# EXPLORING AND MODELING THE RELATIONSHIP BETWEEN BILINGUALISM, SOCIAL ESSENTIALISM, AND INTERGROUP BIAS

by

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(Under the Direction of Brian Haas)

## ABSTRACT

Bilingualism has often been studied in the context of binary categories. However, this does not capture its multidimensional nature. In the first study, I tested bilingualism while treating it as a continuous, multidimensional variable to see how it relates to social essentialism and intergroup bias. This is based on studies that have shown an association of bilingualism with less outgroup bias and less essentialist beliefs. I hypothesized that social essentialist beliefs would play a mediating role in the relationship between bilingualism and intergroup bias, as modeled by the simple mediation model. I tested this hypothesis by assessing a group of undergraduate students using a bilingualism assessment, an assessment of their belief in social determinism, an adapted implicit association test that focuses on words associated with ingroups and outgroups, as well as an explicit bias task focused on generalized ethnocentrism. Participants showed mixed results with a lack of significant relationships for implicit bias assessment, but some significant relationships for explicit bias assessment.

In the second study, I focused on testing whether a priming procedure for bilingual identity would be effective at getting bilingual participants to more strongly identify with their bilingualism and show differences in how they respond to assessments of essentialist beliefs and explicit outgroup biases. Participants did not show any differences between the bilingual and control groups.

INDEX WORDS: Bilingualism, Essentialism, Intergroup Bias, Implicit Bias, Ethnocentrism

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# DEDICATION

I would like to dedicate my dissertation to my family. Thank you to my parents Jie Chen and Ke Xia for their continued support and encouragement. Thank you to my sister Gracelynn Xia for always being a supportive voice when I need it.

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TABLE OF CONTENTS

Page

# LIST OF TABLES

# LIST OF FIGURES

# CHAPTER 1

## INTRODUCTION

Speaking two or more languages is the general interpretation for defining bilingualism. However, this interpretation tends to just invite more questions once you start trying to delve deeper into understanding bilingualism. There are questions of how bilingualism should be defined given how complex and variable it can be from person to person. It is also difficult to objectively assess given that there is not a universal way to assess language ability across different languages, and often assessment relies on self-report of language background. It is also often context-dependent in terms of country or region. Specifically, the US and other English-speaking Western countries have a different relationship with monolingualism and bilingualism than most other countries and regions. In order to understand how bilingual backgrounds relate to other psychological phenomena however, it is important to find an ideal approach to assessing bilingualism.

Specifically, given that bilingualism is an ability that is multidimensional in its nature and yet has tended to be studied through a binary lens of people being bilingual or not, with much of the literature focusing on comparing monolinguals to bilinguals, there is a need to move away from this approach (Luk & Bialystok 2013). The practice of ignoring the multidimensional nature of bilingualism may be detrimental to understanding the complexity of how bilingualism may relate to cognitive and social processes. This may help explain why much research supported the notion of a bilingual cognitive advantage (Adesope et al., 2010; Schroeder 2018), while there is increasing evidence in opposition to such an advantage (Paap & Greenberg 2013; Nichols, 2020), since these studies have used a binary approach which does not effectively

represent the true nature of bilingualism. The multidimensional nature of bilingualism also brings forth the question of whether there are other factors related to bilingualism that impact cognitive and social processes. More specifically, there is support for bilingualism having an association with less racial bias (Burns et al., 2019; Singh et al., 2020) as well as reduced essentialist biases (Byers-Heinlein & Garcia 2015), and support for the relationship between increased essentialist biases and greater intergroup racial biases (Andreychik & Gill, 2015; Bastian & Haslam, 2006; Chen & Ratliff, 2018). Given these relationships, the current study seeks to illuminate how bilingualism is associated with essentialist beliefs and intergroup bias and whether essentialist beliefs can statistically explain the association between bilingualism and intergroup bias.

Another approach to understanding bilingualism, an ability that cannot be experimentally manipulated ethically or practically, is to devise a way to manipulate its salience. This is the focus of the second study which takes a look at whether priming bilingual identity for bilinguals can increase for their identification with bilingualism and whether this impacts their essentialist beliefs and intergroup bias. This approach is based on previous studies in the area of multicultural priming which uses various cultural cues to prime specific cultural contexts (Tadmor et al., 2012). In this way, bilingual participants who are primed to think about their bilingualism and what it means to them can be compared to bilingual participants who are not primed to think about their bilingualism. This approach is meaningful for demonstrating a potential alternative way to understand bilingualism as a background that does not rely on self-report. Additionally, if the priming mechanism is successful, then there would be implications that bilingual identity salience plays a specific and significant role in the context of bilingualism's many facets.

# CHAPTER 2

# LITERATURE REVIEW

Bilingualism has been studied in various contexts in terms of cognitive and social processes, which includes factors like intergroup bias. Similarly, psychological essentialism has been studied in its various forms for how it relates to other factors of the mind including attitudes towards others like outgroup biases. Given the results of these studies, the question that is presented is how essentialist beliefs may or may not play a role in the association between bilingualism and intergroup bias measures. The focus of this background is to understand the research related to bilingualism, essentialist belief, and intergroup bias and how to contextualize the relationship of these factors with each other based on previous studies.

## Bilingualism

In many studies, bilingualism has been found to be associated with an advantage on a variety of social and cognitive processes, including executive function, theory of mind, and intergroup bias (Adesope, et al., 2010; Schroeder 2018; Singh et al., 2020). This advantage means that bilinguals have been found to have better executive function capabilities, better theory of mind reasoning, and less biased attitudes towards outgroup members, as compared to monolinguals. These results which support a bilingual advantage have largely been investigated under study designs with a binary, categorical approach to bilingualism and monolingualism which depend on self-reported information about participants' language background and categorization as determined by the researcher. However, other studies with this categorical approach have found increasing evidence against a notion of this bilingual advantage (Paap & Greenberg, 2013;

Nichols 2020). These findings do not support an advantage that bilinguals have over monolinguals when it comes to various cognitive processes such as executive function tasks. Given the conflicting evidence and increased refuting of the idea of the bilingual advantage, a different perspective of looking at bilingualism is encouraged, especially given the existing wide range of individual differences among the features and characteristics of the bilingualism of different people (Luk & Bialystok, 2013). For example, people learn additional languages in different contexts, such as academically in a school setting or naturalistically by speaking with their family at home. Some people use their languages in different contexts such as only with family, with both family and friends, or only in school. Some people listen in one language while responding in another and some people only speak and understand a second language but do not read or write it. There are also variations in contexts of language proficiencies, such as some people who are highly proficient in understanding the oral language but cannot read or write it, or others who may have a medium level proficiency across the domains of the written and spoken word. This different perspective can come in the form of conceptualizing being bilingual by considering variations such as the previous examples, which means treating it multidimensionally as a continuous measure, rather than as a category. There is much support for new approaches to evaluating bilingualism that takes into consideration these variations, details, and social contexts (de Bruin 2019; Titone & Tiv 2023), including advocating for the concept of a unifying “Bilingualism Quotient” which may better represent bilingualism (Marian & Hayawaka 2021). This is in contrast with previous studies which have collected some self-reported information about usage and proficiency but used it to determine a cutoff score with self-rated proficiency or used the data to do additional analyses.

With an understanding that different places in the world have very different dynamics when it comes to the nature and frequency of bilingualism, the United States provides a unique perspective given the relative common phenomena of monolingualism compared to many places in the world. One multidimensional construct which assesses bilingualism is the Language and Social Background Questionnaire (LSBQ) which is designed with the expectation of the dominant language spoken being English and includes various factors like proficiency and usage of language (Luk & Bialystok, 2013; Anderson, et al., 2018). The LSBQ calculates a continuous number that represents the degree of bilingualism based on a series of questions about self-rated proficiency for each language, relative language usage with different people, environments, situations, and activities, and other usage statistics. The calculation methodology for this score was derived based on a factor analysis conducted on the LSBQ instrument as mapped onto previous studies of bilingualism and cognitive outcomes. A resulting composite score represents the degree of bilingualism, with high scores indicating more bilingualism and lower scores indicating more monolingualism. Separate factor scores represent the scores for the main sub-factors of non-English home use and proficiency, non-English social use, and English proficiency (Anderson, et al., 2018). Higher scores on the "non-English home use and proficiency" factor indicates greater proficiency on the non-English language and greater use of said language in private life, at home, and with family members. Thus, lower scores on this factor reflect poor or lacking non-English language ability and more English usage in private life, home, and family contexts. For the second factor of "non-English social use," higher scores reflect more use of the non-English language in societal and community settings outside of the home and private life and lower scores reflect more English use in those contexts. Finally, for the third factor of English proficiency, high scores reflect high proficiency in English and low scores

reflect low proficiency. The composite of these scores is what is used to calculate the composite bilingualism score. One limitation of this measure is that it must be conducted in English to accommodate the practical restrictions of trying to accommodate additional languages. Although translated versions of this measure can be used, for the purpose of the current study in which the focus is centered on intergroup dynamics in the US, the English version of the LSBQ is used. The conceptualization of bilingualism by the LSBQ allows for a continuous interpretation which can correlate with other factors, including the factors of essentialist beliefs and level of intergroup bias and prejudice assessed in the current study.

The social nature of bilingualism leads there to be much to be studied in terms of how bilingual background relates to various social factors. Bilingualism has been studied when it comes to factors like perspective-taking and theory of mind, factors which relate to the ability of people to understand that other people have perspectives different from one's own. Findings support the notion of a bilingual advantage over monolinguals on these abilities (Rubio-Fernández & Glucksberg 2012; Schroeder 2018). These findings are the foundation for studying how bilingualism is associated with factors associated with various with intergroup perceptions and dynamics, such as essentialist beliefs and intergroup biases.

**Psychological Essentialism**

The framework by which this current study views essentialism is centered around the existence of general lay beliefs around categories having essences which mark differences among socially categorized groups which can be seen as innate and unchangeable (Haslam et al., 2006; Medin & Ortony, 1989; Yzertbt et al., 1997). As outlined by Rothbart and Taylor (1992), essentialist thinking can be thought of as having two core components. The first is that membership to the social category is richly informative about a person, and the second is that

such a membership is fixed and inalterable (Rothbart & Taylor, 1992). Each of these core components are pillars to understanding what an essentialist bias means for conceiving social categories of people.

Based on this model of essentialism, studies have looked at the relationship of this type of thinking with intergroup biases and prejudice. Yzerbyt et al. (1997) specifically propose that essentialist thinking serves the purpose of justifying existing social arrangement, which in turn promotes the processes associated with intergroup bias and stereotyping, which can also then enforce essentialist beliefs. In general, higher levels of essentialist are associated with higher levels of bias, prejudice, and stereotyping (Andreychik & Gill, 2015; Bastian & Haslam, 2006; Chao et al., 2013; Diesendruck & Menahem, 2015; Keller 2005). Specifically, essentialist thinking about people's social categories is associated with general bias against outgroups and in-group favoritism in different contexts. This has been theorized to be related to motivated social cognition which is founded on the idea of using these lay beliefs to justify existing social group dynamics, including which groups are dominating (Crandall & Eshleman 2003; Keller 2005). Thus, people who have stronger essentialist beliefs are more likely to hold the perspectives that uphold the status quo and thus support biased and prejudiced perspectives. This also includes the mechanisms that support stereotyping (Crandall & Eshleman 2003).

There are many different types of essentialist assessments which focus on various components or conceptualizations of essentialist beliefs, that have been applied to look at its relationship with intergroup bias measures. Some measures focus on the biological component of essentialism, conceptualizing it as beliefs pertaining to the defining nature of biological and genetic origins, such as the belief in genetic determinism scale (Keller 2005). This assessment focuses on essentialist beliefs as conceived as the biological component of essentialist beliefs in

which biological origins are the fundamental, defining factor of the core of a person. Another measure crafted in a similar manner is the belief in social determinism (BSD) scale (Rangel & Keller, 2011). This scale focuses on social influences as a component of essentialist thinking. In this case, this measure concentrates on the component of essentialism that is based in the lay belief of fundamental features of people being determined by social factors. Specifically, the BSD focuses on how factors such as social status, socialization, upbringing, and peer contact are fundamental to formation of the core of a person (Rangel & Keller, 2011). The BGD and the BSD were crafted to be distinct yet complementary components of essentialism, supported by findings that these measures show moderate positive correlations but also different associations with components of lay essentialist theories (Rangel & Keller 2011). Using this measure in the context of the current study emphasizes how beliefs about how deterministic social origins of a person is for a person's personality, abilities, and other aspects of who someone is as a person.

**Intergroup Bias**

Intergroup bias is studied using various methodologies and methods from implicit assessments to self-reported attitudes. Each of these methods serve different purposes for understanding prejudice and bias in intergroup contexts. Examinations of implicit bias seek to understand the kind of biases that may occur in less explicit cognition. The implicit association test (IAT) has often been used to assess these implicit cognitive biases by measuring the strength of associations between target stimuli with different attributes, such as positive and negative words (Greenwald et al, 1998). This means understanding whether there are stronger associations with one target stimuli compared to another with other stimuli such as positive and negative words. For example, a minority racial group bias would be demonstrated if when a person is prompted to do so, they are significantly quicker at associating a dominant racial group with

positive words and a minority racial group with negative words, than the opposite associations. The IAT showed discriminate and convergent validity with other assessments of prejudice (Gawronski 2002). Mouse-tracking methodology, which tracks the decision-making process made through a computer mouse, has been used to examine the underlying mechanisms of the IAT. It was found that even when people choose the correct response, the movement path of their mouse was shown to be attracted to the alternative response, illustrating the mechanism that would influence responses on the IAT, such that the attraction to the alternative response is analogous to the differing reaction times (Yu et al., 2012). Thus, assessing implicit associations would represent assessing the underlying associations that participants make with regards to the stimuli and attributes presented, which is separate to the choices being made outwardly. In the case of an IAT that focuses on the dynamics of associations with an ingroup and an outgroup, what is being assessed can be thought of as a representation of broader societal levels of intergroup perceptions, much like IATs focused on race groups can be seen as a marker of systemic inequalities (Payne & Hannay, 2021). While the size of the effect of the IAT as predictors of discriminatory behavior has been called into question by some (Oswald et al., 2015), others frame these statistically small effects in terms of their aggregate and the influence that has on the scale of the broader society where people experience the impacts of systemic-level biases (Greenwald et al., 2015).

Explicit assessments of intergroup bias often consist of items that ask participants to indicate their agreement with a set of statements about their thoughts or feelings toward other groups (e.g., groups based on race, gender, nationality). Evidence suggests that direct assessments of racial preferences were better predictors for implicit racial attitudes and maximized differences between the participants' racial groups than more indirect assessments

which asked about racial attitudes (Axt 2018). This supports the idea that there is strong value in direct assessments of biased attitudes, despite the presence of social desirability concerns in directly asking questions about intergroup attitudes. However, the specific dynamics in these assessments are often context specific and regionally specific, focusing on a particular group and regional context. Specificity in these contexts is useful for investigating specific phenomena but are less generalizable to broader contexts. The Generalized Ethnocentrism Scale (GENE) is a scale which was first developed to be used in a broader context which is not specific to region or specific to particular social group, in this case developed to look at country-level ingroups and outgroups, essentially in terms of nationality (Neuliep and McCroskey, 1997). Thus, this measure contains items that use language that does not refer to specific groups, specific dynamics, or specific attitudes associated with a group, such as stereotypes specific to a racial group. The short form developed that was used in this study is particularly designed to be vague in its focus to people who are different and cultures that are not your own (Neto & Neto, 2022).

**What is the relationship between bilingualism, essentialism, and intergroup bias?**

Given an understanding of bilingualism and essentialism on their own, it is thus important to understand the context of their connection to each other and intergroup bias, with these constructs being the core of this study. First, it is crucial to outline how bilingualism and essentialism are each related to intergroup bias. Specifically, evidence has supported a relationship of being bilingual with less bias and prejudice, both explicitly and implicitly (Singh et al., 2020). Differences between monolingual and bilingual infants on social cue use were found showing a protective effect against racial bias for bilinguals, in which bilinguals' gaze demonstrated race-neutral patterns compared to monolingual infants with own-race bias (Singh et al., 2019). Infants included in the study were all found to not have sustained contact with the

other race used in the study (Singh et al., 2019). Bilingualism has also been found to play a role among adults in the other-race- effect, or the phenomenon in which own-race faces being recognized better than other race faces, in which the participants were all Chinese ethnicity Singaporeans (Burns et al., 2019). Cognitive control and cognitive flexibility in representing categorical attributes are recognized as two possible underlying mechanisms for the association between bilingualism and intergroup bias, based on previous studies that have suggested a common set of executive functions are linked to both racial bias (Ito et al., 2015, Klauer et al., 2010, Shih et al., 2013; Siegel et al., 2012; Teachman et al., 2003) and bilingualism (Adesope et al, 2010, Bialystok, 2015; Fan et al., 2015; Rubio-Fernández & Glucksberg, 2012; Schroeder 2018). Earlier maturation of distinct control systems due to bilingual experience may be the reason cognitive control could account for the link between bilingualism, executive function, and reduced bias (Singh et al., 2021). The other possibility is that cognitive flexibility reduces how much constraint is placed on information, which in turn supports broader definitions of categories like racial groups so that they are less confined to rigid stereotyped perceptions, which then reduces bias (Singh et al, 2021). Singh et al. (2021) found empirical support that cognitive flexibility predicted implicit racial bias. These findings generally support some form of association between bilingual backgrounds with less intergroup bias, particularly in the case of implicit racial bias.

Higher essentialist beliefs have been found to be associated with greater likelihood to enforce boundaries based on race and endorse stereotypes associated with social groups and even dehumanize outgroups (Bastian & Haslam, 2006; Chao et al., 2013, Chen & Hamilton, 2012; Leyens et al., 2001). Various essentialism measures were found to be associated with higher degrees of both implicit and explicit racial biases as assessed by the IAT and assessment of level

of positive or negative feelings towards racial groups (Chen & Ratliff, 2018). This relationship of higher essentialism being associated with greater bias is supported by the notion that essentialist beliefs about people and groups can serve as justifications for prejudicial attitudes towards those people and groups, including implicit biases. Specifically, having higher essentialist beliefs about the differences between social groups can justify people's endorsement of stereotypes of group differences, while holding less essentialist beliefs means more malleability with these preconceptions, due to less adherence to a stable, internal rationale for social group differences (Chen & Ratliff, 2018). There is also empirical support for endorsement of social hierarchies as the mechanism for how essentialism promotes racial prejudice, which falls in line with this idea that high essentialist beliefs lead to justification for bias towards these social groups (Mandalaywala, et al., 2018).

The final relationship to look at is the one between bilingualism and essentialism, which is the least studied among the paired relationships between these factors. This has not been a focus of bilingualism research, but a study did find that bilingual children were more likely to believe that traits are learned through experience and the environment, rather than inherited, supporting the idea that bilingualism is associated with reduced essentialist biases (Byers-Heinlein & Garcia, 2015). While there is some overlap between this perception of traits with the idea behind the social deterministic component of essentialist beliefs, a distinction can be found with the idea of long-term environmental influences and learning processes compared to just the social context in which you were born. The results of this study support the notion of the potential mediating role of essentialism for the relationship between bilingualism and intergroup biases, given the difference between the perceptions of bilingual and monolingual children. Therefore, this current study seeks to demonstrate exactly such a relationship.

The first part of the current study will focus on the correlations between bilingualism, essentialism, and intergroup bias, as well as mediation model for these three factors, in which bilingualism acts as a mediating factor for the relationship between essentialist biases and intergroup biases. Bilingualism will be assessed as a multidimensional factor by the LSBQ, while essentialism will be measured in the context of two different components through the BGD and the BSD. Intergroup bias will be assessed implicitly and explicitly, to account for both conscious and unconscious biases and attitudes. There is support for an association of both essentialism and bilingualism with implicit social outgroup bias, assessed by the implicit association test (Greenwald et al., 1998; Singh et al, 2020; Chen & Ratliff, 2018). Implicit bias will specifically be assessed using the Implicit Association Test (IAT; Greenwald et al., 1998) paradigm, prompting participants to make associations between various positive and negative words and "us" or "them" pronouns intended to designate in-group and out-groups, much like Perdue et al. (1990) did in their study. This is applied for the purpose of focusing on general in-group and out-group attitudes, rather than focusing on specific racial dynamics, which are complex and complicated by the racial backgrounds of bilingual individuals compared to monolingual individuals. The IAT has been a valuable tool for understanding the form of bias that comes in an indirect form and not gathered by self-report. Studies have shown IAT scores to predict biased behaviors such as discrimination and health outcomes (Dovidio et al., 2002; Greenwald et al., 2015; Greenwald et al., 2009; Oswald et al., 2013; Oswald et al., 2015).

Outside of an implicit assessment of associations, explicit expressions of biased attitudes are another avenue for understanding bias that is just asking directly rather than trying to assess underlying attitudes that may or may not be in the awareness of an individual. For the explicit measure in this study, the Generalized Ethnocentrism Scale (GENE; Neuliep & McCroskey

1997; Neuliep 2002) will be used to assess explicit attitudes of outgroup bias against other cultural backgrounds. This assessment has been used to find cross-cultural differences of explicit expression of ethnocentrism and mechanisms that predict ethnocentrism, such as intercultural communication (Dong et al., 2008; Neuliep et al., 2001). Using this explicit assessment method allows for generalization across different social, cultural, and ethnic backgrounds of bilinguals in the USA which means that specific dynamics of specific groups, such as racial groups, will not be the focus. Since this scale only refers broadly to people of other cultures and people who are different in its items, there is no specific dynamic between the racial background of the participant the racial background of subject in the scale to consider, which would be the case if a scale was used which focused on and mentioned specific groups or people.

The second study seeks to take an experimental approach to investigate the effect of priming of a person's bilingual background. Specifically, a priming procedure will be applied to a bilingual set of participants from a population in the US, in which one group will be prompted to write about their bilingual experiences while a control group will be prompted to write about something unrelated to their language background, before they complete the assessments involved in the study. This method of priming bilingual identity is supported by previous research that showed that boosting the multiple identities of children boosts flexible thinking (Gaither et al., 2019). It is also supported by previous studies that used priming of multicultural, and biracial backgrounds demonstrated differential results in terms of identity preferences and intergroup bias based on the priming condition (Gaither et al., 2014; Tadmor et al., 2012). This process of experimentally manipulating bilingual background in some way also seeks to take a new approach to understanding the impact of bilingualism, beyond surveying linguistic backgrounds, and being able to experimentally assess bilingual backgrounds.

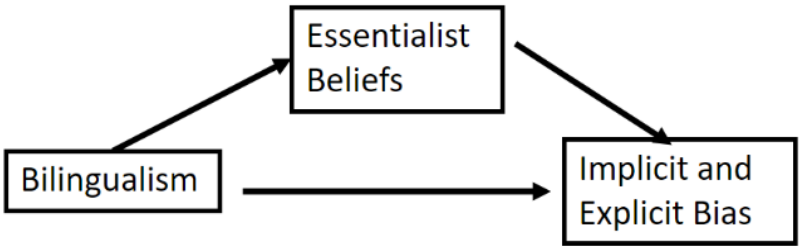


**Figure 1**: Predicted Mediation Model

Across the two studies, it is expected that there will be associations between bilingualism, essentialism, and bias assessments that match previous findings on these relationships. This means that greater degrees of bilingualism will be predicted to associate with less essentialist beliefs and less outgroup bias implicitly and explicitly. It is predicted that a mediation model, as shown in Figure 1, will show that essentialist beliefs mediate the relationship between bilingualism and intergroup bias such that bilingualism affects intergroup bias mainly through essentialist beliefs. It is also predicted that the bilingual group who are primed to have a more salient bilingual identity will demonstrate greater degrees of explicit ethnocentrism, and lower degrees of essentialist beliefs inclinations compared to the control group.

# CHAPTER 3

# METHODS

## Study 1

### *Participants*

The target sample size was set to be N= 450. This was derived from the standardized coefficients and correlation coefficients from previous studies between which involved the Language and Social Background Questionnaire, assessments of essentialist beliefs, and assessments of explicit and implicit bias (Byers-Heinlein & Garcia 2015; Champaux-Larsson & Dylman 2021; Chen & Ratliff 2018; Singh et. al., 2021). Monte Carlo Power Analysis for Indirect Effect was used to estimate what sample size would be needed for the simple mediation model that was to be used for analysis. The estimated sample size that was needed to obtain a statistical power level of 0.83 with an alpha level of 0.05 for explicit bias was N = 500, while the estimated sample size that was needed to obtain a power level of 0.63 was N = 400. Due to feasibility limitations for obtaining a larger sample size, this study sought a sample size that was around N = 450, to obtain an estimated statistical power of at least 0.80 for the explicit bias dependent variable.

There were 452 undergraduate students in introductory psychology courses (18 and older) who were recruited through the Research Participant pool at the University of Georgia and participated by completing the Qualtrics survey link provided. There were no specific criteria expressed for participation in this study, particularly in terms of language background. The intentions for not specifically recruiting bilingual and monolingual participants was to seek a

naturally occurring range of language backgrounds. People who identify themselves either way likely fall on each end of the scale for bilingualism, and people who fall in between that range would not be represented if monolingual and bilingual participants were explicitly recruited. Participants were given .5 points of credit toward their research participation points for their classes. 1 participant was removed for failing the attention check.

### *Measures*

The first part of this study focuses on looking at the association between self-reported assessments of bilingualism, essentialist beliefs, and intergroup bias measures. Bilingualism was assessed by the Language and Social Background Questionnaire (LSBQ) with the bilingualism score produced by the scale used as well as the factor scores. Essentialist beliefs were assessed using the Belief in Social Determinism (BSD) scale, a 12-item measure which includes 12 statements to which participants indicate the degree to which they agree or disagree with the statement on a scale from 1 to 7, with 1 being strongly disagree and 7 being strongly agree. Specifically, the measure contains items such as "An individual's personality often reveals the social origin of the person," "I do not believe that human individuals are strongly affected in their behavior by their social origin," and "The capabilities of people can to a large degree be traced back to their social origin." Instructions indicate that "social origin" can be defined as the social context that a person was born, including features such as socioeconomic context and the entire social environment.

A new version of the Implicit Association Test (IAT; Greenwald et al., 1998) was used to assess implicit bias against outgroups with the test generated using IATgen (Carpenter et al., 2019). IAT assessed associations between pairs of attribute concepts (positive and negative words) and target concepts (in-group and out-group category words) by measuring the speed of

participants in correctly classifying stimuli for each category. IAT stimuli include two sets of target concept words, one of which were labeled as the ingroup of the participant (i.e., us, we, our, ours, ourselves) and the other of which were labeled as the outgroup of the participant (i.e., they, them, theirs, themselves, others) and a series of positive (peace, glorious, marvelous, success, wonderful) and negative words (agony, failure, unpleasant, evil, nasty). During the IAT, participants first used two computer keys to practice identifying target and attribute items across two blocks (20 trials each). Participants then completed two essential blocks where the tasks are combined, involving classifying items from one-target-attribute pairing with one response key (e.g., outgroup + positive) and classifying items from the alternate target-attribute pairing with another response key (e.g., ingroup + negative). Next, another practice round involving reversal of the key assignments for target items (28 trials) occurred. Finally, another set of critical trials were completed which involve the alternative pairings (e.g., outgroup + negative; ingroup + positive). Blocks in which pairing are consistent with bias against the outgroup category words (i.e., outgroup + negative; ingroup + positive) were considered congruent trials, while the other pairings consistent with bias against ingroup category words are considered incongruent. A sample stimulus can be found in Figure 2. Scoring was completed using the IATgen as well, with the computation of a d-score used as the score for the IAT. Positive d-scores indicate an outgroup bias and ingroup favoritism while negative d-scores indicate the opposite bias with a zero-score representing no bias.

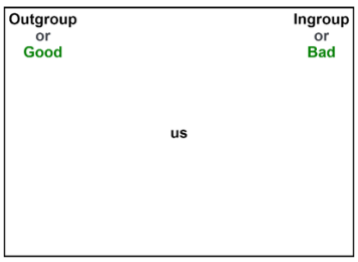


**Figure 2:** IAT Example Image

Explicit bias was assessed using the GENE scale (short form), which assesses self-reported ethnocentric bias toward different cultural backgrounds, while not being specific to any race, ethnicity, or cultural background (Neuliep, 2002). Specifically, the short form measure was used, which includes just seven items, which helps streamline this scale for this study (Neto & Neto, 2022). Participants were asked to respond on a scale from 1 to 7, with 1 indicating strongly disagreeing with the statement and seven indicating strongly agreeing with the statement. Some examples of these items including responding to how much one agrees or disagrees with statements such as "I dislike interacting with people from different cultures," "Most people would be happier if they lived like people in my cultures," and "I do not trust people who are different." Participants were prompted with the instruction that the items are related to different cultures around the world.

This study's methods, hypotheses, and planned analyses were preregistered on Open Science Framework (https://osf.io/f6wex?revisionId=643c7048c5b3be02952ac07a) prior to data being collected.

## Study 2

### *Participants*

The target sample size was 200 bilingual adults (18 and older) recruited through Prolific, with 100 randomly assigned to each priming condition. The bilingual background was determined by Prolific participants who indicated in Prolific's pre-screening questions that they were multilingual. The G*Power program (Faul et al., 2007) was used to conduct a power analysis, with the intent of obtaining a .95 power for detecting a medium effect size of .50 with a standard .05 alpha error probability. Based on this power analysis, a sample of 88 participants per condition would be sufficient to reach this goal, which is met by the target sample size.

### *Measures*

A priming procedure was used to increase the salience of the bilingual identity of the participants for them as they complete the study. For the *salient* condition, participants were prompted to write for eight minutes about their experiences being bilingual and what being bilingual means to them. The prompt they were given was phrased as the following, "In this section, please think about what it means to you to speak multiple languages. We would like to learn more about your bilingual identity. For the next 8 minutes, please think about what it is like to be bilingual. Please write as much as you can about all your experiences as a bilingual and what it means to you to be bilingual." For the *control* condition, participants were prompted to write for 8 minutes about an activity or hobby or some other pastime that they like to do. The prompt they were given was phrased as the following, "In this section, please think about what it means to you to speak multiple languages. We would like to learn more about your bilingual identity. For the next eight minutes, please think about what it is like to be bilingual. Please write as much as you can about all your experiences as a bilingual and what it means to you to be bilingual." For both conditions, participants were prompted to write as much as they can throughout the time allotted. Each of these conditions were randomly assigned using Qualtrics's randomizer function, with the option for evenly presenting the conditions selected. For essentialism beliefs and explicit bias assessments, the same measures will be used as Study 1.

### *Procedure*

Participants were first randomly assigned to a salient or control condition. Then, according to their assignment, they will either be prompted to write about their bilingual background, or about something else for 8 minutes. Following conclusion of those 8 minutes, participants will be asked to evaluate how much they agree or disagree with the statement

"Bilingualism is very important to my identity" on a scale of 1-7, with 1 being disagreeing and 7 being strongly agreeing, as a manipulation check. They then completed the social determinism scale (BSD) and the explicit ethnocentrism measure (GENE) from Study 1.

This study's methods, hypotheses, and planned analyses were preregistered on Open Science Framework (https://osf.io/5h9xc) prior to data being collected.

# CHAPTER 4

# RESULTS: STUDY 1

## Participants

There were 452 participants recruited through the University of Georgia Research Participant pool. One participant was removed for failing the attention check. After using the IATgen scoring script in R (Carpenter et. al., 2019), the d-score outcome results were produced for every participant, in which a positive value indicates associations of targets reflect ingroup favoritism and outgroup bias, while a negative value reflects the opposite bias, while a zero score indicates no bias. 47 results were found to cross the error threshold for the IAT, which indicates that trials over 10,000 milliseconds (about 10 seconds) and participants with more than 10% of their trials faster than 300 milliseconds are scored as missing. Based on this procedure, data for 47 participants were removed and not included in analysis focusing on the IAT. For the essentialism scale (BSD), 24 additional participants were removed for missing data. This left a total of 382 participants for the simple mediation model involving bilingualism, essentialism, and implicit bias. For the simple mediation model with explicit bias, the data was evaluated again to remove participants with missing data for the bilingualism measure (LSBQ), the social essentialism scale (BSD), and the explicit ethnocentrism scale (GENE), which resulted in 405 participants remaining for analysis. Across all the variables of this study, the remaining participants without errors and missing data were 361 participants, which were the participants of focus for correlation analysis.

Among the participants included for correlation analysis, the demographics of the sample indicated that 288 participants identified as female, 66 identified as male, 4 identified as non-binary or third gender, 1 self-identified as a transgender male, and 2 chose not to identify their gender. In terms of race and ethnicity, 265 participants identified themselves as White, 42 indicated they were Asian, 20 indicated they were Black or African American, 11 indicated they were Latino/a/x or Hispanic, and 22 indicated they identified with multiple ethnicities included. There was one other participant who identified as Other, or a race or ethnicity not included.

**Measures**

All analysis was conducted using R. Internal consistency was evaluated for the social essentialism scale (BSD) and the ethnocentrism scale (GENE). The BSD with 12 items was found to have a Cronbach's alpha value of $\alpha = 0.813$, which indicates strong internal consistency. Similarly, for the 7 item GENE scale, Cronbach's alpha value of $\alpha = 0.873$ was found, indicating strong internal consistency. The BSD and the GENE were scored by finding the sum of the scores for each item.

**Correlation Analysis**

Correlation analysis was conducted for the composite factor score for bilingualism (LSBQ), the measure for social essentialism (BSD), the measure for implicit bias (IAT) and the explicit bias measure (GENE). In addition, the sub factor scores for the LSBQ are also included. These results can be found in Table 1. Notably, the composite bilingualism score was found to be positively correlated with all the outcome measures, with a statistically significant small correlation with explicit ethnocentrism. For the subfactors, both non-English sub-factors were found to be positively correlated with the outcome variables, but English proficiency was found

to be negatively correlated with the outcome variables, with explicit ethnocentrism being statistically significant.

**Table 1**

Descriptive Statistics and Correlations for Study 1 Variables

| Variable | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Composite LSBQ | -6.62 | 4.19 | __ | | | | | | |
| 2. LSBQ – Non-English Home Use and Proficiency | -6.59 | 8.08 | 0.92** | __ | | | | | |
| 3. LSBQ – Non-English Social Use | -2.83 | 6.83 | 0.86** | 0.59 ** | __ | | | | |
| 4. LSBQ – English Proficiency | -28.13 | 0.45 | -0.54** | -0.44** | -0.55 ** | __ | | | |
| 5. Social Essentialism (BSD) | 58.00 | 8.42 | 0.12 | 0.14 | 0.07 | -0.01 | __ | | |
| 6. Implicit Bias (IAT) | 0.58 | 0.36 | 0.08 | 0.10 | 0.04 | -0.14 | 0.03 | __ | |
| 7. Explicit Ethnocentrism | 12.46 | 5.92 | 0.16* | 0.15* | 0.13 | -0.16* | 0.19 ** | -0.03 | __ |

*p<.05. **p<.01.

**Mediation Analysis**

***Implicit Bias***

From a simple mediation analysis conducted with ordinary least squares path analysis, there was no significant indirect or direct effect of bilingualism on implicit bias through social essentialism. This can be seen in Figure 3. Specifically, although a greater degree of bilingualism was significantly associated with higher degrees of essentialist beliefs about social groups ($a$ = 0.201, $p$ = 0.047), essentialist beliefs about social groups were not significantly with implicit

outgroup bias (*b* = -0.000, *p* = 0.974). A bootstrap confidence interval for the indirect effect (*ab* = 0.000) based on 5,000 bootstrap samples included zero (-0.001 to 0.001). There was no evidence that bilingualism score was associated with implicit bias scores (*c'* = 0.005, *p* = 0.162)

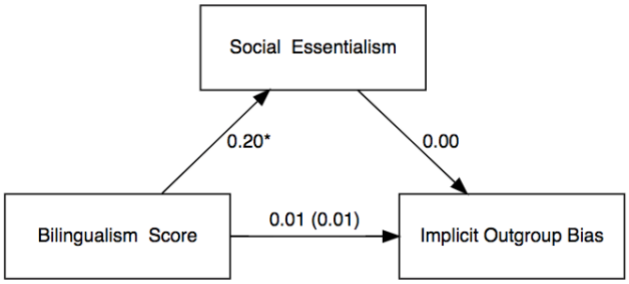


**Figure 3:** Simple Mediation Model: Composite Bilingualism Score and Implicit Bias

*Note.* This figure shows the simple mediation model for the relationship between the composite bilingualism score derived from the LSBQ and implicit outgroup bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect.

*This denotes a statistically significant effect.

For the bilingualism sub-factor of "Non-English Home Use and Proficiency," a bootstrap confidence interval for the indirect effect (*ab* = 0.000) based on 5,000 bootstrap samples included zero (-0.0007 to 0.0006). There was not any evidence that this sub-factor of bilingualism was associated with implicit ethnocentric bias scores (*c'* = 0.002, *p* = 0.091). In a similar manner, for the bilingualism sub-factor of "Non-English Social Use", a bootstrap confidence interval for the indirect effect (*ab* = 0.000) based on 5,000 bootstrap samples included zero (-0.0003 to 0.0004). There was no evidence supporting an association of this sub-factor of bilingualism with implicit ethnocentric bias scores as well (*c'* = 0.002, *p* = 0.467).

However, the bilingualism sub-factor of "English Proficiency" did show some evidence of a relation with implicit bias. Although English proficiency based on the LSBQ was not

significantly associated with belief in social determinism ($a$ = 0.135, $p$ = 0.888) and social essentialism scores were not significantly associated with implicit bias ($b$ = 0.000, $p$ = 0.898), there was evidence that greater English proficiency was associated with reduced implicit bias ($c'$ = -0.103, $p$ = 0.014). This relationship can be seen in Figure 4. A bootstrap confidence interval for the indirect effect ($ab$ = 0.000) based on 5,000 bootstrap samples included zero (-0.004 to 0.003).

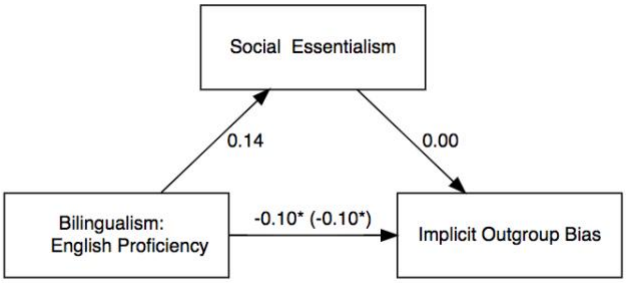


**Figure 4:** Simple Mediation Model: English Proficiency Sub-Factor Bilingualism Score and Implicit Bias

*Note.* This figure shows the simple mediation model for the relationship between the English proficiency factor of the bilingualism score derived from the LSBQ and implicit outgroup bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect.

*This denotes a statistically significant effect.

### *Explicit Bias*

For the simple mediation models for explicit ethnocentric bias, there were more significant results found. First, with the composite bilingualism score (LSBQ), a simple mediation analysis was conducted using ordinary least squares path analysis, in which significant

direct and indirect effects were found of bilingualism on explicit bias through social essentialism. These relationships can be seen in Figure 5. More specifically, greater bilingualism was associated with more essentialist beliefs about social groups ($a$ = 0.226, $p$ = 0.022) and more essentialist beliefs about social groups were associated with greater explicit ethnocentric bias ($b$ = 0.127, $p$ = 0.0003). A bootstrap confidence interval for the indirect effect ($ab$ = 0.029) based on 5,000 bootstrap samples did not include zero (0.006 to 0.059), indicating that essentialist beliefs mediated the relation between bilingualism and ethnocentric biases. There was also evidence that bilingualism score was associated with the explicit bias scores ($c'$ = 0.182, $p$ = 0.011).

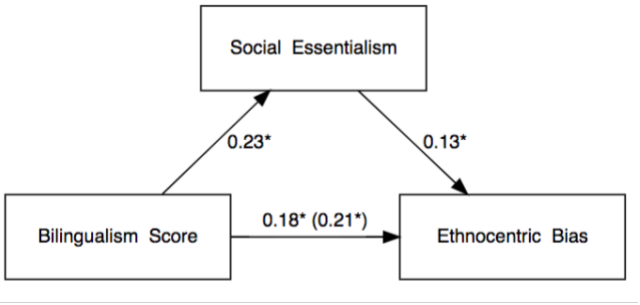


**Figure 5:** Simple Mediation Model: Composite Bilingualism Score and Ethnocentric Bias

*Note.* This figure shows the simple mediation model for the relationship between the composite bilingualism score derived from the LSBQ and ethnocentric bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect.

*This denotes a statistically significant effect.

For the sub-factors of the LSBQ bilingualism measure, the simple mediation analysis conducted for the "Non-English Home Use and Proficiency" sub-factor found that higher scores on this sub-factor were significantly associated with higher degree of belief in social determinism ($a$ = 0.145, $p$ = 0.005) while higher scores for social determinism were also

associated significantly with higher explicit bias scores on ethnocentrism ($b$ = 0.127, $p$ = 0.0004). A bootstrap confidence interval for the indirect effect ($ab$ = 0.018) based on 5,000 bootstrap samples did not include zero (0.005 to 0.035), indicating that essentialist beliefs mediated the relationship between this bilingualism factor and ethnocentric biases. There was also evidence that this bilingual sub-factor score was associated with explicit bias scores ($c'$ = 0.086, $p$ = 0.020).

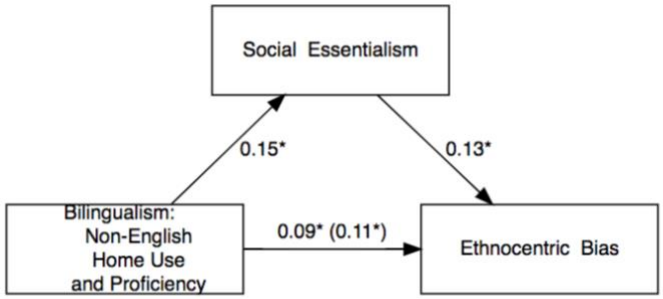


**Figure 6:** Simple Mediation Model: Non-English Home Use and Proficiency Bilingualism Sub-Factor Score and Ethnocentric Bias

*Note.* This figure shows the simple mediation model for the relationship between the non-English home use and proficiency factor of bilingualism derived from the LSBQ and ethnocentric bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect.

*This denotes a statistically significant effect.

For the sub-factor of "Non-English Social Use," a simple mediation analysis was conducted which found that this sub-factor of bilingualism was not associated significantly with degree of belief in social determinism ($a$ = 0.145, $p$ = 0.320), while degree of belief in social determinism significantly associated with explicit bias scores ($b$ = 0.135, $p$ = 0.0002). A

bootstrap confidence interval for the indirect effect (*ab* = 0.008) based on 5,000 bootstrap samples included zero (-0.006 to 0.025), indicating that essentialist beliefs did not mediate the relationship between non-English social use and ethnocentric bias. There was also evidence that this sub-factor score for bilingualism was associated with explicit bias scores (*c'* = 0.098, *p* = 0.024). The model for this relationship can be seen in Figure 7.

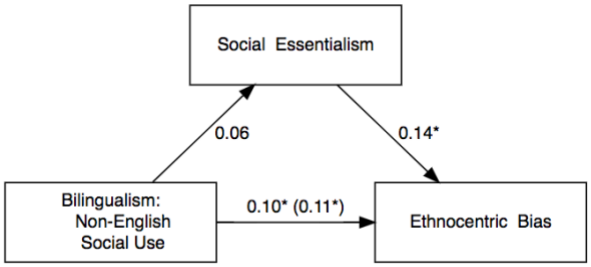


**Figure 7:** Simple Mediation Model: Non-English Social Use Bilingualism Sub-Factor Score and Ethnocentric Bias

*Note.* This figure shows the simple mediation model for the relationship between the non-English social use of bilingualism derived from the LSBQ and ethnocentric bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect. *This denotes a statistically significant effect.

For the final sub-factor of "English Proficiency" in the bilingualism measure (LSBQ), the simple mediation analysis conducted demonstrated that while this sub-factor was not found to be significantly associated with degree of essentialist beliefs (*a* = -0.091, *p* = 0.922), the degree of essentialist beliefs was significantly associated with explicit ethnocentric bias (*b* = 0.128, *p* = 0.0001). A bootstrap confidence interval for the indirect effect of this model (*ab* = -0.013) based on 5,000 bootstrap samples included zero (-0.250 to 0.188), indicating that essentialist beliefs did not mediate the relationship between English proficiency and ethnocentric bias. There was also

evidence that this sub-factor score for bilingualism was significantly associated with explicit bias scores (*c'* = -2.022, *p* = 0.002). The model for this relationship can be seen in Figure 8.

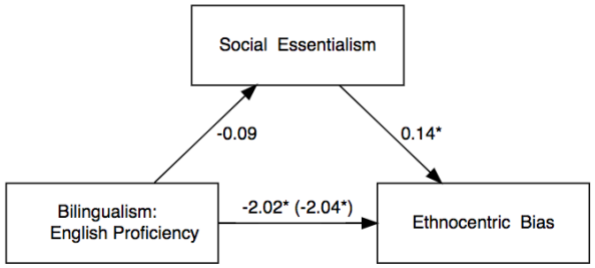


**Figure 8:** Simple Mediation Model: English Proficiency Bilingualism Sub-Factor Score and Ethnocentric bias

*Note.* This figure shows the simple mediation model for the relationship between the English proficiency factor of bilingualism derived from the LSBQ and ethnocentric bias, as mediated by essentialist beliefs. Each path is labeled with the standardize regression coefficient for that path. For the path between bilingualism and bias, the effect in the parenthesis is the total effect.

*This denotes a statistically significant effect.

# CHAPTER 5

# STUDY 2: RESULTS

## Participants

There were 249 participants recruited through Prolific with the pre-screening selection of participants who had stated through Prolific that they were bilingual or multilingual. After filtering out participants who indicated they were not bilingual in an additional question, 213 participants remained. 100 of those participants were randomly assigned to the control condition and 113 participants were randomly assigned to the bilingual priming condition. Of the 213 participants, 97 identified as female, 108 identified as male, 7 identified as non-binary or third gender, and 1 self-identified as agender. In terms of race and ethnicity, 82 participants indicated they were White, 45 indicated they were Asian, 40 indicated they were Latino/a/x or Hispanic, 15 indicated they were Black or African American, and 30 indicated they identified with multiple ethnicities included.

## Main Analysis

All analysis was conducted in R. Internal consistency was evaluated for both the social essentialism scale (BSD) as well as the ethnocentrism explicit bias scale (GENE). The 12 items of the BSD were found to have a Cronbach's alpha of $\alpha = 0.882$, indicating strong internal consistency for this measure. In a similar manner, the 7 items of the GENE ethnocentrism measure were found to have Cronbach's alpha value of $\alpha = 0.857$, also indicating strong internal consistency for ethnocentrism.

When it came to the manipulation check of how much participants identified with their bilingual background, the bilingual prime group was not found to have statistically significant difference in mean ($M$ = 5.48, $SD$ = 1.51) than the control group ($M$ = 5.23, $SD$ = 1.58), $t$(205.24) = 1.17, $p$ = 0.245, $d$ = 0.16. Similarly, the bilingual prime group ($M$ = 54.80, $SD$ = 10.84) and the control group ($M$ = 53.81, $SD$ = 11.23), were not found to be statistically significantly different for the essentialist beliefs score (BSD), $t$(209.4) = -0.66, $p$ = 0.512, $d$ = 0.09. And finally, it was found that the difference between bilingual prime group ($M$ = 15.80, $SD$ = 6.60) and the control group ($M$ = 14.95, $SD$ = 7.15) on their ethnocentric bias, was not statistically significantly different, $t$(202.71) = 0.89, $p$ = 0.372, $d$ = 0.12.

**Exploratory Analysis**

Exploratory analysis was conducted to understand the relationship between the manipulation check, or the bilingual identity score, the essentialist beliefs scale and ethnocentrism measure. A correlation analysis was conducted for these variables. It was found that greater importance of bilingual identity was significantly correlated with more essentialist beliefs $r$(213) = .32, $p$ < .001. However, importance of bilingual identity was not found to be significantly correlated with ethnocentric bias $r$(213) = .001, $p$ = .983. Essentialist beliefs and ethnocentric bias are found to be significantly correlated, $r$(213) = .19, $p$ = .005.

# CHAPTER 6

# DISCUSSION

Based on these results, the hypotheses for Study 1 were partially supported, while the hypotheses for Study 2 were not supported. These results reflect various components of the understanding of the relationship between bilingualism, essentialist beliefs, and intergroup bias which will be discussed in this discussion in the context of each study, in addition to implications for these results and what future directions can be inspired by these results.

## Discussion: Study 1

The correlations between the variables offer some surprising results in that some of the associations are in different directions than expected. Specifically, based on previous literature, it was expected that bilingualism would be associated with less essentialist beliefs and less intergroup bias. However, greater bilingualism was associated significantly with increased explicit ethnocentric bias (GENE). In a similar manner, the sub-factor of the LSBQ, non-English home use and proficiency, in which higher values reflect greater non-English language proficiency and usage of the non-English language in contexts related to home and family, was similarly positively correlated with essentialist beliefs and bias, with the correlation with explicit bias being significant. The non-English social use sub-factor was also found to be positively correlated with essentialist beliefs and both implicit and explicit bias, although none of the correlations were found to be statistically significant. It is important to note that in all of these cases, the correlation coefficient is in the range that would be considered a small effect. This would indicate that even among the significant correlations, the associations are not strong ones.

However, it is notable that the correlation direction for the sub-factor of English proficiency is in the negative direction for essentialism, implicit bias, and explicit bias. This means that higher proficiency in English is associated with less essentialist beliefs, less implicit outgroup bias, and less explicit outgroup bias. The direction of this relationship may reflect that proficiency in English, as part of the language of the dominating culture in the US context, is a notable determining factor for attitudes towards outgroups.

This unexpected direction for some of the factors could be explained by the specific nature of the demographics, although it is difficult to determine given the much smaller sample of participants that could be categorized as bilingual based on the score on the LSBQ measure for bilingualism. Taking a look at the demographics for the 30 bilingual participants, it would appear that unlike the sample as a whole, there are more non-White participants than White participants. Specifically, there are 9 white participants while the remaining 21 participants (70%) are non-White or indicated identification with multiple ethnicities. This is in contrast to the participants falling under the threshold for monolingualism, which is a total of 287 participants. Among these participants, 247 of them identified as White (86%). The reason that this demographic difference may be notable is that White populations may perceive group dynamics differently than non-White populations, especially in a US context in which White people are still the dominating racial group and would have different relationships with perceptions of intergroup dynamics. In particular, ethnic minority groups in the US have been found to share similar attitudes toward White people, who would be the shared outgroup in common between these ethnic minority groups, which include negative attitudes towards White people (Conley et al., 2015). Thus, a bilingual group of participants with more ethnic minorities may share similar outgroup attitudes towards the dominant group, who are the dominant

participants of the monolingual participants. Thus, instead, of decreasing their bias due to bilingual exposure, they would still have strong outgroup bias because they are thinking about a group that dominates society, or even thinking of instances of racism and prejudice they experienced from White people. This would be particularly notable if perceptions of outgroups when completing the intergroup bias measures are based on thinking about the dominant group, as compared to thinking about other non-dominant groups. In contrast, the monolingual participants featuring a large portion of White participants would not be perceiving outgroups in the context of the dominant group, but minority groups instead. On the other hand, people may also be thinking outside of the context of ethnic or racial groups and thinking more, such as thinking about dominant culture people, or political affiliations, religious affiliations, or some other distinction, which would likely mean they are thinking of an antagonistic group to them. There are also other possibilities that participants are not thinking about outgroups in terms of racial and ethnic groups, but some other factor like sexual orientation or gender.

It is also notable that the significant correlations in terms of bilingualism scores and outcome variables, are all with the explicit ethnocentric bias measure. There is a lack of significance found with the implicit demonstration of outgroup bias in comparison to explicit expressions of this kind of bias. This seems to indicate that explicit expressions of outgroup bias through self-report may be able to demonstrate more of the dynamic between bilingualism and intergroup bias than any implicit expression, at least in the form studied here. People may express stronger differences on explicit expressions of outgroup biases than can be reflected through demonstrations of unconscious associations as reflected by the IAT. Another possibility is that non-specific outgroup biases as were assessed here do not reflect outgroup attitudes in the same way that specific references to outgroup do. Perhaps the wide variability of what groups

that people think about when asked to think about outgroups broadly creates an ambiguity that differentiates from the clear results obtained when people are asked to think about specific outgroups.

Another aspect of the data to consider is that both the GENE and BSD distributions are non-normal according to the Shapiro-Wilk test. In the case of the GENE scale, the data is heavily skewed towards the lower end of the range, indicating that there was skew towards the lower end of the scale indicating less ethnocentric beliefs. Thus, this skew must be taken into consideration when discussing results with the understanding that the results are more concentrated in the lower range ($M$ = 12.46, $SD$ = 5.93). For the BSD scale, the data is also non-normally distributed, although it is much less strongly skewed ($M$ = 58.00, $SD$ = 8.42).

In terms of the simple mediation analysis results, when looking at the composite bilingualism score on the LSBQ measure and its relationship with implicit outgroup bias, it was found that there was no support for any significant direct or indirect effect. This was a similar case for both non-English sub-factors of the LSBQ bilingualism measure. Thus, bilingualism does not appear to be associated with implicit outgroup bias.

However, as was the case with the correlations, the English proficiency sub-factor showed a different pattern than the composite score. Nevertheless, there is no support for an indirect effect in this simple mediation model, and thus there is no support for the mediation of English proficiency score and implicit outgroup bias by essentialist beliefs. These results largely indicate that there is not a strong relationship found for bilingualism with implicit bias as mediated by essentialist beliefs. However, the direct effect was found to be significant, indicating that a higher level of English proficiency is directly associated with less implicit outgroup bias in the context of the IAT results. This relationship dynamic may be associated with how English

proficiency levels reflect differences in assimilation level with the broader English-speaking community, which would mean more associations with outgroup members, which may contribute to lessening biased associations of outgroup members to negative words. It would be notable to further assess the importance of English proficiency while gaining more insight into the relevant cultural and social context of intergroup dynamics, within English-speaking regions.

There were more results that were statistically significant found with regards to the relationship between bilingualism and ethnocentric bias as mediated by essentialist beliefs. For the composite bilingualism score, a significant direct effect and indirect effect were both found, a result that would support partial mediation by the mediator of essentialist beliefs. This means that higher degrees of bilingualism as assessed by the LSBQ are associated with more explicit ethnocentric bias which is mediated by degree of essentialist beliefs. This result supports the hypothesis for the simple mediation model as reflected in Figure 1. The difference between this explicit measure the implicit measure may be explained by the distinction between how bilingualism is associated with implicit bias and explicit expressions of bias in which there is a stronger association with explicit bias, which is also better explained by essentialist beliefs as a mediator.

When looking at the bilingualism sub-factors in the context of the explicit ethnocentric bias assessment, non-English home use and proficiency was found to be associated with ethnocentric bias. These findings suggest that greater non-English home use and proficiency was associated with greater essentialist beliefs, which in turn lead to increased ethnocentric biases. The implications of this dynamic are that perhaps how much people are connected to their home life and non-English language used in home settings and with family is significantly related to how they perceive outside groups. Perhaps the vagueness of the ethnocentrism scales in terms of

which groups they associate outgroups with means that they may be thinking of groups that would be hateful or discriminatory toward them, which would naturally lend to ethnocentric bias. Another possibility is of course that there may be characteristics about the demographics of the bilingual group that would be associated with ethnocentric beliefs, prejudices, and outgroup biases. For example, among Asian Americans, internalized model minority myth has been found to be associated with anti-Black attitudes (Yi & Todd, 2021). Another example is how immigration status plays a role in predicting increased negative outgroup bias and increased ingroup favoritism (Pfeifer et al., 2007). Specifically, being an immigrant (and not just a descendant of immigrants) predicts greater outgroup bias and ingroup favoritism compared to non-immigrants. However, given that there was no data collected with regards to immigration related background, this is speculation that would require another study that collected this background.

For the sub-factor of non-English social use, it was found that there is a significant direct effect but not a significant indirect effect on explicit ethnocentric bias. This would indicate that higher non-English language use in society and community contexts is associated with more explicit ethnocentric bias. The implication of this result is that use of the non-English language in contexts that involving socializing outside of the home and with family may lead to more ethnocentrism. Like with the first sub-factor, dynamics of who is considered and contextualized as an outgroup may play a role here, especially given that the social and community context would reinforce ingroup dynamics. Perhaps speaking another language in community contexts reinforces identification with an “othered” culture compared to the dominate English-speaking culture which leads to perceptions of bias against those dominating forces. Of course, the causal direction could be flipped in which “othering” by the dominant society pushes people who speak

another language to be more active in community contexts of their non-English language and leads to negative associations with the dominant society. More specific context for how outgroups are conceived would be helpful in future studies.

Finally, for the English proficiency sub-factor, it was found that there is support for direct effect but not the indirect effect. Of course, once again, the association for English proficiency in a different direction, in which higher English proficiency is associated with less explicit outgroup bias. This is perhaps due to higher degree of English proficiency being related to higher degree of assimilation into the broader English-speaking culture and society, similar to the case as the implicit outgroup bias assessment. More information about the background of the participants would be needed to draw any conclusion based on this speculation.

Essentialist beliefs mediate some of these effects for ethnocentric bias, specifically, for the relationship between composite bilingualism score and ethnocentric bias, as well as for the factor of non-English home use and proficiency, but not for the other factors. The reason for this difference may reflect the role how essentialist beliefs may be more connected to certain aspects of bilingualism than others, such as the components of the non-English home use and proficiency factor. Perhaps proficiency of non-English language and use of it in private and home contexts are most related to beliefs about social origins given that the non-English language is heavily associated with ethnocentrism, assuming that the language is tied to ethnic identity. Additionally, home use would be associated with ideas of social origins given that the family context is a defining factor in social origins. This speculation would need more information about social and cultural background to better understand. Additionally, the mediation by essentialist beliefs in the model involving the composite score would indicate that there is an overall mediation for

bilingualism as a whole, at least as reflected by this score, but that each factor plays a different role in this dynamic.

**Discussion: Study 2**

Given that there was no significant difference for the manipulation check of importance of bilingual identity, this would not support the effectiveness of such a salience prime for creating a significant difference for how people assess the importance of their bilingual identity. Additionally, since essentialist beliefs and ethnocentric beliefs, were also found to not be statistically different across the different priming conditions, it would support the notion that priming bilingual identity in this manner does not create a significant difference on degree of belief in social determinism (BSD) and degree of explicit ethnocentric bias (GENE). Specifically, priming the salience of a person's bilingualism background and what it means to them through writing about it did not lead to the support for the hypotheses about this priming procedure. The exploratory analysis conducted helps to understand the dynamics of the data collected in this study from a different perspective. Given the significant correlation between greater importance for bilingual identity with greater essentialist beliefs, this would indicate that there is some sort of association with this concept of bilingual identity with essentialist beliefs. This dynamic was not demonstrated through the priming procedure but can be seen in terms of the correlation. Further understanding of this dynamic could best be understood by an expanded list of question associated with bilingual identity.

Given that the trend direction of the manipulation check question, which did indicate a higher mean for the bilingual priming condition as compared to the control condition, it is possible that this study was simply underpowered to detect the observed effects. Given that the

effect sizes found were all small effect sizes, the results support this notion. Future studies would need to be conducted with such large sample size to further explore this possibility.

The reason that there was no significant difference found for essentialist beliefs and explicit ethnocentrism could reflect that priming bilingual identity among bilinguals through the writing exercise used in this study does not lead to differences on these measures. Being primed to think about your bilingual identity may differentially affect a bilingual individual based on their relationship with their bilingual identity, in much the same way that the Bilingual Identity Integration assessment reflects the nature of the integration of a person's cultural identities, given that level of identity integration can play a role in how a person associates their intergroup dynamics (Benet-Martínez & Haritatos, 2005). This would mean that there are other factors that would better reflect how differences on the importance of bilingual identity may associate with essentialist beliefs and biases. Perhaps individuals who have a more integrated relationship with their two languages and associated cultural identity would respond differently than people who have a distinct distance that separates their associations with these two languages.

Given the connection between bilinguals and biculturals, an approach that unifies bilingual biculturals individuals under one distinct identity could help in understanding the relevance of identity integration in these contexts (Grosjean 2015). Such an approach would be able to bridge the contexts of cultural and bilingual identity together in populations that have these backgrounds to better understand these intertwining factors. One way to approach this is to create a composite measure that assesses both components related to biculturalism and bilingualism to form one score or a set of factors following a factor analysis. Another more straightforward way would be to simply assess both components extensively and be sure to analyze the results in the context of all of the factors. Understanding the best way to approach

assessing the bilingual biculturals individuals would require continued studies of these populations and both extensive studying of both components of their background.

Another aspect of Study 2 that is notable is that over half of the participants were non-White or identified with more than one ethnicity, some of whom identified with being part White and others who did not. This is notable given the importance of cultural context to essentialist beliefs, given that previous studies have found Chinese adults demonstrated a greater tendency than American adults to essentialize a variety of social groups (racial, nationality, social class, etc.) as homogenous, as related to specificities of cultural differences (Xu et al., 2023). This cultural context reflects the need to understand some of the differences that may lie in essentialist beliefs depending on cultural context.

Additionally, there are differences among non-White populations in the U.S. in terms of their own prejudices against other non-White populations, in which the immigration generation you are from, which typically means foreign-born first generation or US-born second generation and beyond, plays a role (Yellow Horse, et al., 2021; Haywood 2017; Pfeifer et al., 2007). To better understand whether these dynamics among non-White populations and immigrants play a role in the context of bilingualism, essentialist beliefs, and ethnocentric bias, it would require more information about the participants' backgrounds that was unfortunately not collected in this study.

**General Discussion**

The mixed results for Study 1 and the results that did not support the hypothesis in Study 2 show that the study of bilingualism and its relationship with social factors will be a continuous path of navigating the complexity of bilingualism. Based on the unexpected direction of the relationships found in Study 1 and the need for additional context, it would be valuable to

conduct further studies that gather more background information on factors such as whether participants are a first- or second-generation immigrant and other socio-cultural contexts. This is especially the case given the patterns of prejudicial attitudes towards other minorities demonstrated by some Asian immigrants, for example, and the role that immigration status plays in bias assessments (Yellow Horse, et al., 2021; Haywood 2017; Pfeifer et al., 2007). Additionally, if the same ethnocentrism measure would be used in future studies, a qualitative assessment of how participants perceived outgroups when thinking about those statements may be valuable to understanding the context with which participants are responding, helping to answer some of the speculative questions presented here. For example, a follow-up question after completion of the GENE measure would be to ask, "When you were responding to the previous statements, what group(s) were you thinking of and could you describe them in a few words here?" This qualitative data would encompass information about thought processes beyond the outcomes filled out by the survey.

One context to consider for the implicit bias results, is recent data that demonstrates a trend toward neutralization in the long term for US participants in Project Implicit, the project for the IAT. Looking at data from 2007 to 2016, Charlesworth and Banaji (2019) found that implicit race, sexuality, and skin-tone attitudes decrease in bias which trended toward neutrality over time along with parallel change toward neutrality for explicit attitudes. In the case of this study, I was able to find significant results for explicit attitudes, but not for implicit ones. When expanding on this data and looking at the same set of data but with the added date range from 2007 to 2020, Charlesworth and Banaji (2022) found that bias on attitudes continued to decrease in the trend, just as they previously had forecasted (Charlesworth & Banaji 2019). Although there was short-term influence by sociopolitical events during this added period from 2016 to

2020, it was shown to be just be temporarily disruptive towards the long-term trends towards neutrality, as the attitudes were shown to eventually return to long-term path to neutrality (Charlesworth & Banaji 2019). This long-term trend toward neutrality may help contextualize the values found in this study. This is especially relevant given this sample was from an undergraduate sample, largely consisting of young adults from around 18-22, which reflects a population that is particularly inclined to demonstrate decreased bias compared to an older population. This is supported by the finding that there were faster decreases in bias for younger respondents than older respondents for racial attitudes and sexuality attitudes (Charlesworth & Banaji 2022). Younger participants tend to demonstrate these kinds of less biased attitudes and the bias of this sample focused on young students could poorly reflect wider differences in a sample that include a broader age range of participants.

Another factor to consider in future studies would be assessing level and type of cultural integration, such as with the Bicultural Identity Integration (BII) scale (Benet-Martínez & Haritatos, 2005), which would help gain insight into the cultural context of the participants as would be relevant to their relationship with the dominant culture and its values. This is especially relevant given the strong connection between language background and cultural background for bilingual people. This measure (BII) assesses the degree to which an individual with a bicultural background perceives their cultural identities as compatible or oppositional, with focus on how both distance and conflict between the cultural identities play distinct roles as components of a person's cultural identity (Benet-Martínez & Haritatos, 2005). Low BII bicultural people are associated with having difficulty uniting both of their cultural identities into a singular, cohesive identity and have a tendency to see their cultures as highly dissimilar. Alternately, high BII bicultural people are associated with seeing their cultural identities as complements to each other

and see themselves as a part of a “third culture” which blends elements of both backgrounds cohesively.

Studies have shown that more blended identity integration predicts greater tolerance for outgroups (Huff et al., 2017) and people with more integrated bicultural identities are more likely to approach and less likely to avoid majority group members, in this case White Americans (Huff et al., 2020). This indicates that identity integration for bicultural and bilingual individuals may play a role in understanding how people approach outgroup members. More specifically, greater integration of cultural identity may be associated with less ethnocentric bias while less integration may explain the higher level of ethnocentric bias found in this case. This is likely because integrated, blended identities mean that a person is more at peace with their different cultural backgrounds and is more comfortable with bridging the gap of their different identities, as compared to someone at odds with both their identities with negative feelings towards both. How bilingual identity integration interacts with bilingual background would need to be studied to understand the difference between bilinguals with high integration and bilinguals with low integration. Future studies which collected data on these components of the backgrounds of participants would help to elucidate this dynamic.

There were several limitations in this study. For Study 1, due to practical limitations, the sample was derived from an undergraduate student population which is limited in age range and consists of a population receiving a college education who are attending a psychology course. This specificity of an undergraduate population may limit the context of bilingual background for this study, such that there may be a specific cultural context that is unique to a particular undergraduate population based on the specific students that attend a specific school. Additionally, Study 1 had a smaller group of bilinguals than was intended, which limited the

analysis that could be conducted with regards to using the threshold scores to compare people who can be grouped into monolinguals and bilinguals based on the composite score for bilingualism obtained through the scale. This limitation was due to making a choice to focus on the spectrum of bilingualism and not recruit groups who are distinctly bilingual and monolingual. In order to get a greater number of participants on the bilingual part of the spectrum, future studies should collect participants based on recruitment by existing population ratios of language background in addition to separately targeting bilingual participants to get a larger sample of bilinguals.

For Study 2, due to other practical limitations, the bilingual data from the LSBQ was not able to be collected, which would have been able to help in understanding some of the contexts for language backgrounds of the participants and how that relates to those in Study 1. Additionally, the sample size was limited by practical considerations that prevented use of a larger sample size that could detect a smaller effect. Additionally, practical restrictions also led to the lack of evaluation of participants on implicit outgroup bias. Future studies should incorporate implicit outgroup bias evaluations in association with bilingual identity salience priming methods.

### *Implications*

The implications for the results found in this study reflect complex relationship of bilingualism with ethnocentrism. Given that this study found a relationship that supports increased bilingualism being associated with increased ethnocentric bias, this is a potentially highly significant finding in a different direction that what would be expected based on previous studies. This would imply that bilingualism does not have the kind of advantage which is beneficial for decreasing prejudicial attitudes. However, the extent of these implications is

tempered by the possible alternative explanations and hypotheses that would require further studies to elucidate. Given the mixed results found in Study 1, this would also imply further studies would need to incorporate further complexities to better model the relationship between bilingualism and intergroup bias, which would account for various aspects of the background of the bilinguals and their socio-cultural context. This means that the broader implication is that there is even more complexity that needs to be considered to understand the relationship that bilingualism has with psychological phenomena.

For Study 2, the broad implication is that priming the salience of a bilingual individual's bilingual identity does not demonstrate significant differences in the context of the outcome measures assessed here. Most notably, there was not a significant difference found between the conditions with regards to their assessment of their identification with bilingualism, which was the purpose of the priming task. Thus, bilingual identity salience is not an effective method for manipulating the importance of bilingual background. Any further studies that approach studying bilingualism through priming would need to use different methodologies to do so.

***Future directions***

Based on the results found in Study 1, one future direction to explore is to focus on sub-factors of language background such as English proficiency. Specifically, it would be valuable to look more carefully at this factor with a larger sample that is able to have a larger number of participants who would be classified by the bilingualism measure (LSBQ) as bilingual. English proficiency and its relationship with cultural identity in particular would help to illuminate what context higher levels of English proficiency reflects in bilinguals as compared to monolinguals. This would help with understanding how components of bilingual background may interact differentially in how it relates to other factors. The other sub-factors as determined by the LSBQ

should also be of focus for how the non-English factors relate to other factors like intergroup bias. And in order to understand the nature of these sub-factors better, collecting qualitative data in the form of an interview may help to better contextualize these factors in terms of what participants are self-reporting on proficiency levels and usage features.

In a similar manner, future studies on these relationships should collect a much larger volume of data on the social and cultural backgrounds of participants to gain better insight into the context under which participants are deriving their perspectives from. This would include factors like immigrant background. Even collecting data on political inclinations may help to better contextualize the perspectives of participants in terms of whether additional social and cultural background factors may play a role in assessments of social psychology measures like outgroup bias measures. Collecting data on cultural backgrounds in terms of what the participants relationship is to their cultural and social identity or identities would provide insight into how those contexts may or may not play a role in participants relationship with outgroups and ingroups. With regards to intergroup dynamics, asking participants to describe the outgroups and ingroups they were thinking of as they responded to these items may help researchers to gain understanding for whether there are notable differences in how participants with different backgrounds may contextualize intergroup dynamics differently when asked the same questions. Either asking for participants to discuss the contexts for thinking about intergroup dynamics in writing or asking participants in an interview format would gather the necessary information.

Another direction for future studies would be to focus on specific intergroup dynamics, such as between specific racial groups. This would especially be helpful in understanding the results in this study given that the relations observed were in the opposite direction of what was expected. This could come in the form of focusing on anti-Black biases in the United States, for

example, or skin tone biases against darker skin tones so as to not focus on a specific racial group.

Based on Study 2, one future direction for study is to be able to collect a larger sample size that also is able to evaluate their bilingual background using the LSBQ measure. This would be especially helpful in evaluating whether there is a difference between those categorized as bilingual and those would fall in the range that is between the thresholds of monolingualism and bilingualism, such as receptive bilinguals who can understand a second language but not speak it. Such differentiation would perhaps indicate whether priming bilingual identity plays a differential role depending on the level of bilingualism.

Another facet to consider with regards to this priming procedure is whether there are alternative ways to prime the salience of a person's bilingualism including conducting the study in another language or asking a more focused question that frames bilingualism positively or negatively. Priming the salience of bilingualism by conducting the study in another language would be potentially difficult in terms of feasibility given that the study intends to focus on more than one language, but a study focused on bilinguals of English and one other specific language would work in this context. This type of study would be more specific to priming a differential language mindset, and not necessarily bilingualism broadly speaking, but would still reflect how switching to the language that is not dominant in the US would remind a participant of their bilingualism. Alternately, priming bilingual participants with intentional prompting toward positive framing of the impact of bilingualism could help to add emphasis on thinking about the positive aspects of being bilingual. Including an assessment focused on the emotional valence participants associate with being bilingual and how that relates to outcome measures like

outgroup bias may help to evaluate whether such emotional components play a role in the role of bilingualism.

In conclusion, the studies conducted demonstrated that bilingualism is a complex phenomenon which necessitates complex evaluation to fully elucidate the abundance of factors that are associated with it. How it relates to biases in intergroup contexts must be considered in the context of the variety of socio-cultural factors that also play a role in how people perceive themselves and others in intergroup contexts. To better understand the role that bilingualism plays in how people perceive ingroup and outgroup members and the level of bias that exists, further studies must be conducted to collect sufficiently detailed background data about bilingual individuals.

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