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## **Multilingualism and Stereotype Endorsement: The Roles of Cognitive Flexibility and Deprovincialization**

Hayley Schoede

*Master in Psychology of Intercultural Relations*

Supervisors:

Doctor Margarida Vaz Garrido, Associate Professor, Iscte-University Institute of Lisbon

Doctor Rita Guerra, Researcher, Iscte-University Institute of Lisbon

October, 2020





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## Abstract

There is indication that multilingualism is a key correlate to outgroup acceptance. Furthermore, that this relationship is facilitated through deprovincialization, or open-mindedness, and cognitive flexibility, or the ability to mentally switch and fluctuate between tasks. However, literature surrounding this relationship is minimal and lacks comprehensive measures of these phenomena. The present study of 173 white Americans (34 multilingual) examined how deprovincialization and both implicit and explicit cognitive flexibility mediate the relationship between multilingualism and attitudes towards the outgroup, stereotype endorsement and stereotype activation and application. Results indicated that higher levels of self-appraised multilingual capacities in terms of speaking, reading, writing and comprehension were positively associated with both implicit cognitive flexibility and deprovincialization and in turn, deprovincialization associated with improved attitudes towards the outgroup. Furthermore, the importance of certain vectors to language attainment such as friends or school positively correlated with implicit cognitive flexibility, deprovincialization and attitudes towards the outgroup. Practical implications of multilingualism within the American society are discussed.

*Keywords:* Multilingualism, cognitive flexibility, deprovincialization, outgroup stereotyping

APA Classification Codes:

2340 Cognitive Processes

2720 Linguistics & Language & Speech

3000 Social Psychology

3040 Social Perception and Cognition





## Resumo

Há indícios de que o multilinguismo é um correlato chave para a aceitação do exogrupo. Além disso, essa relação é facilitada através da desprovincialização, ou mente aberta, e flexibilidade cognitiva, ou a habilidade de mudar mentalmente e oscilar entre as tarefas. No entanto, a literatura em torno dessa relação é mínima e carece de medidas abrangentes desses fenômenos. O presente estudo com 173 americanos brancos (34 multilíngues) examinou como a desprovincialização e a flexibilidade cognitiva implícita e explícita medeiam a relação entre multilinguismo e atitudes em relação ao exogrupo, aceitação de estereótipos e ativação e aplicação de estereótipos. Os resultados indicaram que níveis mais elevados de capacidades multilíngues autoavaliadas em termos de fala, leitura, escrita e compreensão se encontram positivamente associados com a flexibilidade cognitiva medida de forma implícita e a desprovincialização e, por sua vez, a desprovincialização se encontra associada a atitudes mais positivas em relação ao exogrupo. Além disso, a importância de certos vetores para o domínio da linguagem, como amigos ou escola, correlacionaram-se positivamente com a flexibilidade cognitiva medida de forma implícita, desprovincialização e atitudes em relação ao exogrupo. As implicações práticas do multilinguismo na sociedade americana são discutidas.

*Palavras chaves:* Multilinguismo, flexibilidade cognitiva, desprovincialização, estereotipagem do exogrupo

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# Index

<b>Introduction .....</b>	<b>1</b>
Multilingualism .....	2
Cognitive flexibility.....	4
Contact.....	5
Deprovincialization .....	6
Stereotyping.....	8
Present Research.....	10
Hypotheses .....	12
<b>Methods .....</b>	<b>13</b>
Design.....	13
Participants .....	13
Materials and Measures .....	14
Procedure .....	20
<b>Results .....</b>	<b>23</b>
Preliminary Correlation Analysis .....	23
Mediation Models.....	24
<b>Discussion.....</b>	<b>29</b>
Limitations and Future Research.....	32
Practical Implications .....	34
<b>Conclusion.....</b>	<b>35</b>
<b>References .....</b>	<b>37</b>
<b>Appendix A – Informed Consent.....</b>	<b>45</b>
<b>Appendix B – Questionnaire and Word format .....</b>	<b>47</b>



## Introduction

In a world of rapidly increasing technology, international mobility, globalization and digitalization, the topic of multilingualism, or the knowledge and utilization of multiple languages, becomes highly significant. Multilingualism that is, the use of, or competence in more than one language (Clyne, 2017), is currently the rule throughout the world and will become increasingly so in the future (Bhatia & Ritchie, 2013, p. xxi). However, focusing on the United States, according to the 2016 Census Bureau data, 65.5 million U.S. residents (native-born, legal immigrants and illegal immigrants) spoke a language other than English at home, equaling around 20 percent of the population at the time of the census (Zeigler & Camarota, 2017). Though this represents a huge increase from previous decades, the statistics remain meager and multilingualism is indeed still the exception. Moreover, while the majority of Americans are English-speaking monolinguals, the United States as a country is not; more than 300 languages are spoken within the nation (Ryan, 2013). The answer as to why this steep difference between English monolingualism and multilingualism persists may lie in the intrinsic relationship between language and group dynamics. The myth of English superiority is propagated to the detriment of the marginalized and the native languages of minority groups are treated with discrimination; a language of the disadvantaged entails disadvantages in society (Skutnabb-Kangas et al., 1995). As the nation is plentiful in language diversity it is logical that prejudice presents itself between the ethnic and therefore innately linguistic groups (Perry, 2007). Consequently, the question undeniably presents itself that if multilingualism was the norm within the United States could there possibly be a reduction of stereotype endorsement and ultimately more peaceful intergroup interactions within this society of particularly turbulent intergroup relations?

Previous research has shown the multitudinous benefits of multilingualism. Specifically, the definite connection between multilingualism and increased cognitive flexibility has been established (e.g., Payne, 2005; Schweiter & Ferreira, 2017). Language and flexibility have an inherent relationship as language enhances and demands for the expression of flexible cognition (Deak, 2003). Literature has also begun to explore the social benefits of multilingualism through its relationship with deprovincialization, that is, increased open-mindedness or as defined by Pettigrew (1998), a reappraisal and distancing from one's ingroup. One recent study has shown that both of these variables (cognitive flexibility and deprovincialization) are in turn associated

with outgroup acceptance (Mepham & Martinovic, 2018). However, the relationship between the variables of multilingualism, cognitive flexibility, deprovincialization and specifically, consequential stereotype endorsement and implicit and explicit outgroup attitudes, is far from being exhaustively explored and merits a deeper look. Therefore, the present research contributes to existing literature by further examining the relationship of all of these variables and innovatively conceptualizing multilingualism as a form of contact. Because speaking more than one language inevitably entails the exposure to and contact with the groups who natively speak different languages and according to the Contact Hypothesis (Allport, 1954) intergroup contact has a positive effect on intergroup relations, multilingualism can therefore plausibly be related to more positive intergroup relations.

## **Multilingualism**

The phenomenon of multilingualism has been studied from distinct perspectives within various disciplines and can be defined in numerous manners; it is also theorized to be linked with a multitude of cognitive and social enhancements. According to Wei, (2008; p. 4), multilingualism is defined as “anyone who can communicate in more than one language, be it active (through speaking and writing) or passive (through listening and reading).” Therefore, the idea of multilingualism can fluctuate from partial skills and competencies to full-fledged literacy and academic fluency or command of language (Commission of the European Communities, 2007). Currently, the idea of a completely balanced prowess in two or more languages is no longer a stipulation to be considered bilingual or multilingual (Skutnabb-Kangas & McCarty, 2006). When used in the generic sense, multilingualism can be respected as a mainstream classification which refers to the ability to use two or more languages, therefore encompassing both bilingualism or trilingualism as instances of multilingualism (Cenoz, 2013). Thus, regardless of the level of proficiency, frequency of use, age of language acquisition or number of secondary languages, reading, oral and/or written skills in more than one language constitute multilingualism as viewed on a continuum.

Language is both a “cognitive instrument” as well as a “social tool”; it postulates access to notions and meanings, it is the logical system for problem solving and conflict resolution, and the organizational source for knowledge. Furthermore, it is the instrument through which human relations occur and where social position is determined (Bialystok, 2007). It is through words that

the foundations of ideologies, religions, legal systems and cultural markets are established, renovated and maintained (Paradowski, 2011). Despite the seemingly obvious benefits of sustaining more than one language, it was not until the 1960's that the prevailing unfavorable stance that multilingualism was a detriment was overturned (Paradowski, 2011). Presently, the idea that multilingualism may complicate language and cognitive development in children has been exposed as invalid and the assumptions that language mixing or language switching among proficient multilinguals may be a sign of pathology or incomplete language abilities has also been proven unfounded. Infants develop the ability to discriminate among the languages they hear and are more open to language learning than their monolingually exposed counterparts (Petitto, et al., 2012). And code-switching between languages actually reflects a sophisticated cognitive strategy, enabling listeners to exploit the features of bilingual speech as it is produced (Fricke et al., 2016). Rather, individuals benefit from multilingualism in a multitude of forms, one of which being greater openness to other languages and to new learning in and of itself (Kroll & Dussias, 2017). The multilingual speaker is now seen as a model for understanding the way that language experience shapes the mind and the brain (Kroll et al., 2015). The ensuing and continuing research into the benefits of multilingualism abound.

Though multilingual advantages are often examined in children, superior executive function including skills such as working memory, flexible thinking and inhibition, have been reported for bilinguals of all ages thus demonstrating life-long advantages for multilingual individuals over mono-lingual (Diamond, 2010). Likewise, these advantages can be seen not only in naturalistic bilinguals, but also in foreign language learners (Paradowski, 2008). The key lies in the fact that due to the repetitive mental exercise involved in speaking two or more languages, “bilinguals precociously than monolinguals develop several cognitive abilities, ranging from creativity, cognitive flexibility, better reasoning and problems solving skills to perceptual disembedding,” (Paradowski, 2011, p. 340). Multilingual individuals exemplify skills such as superior memories for information storage and processing (Bialystok et al., 2004), are superior at resolving conflicting information (Costa et al., 2008) and maintain a more expanded personal horizon as different objects and phenomena can thus be evaluated and characterized from plural perspectives (Potter & Wetherell, 1987). Not only is the linguistic repertoire increased, but also the availability of alternative conceptualizations which are essential for critical thinking and flexibility (Pavlenko, 2005).

From a social perspective, multilingualism facilitates communication within institutions, between individuals and between groups. Mastering a second language or using multiple languages simultaneously involves the internalization of new perspectives and an entire conceptual restructuring and rearrangement of knowledge (Whorf, 1956; Caramazza, 1999). It expands the horizon of the individual creating synchronized insiders and outsiders by allowing the person in question to view their own culture from a new perspective that would otherwise not be available to a monolingual person (Paradowski, 2011). Multilingualism extends the opportunities with which communication is realized allowing the individual to interact with people he or she would otherwise not engage with and can even increase job opportunities (Paradowski, 2011). Therefore, the benefits of multilingualism, both cognitive and social, are positive and desirable to all.

### **Cognitive flexibility**

Literature shows extensive research within the cemented relation of multilingualism and enhanced executive function (e.g. Bialystok, 1998, 1999, 2004, 2009). Executive function is a set of mental skills that include working memory, flexible thinking, and self- control or inhibition. The skills of executive function are used every day to learn, work, and navigate through daily life. Individuals who develop and grow up in environments in which two or more languages are present typically outperform their monolingual counterparts on tests of executive function (Stocco et al., 2014). Again, these advantages can be seen not only in naturalistic bilinguals, but also in foreign language learners (Paradowski, 2008) and throughout the lifespan from childhood to adulthood (Bialystok, 2001, 2009; Bialystok et al., 2005). Research therefore suggests that a particular linguistic experience such as that of bilingualism, translates into a domain-general advantage in cognitive function (Stocco et al., 2014).

Specifically, cognitive flexibility, encompasses an individual's awareness that in any given situation there are options and alternatives available, their willingness to be flexible and adapt to the situation, and their self-efficacy or commitment to be flexible (Martin & Anderson, 1998). Cognitive flexibility is delineated in two categories: reactive flexibility and spontaneous flexibility (Purdy & Koch, 2006). Reactive flexibility permits individuals to shift or change behavior in response to the situation, whereas spontaneous flexibility signifies individuals' ability



to consider alternatives, formulate ideas of their own, and the ability to adapt plans according to current contextual information (Rende, 2000).

Arguably, this flexibility is increased in multilingual individuals as a result of flexibility requirements of language production inherent within any given language (Martin & Rubin, 1995). As such, multilingualism and executive control are interwoven in that flexibility is necessary to regulate language activation based on the person with whom the multilingual individual is interacting; this flexibility is part of, and integral to, the executive control system (Schwieter & Ferreira, 2017). Moreover, this flexibility can be viewed as a type of control, or, “the capacity to constrain thought processes and behavior to reach goal-relevant ends,” (Payne, 2005, p. 488). In the case of the present research, the goal being to refrain from stereotype application based on increased deprovincialization.

## **Contact**

The present research conceptualizes multilingualism as a form of contact, connecting individuals with new cultures and ways of life through language. The Contact Hypothesis, (Allport, 1954), suggests that “contact between social groups of contrasting ethnicity, nationality, religion or other category memberships produces positive effects and lessened intergroup bias when four essential conditions are met: equal status within the situation, common goals, intergroup cooperation and support of the authorities,” (Eller & Abrams, 2003, p. 56). Meta-analytical evidence shows that contact reduces prejudice through three mediators: enhancing knowledge about the outgroup, reducing anxiety about intergroup contact and increasing empathy and perspective taking (Pettigrew & Tropp, 2008). Learning about the outgroup through contact facilitates the opportunities and ability to see just how similar they may be to one’s ingroup and may therefore lessen prejudice. Intergroup contact characteristically reduces level of threat and anxiety also leading to a reduction of prejudice (Pettigrew & Tropp, 2008). Finally, intergroup contact with the outgroup, allows one to take the perspective of the other and empathize with their concerns, contributing to improved intergroup attitudes and reducing prejudice (Pettigrew & Tropp, 2008).

These mediating processes of attitude change through contact are comparable to the stages one may go through when learning or utilizing a foreign language. According to Lambert (1956), the process of becoming bilingual rests within two clusters, the vocabulary cluster or the concrete

elements of language, and the cultural cluster. Overcoming the barriers of language learning and operation as represented by these two clusters, it is necessary for the individual to first internalize the language in order to arrive at the final stage of language acquisition and automaticity. Once this has been accomplished, language and thought interconnect and merge thus eliminating the barrier of the cultural cluster (Gardner, 2007). Therefore, the individual must have the contact with the language and with those who speak the language natively, thereby learning not only about the language but also about the people; as a result, anxiety is reduced and perspective taking is facilitated as the individual learns to empathize with the native-speaking outgroup.

Finally, when achieving capacities within two or more languages, contact with different groups is implored and the individual may then plausibly identify with the group from which his/her native language is derived, as well as the groups of speakers of his/her second, third or fourth languages are derived. By conceptualizing multilingualism as a form of contact one can logically propose that, potentially all underlying mechanisms of contact can also explain how multilingualism is associated with a reduction of prejudice. The underlying mechanisms of contact being learning about the outgroup, changing behavior, generating affective ties with the outgroup and ingroup reappraisal (Pettigrew, 1997; Pettigrew, 1998). Conceptualizing multilingualism as a form of contact thus elucidates the proposal that multilingualism may foster the reduction of prejudice.

### **Deprovincialization**

Mepham and Martinovic (2018), examined the solidified relationship of multilingualism with cognitive flexibility and incorporated the variable of deprovincialization, or a higher awareness and acceptance of others (Pettigrew, 2012). In a sample of Dutch participants, the authors found that people who retained various languages were more cognitively flexible and higher cognitive flexibility was in turn related to higher deprovincialization. Therefore, just as multilingualism enhances cognitive flexibility, it also has a relationship with more deprovincialized thinking. Moreover, these two phenomena are intertwined with the development and maintenance of prejudice, stereotypes and discriminatory behavior towards others.

“Provincialism refers to being unsophisticated and centered in one’s own small world. One judges other people and cultures negatively, simply because they are different from your ingroup and culture” (Pettigrew, 2012, p. 325). Deprovincialization is a phenomenon that occurs at the

individual level and can be considered as a reduction of provincialism and a higher level of awareness and acceptance of other people and cultures that are different from one's own (Pettigrew, 2012). As such, one definition of deprovincialization is the ability to think outside of one's personal world, thereby refraining from judging other people and cultures negatively based on the fact that they may differ from ingroup and culture of the person in question; shorted stated, it is "a re-evaluation of one's ethnocentric worldview," (Mepham & Martinovic, 2018). Ethnocentrism refers to judging other groups from one's own cultural point of view (Levine & Campbell, 1972). The second definition of deprovincialization can also be viewed not as a matter of decreased ethnocentrism, but rather a distancing from one's ingroup (Verkuyten et al., 2010). Therefore, deprovincialization is also a growing acceptance of other peoples and cultures following intergroup encounters, without reproaching the culture and values of the ingroup (Boin et al., 2020). However, no matter the definition, contact with other groups leads to deprovincialization which in turn has positive effects on outgroup acceptance (e.g., Mepham & Martinovic, 2018; Pettigrew & Tropp, 2008; Verkuyten et al., 2010).

Inter-group contact which leads to deprovincialization facilitates habituation to outgroup members because by getting to know outgroups members' varying lifestyles, customs, norms, etc., one begins to appreciate the fact that there are other ways to evaluate society (Pettigrew, 1997, 1998). Accordingly, because culture manifests itself through language, when learning the language of another group, the individual learns not just lexical vocabulary but also about lifestyle, customs and norms of the society which speaks the language natively. This is only logical as aspects such as these facilitate the understanding of contextual communication, nuances and the reproduction of the language accordingly. Furthermore, because different languages respect differing patterns, words and nuances, the same reality can be described in two different ways with two different discourses related to diverse or similar contexts (Pavlenko, 2005). Consequently, multilingualism involves the incorporation of new perspectives and abstract reformation or rearrangement of knowledge (Caramazza, 1999; Whorf, 1956). Therefore, multilingual individuals are afforded the vantage point of their own culture from a new perspective not otherwise available to monolinguals; this can facilitate comparisons, contrasts and deeper understandings of cultural concepts (Paradowski, 2011). Because the learning of a new language usually entails exposure to a new culture, it also leads to an improved understanding and appreciation of other people and nationalities, thereby reducing racism,

xenophobia, and intolerance (Carpenter & Torney, 1974). Therefore, based on literature showing that multilingualism is associated with higher cognitive flexibility and increased deprovincialized thinking, we propose that multilingualism is negatively related to prejudice and stereotype endorsement.

## **Stereotyping**

An important and fundamental element of prejudice is that of stereotypes. Stereotypes can be defined as “a cognitive structure that contains the perceivers knowledge, beliefs, and expectations about a human group,” (Hamilton & Trier, 1986, p. 133) or, a rather socially shared set of attitudes that are distinctive of members of a certain social group (Greenwald & Banaji, 1995). Stereotypes can be expressed in terms of the particular kinds of mental representations that form the basis of one’s knowledge about social groups (Sherman, 1996). Stereotypes are over-generalized and therefore cognitively efficient as they allow us as humans to respond expediently to different situations and diversity by using previously formulated and determined categories in our minds to apply to different people. However, they fail within the realm of systematic and purposeful judgement by fostering ignorance and allowing individuals to generalize. Logically, more prejudiced people foster and employ stereotypes about certain groups to make judgments more efficiently and henceforth may act in discriminatory behavior.

Stereotypes are multifaceted and can be examined from numerous vantages. A considerable amount of research has now revealed that it is possible to obtain measures of prejudice and stereotyping which may be beyond the individual’s control or cognizance and are therefore implicit (e.g., Wittenbrink et al., 2001). Implicit attitudes are presumed to function unconsciously, reflecting a more automatic mental process whereas explicit attitudes operate consciously and are considered under the control of the individual (Dambrun & Guimond, 2004).

### ***Implicit Aspects of Stereotype Endorsement***

An implicit measure of stereotyping and prejudice is that of measuring stereotype activation and application. Stereotype activation refers to “the extent to which a stereotype in one’s mind is activated, and accessible” and stereotype application to “the extent to which one uses a stereotype to judge a member of the stereotyped group” (Kunda & Spencer, 2003). To be applied, a stereotype needs to have been activated first. However, the activation of a stereotype does not need to entail the subsequent application; people may activate a stereotype and, nevertheless,

refrain from applying it to any individual” (Devine, 1989). It can be assumed that when a perceiver applies the stereotype to a member of the stereotyped group, the stereotype was activated. However, when the stereotype is not applied, it cannot be assumed it was not activated as people may abstain from the application of activated stereotypes (Gilbert & Hixon, 1991). Nevertheless, activation may still be evident through implicit measures that gauge judgements that are beyond control (Greenwald & Banaji, 1995). The perceiver can avoid applying an activated stereotype as a result of motivation to avoid prejudice (Devine, 1989). Moreover, executive control, such as cognitive flexibility, plays a key role in determining whether an automatically activated stereotype or bias will be manifested through observable behavior because the behavioral expression of automatically activated stereotypes depends on how strongly executive control is engaged (Payne, 2005).

### ***Explicit Aspects of Stereotype Endorsement***

Moving from implicit and underlying mechanisms within the aspects of stereotyping to explicit and observable facets, two universal dimensions of stereotypes emerge as warmth and competence (Fiske et al., 2007). These two dimensions can be explained through the hypothetical situation of meeting a stranger. In encounters such as this, one seeks to determine whether the newcomer is a friend or foe, or rather, someone who intends good will or harm (warmth), and subsequently, whether this newcomer has the ability to act upon those intentions (competence). People perceived as warm and competent elicit positive emotions and behaviors; those perceived as lacking in both warmth and competence elicit negativity; people who fall into categories high on one dimension but low on the other, uniformly elicit ambivalent affective behavior (Fiske et al., 2007).

In the United States, black professionals scored low on warmth and high on competence, eliciting positive emotions and affective behavior as can be described as envy; an ambivalent reaction that incorporates both admiration and dislike to social targets (Fiske et al., 2002). This complex emotion is reserved for high status out-groups and can be a very volatile affective response (Harris et al., 2010). However, members of the poorer Black community scored low on both warmth and competence, eliciting disgust and accompanying contempt (Fiske et al., 2007). Though less volatile as it is not a mixed stereotype, groups that elicit emotions of disgust are often dehumanized (Harris et al., 2010). Thus, the content of the stereotype per group can be both uniform or mixed, however both elicit different but constant and respective emotions, influencing

subsequent behavior toward the target (Cuddy et al., 2007). The elicited emotions stemming from stereotypes are then observed in general intergroup attitudes explicitly.

## **Present Research**

Mepham and Martinovic (2018) established that multilingualism was related to increased cognitive flexibility, leading to increased deprovincialization and ultimately more outgroup acceptance. However, this study was based purely on self-report for all measures and did not include any task measures to neither quantify cognitive flexibility nor gauge participants' implicit attitudes. Thus, the current research adds to the existing knowledge by innovatively including two task measures within the research rather than simply self-report and more rigorously examining secondary language capacities and contributions to their L2 learning. Thus, cognitive flexibility is measured implicitly with the Wisconsin Card Sorting Task (Berg, 1948), and an implicit measure of stereotyping to measure participants unconscious attitudes was included in the present research. As such, a more in-depth understanding of the variables of cognitive flexibility and stereotyping are examined. Moreover, the present research allows for a more comprehensive scrutinization of multilingualism by not only probing as to whether or not participants speak more than one language, but also contextual information as to how their language capacities were shaped being friends, family or school for example, and how participants' would rate their personal proficiency levels in aspects integral to language aptitude such as reading, writing, comprehension and speaking. Finally, the present research incorporates deprovincialization as a parallel mediating variable rather than a consequence of cognitive flexibility, proposing that both cognitive and identity aspects can act as underlying mechanisms to explain the positive impact of multilingualism on prejudice and stereotyping.

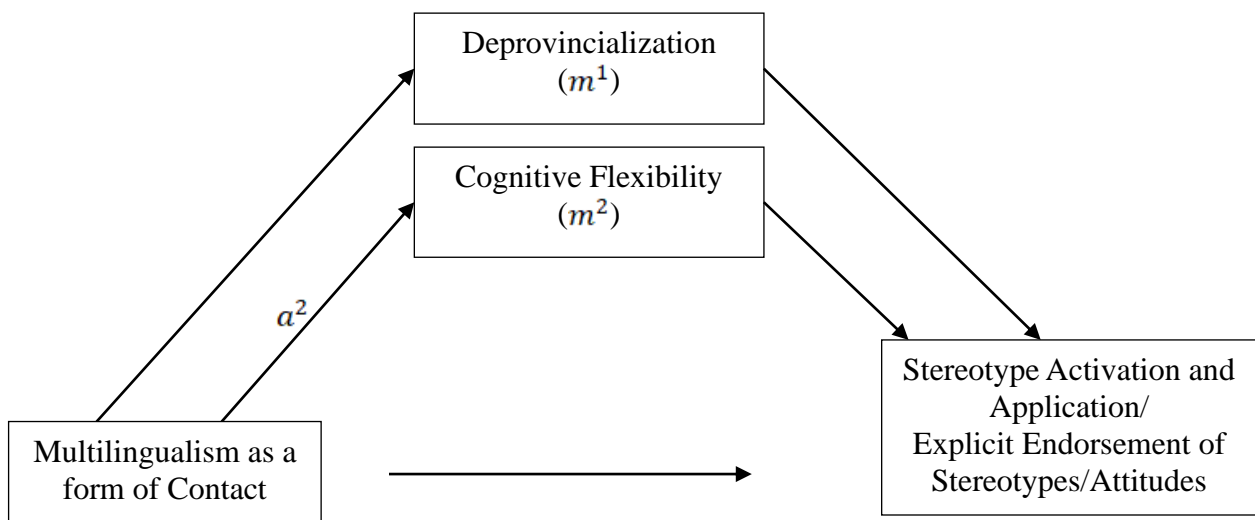
Based on the contextual information of the American society and limited literature in the area of multilingualism and its relationship with intergroup relations, there is need for more meaningful understanding and deliberate investigation into the correlations between the ability to communicate in multiple languages and both the cognitive and social effects this can have on stereotyping other groups. By innovatively conceptualizing multilingualism as a form of contact the present research sought to examine whether multilingual capacity correlates to stereotype reduction through enhanced cognitive flexibility, a documented byproduct of multilingualism, and increased deprovincialization, or less ethnocentrism, another concomitant variable that can be

triggered by multilingualism and intertwined with the development and maintenance of prejudice, stereotypes and discriminatory behavior towards others (Mepham & Martinovic, 2018).

The primary goal of the present research was to build upon previous findings by including several innovations in the forms of task measures and by examining variables more in-depth by using the combination of several measures per variable. For the predictor variable of multilingualism, we examined history of language acquisition, number of languages spoken and to what degree within the four fundamental foundations of language (reading, writing, comprehension and speaking) and vectors of proficiency acquisition. By including a task measure rather than merely self-report responses, the present research adds to the current literature surrounding the relationship between multilingualism and cognitive flexibility in its explicit and implicit form. The present research incorporated the outcome variable of multi-stereotype reduction in the forms of implicit stereotype activation and application through the novel implementation of an Implicit Association Task. And finally, explicit stereotype endorsement was measured through scales of warmth and competence and general evaluations of the outgroup. For a visual depiction of the study's conceptual model, see Figure 1.

**Figure 1.**

*Conceptual Model*



## **Hypotheses**

H1: Multilingualism involves contact with the outgroup in the form of languages, thus is related to more deprovincialized thought processes which will in turn also be related to less stereotyping, both explicit and implicit, and more positive attitudes towards outgroups.

H2: Multilingualism is positively associated with enhanced cognitive flexibility which in turn will be associated with less stereotype endorsement, both implicit and explicit, as well as with more positive attitudes towards outgroups.



## Methods

### Design

The present research is a correlational study that sought to explore the role of multilingualism in cognitive flexibility, deprovincialization and ultimately, stereotyping. Thus, the predictor variable of multilingualism, the outcome variable of stereotyping, the mediating variables of cognitive flexibility and deprovincialization all remained unmanipulated. The order of measures within the survey followed the conceptual model beginning with the examination of multilingualism, followed by that of deprovincialization, cognitive flexibility, and concluding with stereotyping. Only scales implemented for measuring cognitive flexibility (self-reported) and deprovincialization were randomized and all scaled items ranged from 1 to 7.

### Participants

Participants were recruited by means of convenience sampling using email and the Facebook and Twitter social media platforms as well as through the Amazon Mturk platform. The only conditions for participation were that the participant must be eighteen years or older, a US citizen and identify as White. To ensure Mturk participants met inclusion criteria before commencing the survey, stipulations were clearly and repeatedly stated in the survey announcement displayed to potential participants. A total of 195 participants were thus excluded in the ultimate data analysis: 54 individuals indicated they most identified with an ethnic group other than White, two were not US citizens, 123 participants failed to complete the entire survey or intended to take the survey from anything other than a computer, and a further 16 participants did not answer to attention check questions correctly. Thus, the final sample for the present research consisted of 172 individuals (49.4% male; 50.6% female) who agreed to participate in this study. Only three participants (still US citizens) indicated they were not born in the US but rather in Bulgaria, Canada and Montenegro. Participants were between 18 and 73 years of age ( $M = 40.86$ ;  $SD = 13.81$ ). Almost half (49.4%) of the participants indicated that they had obtained a bachelor's degree, 31.4% had a master's or graduate degree, 9.9% held an associate's degree whereas, 4.1% had completed a doctorate's degree. The bulk of participants (76.2%) indicated they were employed, 8.1% stated they were unemployed, 7.6% students, 7.0% retired and 1.2% identified as "other". Political orientation was measured on a scale from 1 being left-wing to 7 being right-wing; of the sample, 42.5% of participants identified themselves as on the left end of the

spectrum, 33.7% leaning to the right side of the scale and 23.8% of participants indicated a neutral political stance. The majority of participants (52.9%) specified that they had never lived outside of the US. Of the remainder of the sample, 16.8% indicated they had lived abroad for more than one year and 30.3% for less than a year. A total of 34 participants (19.8%) spoke at least one second language.

## **Materials and Measures**

The survey was conducted online using a computer with a keyboard through the Qualtrics survey platform and the PsyToolkit platform (Stoet, 2010, 2017). All Likert-scale questions were adapted to a 7-point format with (1 - *negative anchor* and 7 - *positive anchor*).

### ***Multilingualism***

To measure the predictor variable of multilingualism, a culmination of three validated measures were adapted, combined and implemented. Each question was presented for each language the participant indicated they spoke supplementary to their mother tongue or L1.

#### *Language Experience and Proficiency Questionnaire*

The Language Experience and Proficiency Questionnaire or LEAP-Q (Marian et al., 2007) includes nine standard questions in which the participant clarifies first, second, third language etc., history, culture and preferences through open responses. In this research we adapted three questions from the LEAP-Q including: “Please list your secondary languages in terms of dominance”, “On a scale from 1 - *not important* to 7- *very important*, please indicate how much the following factors contributed to you learning language X: interacting with friends, interacting with family, reading, online interactions (e.g., chatrooms, messenger), listening audiobooks/podcasts, watching TV” and “Please list the amount of time you have spent in each language environment: in a country where language X is spoken, in your own family where language X is spoken and in a school/working environment where language X is spoken.”

#### *Language History Questionnaire.*

The language History Questionnaire or LHQ (Li et al., 2006) is a synthesis of the examination of 41 previously published language questionnaires in which the authors identified the most commonly asked and therefore crucial questions to identify language capacities. The complete questionnaire consists of 29 questions. The one item adapted from this questionnaire for

the present research was: “Please list the age when you: began acquiring language X, became fluent in language X, total years learning language X.”

#### *Language and Emotions Questionnaire*

The Language and Emotions Questionnaire, or (BEQ), (Dewaele & Pavlenko, 2001-2003), is a web-based questionnaire comprised of a total of 35 questions. For the present research the question: “Please list on a scale from 1 - *not proficient* to 7 - *fully proficient*, how do you rate yourself in speaking, comprehension, reading, and writing in each of your secondary language(s)” was adapted.

The variable of multilingualism was transformed into two composite variables: (1) participants’ self-reported levels of speaking, reading, writing and comprehension of their L2 (SRWC) ( $\alpha = .83$ ) and (2) participants’ attribution of value to certain vectors of L2 acquisition and maintenance such as family, friends, school etc. ( $\alpha = .54$ ). As the alpha was unacceptable, the item of the perceived importance of the family’s contribution toward language learning and maintenance was deleted ( $\alpha = .63$ ).

#### **Contact**

Questions concerning intergroup contact were included as adapted from the Laurence et al., (2018) study examining quality and quality of inter-group contact within neighborhoods and workplaces through a conceptualization of contact through an overall-valence approach. The present research utilized the four questions: “How often, if at all, do you mix with people who speak your secondary languages natively in your *workplace/social circles*?” and “How much, if at all, do you enjoy this mixing with people who speak your secondary languages natively in your *workplace/social circles*?” Responses range from 1 - *Never/ I don’t enjoy it at all* to 7 - *Very often/ I enjoy it quite a bit*. Two composite variables for contact were calculated: the frequency of contact with native speakers of the participants’ L2 ( $r = .46$ ) and the quality of contact with the native speakers of the participant’s L2 ( $r = .65$ ).

#### **Deprovincialization**

Deprovincialization was measured using a combination of the Cultural Deprovincialization Scale (CDS) (Boin et al., 2020) and four statements regarding cultural relativism and open-mindedness (Martinovic & Verkuyten, 2013).

### *Cultural Deprovincialization Scale*

In the present research, the five item Cultural Deprovincialization Scale which defines deprovincialization as a growing acceptance of other peoples' following intergroup contact was implemented. Examples include: "Getting to know individuals from different cultures makes me feel more open toward other people," and "Knowing customs and traditions of different cultures helps me feel closer to other people." Responses ranged from 1 - *does not describe me at all* to 7 - *describes me very well*. Before analysis, the third and fourth items were reverse coded so that higher score indicated higher levels of deprovincialization. The measure presented good internal consistency in the original research ( $\alpha = .87$ ) (Boin et al., 2020).

### *Cultural Relativism and Open-mindedness*

Deprovincialization was also measured by participant's agreement to four statements on the topic of cultural relativism and open-mindedness regarding the American worldview as was adapted from the paper by Martinovic and Verkuyten (2013). The statements included: "American culture is certainly no better than other cultures", "One must always try to have a broader view than only the United States", "How we in the United States look at the world is but one of many possibilities" and "One must always nuance your own worldview and not declare it sacred." Responses ranged from 1 - *strongly agree*, to 7 - *strongly disagree*. This measure had good reliability ( $\alpha = .86$ ) in the original research.

Two composite variables of deprovincialization were calculated from the two scales used within the present research. Thus, one variable for deprovincialization as viewed in terms of a growing acceptance of other people following intergroup contact ( $\alpha = .83$ ) and one variable for deprovincialization in terms cultural relativism and open-mindedness ( $\alpha = .82$ ) were created.

### *Cognitive Flexibility*

Cognitive flexibility was measured with two measures, one self-report and one neuropsychological instrument: The Cognitive Flexibility Scale (CFS) (Martin & Rubin, 1995) and a Wisconsin Card Sorting Task (WCST) (Berg, 1948).

#### *The Cognitive Flexibility Scale*

The CFS consists of 12 items using a 6-point Likert format (1 - *strongly agree* to 6 - *strongly disagree*), however, for the present research, all items were modified to a 7-point Likert scale. All questions from the scale were used in the present research, examples being: "I can communicate and idea in many different ways," and "My behavior is a result of conscious decision that I

make.” Before analysis, the second, third, fifth and tenth items were reverse coded so that a higher score indicated increased cognitive flexibility. The CFS in was found to be internally consistent and reliable both in the original research ( $\alpha = .83$ ) (Martin & Rubin, 1995), and in the current study ( $\alpha = .86$ ).

#### *Wisconsin Card Sorting Task*

Cognitive flexibility was also assessed with one of the most frequently used neuropsychological instruments, the Wisconsin Card Sorting Test first developed by Berg (1948). Though developed to be conducted manually, the WCST is more and more habitually being implemented in computerized versions (Feldstein, et al., 1999) as was implemented in the present research through the PsyToolkit platform (Stoet, 2010, 2017). Additional coding was added to allow participants to enter a personal identification code for subsequent data match up during data analysis.

The implemented version of the task consisted of the presentation of four stimulus cards and a deck of response cards; the response cards must be individually matched by the participant to one of the stimulus cards based on the principle of color, form or number of shapes on the card. The task is categorized by number of correct matches (preservative and non-preservative errors) and categories completed. Categories are distinguished by 10 consecutively correct matches as the stimuli and response cards change, therefore it is impossible to not make any errors. A total of sixty trials were administered.

Reliability of the WCST manual version has been assessed thoroughly (Anderson et al., 1991; Axelrod et al., 1992; Crockett et al., 1986). However, it can be noted, using computerized versions of the WCST is controversial in its maintained ability to assess executive function to the same level as the manual examination. Nevertheless, the use of computerized testing offers advantages such as the ability to reach a larger population venue, elimination of participant/experimenter interactional bias, reduction of human errors in test scoring and provision of a substantial range of variations in test parameters (Feldstein, et al., 1999). For the WCST task measure, the proportion of correct responses to possible correct responses (number of correct responses/possible correct responses), or rather, accuracy, was calculated.

#### *Stereotyping*

The outcome variable of stereotyping was evaluated using an Implicit Association Task (IAT) (Greenwald et al., 1998) and a combination of questions from The Stereotype Content Model

(SCM) (Fiske et al., 2002), and The General Evaluation Scale (Wright, et al., 1997). This allowed for examination of both implicit attitudes and explicit stereotype endorsement.

#### *Race Implicit Association Task*

The Implicit Association Task or IAT (Greenwald et al., 1998) is a tool to measure mental associations between target pairs (e.g., races) and a category dimension (e.g., positive or negative words). Participants are shown a stimulus such as a word or image on the screen and must categorize the stimulus with targets (black or white faces) or with the category (good or bad). Conceptually, the task is accomplished faster when sorting in a tactic that is in line with one's associations (Fazio et al., 1995). The full procedure consists of practice and trial blocks with configurations as follows: Target A on the right initially positive (compatible), Target A on the right initially negative (incompatible), Target A on the left initially positive (compatible) and Target A on the left initially negative (incompatible). Between these combined blocks, there is one additional practice block to exercise when the category is in a reversed position. This allows for the participant to maintain their speeds without interferences of merely mental bias such as prior learning (Greenwald et al., 1998). Between each block a separation screen is presented to the respondent and when an error is made, a "+" symbol is shown until the respondent corrects the sorting mistake.

The present research implemented a survey software IAT using the Shiny Web Applet available through the open-source Iatgen website (Carpenter, et al., 2019). Positive and negative attribute names were specified as "*good*" and "*bad*," and eight positive and eight negative attribute stimuli words such as "*cheerful, pleasure, friendship, bothersome, disgust and humiliate*" were consequently inserted into the web applet. Next, Target A and B were defined as "White" and "Black" and defined with 12 face images, photos of individuals who would be commonly classified as belonging to the black (six images: three male, three female) or white (six images: three male, three female) race (Nosek, et al., 2007). The images were then uploaded into the image library of Qualtrics to ensure correct recordings of reaction times. The file was downloaded to the computer desktop and subsequently uploaded and integrated into the Qualtrics platform to construct a working, seven-block IAT. "Across samples, domains, and variants, the survey-software IAT functioned reliably, consistently with expectations, and in accordance with meta-analytic trends, published research, and reaction-time software" (Nosek, et al., 2007).

This survey software IAT manifests through four different permutations, one permutation is randomly provided to each participant. The permutations consist of the beginning block as either left/negative (LN), right/negative (RN), left/positive (LP) and right/positive (RP); thus, either incompatible or compatible trials and these permutations are crucial for the computation of the difference score (*D* score). The *D* score was calculated for each participant and indicates whether the participant was faster or slower in the compatible or incompatible condition. A *D* score of zero indicates no difference in speeds, a positive score indicates that one was faster in the compatible block and a negative score demonstrates that the participant was faster in the incompatible block. Simply, a positive *D* score reflects prejudice.

Instructions from Lane et al. (2007) were used to calculate the *D* score per participant. Within permutations RP and LP, data from blocks three, four, six and seven were analyzed as follows: (1) trials exceeding 10,000 milliseconds were deleted; (2) subjects who completed more than ten percent of their trials faster than 300 milliseconds were disregarded; (3) an inclusive standard deviation for all trials in blocks three and six and likewise in blocks four and seven were calculated; (4) the mean reaction time for responses in each block three, four, six and seven were calculated; (5) the mean reaction time of block three was subtracted from the mean of block six (MeanBlock6 – MeanBlock3), and the mean of block four was subtracted from the mean of block seven (MeanBlock7 – MeanBlock4) resulting in two different scores; (6) each difference calculation was then divided by its associated inclusive standard deviation; (7) The *D* score then equals the equally weighted average of the two resulting ratios.

For participants within the permutations RN and LN, step five was inversely subtracted. Thus, the mean of block six was subtracted from the mean of block three and the mean of block seven was subtracted from the mean of block four (MeanBlock 3 – MeanBlock6) and (MeanBlock4 – MeanBlock7). This allowed for a standardized *D* score for all participants regardless of permutation starting positions of compatible or incompatible. Finally, for the IAT task measure, only the *D* score extracted was utilized for analysis as a composite variable.

#### *Warmth and Competence Stereotypes*

To measure explicit stereotype endorsement, four questions from the Stereotype Content Model (SCM) (Fiske et al., 2002) were adapted and implemented; two questions to assess competence and two questions to assess warmth. Participants were asked to indicate on a scale from 1 - *not at all* to 7 - *extremely*, their warmth and competence perceptions of how the Black

community is viewed by society. Questions included: “As viewed by society, how competent/capable are members of the Black community?”, and “As viewed by society, how warm/friendly are members of the Black community?”. Participants are thus instructed to not give their own opinions, but that of society in general to reduce social desirability concerns (Fiske et al., 2002). A composite score for both, warmth ( $r = .84$ ) and competence ( $r = .86$ ) dimensions of the Black outgroup was created.

#### *General Evaluation Scale*

The General Evaluation Scale (Wright et al., 1997) asks participants to rate their feelings towards the black community on six bipolar items (*negative/positive, cold/warm, suspicious/trusting, hostile/friendly, contempt/respect* and *disgust/admiration*) and ranged from 1 (negative anchor) to 7 (positive anchor). A composite measure for the general evaluation scale ( $\alpha = .95$ ) was created.

### **Procedure**

Participants were presented with an informed consent form notifying them about the nature of the anonymous and confidential nature of the study, that their participation was voluntary, and completion of the survey would take around 20 minutes. Further instructions indicated that the survey should be taken from a computer. Participants were not forced to complete the entire survey within a specific allotment of time, however, the survey had to be completed within two weeks of its first opening. Answers to all questions in the survey were forced and the survey automatically terminated if participants were under 18 years of age, and if identified as anything other than White. Because of the integration of tasks within the entire survey, the survey was split into four combined blocks of surveys allowing participants to respond chronologically to questions respective to the variables as can be observed in the order of the theoretical model. The contents of the blocks and their linkages were as follows:

#### ***Survey Block 1***

The first block was comprised of the creation of a participant code, scaled and open-ended questions regarding multilingualism, contact, deprovincialization and cognitive flexibility and sociodemographic questions. Two bogus attention check questions were integrated into this survey section to ensure participants’ attention was maintained. Thus, within the range of the 1 to 7 Likert scale of disagree to agree, all participants were instructed to select “agree” to one



question and “disagree” to another (Oppenheimer et al., 2009). Upon completion of this section, participants were asked to click on the provided hyperlink to continue to block 2, conducted within the PsyToolkit platform.

### ***Survey Block 2***

The second block consisted of the WCST in PsyToolkit and included instructions for the task, insertion of the personal participant code, and the task itself. Upon completion of the task, participants were asked to click on the provided link to return to Qualtrics.

### ***Survey Block 3***

The third block included the Race IAT. Participants were asked to re-introduce their participant code, read the instruction for the IAT and subsequently complete the task. Upon completion, participants were directly redirected to block 4.

### ***Survey Block 4***

The fourth and final block again asked for the participant code and contained questions regarding explicit attitudes towards and stereotypes about the outgroup. Upon completion of these items, participants were shown a screen thanking them for their participation and marking the termination of the entire survey.

Data was gathered through both Qualtrics and PsyToolkit and subsequently combined and integrated into excel where the WCST and IAT data was cleaned. Subsequently all data sets from each survey block were combined by manual entry into SPSS. Descriptive statistics, bi-variate correlation and mediation analysis were then performed.



## Results

### Preliminary Correlation Analysis

In the first stage of analysis, correlation analyses were conducted and scrutinized to determine which variable to be tested in subsequent parallel mediation analysis using IBM SPSS Statistics software (version 26). Zero-order correlation analysis of variables listed above revealed that both variables of multilingualism (SRWC and attributions of importance to contribution vectors, such as friends, school, TV etc., to achieve and maintain multilingual status) were significantly and positively correlated with both accuracy in the WCST and deprovincialization in terms of cultural relativism and open-mindedness.

Frequency of contact with native speakers of the participants' L2 correlated positively and significantly with both the implicit and explicit measures of cognitive flexibility and deprovincialization in terms of a growing acceptance of other peoples' following intergroup contact but not with outcome variables. Quality of contact with native speakers of the participants' L2 had no significant correlations with any other variable.

Self-reported cognitive flexibility correlated positively with both conceptions of deprovincialization and a higher evaluation of the Black outgroup. Implicit cognitive flexibility as measured by the accuracy on the WCST positively correlated with deprovincialization only in terms of cultural relativism and open-mindedness and with a higher evaluation of the Black outgroup. Both conceptualizations of deprovincialization were positively correlated with each other, and a higher general evaluation of the Black outgroup.

Warmth and competence evaluations of the Black outgroup were correlated with each other. Furthermore, both were positively correlated to a higher general evaluation of the Black outgroup. However, neither warmth or competence evaluations were related to the predictor variable of multilingualism, nor any measures of the mediating variables of cognitive flexibility and deprovincialization. Finally, the IAT was not correlated with any other variable. Variables such as political stance or number of languages spoken were not significantly correlated with mediating or outcome variables and were thus also excluded from parallel mediation analysis. For a visual depiction of preliminary correlations, see Table 1.

Table 1.

*Correlations Between Variables in Tested Models*

Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Speaking, reading, writing and comprehension of L2	34	4.65	1.14	-											
2 Contributions to L2 acquisition and maintenance	34	3.70	1.32	.33	-										
3 Frequency of contact with L2 native speaking outgroup	34	6.06	1.05	.29	.14	-									
4 Quality of contact with L2 native speaking outgroup	34	4.01	1.63	.27	.26	.31	-								
5 Cognitive Flexibility Scale	172	5.35	0.85	.28	.15	.59**	-.07	-							
6 WCST Accuracy	172	.72	0.15	.42*	.35*	.46**	-.03	.09	-						
7 CDS: Deprovincialization: growing acceptance of others following intergroup contact	172	5.65	1.17	.18	.08	.52**	-.15	.69**	.13	-					
8 Deprovincialization: cultural relativism and open-mindedness	172	5.64	1.11	.36*	.50**	.34	.09	.48**	.15*	.59**	-				
9 Competency rating of Black outgroup	172	4.65	1.57	.08	-.11	.07	.12	-.07	-.14	.08	.09	-			
10 Warmth rating of Black outgroup	172	4.81	1.49	.22	-.05	-.07	.27	-.03	-.13	.05	.17*	.82**	-		
11 Attitudes: General evaluation scale	172	5.45	1.22	.34	.18	.13	.13	.30**	.16*	.49**	.61**	.22**	.28**	-	
12 IAT D-score	172	.28	0.44	-.21	-.13	.21	-.11	.06	-.01	-.04	-.17*	.01	.00	-.06	-

Note. \* $p < .05$ . \*\* $p < .001$

**Mediation Models**

Based on the observations from these correlations, four models were tested using the 3.5 version of the PROCESS macro (Hayes, 2019). All models were tested using PROCESS parallel mediation (Model 4). Indirect effects were tested using 5000 bootstrap samples and percentile bootstrap confidence intervals. Considering the small sample size of multilingual participants ( $N = 34$ ) all results must be interpreted with caution and all models were tested using single rather than parallel mediation analysis.

The two conceptualizations of multilingualism as the importance of contributing factors to L2 acquisition and maintenance, as well as self-reported assessments of speaking, reading, writing proficiency were included as separate indicator variables within separate models. Similarly, only deprovincialization as cultural relativity and implicit cognitive flexibility were entered as single mediating variables in separate models. We chose these variables as they presented the highest number of correlations to predictor and outcome variables. Attitudes towards the outgroup (i.e., General Evaluation Scale) were entered as the outcome variable in all models. Finally, neither warmth and competence evaluations of the Black outgroup, nor the IAT *D* score showed significant correlations to the predictor and mediating variables and thus were not entered in the models.

Model 1 tested multilingualism (speaking, reading, writing and comprehension levels) and its association with attitudes towards the outgroup (general evaluation scale) mediated by implicit cognitive flexibility. In model 2, multilingualism as assessments of speaking, reading, writing, and comprehension was the predictor variable, deprovincialization as defined by cultural relativism and open-mindedness was the mediating variable and the outcome variable was again attitudes toward the outgroup seen through the general evaluation scale. For model 3, the indicator variable was importance of contributing factors to L2 acquisition and maintenance, the mediating variable was defined as implicit cognitive flexibility and the outcome variable was attitudes towards the outgroup. In model 4, again the indicator variable was the importance of contributing factors to L2 acquisition and maintenance, the mediating variable was deprovincialization as increased cultural relativism and open-mindedness and the outcome variable was attitudes toward the outgroup. For a visual depiction of mediation analyses, see Table 2.

Table 2  
*Mediation Models*

<b>Model 1</b>	M (Implicit Cognitive Flexibility)			Y (Attitudes )		
	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>
Constant	.550**	0.081	<.001	3.465**	0.907	<.001
(X) L2 Speaking, Reading, Writing, Comprehension	.044*	0.012	0.014	0.158	0.131	0.239
M (Implicit Cognitive Flexibility)	-	-	-	2.107	1.266	0.106
	R2 = .176			R2 = .187		
	F(1, 32) = 6.826, p = .014*			F(2, 31) = 3.574, p = .040*		
<b>Model 2</b>	M (Deprovincialization)			Y (Attitudes)		
	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>
Constant	4.216**	0.762	<.001	2.456**	0.642	<.001
(X) L2 Speaking, Reading, Writing, Comprehension	.342*	0.156	0.036	0.074	0.101	0.471
M (Deprovincialization)	-	-	-	.514**	0.107	<.001
	R2 = .131			R2 = .495		
	F(1, 32) = 4.805, p = .036*			F(2, 31) = 15.162, p < .001**		
<b>Model 3</b>	M (Implicit Cognitive Flexibility)			Y (Attitudes)		
	<i>Coeff.</i>	<i>SE</i>	<i>p</i>	<i>Coeff.</i>	<i>SE</i>	<i>p</i>
Constant	.609**	0.072	<.001	3.664**	0.919	<.001
(X) Contributions to L2	.039*	0.018	0.043	0.044	0.139	0.757

M (Implicit Cognitive Flexibility)	-	-	-	2.609*	1.253	0.046
	R2 = .122			R2 = .152		
	F(1, 32) = 4.440, p = .043*			F(2, 31) = 2.782, p = .077		
<b>Model 4</b>	M (Deprovincialization)			Y (Attitudes)		
	Coeff.	SE	p	Coeff.	SE	p
Constant	3.919**	0.608	<.001	2.781**	0.582	<.001
(X) Contributions to L2	.513*	0.155	0.002	-0.179	0.113	0.125
M (Deprovincialization)	-	-	-	.631**	0.112	<.001
	R2 = .255			R2 = .524		
	F(1, 32) = 10.948, p = .002*			F(2, 31) = 17.059, p < .001**		

Note. \* $p < .05$ . \*\* $p < .001$

Model 1 explained 18.7% of the variance of attitudes towards the Black outgroup and was overall significant ( $R^2 = .187$ ,  $F(2, 31) = 3.574$ ,  $p = .040$ ). The results showed a positive and significant direct effect of speaking, reading, writing and comprehension of L2 on implicit cognitive flexibility ( $B = .044$ ,  $SE = .012$ ,  $p = .014$ ). However, contrary to the expected, the direct path from cognitive flexibility to attitudes about the outgroup, ( $B = 2.107$ ,  $SE = 1.266$ ,  $p = .106$ ) and also the direct path from speaking, reading, writing and comprehension of L2 to attitudes about the outgroup ( $B = .158$ ,  $SE = .132$ ,  $p = .239$ ) were non-significant. These findings suggest that more adept domination of L2 in terms of speaking, reading, writing and comprehension associates with increased implicit cognitive flexibility consistent with ( $H2$ ).

Model 2 explained 49.5% of the variance of attitudes towards the Black outgroup and was overall significant ( $R^2 = .495$ ,  $F(2, 31) = 15.162$ ,  $p < .001$ ). The results demonstrated a positive and significant direct effect of speaking, reading, writing, comprehension of L2 on deprovincialization in terms of cultural relativism and open-mindedness ( $B = .342$ ,  $SE = .156$ ,  $p = .036$ ). Thus, the more adept the domination of L2 in terms of speaking, reading, writing and comprehension, the more the individual displays deprovincialized thought processes. Deprovincialization was positively correlated with attitudes about the Black outgroup ( $B = .514$ ,  $SE = .107$ ,  $p < .001$ ); that is, the more deprovincialized thought of the individual, the more positive are the attitudes about the Black outgroup. Consistent with the hypothesized ( $H1$ ), the indirect effect of speaking, reading, writing and comprehension of L2 on attitudes about the Black outgroup was significant ( $B = .176$ ,  $SE = .097$ , 95% CI [.023, .394]). That is speaking,

reading, writing and comprehension of L2 was associated with more positive attitudes towards the Black outgroup through increased deprovincialization.

Model 3 explained 15.2% of the variance of attitudes towards the Black outgroup and was overall non-significant ( $R^2 = .152$ ,  $F(2, 31) = 2.782$ ,  $p = .077$ ). The results demonstrated a positive and significant direct effect of contributions to L2 acquisition and maintenance such as friends, school, work etc. L2 on implicit cognitive flexibility ( $B = .039$ ,  $SE = .018$ ,  $p = .043$ ). Thus, the more highly the individual evaluated contribution vectors to L2 acquisition and maintenance (friends, school, work etc.) the higher was their score on implicit cognitive flexibility. Implicit cognitive flexibility was positively correlated with attitudes about the Black outgroup ( $B = 2.609$ ,  $SE = 1.253$ ,  $p = .046$ ); that is, the more augmented the implicit cognitive flexibility, the more positive are the attitudes about the Black outgroup. Consistent with the hypothesized ( $H2$ ), the indirect effect of contributions to L2 acquisition and maintenance on attitudes about the Black outgroup was significant ( $B = .101$ ,  $SE = .069$ , 95% CI [.002, .269]). That is, the attribution of importance to contributions to L2 acquisition and maintenance is indirectly associated with more positive attitudes towards the Black outgroup through increased implicit cognitive flexibility.

Model 4 explained 52.4% of the variance of attitudes towards the Black outgroup and was overall significant ( $R^2 = .524$ ,  $F(2, 31) = 17.059$ ,  $p < .001$ ). The results demonstrated a positive and significant direct effect of individual's the self-reported importance of contributions to L2 acquisition and maintenance on deprovincialization in terms of cultural relativism and open-mindedness ( $B = .513$ ,  $SE = .155$ ,  $p = .002$ ). Thus, the more the individual highly evaluated the importance of contribution factors to L2 acquisition and maintenance the more the individual displayed deprovincialized through processes. Deprovincialization was positively correlated with attitudes about the Black outgroup ( $B = .631$ ,  $SE = .112$ ,  $p < .001$ ); that is, the more deprovincialized thought of the individual, the more positive are the attitudes about the Black outgroup. As predicted ( $H2$ ), the indirect effect of contribution factors to L2 acquisition and maintenance on attitudes about the Black outgroup was significant ( $B = .323$ ,  $SE = .145$ , 95% CI [.058, .610]). Therefore, deprovincialization mediates the relationship between higher attributions of importance to contribution factors of L2 acquisition and more positive attitudes towards the Black outgroup.





## Discussion

The present research set out to examine whether multilingualism is associated with more positive attitudes about, and a reduction of stereotyping towards, a minority outgroup (Black Americans) as a result of both cognitive flexibility and deprovincialized thought processes. The literature regarding the correlation between secondary language capacities and the reduction of prejudice is far from ample and previous studies that have examined this relationship have mostly taken into account only the number of languages spoken and examined attitudes only towards the outgroup of the native speakers of participants' L2 (Rubinfeld, et al., 2007). Therefore, building upon the findings of Mepham and Martinovic (2018) that multilingualism respectively leads to cognitive flexibility, deprovincialization and outgroup acceptance, the present study investigated the role of foreign language skills in improved attitudes towards an unrelated outgroup and thus the amelioration of intergroup relations across spheres. Moreover, the present research veers from existing literature by implementing several variables as a measure of multilingualism rather than only examining multilingual capacities in terms of the number of secondary languages spoken (e.g., Mepham & Martinovic, 2018). By observing which vectors were important to language acquisition and maintenance and the self-assessment of proficiency within the four fundamental foundations of language such as reading, writing, speaking and comprehension, a more comprehensive evaluation of multilingualism can be established. And as such, the present research was able to classify multilingualism as a form of contact; secondary language capacities as a proven means to improved intergroup relations (Allport, 1954).

Support for both the hypothesis (*H1* and *H2*) that multilingualism, (as conceptualized as higher levels of proficiency as reported through self-assessment and as the importance of contribution factors to L2 acquisition and maintenance), was positively associated with both cognitive flexibility and deprovincialization was found; the latter positively correlating with more positive evaluations of the outgroup (*H1*). Thus, the more a person governs the four foundational aspects of language, the more they are able to relativize their imbued culture to other cultures of the world allowing for a more positive evaluation of the outgroup.

In turn, the consideration of multilingualism as defined by the attribution of importance to certain vectors of language learning was positively associated with both deprovincialization and cognitively flexibility, and in turn correlated significantly with positive evaluations of the unrelated Black outgroup thus also confirming *H1* and *H2*. That is, the higher a person values

certain vectors of secondary language contribution such as friends, school or work, the more they are able to both switch and fluctuate between thinking patterns and cognitive formulations, and to refrain from provincial thinking, allowing a more positive evaluation of the outgroup.

Concerning the predictor variable of multilingualism as the attribution of importance to certain vectors of language learning and conservation such as friends, school or work, the contribution of the family was excluded from the composite variable. One can speculate that, the role of the family regarding language can be viewed as pertaining to the individuals' ingroup, and thus contact with the family when learning and using L2 would be necessarily ingroup contact. However, when it comes to practicing and utilizing L2 with friends, people from school or work or other outsiders in various settings, the contact would be between and across groups and thus is the more meaningful contributor to secondary language development and more positive attitudes towards outgroups.

The present research included a multi-faceted outcome variable that scrutinized the stereotype dimensions of warmth and competence, an explicit overall general evaluation of the outgroup and implicit stereotype activation and application, thereby allowing for a more authentic examination of intergroup dynamics. While both *H1* and *H2* were supported when considering a general evaluation of the minority outgroup (explicit stereotype endorsement), no significant indirect effects were found for the impact of multilingualism on implicit attitudes or explicit stereotyping (IAT and warmth and competence dimensions). Thus, contrary to both hypotheses (*H1* and *H2*), the implicit measure of stereotype activation and application and explicit measure of attitudes, were not correlated with either the predictor variable of multilingualism or other outcome variables. In the case of the implicit evaluation of the Black minority group, on average, respondents demonstrated higher levels of prejudice ( $D' = .28$ ) and within the explicit stereotype endorsement measure as depicted by the dimensions of warmth ( $M = 4.81$ ) and competence ( $M = 4.65$ ), respondents evaluated the Black outgroup above the scale midpoint indicating lower levels of prejudice. Therefore, more bias was found within the implicit measure than within the explicit and the two scores did not correlate. This lack of relationship between the explicit and implicit measures of the same construct may be explained by the fact that often implicit measures may not be entirely predictive of behaviors (Gawronski et al., 2007). When the enquiry is explicit, respondents have the time, amongst other things, to consider whether their opinion is socially compliant basing this off personal life experiences, previously formed heuristics and particular

desires. Whereas within the implicit process, respondents must react as quickly as possible allowing for an assessment based directly from subconscious attitudes.

Also, no significant relations emerged between multilingualism, deprovincialization and warmth and competence dimensions. Indeed, the evaluations of the dimensions of warmth and competence of the minority group were above average and positively correlated. This is an unusual finding as when social groups are judged by outsiders, often warmth and competence correlate negatively; that is, many groups are judged highly on one dimension and low on the other having significant implications for affective and behavioral responses (e.g., Fiske, 1998; Fiske et al., 1999; Yzerbyt et al., 2005). The Black minority group within the United States is most often evaluated with ambivalence meaning they are perceived as high on one dimension and low on the other (Fiske et al., 2002). For example, a Black working professional is high on competence but low on warmth. However, when the target is a poor African American, he or she is most often evaluated as being lower on both warmth and competence. Considering the particularly small size of the sample within the present research, it is crucial that future studies examine the potential impact of different aspects of multilingualism on multiple aspects of intergroup relations, such as that of warmth and competence evaluations of the outgroup, drawing upon a larger participant pool.

Of particular interest, it was the measure of implicit cognitive flexibility that was most often associated with both multilingualism and attitudes towards the Black outgroup rather than the self-reported scale. It can be argued that a comprehensive understanding of behavior necessitates examination of not only the external and observable situations but also the internal psychological workings of the individual (De Houwer et al., 2009). Thus, by exploring the variable of cognitive flexibility in an implicit manner, a more objective understanding of the underlying mechanisms that are operationalized by individuals, rather than merely surface inspection, was afforded. An explicit measure assesses opinions and attitudes however, these responses can be distorted by social desirability and the reigning social norms (Gawronski & De Houwer, 2000). Thus, an implicit measure can minimize these effects because the respondent must give their response instantaneously, not allowing for consideration or reflection if the response conforms to the social norms or their personally or socially desired reaction. Hence, the individual may evaluate themselves as highly cognitively flexible because this is their desire, however, when an implicit measure is used to measure the same concept, outcomes can differ.

Through the inclusion of the psychological mechanisms of both cognitive flexibility and deprovincialization as the linking paths between multilingualism and improved outgroup attitudes, the present study enabled inspection of how and why this association between multilingualism and outgroup acceptance exists. As such, higher levels of self-assessment of multilingual capacities in speaking, reading, writing positively correlated with deprovincialization and implicit cognitive flexibility, deprovincialization in turn correlated positively with more positive attitudes about the outgroup. Furthermore, both deprovincialization and implicit cognitive flexibility mediated the relationship between higher attributions of importance to vectors of L2 learning and maintenance such as friends, school, or work (namely, the individual's outgroup) and attitudes towards an unrelated minority outgroup. These findings are in line with the findings of Mephram and Martinovic (2018) regarding the importance of both cognitive flexibility and deprovincialization respectively when examining the impact of multilingualism on outgroup stereotyping and evaluations. Considering the small sample size of multilingual individuals within the present research, the relationship between multilingualism inducing cognitive flexibility, in turn leading to deprovincialization and ultimately promoting more outgroup acceptance was not tested. However, the present research has examined this relationship with more comprehensive measures of multilingualism, a more objective measure of cognitive flexibility and by using a broader scope of outgroup acceptance defined by implicit and explicit attitudes and outgroup stereotype endorsement. By using more comprehensive measures to examine the predictor and outcome variables within such a complex relationship, allows for supplementary insight and increased opportunity to observe the impact of multilingualism on outgroup acceptance.

### **Limitations and Future Research**

The present research was highly exploratory and given the unquestionably small sample size of multilingual individuals ( $N = 34$ ), the results of this study do not provide definite conclusions. and is in no way representative of all multilingual individuals. Therefore, all inferences drawn from the results must be taken with utmost caution. However, based on the results of this study, the indication that the present hypotheses could be confirmed with more certainty is promising. Future research drawing upon a larger sample size, particularly with more multilingual individuals,

is crucial. Furthermore, the United States is but one of many countries and therefore, the results found within this population cannot be generalized to the rest of the world.

As this study included an IAT where the target group was the Black minority group, only white participants could contribute. This exclusion was fundamental to extinguish the possibility of confounds within the results, however, future research could focus on using a different sample pool of participants and adjusting the measures accordingly. For example, specifically targeting individuals who are multilingual as a result of mother-tongue minority status and consequently examining aspects of imposed multilingualism with deprovincialization, cognitive flexibility and majority group acceptance. By doing so, the examination of the relationship between multilingualism and intergroup relations would be more inclusive.

The complexity of the present research as conducted online can also be considered a limitation. As participants were forced to navigate to two different platforms to complete the survey which included two task measures from their personal computers rather than within the laboratory setting, outcomes cannot be declared as irrefutable. Though data cleaning measures worked to neutralize the possibilities of distraction amongst participants, principally within the IAT and through bogus attention check questions, conducting this research from the lab would indefinitely be more effective as participants can be observed during survey completion. Although conducting experiments online does have advantages and results as a whole remain consistent with in lab settings (Danurand et al., 2008), if the present research were conducted within the lab an experiment facilitator have be available to help participants navigate through multiple platforms and presumably ensure correct and entire completion of the survey thus preventing participant drop-out rates.

Furthermore, future research could incorporate different variables of executive function aside from cognitive flexibility. The roles of skills such as working memory, planning/behavioral organization associated with goal-directed action or inhibition in correlation to multilingualism have been established (e.g., Bialystok, 2001; Bialystok, 1999; Baumgar & Billick, 2018) however, it would be interesting to examine their roles when it comes to attitudes towards the outgroup and stereotyping. Specifically, the role of inhibitory control, or the ability to actively inhibit or delay a dominant response to achieve a goal (Morasch & Bell, 2011), and its role within stereotype activation and application would be intriguing. If the individual in question has a higher capacity of inhibitory control, would this also facilitate their control to inhibit stereotype application?

## **Practical Implications**

Though it is challenging to determine practical implications of the present research due to the notably small sample size of multilingual individuals, the findings suggested that raising multilingual citizens could be an effective strategy for improving intergroup relations and attitudes. Although American English, is unquestionably the dominant national language of the United States, the nation as a whole is comprised of a multitude of tongues and dialects as a result of the imposed colonial past upon the Native Americans and a current national population based upon immigration and continuing globalization. However, linguistic mismanagement and English only prerogatives can be devastating for the more marginalized members of society, essentially excluding them from participating equally as has been the case within the United States. Therefore, by raising children using various languages both at home and through institutional support, or even continuing linguistic growth into and throughout adulthood, the endeavors of diglossia or polyglossia can be harnessed to actually increase the potential to achieve a more multilingual and therefore a more multicultural society. The conceivable benefits of teaching and utilizing multiple languages not only for increased facilitation of constructive intergroup dialogue but ultimately for the creation a more unified society within the present times of amplified globalization and increased diversity, are highlighted by the results of the present study.

## **Conclusion**

The present research examined the relationship between multilingualism as a form of contact and attitudes towards, and stereotyping of, a minority outgroup (Black Americans). By exploring this relationship through the variables of cognitive flexibility and deprovincialization, this study revealed that increased secondary language abilities has positive relationship with cognitive flexibility and deprovincialization with deprovincialized thought processes being positively correlated with improved attitudes towards the outgroup. Furthermore, that higher levels of attribution of importance to factors such as friends, work, school etc. is positively associated with both cognitive flexibility and deprovincialization, and together all variables positively correlate to more positive evaluations of the outgroup. Our findings add to the existing literature by offering preliminary and exploratory evidence for a link between multilingualism and the reduction of prejudice.





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## Appendix A – Informed Consent

Welcome to this master's thesis survey. We are interested in languages and the way people think about themselves and others. Please open this survey from a computer with a keyboard to ensure you can complete the entire survey. Thank you for your participation!

The present study arises in the context of a master's dissertation underway at **ISCTE – Instituto Universitário de Lisboa**. This study concerns language and the way people think about themselves and others. The study is carried out by Hayley Schoede, (hseya@iscte-iul.pt) who can be contacted in case of any questions or should you wish to share comments. Your participation, which is highly valued, consists of multiple-choice survey questions, and two tasks and could take around 20 minutes. There are no expected significant risks associated to participation in the study. Although you may not benefit directly from your participation in the study, your answers will contribute to further research in this area as well as the completion of this master's thesis. You must be 18 years or older to participate and your participation is highly valued!

Participation in this study is strictly **voluntary**: you can choose to participate or not to participate. If you choose to participate, you can stop your participation at any time without having to provide any justification. In addition to being voluntary, your participation is also **anonymous** and **confidential**. The data are intended merely for statistical processing and no answer will be analyzed or reported individually. You will never be asked to identify yourself at any time during the study. If you accept participating, please click on the button in the lower left-hand corner of the page saying, “I agree” and move to the next page. Completion of the questionnaire presumes that you have understood and accept the conditions of the present study, by consenting to participate.



## Appendix B – Questionnaire and Word format

Please create a short participant code by using the last three letters of your first name and the last three numbers of your phone number (you will re-renter this code throughout the survey).

### Demographics

1. What is your year of birth?
2. With which group do you MOST identify? (check only one)
  - a. White American
  - b. Black or African American
  - c. American Indian or Alaska Native
  - d. Asian American
  - e. Hispanic American
  - f. Other
3. What is the highest level of school you have completed or the highest degree you have received?
  - a. Elementary school
  - b. Middle school or Junior high school
  - c. High school
  - d. Associate's degree in college (2-year)
  - e. Bachelor's degree in college (4-year)
  - f. Master's/Graduate degree
  - g. Doctorate's degree
  - h. Don't know
4. What is your sex?
  - a. Male
  - b. Female
  - c. Other
  - d. Prefer not to answer
5. Are you an American citizen?
  - a. Yes
  - b. No
6. Were you born in the United States?
  - a. Yes
  - b. No (if chosen, please indicate where you were born):
7. What is your current employment status?
  - a. Student
  - b. Unemployed
  - c. Employed (if chosen, please indicate what your profession is):
  - d. Retired
  - e. Other
8. In politics, people sometimes peak of "left" and "right." Where would you place yourself on this scale where 1 = left and 7 = right?
9. If you have ever lived or you are currently living outside your country, for how long did that experience last?
  - a. I've never lived outside my country

- b. Less than a month
  - c. 1-6 months
  - d. 6-12 months
  - e. 1-3 years
  - f. 3-5 years
  - g. More than 5 years
10. Do you speak a second language?
- a. Yes
  - b. No

### **Multilingualism**

11. Please list your secondary languages.
- a. L2:
  - b. L3:
  - c. L4:
  - d. L5:
12. For each language, please state the age in numbers when: you began acquiring, became fluent and the total years learning.
- a. L2:
  - b. L3:
  - c. L4:
  - d. L5:
13. Please list the amount of time you have spent in each language environment: in your own family where this language is spoken; school/working environment where this language is spoken; in a country where this language is spoken.
- a. L2:
  - b. L3:
  - c. L4:
  - d. L5:
14. Please list on a scale from 1 (not at all important) to 7 (extremely important), how important the following factors were to the contribution of learning and maintaining your secondary language(s): interacting with friends; interacting with family; reading; online interactions (e.g. chatrooms, messenger, social media); listening to audiobooks or podcasts; watching television; school/work.
- a. L2:
  - b. L3:
  - c. L4:
  - d. L5:
15. Please list on a scale from 1 (not proficient) to 7 (fully proficient), how you would rate yourself in speaking, reading, writing and comprehension of your secondary language(s).
- a. L2:
  - b. L3:
  - c. L4:
  - d. L5:

### **Deprovincialization**

16. On a scale from 1 (strongly disagree) to 7 (strongly agree) please rate your agreement to the following statements:
- a. Getting to know individuals from different cultures makes me feel more open toward other people.
  - b. Knowing customs and traditions of different cultures helps me feel closer to other people.
  - c. Participating in ethnic events from other cultures (travels, religious or non-religious celebrations, etc.) makes me feel uncomfortable and out of place.
  - d. Noticing cultural differences makes me feel less open and less friendly to other people.
  - e. I am always willing to expand my circle of friends to people from different cultures.
  - f. For this question, please check “strongly agree”.
  - g. American culture is certainly no better than other cultures.
  - h. One must always try to have a broader view than only the United States.
  - i. How we in the United States look at the world is but one of many possibilities.
  - j. One must always nuance your own world view and not declare it sacred.

### **Language as Contact**

17. On a scale from 1 (never) to 7 (always) please answer the following questions:
- a. How often, if at all, do you mix with people who natively speak your secondary language(s) in your workplace?
  - b. How often, if at all, do you have interactions with people who natively speak your secondary language(s) within your social circles?
18. On a scale from 1 (dislike a great deal) to 7 (like a great deal), please answer the following questions:
- a. How much if at all do you like mixing with people who natively speak your secondary language(s) in your workplace?
  - b. How do you feel about having interactions with people who natively speak your secondary languages within your social circles?

### **Cognitive Flexibility**

19. On a scale from 1 (strongly disagree) to 7 (strongly agree) please give your agreement to the following statements:
- a. I can communicate an idea in many different ways
  - b. I avoid new and unusual situations.
  - c. I feel like I never get to make decisions.
  - d. I can find workable solutions to seemingly unsolvable problems.
  - e. I seldom have choices when deciding how to behave.
  - f. I am willing to work at creative solutions to problems.
  - g. In any given situations, I am able to act appropriately.
  - h. For this question, please check “strongly disagree”.
  - i. My behavior is a result of conscious decisions that I make.
  - j. I have many possible ways of behaving in any given situation.
  - k. I have difficulty using my knowledge on a given topic in real life situations.
  - l. I am willing to listen and consider alternatives for handling a problem.
  - m. I have the self-confidence necessary to try different ways of behaving.

Please keep in mind your participant code with the last three digits of your first name and the last three numbers of your phone number as you will be re-directed to a new page. Upon completion

of the card sorting task, you are not finished! Please continue by clicking on the provided link that says "you are now finished" to continue to the remainder of the survey.

### **Implicit Cognitive Flexibility**

Please re-insert your personal participant code:

20. WCST

### **Implicit Stereotype Activation and Application**

Please re-insert your personal participant code:

21. IAT

### **Explicit Stereotype Endorsement/Outgroup Attitudes**

22. On a scale from 1 (not at all) to 7 (extremely), please indicate your agreement to the following statements about how the Black community is viewed by society:

- a. How competent are members of this group?
- b. How capable are members of this group?
- c. How warm are members of this group?
- d. How friendly are members of this group?

23. Please indicate how you feel about the Black community in general:

- a. 1 (negative) to 7 (positive).
- b. 1 (hostile) to 7 (friendly).
- c. 1 (suspicious) to 7 (trusting).
- d. 1 (contempt) to 7 (respect).
- e. 1 (disgust) to 7 (admiration).
- f. 1 (cold) to 7 (warm).

Thank you for your participation! If you would like more information regarding the results of this study please contact the researcher, Hayley Schoede at [hseya@iscte-iul.pt](mailto:hseya@iscte-iul.pt).