disagree with the following statements? All ethnic/racial groups should have an equal chance to get a good education in <country of test>. 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree
Ethnic Tolerance (Jobs)	How much do you agree or disagree with the following statements? All ethnic/racial groups should have an equal chance to get good jobs in <country of test>. 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree

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Table C.2 – continued from previous page

Variables	Description and Measurements
Ethnic Tolerance (Politics)	How much do you agree or disagree with the following statements? Members of all ethnic/racial groups should be encouraged to run in elections for political office. 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree
Ethnic Tolerance (Rights)	How much do you agree or disagree with the following statements? Members of all ethnic/racial groups should have the same rights and responsibilities 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree
Ethnic Tolerance (Respect)	How much do you agree or disagree with the following statements? Schools should teach students to respect members of all ethnic/racial groups. 1 = Strongly disagree 2 = Disagree 3 = Agree 4 = Strongly agree

Table C.3: **Summary Statistics of Ethnic Tolerance and Individual Items**

	N	Mean	SD	Median	Min	Max	Skew
Ethnic Tolerance	85617	0.00	1.00	0.36	-4.72	0.93	-1.18
Ethnic Tolerance (Education)	86991	3.57	0.61	4.00	1.00	4.00	-1.42
Ethnic Tolerance (Jobs)	86781	3.51	0.64	4.00	1.00	4.00	-1.21
Ethnic Tolerance (Politics)	86358	3.08	0.80	3.00	1.00	4.00	-0.55
Ethnic Tolerance (Rights)	86729	3.52	0.66	4.00	1.00	4.00	-1.39
Ethnic Tolerance (Respect)	86558	3.52	0.66	4.00	1.00	4.00	-1.30

C.1.3 Predictors & Moderator: Citizenship Education & Classroom Openness

Table C.4: **Description of Predictor and Moderator**

Variables	Description and Measurements
Predictors	
Citizenship Education (Classroom)	How is civic and citizenship education taught at this school at <target grade>? 1 = It is taught as a separate subject by teachers of subjects related to civic and citizenship education **OR** It is taught by teachers of subjects related to human/social sciences (e.g., History, Geography, Law, etc) 0 = Otherwise
Citizenship Education (Extra-Curricular)	How is civic and citizenship education taught at this school at <target grade>? 1 = It is an <extra-curricular> activity. 0 = Otherwise
Citizenship Education (Integrated)	How is civic and citizenship education taught at this school at <target grade>? 1 = It is integrated into all subjects taught at school **OR** It is considered the result of school experience as a whole 0 = Otherwise
Moderator and Individual Items	
Classroom Openness	Composite measure of a student's perceptions of classroom openness by factor analyzing six items from ICCS. Larger values reflect greater classroom openness.

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Table C.4 – continued from previous page

Variables	Description and Measurements
Classroom Openness (Minds)	When discussing political or social issues during regular lessons, how often do the following things happen? Teachers encourage students to make up their own minds. 1 = Never 2 = Rarely 3 = Sometimes 4 = Often
Classroom Openness (Express)	When discussing political or social issues during regular lessons, how often do the following things happen? Teachers encourage students to express their opinions 1 = Never 2 = Rarely 3 = Sometimes 4 = Often
Classroom Openness (Events)	When discussing political or social issues during regular lessons, how often do the following things happen? Students bring up current political events for discussion in class. 1 = Never 2 = Rarely 3 = Sometimes 4 = Often

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Table C.4 – continued from previous page

Variables	Description and Measurements
Classroom Openness (Difference)	When discussing political or social issues during regular lessons, how often do the following things happen? Students express opinions in class even when their opinions are different from most of the other students. 1 = Never 2 = Rarely 3 = Sometimes 4 = Often
Classroom Openness (Discuss)	When discussing political or social issues during regular lessons, how often do the following things happen? Teachers encourage students to discuss the issues with people having different opinions. 1 = Never 2 = Rarely 3 = Sometimes 4 = Often
Classroom Openness (Sides)	When discussing political or social issues during regular lessons, how often do the following things happen? Teachers present several sides of the issues when explaining them in class. 1 = Never 2 = Rarely 3 = Sometimes 4 = Often

Table C.5: **Summary Statistics of Predictors and Moderator**

	N	Mean	SD	Median	Min	Max	Skew
Citizen Educ. (Classroom)	88541	0.90	0.30	1.00	0.00	1.00	-2.71
Citizen Educ. (Extra-Curr.)	88505	0.30	0.46	0.00	0.00	1.00	0.87
Citizen Educ. (Integrated)	88379	0.70	0.46	1.00	0.00	1.00	-0.87
Classroom Open.	85592	-0.00	1.00	0.12	-3.00	1.60	-0.76
Classroom Open. (Minds)	87491	3.00	0.93	3.00	1.00	4.00	-0.66
Classroom Open. (Express)	87546	3.31	0.86	4.00	1.00	4.00	-1.13
Classroom Open. (Events)	87162	2.40	0.92	2.00	1.00	4.00	0.08
Classroom Open. (Difference)	87337	2.99	0.90	3.00	1.00	4.00	-0.57
Classroom Open. (Discuss)	87209	2.69	0.99	3.00	1.00	4.00	-0.26
Classroom Open. (Sides)	87329	2.97	0.93	3.00	1.00	4.00	-0.58

C.1.4 Control Variables

Table C.6: **Description of Control Variables**

Variables	Description and Measurements
Student level Covariates	
Female	Student's gender
	1 = Female
	0 = Otherwise
Mother (Native)	Whether mother or female guardian was born in country of test
	1 = Yes
	0 = No
Father (Native)	Whether father or male guardian was born in country of test
	1 = Yes
	0 = No

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Table C.6 – continued from previous page

Variables	Description and Measurements
Mother (Education)	Mother's (or female guardian's) highest level of education completed
	1 = Did not complete <ISCED level 2>
	2 = <ISCED level 2>
	3 = <ISCED level 3>
	4 = <ISCED level 4>
	5 = <ISCED level 5>
Father (Education)	Father's (or male guardian's) highest level of education completed
	1 = Did not complete <ISCED level 2>
	2 = <ISCED level 2>
	3 = <ISCED level 3>
	4 = <ISCED level 4>
	5 = <ISCED level 5>

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Table C.6 – continued from previous page

Variables	Description and Measurements
Civic Organization	Have you ever been involved in activities of any of the following organizations, clubs or groups? 1 = Answered "Yes, I have done this within the last twelve months" **OR** "Yes, I have done this but more than a year ago" to at least one of the following organizations: • A youth organization affiliated with a political party or union • An environmental action group or organization • A human rights organization • A voluntary group doing something to help the community • An organization collecting money for a social cause • A group of young people campaigning for an issue • An animal rights or animal welfare group 0 = Otherwise
School level Covariates	
Urban	Whether the school is located in an urban area 1 = A large city (over 1,000,000 people) **OR** A city (100,000 to about 1,000,000 people) 0 = Otherwise
School Size	Logged of total school enrollment
Male Students	Percentage of male students in the school

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Table C.6 – continued from previous page

Variables	Description and Measurements
Tension (Intergroup)	Composite measure of salience of intergroup conflicts in the school's community. Factor analyzed three items from ICCS: To what extent are any of the following issues a source of social tension in the immediate area where the school is located? • Presence of immigrants • Religious intolerance • Ethnic conflicts
Tension (Poor)	Composite measure of degree of poverty and unemployment in the school's community. Factor analyzed three items from ICCS: To what extent are any of the following issues a source of social tension in the immediate area where the school is located? • Poor quality of housing • Unemployment • Extensive poverty

Continued on next page

Table C.6 – continued from previous page

Variables	Description and Measurements
Tension (Crime)	Composite measure of frequency of criminal activities in the school's community. Factor analyzed six items from ICCS: To what extent are any of the following issues a source of social tension in the immediate area where the school is located? • Organized crime • Youth gangs • Petty crime • Sexual harassment • Drug abuse • Alcohol abuse

Table C.7: **Summary Statistics of Control Variables**

	N	Mean	SD	Median	Min	Max	Skew
Female	89293	0.50	0.50	0.00	0.00	1.00	0.02
Mother (Native)	86041	0.88	0.32	1.00	0.00	1.00	-2.39
Father (Native)	85093	0.89	0.31	1.00	0.00	1.00	-2.48
Mother (Education)	85897	3.54	1.23	4.00	1.00	5.00	-0.40
Father (Education)	83602	3.49	1.21	3.00	1.00	5.00	-0.33
Civic Organization	87730	0.67	0.47	1.00	0.00	1.00	-0.74
Urban	89301	0.36	0.48	0.00	0.00	1.00	0.61
School Size	89241	6.37	0.77	6.42	1.10	8.75	-0.58
Male Students	89241	51.18	13.50	50.67	0.00	100.00	0.14
Tension (Intergroup)	88128	-0.00	1.00	-0.43	-0.87	4.18	1.16
Tension (Poor)	88191	0.00	1.00	-0.14	-1.35	2.29	0.57
Tension (Crime)	87883	0.00	1.00	-0.22	-1.19	3.06	1.00

C.1.5 Study 1 Results

Table C.8: **Effects of Civic Education & Classroom Openness on Ethnic Tolerance (Full Regression Results)**

DV =	Ethnic Tolerance			
Models	OLS	Multi-level	OLS	Multi-level
	(1)	(2)	(3)	(4)
Classroom Openness	0.190**	0.175**	0.150**	0.155**
	(0.009)	(0.004)	(0.030)	(0.012)
Citizenship Education (Classroom)	0.054†	0.032	0.058*	0.035
	(0.029)	(0.023)	(0.029)	(0.023)
Citizenship Education (Extra-Curricular)	0.002	0.007	0.002	0.007
	(0.024)	(0.017)	(0.024)	(0.017)
Citizenship Education (Integrated)	0.033†	0.019	0.033†	0.019
	(0.019)	(0.014)	(0.019)	(0.014)
Citizenship Education (Classroom) × Classroom Openness			0.043	0.022†
			(0.032)	(0.013)
Female	0.122**	0.127**	0.122**	0.127**
	(0.015)	(0.007)	(0.015)	(0.007)
Mother (Native)	−0.021	−0.035*	−0.022	−0.035*
	(0.032)	(0.016)	(0.032)	(0.016)
Father (Native)	−0.053	−0.052**	−0.052	−0.052**
	(0.035)	(0.016)	(0.035)	(0.016)
Mother (Education)	0.034**	0.028**	0.033**	0.028**
	(0.007)	(0.003)	(0.007)	(0.003)
Father (Education)	0.035**	0.023**	0.035**	0.023**
	(0.006)	(0.003)	(0.006)	(0.003)
Civic Organization	0.004	−0.0004	0.004	−0.0004
	(0.015)	(0.008)	(0.015)	(0.008)
Tension (Intergroup)	−0.016	−0.005	−0.016	−0.005
	(0.014)	(0.008)	(0.014)	(0.008)
Tension (Poor)	−0.0001	−0.004	−0.001	−0.004
	(0.011)	(0.008)	(0.011)	(0.008)
Tension (Crime)	−0.021*	−0.026**	−0.021*	−0.026**
	(0.011)	(0.008)	(0.011)	(0.008)
Urban	0.029	0.042**	0.029	0.042**
	(0.019)	(0.013)	(0.019)	(0.013)
School Size	0.010	0.022**	0.009	0.023**
	(0.013)	(0.008)	(0.013)	(0.008)
Male Students	−0.001†	−0.001	−0.001†	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
N	72,462	72,462	72,462	72,462
Country FE	Yes	No	Yes	No

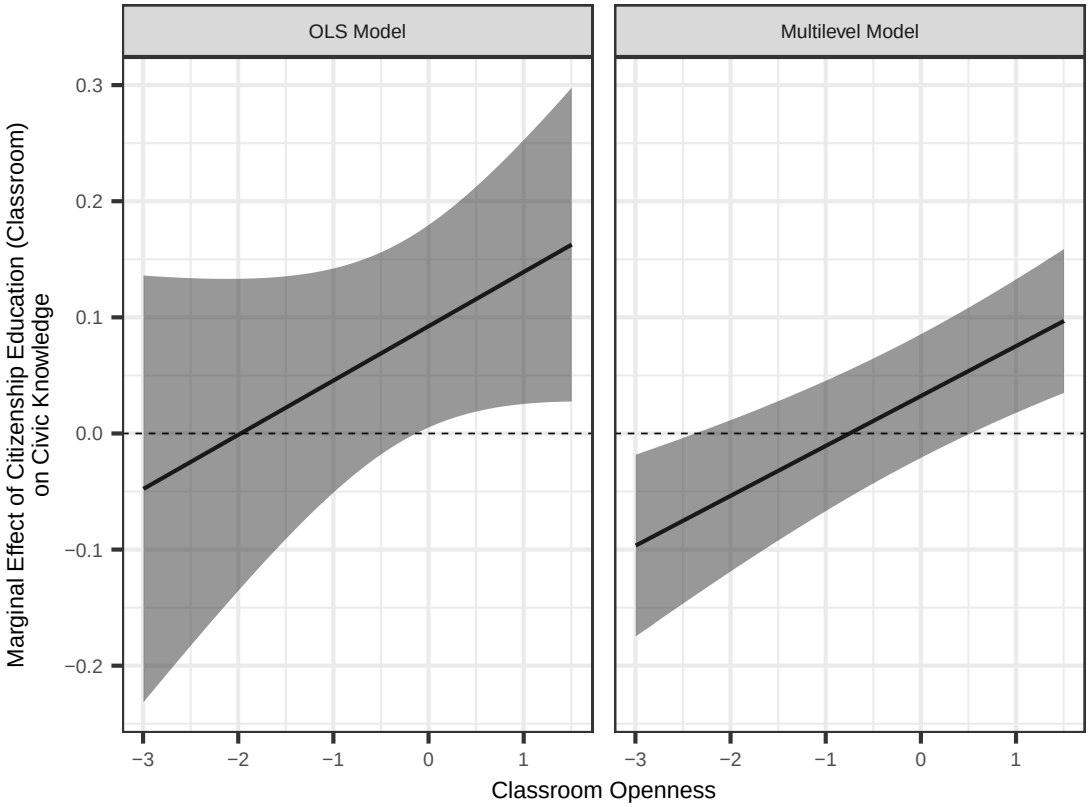
Notes: Table entries are standardized coefficient estimates. In models (1) and (3), robust standard errors clustered at the school level are shown in parentheses, while models (2) and (4) display conventional standard errors. **p < 0.01; *p < 0.05; †p < 0.1.

Table C.9: **Effects of Civic Education & Classroom Openness on Civic Knowledge (Full Regression Results)**

DV =	Civic Knowledge	
Models	OLS	Multi-level
	(5)	(6)
Classroom Openness	0.126**	0.102**
	(0.029)	(0.010)
Citizenship Education (Classroom)	0.092*	0.032
	(0.044)	(0.027)
Citizenship Education (Extra-Curricular)	0.028	0.025
	(0.031)	(0.021)
Citizenship Education (Integrated)	0.025	−0.010
	(0.025)	(0.018)
Citizenship Education (Classroom) ×	0.047	0.043**
Classroom Openness	(0.030)	(0.010)
Female	0.165**	0.159**
	(0.013)	(0.005)
Mother (Native)	0.099**	0.105**
	(0.025)	(0.012)
Father (Native)	0.163**	0.146**
	(0.023)	(0.012)
Mother (Education)	0.102**	0.068**
	(0.006)	(0.003)
Father (Education)	0.094**	0.063**
	(0.005)	(0.003)
Civic Organization	−0.102**	−0.098**
	(0.011)	(0.006)
Tension (Intergroup)	−0.004	0.001
	(0.013)	(0.010)
Tension (Poor)	−0.108**	−0.135**
	(0.016)	(0.011)
Tension (Crime)	0.017	0.024*
	(0.014)	(0.011)
Urban	0.105**	0.124**
	(0.024)	(0.017)
School Size	0.045**	0.087**
	(0.013)	(0.010)
Male Students	−0.003**	−0.003**
	(0.001)	(0.001)
N	74,113	74,113
Country FE	Yes	No

Notes: Table entries are standardized coefficient estimates. In model (5), robust standard errors clustered at the school level are shown in parentheses, while model (6) displays conventional standard errors. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.

Figure C.1: **Conditional Marginal Effects of Civic Education on Civic Knowledge**



Notes: The figure presents the marginal effects of *Citizenship Education (Classroom)* on *Civic Knowledge* at various levels of *Classroom Openness*, together with their corresponding 95% confidence intervals.

C.2 Study 2: Citizenship Education Reform in Singapore

C.2.1 Sampling Design and Survey Protocols

Survey participants were recruited by Rakuten Insight through their consumer panel. Participants were then redirected to an online survey that was hosted at Qualtrics. The sampling frame consisted of all Singapore citizens who were born between the years of 1976 and 1995. All questions and answer choices were written in English, as it is spoken by more than 96% of the citizen population in the country.

In addition, the survey implemented the following procedures that are in line with the guidelines and rules set out in the APSA Ethics Guide and Guidance for Human Subjects Research, as well as those outlined by the Institutional Review Board (IRB) from my home university:

- Guaranteeing that participation in any research activities is voluntary:
  - Each participant signed a consent form that emphasizes the voluntary nature of the activity. They were informed that their participation is voluntary, and that any refusal to participate will involve no penalty or loss of benefits.
  - Participants are also free to skip or refuse to answer any questions during the activity without incurring any loss of benefits.
- Guaranteeing fair compensation:
  - Participants were compensated for their efforts upon completion of the survey. The compensation rate was US$4.50. Given that the survey took an average of 12 minutes to complete, this translates to an hourly rate of US$22.50, which is higher than the average hourly rate among Singaporean workers in 2020.[1]
- Protecting the identities of participants:

[1] According to the Ministry of Manpower, the median gross monthly income from work is SG$4,000 (or us$2,824.40) and the average number of working hours is 42.8 hours per week. This translates to an average salary per hour rate of SG$23.36 (or US$16.49).

  - The survey did not collect any information that can be traced to any individual respondent i.e., participants' names and their IP addresses.

- Mitigating any potential harm or damages to participants:
  - Any information shared by participants are stored securely in the author's password protected hard drive and only the author has access to the data
  - In addition, records of survey responses will not be shared with any government institutions, other researchers, and for-profit entities. Data will only be shared on a need-to-know basis (e.g., for replication purposes).

C.2.2 Variables and Descriptive Statistics

Table C.10: **Description of Variables Used in Study 2**

Variables	Description and Measurements
Outcome Variable	
Ethnic Tolerance	Composite measure of a respondent's ethnic tolerance. Larger values correspond to greater ethnic tolerance. Respondents rate their level of agreement, on a 4-point Likert scale, to the following five statements: • All ethnic/racial groups should have an equal chance to get a good education in Singapore. • All ethnic/racial groups should have an equal chance to get good jobs in Singapore. • Members of all ethnic/racial groups should be encouraged to run in elections for political office. • Members of all ethnic/racial groups should have the same rights and responsibilities. • Schools should teach students to respect members of all ethnic/racial groups.
Main Predictor	
Reform	0 = Born before January 1, 1986 1 = Born on or after January 1, 1986
Running Variable	
Running	Difference in the number of days between a respondent's date of birth and January 1, 1986

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Table C.10 – continued from previous page

Variables	Description and Measurements
Control Variables	
Female	Respondent's gender
	1 = Female
	0 = Otherwise
Chinese	Whether respondent's ethnicity is Chinese
	1 = Chinese
	0 = Otherwise
Mother (Native)	Whether mother was born Singapore
	1 = Yes
	0 = No
Father (Native)	Whether father was born in Singapore
	1 = Yes
	0 = No
Education	What is the highest educational qualification that you have attained?
	GCE N Level = 1
	GCE O Level = 2
	ITE / Vocational Institute = 3
	GCE A Level / International Baccalaureate = 4
	Polytechnic diploma = 5
	Some university-level education, without degree = 6
	Bachelor's degree or post-graduate diploma = 7
	Master's degree = 8
	Doctorate = 9

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Table C.10 – continued from previous page

Variables	Description and Measurements
Employed	Respondent's employment status
	1 = Full time or self-employed
	0 = Otherwise
Income	What is your monthly salary?
	0 = Less than SG$1,000
	1 = SG$1,000 - SG$1,999
	2 = SG$2,000 - SG$2,999
	3 = SG$3,000 - SG$3,999
	4 = SG$4,000 - SG$4,999
	5 = SG$5,000 - SG$5,999
	6 = SG$6,000 - SG$6,999
	7 = SG$7,000 - SG$7,999
	8 = SG$8,000 - SG$8,999
	9 = SG$9,000 - SG$9,999
	10 = SG$10,000 and above
Education Track	Respondent's education track during secondary education
	1 = Special or Express stream
	0 = Normal (Academic) stream

Table C.11: **Descriptive Statistics of Variables Used in Study 2**

	N	Mean	SD	Median	Min	Max	Skew
Ethnic Tolerance	2231	0.00	1.00	-0.22	-4.72	1.36	-0.34
Perspective-Taking	2201	0.00	1.00	0.07	-4.04	1.96	-0.16
Reform	2291	0.55	0.50	1.00	0.00	1.00	-0.21
Running	2291	191.62	1964.89	371.00	-3625.00	3590.00	-0.17
Female	2294	0.57	0.50	1.00	0.00	1.00	-0.27
Chinese	2295	0.76	0.43	1.00	0.00	1.00	-1.21
Mother (Native)	2288	0.86	0.35	1.00	0.00	1.00	-2.09
Father (Native)	2285	0.89	0.31	1.00	0.00	1.00	-2.52
Education	2295	6.29	1.70	7.00	1.00	9.00	-1.44
Employed	2295	0.92	0.27	1.00	0.00	1.00	-3.10
Income	2293	4.85	2.68	5.00	0.00	10.00	0.30
Education Track	2295	0.61	0.49	1.00	0.00	1.00	-0.43

C.2.3 Study 2 Results

Table C.12: **Balance Checks for Study 2 (Born Before or After Cutoff)**

	Before Jan 1, 1986	On or after Jan 1, 1986	F Statistic	Prob > F
Chinese	0.727	0.719	0.057	0.812
	(0.446)	(0.45)		
Father (Native)	0.919	0.909	0.269	0.604
	(0.273)	(0.288)		
Education	6.264	6.456	2.685	0.102
	(1.675)	(1.529)		
Employed	0.943	0.924	1.058	0.304
	(0.233)	(0.266)		
Female	0.523	0.581	2.579	0.109
	(0.5)	(0.494)		
Income	5.078	4.904	0.891	0.345
	(2.584)	(2.462)		
Mother (Native)	0.876	0.889	0.312	0.577
	(0.33)	(0.315)		
Express Course	0.606	0.552	2.289	0.131
	(0.489)	(0.498)		

Notes: The first two columns correspond to the covariate group means for those born before and after January 1, 1986. The next column reflects the F-statistic, and the last column shows the p-value.

Table C.13: **Effect of Civic Education on Ethnic Tolerance in Singapore (Alternative Model Choices)**

DV =	Ethnic Tolerance					
	Quadratic	Cubic	Quadratic	Cubic	Quadratic	Cubic
Reform	-1.546	-1.799	-1.027*	-1.232*	-0.099	-0.324†
	(0.988)	(1.148)	(0.404)	(0.479)	(0.124)	(0.1951)
N	237	237	577	768	2212	2212
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
RD Bandwidth	365	365	867	1172	Full	Full

Notes: Table entries are standardized coefficient estimates. **p < 0.01; *p < 0.05; †p < 0.1.

Table C.14: **Effect of Civic Education on Ethnic Tolerance in Singapore (Alternative Kernel Weights)**

DV =	Ethnic Tolerance			
	Epanechnikov	Uniform	Epanechnikov	Uniform
Reform	-1.469*	-1.499*	-0.344†	-0.243
	(0.655)	(0.6)	(0.203)	(0.205)
N	237	241	771	643
Covariates	Yes	Yes	Yes	Yes
RD Bandwidth	365	365	1178	968

Notes: Table entries are standardized coefficient estimates. **p < 0.01; *p < 0.05; †p < 0.1.

Table C.15: **Effect of Civic Education on Ethnic Tolerance in Singapore (Placebo Cutoffs)**

DV =	Ethnic Tolerance			
Cutoffs =	January 1, 1987	January 1, 1987	January 1, 1985	January 1, 1985
Reform	0.276	0.197	0.009	-0.1
	(0.576)	(0.253)	(0.491)	(0.215)
N	231	551	235	555
Covariates	Yes	Yes	Yes	Yes
RD Bandwidth	365	789	365	904

Notes: Table entries are standardized coefficient estimates. **p < 0.01; *p < 0.05; †p < 0.1.

Table C.16: **Effect of Civic Education on Perspective-Taking in Singapore**

DV =	Perspective-Taking		
	(1)	(2)	(3)
Reform	-0.564	-0.055	-0.135†
	(0.467)	(0.182)	(0.0811)
N	228	803	2182
Covariates	Yes	Yes	Yes
RD Bandwidth	365	1265	Full Sample

Notes: Table entries are standardized coefficient estimates. $^{**}p < 0.01$; $^{*}p < 0.05$; $^{\dagger}p < 0.1$.