Multilingualism and Out-Group Acceptance: The Mediating Roles of Cognitive Flexibility and Deprovincialization

Kieran Douglas Mepham[1] and Borja Martinovic[1]

Abstract

In this research, we systematically study multilingualism as a predictor of acceptance of ethnic out-groups. It is argued that people who speak more languages are more cognitively flexible, that is, they have an enhanced flexibility in understanding and representing information. Higher cognitive flexibility is in turn expected to be related to higher deprovincialization: a reevaluation of one's ethnocentric worldview. Deprovincialization is then expected to result in more openness toward ethnic out-groups, evidenced by a more inclusive notion of the national identity and reduced out-group dislike. Cross-sectional survey data among a representative sample of native Dutch participants from the Netherlands (*N* = 792) provide convincing support for these hypotheses and show that multilingualism is an important yet understudied factor in social–psychological research on prejudice reduction.

In modern societies, multilingualism, or the knowledge and use of multiple languages, is becoming increasingly ubiquitous. While research into the concept of multilingualism often focuses on its cognitive benefits (e.g., Adesope, Lavin, Thompson, & Ungerleider, 2010), this article investigates how multilingualism may improve interethnic attitudes. In a recent review article, Collins and Clément (2012) have convincingly argued that

---

[1]Utrecht University, Utrecht, Netherlands

Corresponding Author:
Borja Martinovic, Department of Interdisciplinary Social Science/ERCOMER, Utrecht University, Padualaan 14, 3584 CH Utrecht, Netherlands.
Email: b.martinovic@uu.nl

language and prejudice are closely related, and empirical studies have shown that learning a foreign language is related to reduced prejudice toward native speakers of that particular language (e.g., Rubenfeld et al., 2007; Wright & Bougie, 2007). What remains unknown is whether those of us who speak more foreign languages are also more open to ethnic out-groups in general, and why this would be the case.

Studying the relationship between multilingualism and out-group acceptance is currently particularly relevant. In today's globalized and internationally mobile world, many (ethnocultural) groups experience frequent intergroup encounters. These encounters call for more acceptance of cultural and linguistic differences in day-to-day life. In line with previous literature (e.g., Gunesch, 2008; Rubenfeld et al., 2007), we propose that multilingual individuals might be better equipped to accept this diversity. Our specific argument is that this could be due to multilingual individuals' higher cognitive flexibility, and in turn their less ethnocentric, or more deprovincialized, worldview. Thus, this research examines whether the degree of multilingualism may be related to greater acceptance of ethnic out-groups, and if so, whether this can be attributed to multilingual individuals' higher cognitive flexibility, which may lead them to adopt a more deprovincialized mind-set.

This article provides three innovations on current scientific literature. First, the research presented here takes an interdisciplinary perspective, exploring multilingualism's potential benefits to intergroup outcomes, where other quantitative research has typically focused on cognitive outcomes of multilingualism (e.g., Adesope et al., 2010). Second, ours is the first study to systematically examine the relationship between multilingualism and general acceptance of ethnolinguistic out-groups. While the suggestion of this relationship is not novel (see, e.g., Rubenfeld et al., 2007), we test the underlying mechanisms using large-scale survey data and advanced quantitative methods (cf. Gunesch's [2008] small sample qualitative analysis). Third, this study is one of few to examine multilingualism in a broad form by considering the total number of languages spoken by adults. In this way, comparisons are not limited to people speaking one language and those who speak two languages (i.e., monolinguals and bilinguals), as is common in studies on the effects of language skills (e.g., Bak, Nissan, Allerhand, & Deary, 2014; Engel, 2011; Eviatar, 1997; Ramírez-Esparza, Gosling, Benet-Martínez, Potter, & Pennebaker, 2006). Moreover, generalizability is not restricted to languages acquired in early childhood (e.g., Bialystok & Shapero, 2005; Dewaele & van Oudenhoven, 2009; Engel, 2011), since languages learned at any age are taken into consideration.

The research is conducted in the Netherlands, one of the countries with the highest percentage of population in Europe (94%) that is conversationally multilingual, and with a large majority of the population (77%) being able to converse in at least three languages, according to Eurobarometer 386 (research conducted on behalf of the European Commission; TNS Opinion & Social, 2012). This makes the Netherlands an ideal context for studying a nationally representative sample of adults, and for estimating how variation in the number of languages spoken is related to out-group acceptance. Below, the concept of out-group acceptance is briefly defined, followed by a theoretical consideration of the mechanisms that could help understand why multilingual individuals might be more open to and accepting of ethnic out-groups.

Out-Group Acceptance

Multicultural societies (i.e., those in which multiple ethnic groups and cultures are present) may face problems of negative out-group attitudes, exclusion, and discriminatory behavior (e.g., Kaas & Manger, 2012; Scheepers, Gijsberts, & Coenders, 2002). Out-group acceptance is defined as the degree to which an individual believes that another ethnic group to which he or she does not belong is of a positive standing. In the present study, out-group acceptance is examined in terms of generally positive feelings toward ethnic out-groups (see, e.g., Pettigrew, 1997), and a sense of shared or common belonging (e.g., Stone & Crisp, 2007).

Multilingualism and Cognitive Flexibility

The first step in explaining why more multilingual individuals may be more accepting of ethnic out-groups is their higher cognitive flexibility. Cognitive flexibility, following Martin and Anderson's (1998, p. 1) definition, is "the awareness that in any given situation there are options and alternatives available, [the] willingness to be flexible and adapt to the situation, and [one's] self-efficacy in being flexible." This cognitive ability is increased in bilingual individuals (Adesope et al., 2010; Kozulin, 1999), due to the flexibility requirements of language production inherent in any language (Martin & Rubin, 1995). Such flexibility could be displayed through alternative manners of presenting the same message; for instance, in the modification of a message to suit the audiences to which it is presented who may have lesser or greater understanding of the language used or the concepts which one is presenting. Indeed, some empirical evidence supports the thesis that cognitive flexibility is influenced by language skills such as speech production (Hermer-Vazquez, Moffet, & Munkholm, 2001). Cognitive flexibility is potentially more developed when one is able to communicate in multiple languages (Kozulin, 1999). This link between multilingualism and cognitive flexibility is further supported by research comparing bilinguals and monolinguals. Examples include more effective integration of divergent data sources (Kharkhurin, 2008) and greater ability to view visually ambiguous stimuli in multiple ways in bilinguals (Bialystok & Shapero, 2005; see also a report commissioned by Education, Audiovisual and Culture executive Agency of the European Commission, 2009). Considering this evidence, and since speaking multiple languages implies a greater ability to understand and represent information in different ways, cognitive flexibility can be expected to be higher in those individuals who show a greater degree of multilingualism (Hypothesis 1).

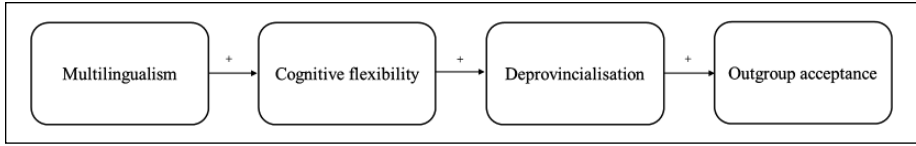## Cognitive Flexibility, Out-Group Acceptance, and Deprovincialization

Rokeach's (1948) classic experimental research found that those who were more cognitively flexible were also less prejudiced against ethnic out-groups. Here, participants were shown arithmetic problems only solvable by a specific complex approach that was explained to them by the researcher. After that, they were offered similar types of

arithmetic problems solvable by much simpler and rather obvious solutions. Those who did not apply the taught complex method but rather went for a simpler solution were deemed more cognitively flexible, and were found to hold less prejudicial attitudes toward ethnic out-groups. In a similar vein, Crisp and Turner (2011) suggested that experience of social and cultural diversity would lead to an increase in out-group tolerance. This is said to occur among those with the capability and motivation to integrate various kinds of conflicting information and generate new insights from earlier information, as would be implied by cognitive flexibility. While these findings are promising in explaining a link between multilingualism and out-group acceptance, further understanding of why cognitive flexibility may cause this increase in out-group acceptance is warranted.

A potential explanation may lie in deprovincialization. Deprovincialization implies the recognition of, and insight into, alternative cultural worldviews and a reframing of those held by one's in-group (Pettigrew, 1997). This concept is typically used in the context of intergroup contact (e.g., Verkuyten, Thijs, & Bekhuis, 2010) but can also be related to multilingualism through cognitive flexibility. It may be that cognitive flexibility, as both a motivated choice and ability to view information in multiple, alternative ways would make one more likely to look at life from different perspectives. Values and norms may then come to be considered somewhat arbitrary and many sets of these viewed as equally valid. Thus, it is argued that these alternative understandings offer a basis for the insight that other groups may also perceive the world in different ways, and would further allow for reevaluation of these cultural understandings. If one does indeed also come to hold a different worldview personally, this novel perception of the world would furthermore motivate one to become more accepting of worldviews other than those held by one's ethnocultural group, since maintenance of a negative evaluation of novel worldviews might cause cognitive dissonance (Elliot & Devine, 1994). For these reasons, it is expected that more cognitively flexible individuals will also be more deprovincialized (Hypothesis 2).

Since deprovincialization implies relativizing one's culture, it can also entail recognition of out-groups' cultures as being valuable, which makes an out-group more likeable (Pettigrew, 1997). Similarly, this reduction of provincialized in-group centrism may encourage one to be less restrictive with regard to which out-groups one perceives oneself to share similarities with. These theoretical links are repeatedly borne out by empirical findings. Martinovic and Verkuyten (2013) found evidence for deprovincialization's association with reduced out-group prejudice. Similarly, in-group reappraisal was shown to be related to lower ethnocentrism (Verkuyten et al., 2010), and deprovincialization was found to be associated with a greater perception of a common identity (Verkuyten & Martinovic, 2015). Based on these theoretical arguments and empirical findings, deprovincialization is expected to be associated with greater out-group acceptance (Hypothesis 3). This represents a more detailed explanation of the link between cognitive flexibility and out-group acceptance as suggested by previous authors (Crisp & Turner, 2011; Rokeach, 1948).

In sum, it is expected that the more languages people speak, the more they will be accepting of ethnic out-groups. This is expected due to two sequential mechanisms: an

Figure 1. Theoretical model of multilingualism's relationship with out-group acceptance.

increase in cognitive flexibility, and as a result of this, becoming more deprovincialized. Deprovincialization could then facilitate a reevaluation of the out-group. These hypotheses are presented as a conceptual model in Figure 1.

Method

Data and Participants

The data used for hypothesis testing were collected by a research agency TNS-NIPO (2012) in an anonymous online survey among 810 Dutch citizens residing in the Netherlands. The sample was representative of the Dutch adult population in terms of age, gender, education, and region. Of this group, 18 participants were excluded for reasons of non-Dutch ethnic background ($N = 8$) and missing data on language ($N = 1$) and controls (9 individuals gave no information on their level of completed education). This yielded a final sample of 792. In this sample, the gender division was exactly equal. The age of the participants in years ranged from 18 to 87 ($M = 50.6$, $SD = 17.2$).

Dependent Variables

Out-group acceptance was operationalized in two ways; first, in terms of holding an inclusive notion of one's national identity and second, feeling generally more positive toward ethnic minorities living in the Netherlands.

Inclusive national identity was measured as a latent variable from participants' agreement with three statements regarding their feelings of Dutch unity in light of cultural differences (Verkuyten, Martinovic, & Smeekes, 2014): "Despite the different cultures that are present in the Netherlands, I often have the feeling that we all belong to one community," "Despite cultural differences, all groups together form Dutch society," and "Despite all of the differences I often have the feeling that we are one country and have to exist together." Agreement was measured on a 7-point Likert-type scale, ranging from *strongly disagree* to *strongly agree*. Reliability for this scale was very good, at Cronbach's α = .90.

Positive feelings toward ethnic out-groups were measured as a latent variable from four so-called "feeling thermometers" (e.g., Zavala-Rojas, 2014). In such a measure, participants indicate how "warm" they feel about a given group in 10° increments, ranging from 0° to 100°. The groups specified were Turks, Moroccans, Surinamese,

and Antilleans. These are the four largest (non-Western) immigrant-origin groups in the Netherlands (Statistics Netherlands, 2015). A measure including all of these groups had good reliability at α = .81.

Independent Variables

The independent variable *number of languages spoken* was measured by counting the number of languages participants reported speaking. These responses were given to the question "Aside from Dutch, which other language/languages do you speak? With speaking is meant having at least enough knowledge to manage an everyday conversation." Dutch dialects reported by participants were not counted as separate languages, however, the officially recognized language of Frisian was counted. This yielded 27 unique languages spoken by participants (see Table 1 in the appendix for the full list), however, of the 1,483 unique occurrences of all languages excluding Dutch, the vast majority were English (646 occurrences), German (508 occurrences), and French (183 occurrences).[1] Spanish (34 occurrences), Frisian (22 occurrences), and Italian (14 occurrences) were the next most frequently spoken languages, while all others were spoken by six individuals or fewer. Participants in our sample were on average able to converse in two to three languages next to their mother tongue (*M* = 2.82, *SD* = 1.15), with one being the lowest and nine the highest number of languages mentioned.

Mediators

The first mediator, *cognitive flexibility*, was measured as a latent variable from participants' agreement with six statements adapted from Martin and Rubin's (1995) scale. These statements concerned one's ability to understand and reproduce information in multiple ways. The six statements were "I am always open to alternative ways to tackle a problem," "I'm always capable of adapting my behavior to situations," "I can explain an idea in multiple ways," "I like to search for creative solutions to problems," "In every situation I can behave as one should," and finally a reverse-scored item, "I avoid new and unfamiliar situations." Agreement with the statements was indicated on a 7-point Likert-type scale, ranging from 1 = *strongly disagree* to 7 = *strongly agree*. This was found to form a reliable scale (α = .78).

The second mediator, *deprovincialization*, was measured as a latent variable from participants' agreement with four statements on the topic of cultural relativism and open-mindedness regarding the Dutch worldview (Martinovic & Verkuyten, 2013). The statements were as follows: "Dutch culture is certainly no better than other cultures," "One must always try to have a broader view than only the Netherlands," "How we in the Netherlands look at the world is but one of many possibilities," and "One must always nuance your own worldview and not declare it sacred." Agreement was indicated on a 7-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. This measure had a good reliability, at α = .86.

Controls

Intergroup contact could be a potentially influential covariate, as contact with out-groups is consistently related to positivity toward out-groups and to deprovincialization (Pettigrew, 1997; Pettigrew & Tropp, 2008; Verkuyten et al., 2010). Furthermore, contact had been shown to mediate the relationship between foreign language acquisition and feelings toward native speakers of that particular language (Rubenfeld et al., 2007). Contact could also plausibly promote cognitive flexibility by, for instance, teaching one to realize that other ethnic groups may take different perspectives on any given topic (e.g., on societal debate regarding immigration). Since no question about frequency of contact with ethnic out-groups was available in the data set, proxies had to be used. First, binary measures of how one had learned foreign languages were considered. Multiple options were offered, and participants who indicated that they learned the languages "From a friend for whom the language is their native one," "From a family member/partner for whom the language is their native one," or "While living in a foreign country" were contrasted with those who did not learn the languages in these ways but rather at school, in a language class, or by watching foreign television programs. This resulted in three dummy variables that plausibly all directly imply contact with native speakers of the language. Furthermore, another contact proxy included was the participant's response to the question "Throughout the years, how often did you visit foreign countries?" to which participants could respond on a six-point scale ranging from *never* to *very often* (multiple times per month). More frequent travel abroad is assumed to imply greater interethnic contact.

A control for *age* (in years) was also included, since it could be related to the number of languages one has had the opportunity to learn, but has also been found to be related to one's attitude toward out-groups to a modest degree (Coenders & Scheepers, 1998). *Level of completed education* was controlled for, since higher education is often associated with more positive attitudes toward out-groups (Coenders & Scheepers, 2003). In the Netherlands, it also provides greater opportunities to learn a language (German, French, and English are standard parts of secondary school education in higher educational tiers). Moreover, education could also stimulate cognitive flexibility in fields other than language learning, such as art (Karakelle, 2009) and math (Verschaffel, Luwel, Torbeyns, & Van Dooren, 2009), and we wanted to control for this additional relationship between education and cognitive flexibility.[2]

Analysis

To test the hypotheses, structural equation modelling (SEM) was employed. SEM is a method that allows for estimation of latent variables based on multiple-item scales, and a simultaneous test of structural paths between these latent variables (Kline, 2010). We used M*plus* statistical software, version 7.3 (L. Muthén & Muthén, 2012), which is particularly suitable for SEM.

First, we fitted a measurement model using confirmatory factor analysis. Following this, descriptive statistics of all variables were taken from M*plus* using the effect-coding method of model identification for latent variables (Little, Slegers, & Card, 2006),[3] since this produces statistics comparable to mean-scored scales while taking into account the differing factor loadings of items on latent variables. Finally, we fitted the hypothesized structural path model. Since prior inspection of the data revealed nonnormal distributions of some variables, all measurement and structural models were fitted using a robust maximum likelihood estimator. Such an estimator provides standard errors robust to nonnormal distributions but does not allow for standard comparison of models through loglikelihood testing, so model comparisons were made using Satorra-Bentler-corrected χ^2 values (Satorra & Bentler, 2001).

Results

Measurement Model

To test the measurement model for the latent variables of inclusive national identification, out-group feelings, cognitive flexibility, and deprovincialization, confirmatory factor analysis was conducted. Fit statistics of the measurement model are presented in Table 1. A four-factor, 17-item model including all items measuring the latent variables fit the data well. However, an item measuring cognitive flexibility ("I avoid new and unfamiliar situations") had a very low explained variance ($R^2 = .11$). This indicated that the latent variable cognitive flexibility did not predict this item sufficiently: therefore, the item was excluded.[4] With this modification made, it was found that another item from the cognitive flexibility scale ("In every situation I can behave as one should") was also quite poorly explained ($R^2 = .21$).[5] Due to this, it was also excluded. No further items from any of the scales were found to be inadequately explained ($R^2 = [.38, .94]$). However, modification indices suggested that feelings toward Surinamese and Antilleans shared error covariance. This was considered a plausible suggestion, since both Surinamese and Antilleans are from former Dutch colonies in a similar geographic area and may therefore be perceived quite similarly. Thus, this residual covariance was freed. No further irregularly large modification indices were found, and this final model fit the data well and better than the previous model (see Table 1). Further testing was conducted to ensure that this factor structure predicted the items better than other plausible variants such as grouping items from the out-group feelings and inclusive national identity measures under deprovincialization, and grouping items from cognitive flexibility and deprovincialization. The proposed measurement model, with four factors measured by 15 items of the original 17, with a single freed error covariance between two out-group feelings items was thus found to be the best fitting compared with other specifications. All measures were found to have good to very good reliability, with Raykov's composite reliability ρ ranging from .74 to .90 (Raykov, 1997).

Table 1. Model Fits of Measurement and Structural Models, Including Sensitivity Analyses.

	$\chi^2(df)$	Scaling	$\Delta\chi^2(\Delta df)$	AIC	CFI/TLI	RMSEA	SRMR
Measurement models							
17-Item, 4-factor model	406.65 (113)***	1.22	—	41081.88	.94/.93	.06	.04
Minus 1 item cognitive flexibility[a]	383.30 (98)***	1.24	19.11 (15)	38328.47	.94/.93	.06	.05
Minus 2 items cognitive flexibility[b]	339.29 (84)***	1.25	43.37 (14)***	36188.48	.94/.93	.06	.05
Freed 1 covariance within feelings (final measurement)[c]	259.00 (83)***	1.25	80.29 (1)***	36090.67	.96/.95	.05	.04
Alternative measurement specifications							
3-Factor M1 (Deprovincialization grouped with out-group feelings)	634.78 (86)***	1.27	264.58 (3)***	36569.56	.88/.85	.09	.08
3-Factor M2 (Deprovincialization grouped with inclusion of national identity)[d]	1035.36 (86)***	1.19	—	36994.73	.79/.74	.12	.07
3-Factor M3 (Cognitive flexibility grouped with deprovincialization)	844.16 (86)***	1.28	358.66 (3)***	36840.64	.83/.79	.11	.08
Hypothesized structural model[e]	481.67(204)***	1.09	—	35936.48	.95/.94	.04	.03
Alternative measures of multilingualism							
Number of languages spoken well	477.08 (204)***	1.09	—	35949.89	.95/.94	.04	.03
Excluding outliers (remaining N = 786)	475.21 (204)***	1.09	—	35658.94	.95/.94	.04	.03
Excluding frequent languages	482.59 (204)***	1.09	—	35967.01	.95/.94	.04	.03
Excluding infrequent languages	478.82 (204)***	1.09	—	35939.18	.95/.94	.04	.03
Alternative structures							
Reversed order cognitive flexibility and languages spoken	538.06 (214)***	1.09	—	38195.18	.95/.93	.04	.05
Swapped position including national identity and deprovincialization[e]	481.67 (204)***	1.09	—	35936.48	.95/.94	.04	.03
Cognitive flexibility and deprovincialization in parallel[e]	481.67 (204)***	1.09	—	35936.48	.95/.94	.04	.03

Note. Scaling = Satorra–Bentler scaling correction factor; AIC = Akaike's information criterion; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; df = degrees of freedom.

[a]Item "I avoid new and unfamiliar situations" was removed due to low explained variance. [b]Item "In every situation I can behave as one should" was removed due to low explained variance. [c]Residual covariance between feelings toward Turks and Antilleans was freed due to a large modification index. [d]A standard Satorra–Bentler correction yields a negative χ^2 difference. AIC comparison was used since the strictly positive method (Satorra & Bentler, 2010) could not be computed. [e]Models are mathematically equivalent.

***$p < .001$.

Table 2. Descriptives of and Correlations Between the Latent and Observed Main Variables (N = 792).

	M	SD	Range	1	2	3	4
1. Inclusive national identity	4.15	1.43	1-7				
2. Out-group feelings	5.48	1.47	0-10	.67***			
3. Cognitive flexibility	5.13	0.79	1-7	.34***	.28***		
4. Deprovincialization	5.37	0.89	1-7	.61***	.53***	.51***	
5. Number of languages spoken	2.82	1.15	1-9	.29***	.26***	.27***	.35***

***$p < .001$.

Descriptive Results

Descriptive statistics of and correlations between the main variables are shown in Table 2. All correlations between the main variables were significant and positive, ranging from $r = .26$, $p < .001$ between number of languages spoken and out-group feelings, to $r = .67$, $p < .001$ between out-group feelings and inclusive national identity. Regarding the control variables (not shown in Table 2), the most notable correlation was that between education and the number of languages ($r = .44$, $p < .001$), probably due to secondary educational requirement of English and French or German in higher educational tiers in the Netherlands.

Multilingualism and Out-Group Acceptance

To test the hypotheses, a structural model was specified in which out-group feelings and inclusive national identity were regressed on cognitive flexibility, deprovincialization, number of languages spoken, and all control variables. Furthermore, deprovincialization was regressed on cognitive flexibility, number of languages spoken, and the control variables. Cognitive flexibility was regressed on number of languages spoken and all control variables. This model fit the data well (see Table 1, "Hypothesized structural model").

Standardized path coefficients of the structural model's main variables can be found in Figure 2, while the unstandardized coefficients are shown in Table 3. Hypothesis 1 was supported: More multilingual individuals were found to be more cognitively flexible. In line with Hypothesis 2, more cognitively flexible individuals were in turn found to be more deprovincialized. Taken together, the relationship between the number of languages spoken and deprovincialization was partially mediated by cognitive flexibility, with a direct effect of number of languages spoken remaining positive and significant. Hypothesis 3, postulating that deprovincialization predicts more out-group acceptance is supported both in relation to inclusive conception of national identity and in relation to out-group feelings. Overall, there was support for the model with sequential mediation paths[6]: the effects of number of languages spoken on out-group feelings and inclusive national identity were
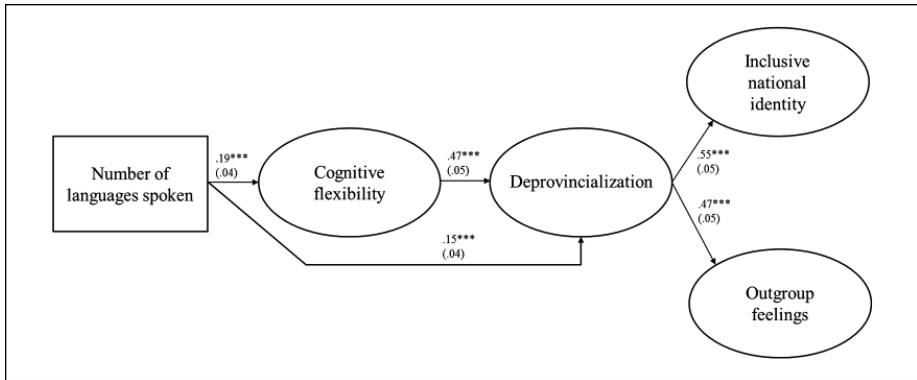
Figure 2. Standardized coefficients of the hypothesized structural model, with standard errors in brackets.
Note. Controlled for intergroup contact (4 proxies), gender, age, highest completed education. Ellipses indicate latent variables, rectangles observed variables.
***$p < .001$.

mediated by cognitive flexibility and deprovincialization in sequence. In addition, another mediation path through deprovincialization alone was found. When accounting for these two indirect paths, no direct relationship remained between number of languages and the two dependent variables, implying full mediation. As can be seen in Table 3, this structural model explains a substantial amount of variance in the out-group acceptance measures and deprovincialization. However, the explained variance of cognitive flexibility is relatively low.

Coefficients for the control variables are reported in Table 3. Of the proxies for intergroup contact, learning languages through native-speaking family members or partner was positively related to out-group feelings (as would be expected), as was having learned a language while living abroad (albeit at a marginal level of significance). Frequency of travelling abroad was also positively associated with cognitive flexibility. However, learning languages through native-speaking friends was unexpectedly found to be negatively related to endorsement of inclusive national identity. Educational attainment positively predicted both of the out-group acceptance measures and deprovincialization, but not cognitive flexibility. Being a female compared with male was associated with more positive out-group feelings, and a greater level of both deprovincialization and cognitive flexibility. Age was found to be positively related to deprovincialization.

Alternative Measures of Multilingualism

Three alternative models were estimated using adjusted measures of multilingualism. First, to examine whether multilingualism conceptualized in terms of the number of languages spoken well[7] is even more strongly related to improved out-group attitudes and inclusive identity, the same model was estimated using the number of languages spoken well as the main explanatory variable ($M = 1.03$, $SD = .93$, correlation with

Table 3. Unstandardized Path Coefficients and Standard Errors of the Hypothesized Model (N = 792).

	Inclusive national identity, b (SE)	Out-group feelings, b (SE)	Deprovincialization, b (SE)	Cognitive flexibility, b (SE)
Total effects				
Number of languages spoken	.22 (.05)***	.17 (.06)**	.17 (.03)***	.13 (.03)***
Cognitive flexibility	.46 (.08)***	.38 (.08)***	.51 (.06)***	—
Direct effects				
Number of languages spoken	.07 (.05)	.05 (.05)	.11 (.03)***	.13 (.03)***
Cognitive flexibility	.02 (.08)	.01 (.09)	.51 (.06)***	—
Deprovincialization	.85 (.08)***	.73 (.11)***	—	—
Indirect effects				
No. languages → Cognitive flexibility → Deprovincialization	.06 (.02)***	.05 (.01)***	—	—
No. languages → Cognitive flexibility	.00 (.01)	.00 (.01)	.07 (.02)***	—
No. languages → Deprovincialization	.09 (.03)***	.08 (.02)***	—	—
Cognitive flexibility → Deprovincialization	.43 (.06)***	.37 (.07)***	—	—
Controls				
Contact (language learned through native partner or family)	.14 (.14)	.38 (.15)**	.00 (.09)	.01 (.12)
Contact (language learned through friend)	−.32 (.14)*	.04 (.15)	.00 (.08)	−.04 (.10)
Contact (language learned through foreign residence)	−.21 (.14)	.34 (.18)†	.12 (.09)	.15 (.11)
Contact (frequency of travel abroad)	−.00 (.05)	−.06 (.06)	.02 (.04)	.11 (.03)**
Education	.09 (.03)**	.07 (.03)*	.07 (.02)***	.02 (.02)
Age	.00 (.00)	.00 (.00)	.01 (.00)***	−.00 (.00)
Gender (female)	.10 (.09)	.36 (.10)***	.17 (.06)**	−.12 (.06)*
Explained variance (R²)	.40***	.37***	.32***	.12***

Note. SE = standard error.
†p < .10. *p < .05. **p < .01. ***p < .001.

number of languages spoken: $r = .68$, $p < .001$). The findings were largely similar to the main model, with the sequential mediation path from multilingualism via cognitive flexibility and deprovincialization to inclusive national identity and out-group feelings being significant.[8] The unstandardized coefficients were only slightly and rather negligibly higher in this alternative model (see Table 3 and Table 4), suggesting that speaking many languages well is not much more beneficial for intergroup outcomes than being able to converse in many languages on a lower level. What did differ in this alternative model, however, is that the total association between number of languages spoken well and the two outcome variables—out-group feelings and an inclusive national identity—was not significant. This was due to an unexpected nonsignificant yet negative direct association between languages spoken well and the outcome variables. Furthermore, number of languages spoken well was no longer found to have a significant direct association with deprovincialization. Explained variances remained very similar, with no other apparent changes compared with the hypothesized model. The standardized path coefficients can be seen in Figure 3, and the unstandardized coefficients including controls and explained variances in Table 4.

Second, due to the high proportion of certain languages, particularly German and English, but also French, a concern may be that the results are driven only by these languages. For this reason, a sensitivity test was conducted in which these languages were not included in the count of languages. This model was found to hold with the additional mediation path from number of languages spoken through deprovincialization. Alternatively, it may be that less commonly spoken languages, which unlike English, German, and French are not typically taught in schools, are more likely to be reflective of some particular experience or trait in the individuals that speak them (e.g., one may have learned the language due to having close friends or family who natively spoke a language but did not actively teach them, or may have learned these languages due to some other preexisting affinity with foreign cultures). Thus, the hypothesized model was retested removing the infrequent languages and keeping only English, French, and German, and was still found to hold. Also, the indirect path through deprovincialization alone was still found to be significant. Multilingualism, thus, seems to be related to out-group acceptance regardless of the type of languages spoken.

Third, since it could be argued that those speaking large numbers of languages (five or more) may have positively misjudged their abilities, and the fact that they occurred infrequently, eight outliers who reported speaking from five to eight languages were excluded to test if they were driving the results. This was not the case, as the analysis without the eight outliers again yielded qualitatively equivalent results to the hypothesized model, including the mediation path through deprovincialization alone.[9]

Alternative Causal Pathways

As the data are cross-sectional, alternative causal ordering is a possibility. First, it was considered whether the two mediators may be independently related to out-group acceptance. Thus, a model was tested in which cognitive flexibility and deprovincialization mediated a link between the number of languages one speaks and

Table 4. Unstandardized Path Coefficients and Standard Errors in the Model Using Number of Languages Spoken Well (N = 792).

	Inclusive national identity, b (SE)	Out-group feelings, b (SE)	Deprovincialization, b (SE)	Cognitive flexibility, b (SE)
Total effects				
Number of languages spoken well	.07 (.06)	.04 (.06)	.14 (.04)***	.16 (.04)***
Cognitive flexibility	.49 (.08)***	.41 (.08)***	.52 (.06)***	.16 (.04)***
Direct effects				
Number of languages spoken well	-.05 (.05)	-.07 (.06)	.05 (.03)	.16 (.04)***
Cognitive flexibility	.04 (.09)	.03 (.09)	.52 (.06)***	—
Deprovincialization	.87 (.08)***	.74 (.11)***	—	—
Indirect effects				
No. languages → Cognitive flexibility → Deprovincialization	.08 (.02)***	.06 (.02)***	—	—
No. languages → Cognitive flexibility	.01 (.01)	.00 (.01)	.09 (.02)***	—
No. languages → Deprovincialization	.05 (.03)	.04 (.03)	—	—
Cognitive flexibility → Deprovincialization	.46 (.06)***	.39 (.08)***	—	—
Controls				
Contact (language learned through native partner or family)	.19 (.15)	.43 (.15)**	.03 (.09)	-.01 (.13)
Contact (language learned through friend)	-.27 (.14)†	.09 (.15)	.03 (.08)	.03 (.10)
Contact (language learned through foreign residence)	-.15 (.14)	.39 (.18)**	.15 (.09)	.14 (.11)
Contact (frequency of travel abroad)	-.02 (.05)	-.04 (.06)	.03 (.04)	.10 (.03)**
Education	.11 (.03)***	.08 (.03)*	.09 (.02)***	.03 (.02)
Age	.00 (.00)	.00 (.00)	.01 (.00)***	-.00 (.00)
Gender (female)	.09 (.09)	.34 (.10)***	.17 (.06)**	-.11 (.06)†
Explained variance (R^2)	.40***	.36***	.32***	.12***

Note. SE = standard error.
†p < .10. *p < .05. **p < .01. ***p < .001.
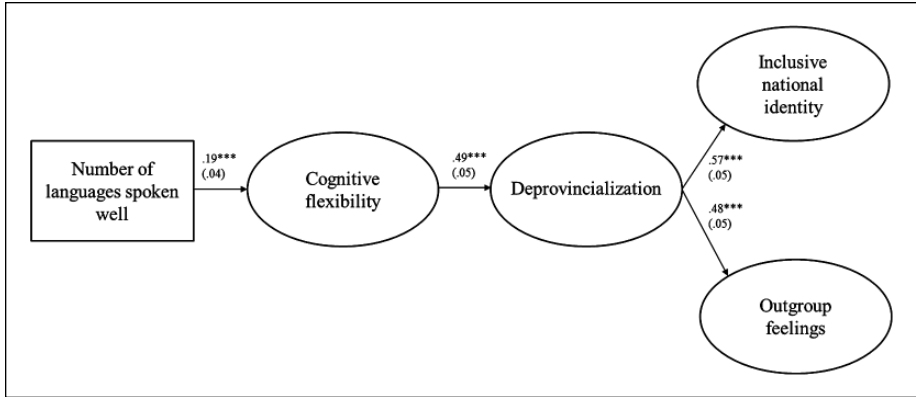
Figure 3. Standardized path coefficients of the structural model using languages spoken well, with standard errors in brackets.
Note. Controlled for intergroup contact (4 proxies), gender, age, highest completed education. Ellipses indicate latent variables, rectangles observed variables.
***p < .001.

one's out-group acceptance in parallel, rather than in sequence. This model is mathematically equivalent to the hypothesized model and thus cannot quantitatively be compared (Kline, 2010, p. 226). However, while cognitive flexibility and deprovincialization were in this alternative model both directly predicted by number of languages spoken, only deprovincialization was found to directly predict the two measures of out-group acceptance.

Second, it was examined whether cognitive flexibility may be a predictor of the number of languages one speaks, since perhaps more cognitively flexible individuals may have an easier time learning them. Thus, their position in the model was reversed. This model still fit the data well (see Table 1) although worse than the hypothesized model.[10]

Finally, a model was tested in which inclusive national identity was swapped with deprovincialization, since perhaps cognitively flexible individuals might directly have a more "flexible" conception of their national identity which leads them to become deprovincialized. This model is also mathematically equivalent to the hypothesized model, and the paths hold (i.e., inclusive national identity is significantly predicted by cognitive flexibility and deprovincialization is predicted by inclusive national identity). However, deprovincialization is still significantly and positively directly predicted by cognitive flexibility. Altogether, these alternative models, while not invalidated, seem to capture the relationships between the constructs less well than the hypothesized model.

Discussion

This study set out to examine whether people who speak more languages are more accepting of ethnic out-groups. The link between foreign language skills and prejudice

reduction has not been researched much, and studies that have done so have focused on learning a specific foreign language and the effects thereof on attitudes toward speakers of that language (e.g., Rubenfeld et al., 2007; Wright & Bougie, 2007). Ours is a first study to systematically investigate the role of multilingualism in reducing prejudice toward multiple out-groups and improving intergroup relations in general. We also used a broad operationalization of multilingualism by considering the total number of languages in which people are able to converse, thereby departing from studies that examine multilingualism in its stricter form and consider only languages that are fully mastered (e.g., Bialystok & Shapero, 2005; Dewaele & van Oudenhoven, 2009; Engel, 2011). Importantly, we examined the underlying explanations for the link between multilingualism and acceptance of ethnic out-groups, by zooming in on cognitive flexibility and deprovincialization as two main mechanisms through which intergroup benefits of multilingualism are being reaped. We tested these ideas on a large nationally representative sample of Dutch participants, using advanced quantitative methods of analysis.

We found support for the expectation that more multilingual individuals would be more accepting of ethnic out-groups. The more languages people speak, the more positive their attitudes toward ethnic minorities are and the more inclusive their conception of national identity. As to the underlying psychological mechanisms, it was found that more multilingual people were more cognitively flexible, which is in line with the existing literature (Adesope et al., 2010; Bialystok & Shapero, 2005; Kharkhurin, 2008; Kozulin, 1999). Cognitive flexibility, in turn, was related to higher deprovincialization, suggesting that people who are more open to alternative arguments and who consider different solutions to problems also tend to hold a less ethnocentric view of the world. Deprovincialized worldview translates then into higher out-group acceptance, consistent with previous literature (Martinovic & Verkuyten, 2013; Verkuyten et al., 2010; Verkuyten & Martinovic, 2015).

We can conclude that people who speak more languages are more accepting of out-groups because they are more cognitively flexible and hence more deprovincialized. These underlying processes were detected regardless of whether we measured the number of languages in which one can have a simple day-to-day conversation or the number of languages spoken well. Findings were moreover robust when focusing only on commonly spoken foreign languages (English, German, French) or only on less common foreign languages. These alternative analyses indicate that multilingualism in its various forms can be beneficial for acceptance of ethnic out-groups.

While our main expectations were confirmed by the data, the analyses also yielded two additional interesting findings that warrant further investigation. First, cognitive flexibility only explained part of the relationship between multilingualism and deprovincialization, as a significant direct positive relationship remained. Perhaps this is an artefact of imperfect controls for intergroup contact (Pettigrew, 1997), but other mechanism may also be at play here. For instance, learning foreign languages likely also implies increasing knowledge about other cultures (Collins & Clément, 2012), and language learning might make one identify with the group with which a given language is commonly associated (see, e.g., Rubenfeld et al., 2007), all of which might cause a reevaluation of one's worldview.

Second, when using an alternative measure of multilingualism counting the number of languages spoken *well*, the total relationship between multilingualism and out-group acceptance was still positive (as in the main model) but failed to reach significance. This was due to a negative though nonsignificant direct path between the number of languages spoken well and out-group acceptance that appeared after having accounted for the significant positive indirect paths through cognitive flexibility and deprovincialization. This negative direct path, although weak, suggests that more proficient multilinguals might also have some reasons to dislike ethnic out-groups. Perhaps those ethnic Dutch individuals who speak more languages well find language learning relatively easy, and are therefore more critical of non-Western immigrant-origin groups, such as Turks and Morrocans, many of whom still have a limited proficiency in the Dutch language (Huijnk & Dagevos, 2012). Future research could look into these additional mechanisms.

Limitations and Directions for Future Research

One of the limitations of this research is the difficulty of determining causality with cross-sectional data. We cannot exclude the possibility that less prejudiced and more deprovincialized individuals would be more interested in learning foreign languages, or that more cognitively flexible individuals would be better at language learning and thus be more multilingual. Similarly, a model of cognitive flexibility and deprovincialization working as two parallel rather than sequential mediators is also a theoretically plausible alternative. We have tested these alternative models and found that they captured the relationships between the main constructs less well, even though the overall fit to the data was still good and at times mathematically equivalent to the hypothesized model. While our theoretical reasoning behind the proposed model makes sense and is supported by the data, future research would benefit from testing the causal paths using longitudinal methods and thereby possibly also revealing reciprocal paths. Such an approach would require following people for longer periods of time, preferably starting from their youth, and recording changes in their language skills, cognitive flexibility, deprovincialization, and out-group attitudes over time.

Another limitation concerns measurement bias in participants' self-reporting. Participants may have overestimated their abilities with regard to the level at which they spoke certain languages, but also how cognitively flexible they were. Furthermore, even if they did not misjudge their abilities, participants may have indicated speaking more languages or being more cognitively flexible due to a bias toward socially desirable responses. Note, however, that socially desirable responses are less problematic in anonymous online surveys such as ours, compared with face-to-face or telephone surveys (Heerwegh, 2009). Still, a more rigorous measurement of both the languages spoken and the extent of individuals' cognitive capabilities would ideally have been used. Future research should therefore consider formal tests of language abilities, or use preestablished thresholds such as those employed by the Common European Framework of Reference for Languages (Council of Europe, 2001). Similarly, while the measure of cognitive flexibility here relied on a self-report scale (Martin & Rubin,

1995) validated in terms of convergence with other measures and with observer ratings (Martin & Anderson, 1998), future research would benefit from including comparatively more objective neuropsychological measures. Such measures of multilingualism and cognitive flexibility would be unlikely to yield different conclusions in terms of valence or pattern of the detected relationships. However, they could provide more precise estimates of the magnitude of the effects.

While our study included participants with varying degrees of multilingualism (speaking up to nine languages), most of the participants "only" spoke two or three foreign languages and these were often relatively closely related European languages (Dutch borrows a lot from English, German, and French). While the sensitivity analysis showed that the effects remained very similar regardless of whether we only considered these common languages or only the less common ones, it could yet be that Dutch people's simultaneous knowledge of distant foreign languages (e.g., Mandarin Chinese, Arabic, and German) would result in more cognitive flexibility than their knowledge of more similar languages (e.g., English, French, and German). This would be expected because by definition, the more distant languages would have more differences in grammar, vocabulary, and idiom. Essentially, due to a lack of statistical power, it was not possible to test which elements of multilingualism may have been most strongly associated with increased cognitive flexibility.[11] Particularly the distinction between abilities in one language, distance between languages, the simpler count of languages (as tested here), and possible interactions between these facets of multilingualism, would be interesting to examine.

Finally, the sample was limited to participants of Dutch ethnic background and we measured their attitudes toward non-Western, linguistically rather distant, immigrant groups residing in the Netherlands. While it is not expected that the proposed mechanisms would function differently in other countries, further cross-national research is needed to validate these findings. Moreover, the overall link between multilingualism and out-group acceptance need not always be positive. For instance, in countries where the learning of specific languages was imposed, as in the case of Russian language in former communist states in Eastern Europe, or French and Spanish in the case of the Basque people in France and Spain, this violation of linguistic autonomy may lead to more apparent friction between the groups and thus more rigid and narrow definitions of the in-group. It would also be relevant to examine the benefits of multilingualism in the context of culturally more similar out-groups. It might be the case that multilingualism is not associated with an equal improvement in attitudes when it comes to culturally similar out-groups because attitudes toward them tend to be more positive to start with and the perceived differences in worldview tend to be smaller.

Notwithstanding these limitations, this research has offered preliminary evidence for a link between multilingualism and acceptance of ethnic out-groups. Just as intergroup contact is an important tool for prejudice reduction (Pettigrew, 1997; Pettigrew & Tropp, 2008), our findings suggest that raising multilingual citizens could be another effective strategy for improving interethnic attitudes. Future research that refines the measures and confirms these findings would highlight the potential benefits of teaching languages for creating more cohesive societies as globalization makes these societies more and more ethnically diverse.

Appendix

Table 1. Frequencies of Spoken Languages.

	Family total	Branch total	Languages total		Family total	Branch total	Languages total
Indo-European	2,243			Uralic	1		
Germanic		1,994		Finnic		1	
English			646	Finnish			1
Dutch			792	Japonic	1		
German			508	Japanese		1	
Frisian			22	Japanese			1
Dialect			15	Niger-Congo	3		
Swedish			4	Senegambian		1	
Sranan			1	Wolof			1
Norwegian			3	Bantu		2	
Nigerian Pidgin			1	Swahili			2
Danish			1	Tai-Kadai	1		
Afrikaans			1	Tai		1	
Italic		237		Thai			1
French			183	Austronesian	2		
Spanish			34	Malayopolynesian		2	
Portuguese			6	Indonesian			1
Italian			14	Malay			1
Slavic		3		Afro-Asiatic	4		
Polish			1	Semitic		4	
Russian			2	Hebrew			2
Greek		3		Arabic			2
Greek			3				

Table 2. Unstandardized Coefficients of Experimental Group Controls in the Model With Number of Languages Spoken and the Model With Number of Languages Spoken Well.

	Inclusive national identity, b (SE)	Out-group feelings, b (SE)	Deprovincialization, b (SE)	Cognitive flexibility, b (SE)
Model with number of languages spoken				
Experimental group (ref.cat. = Group 1)				
Group 2	−.11(.11)	−.11 (.14)	−.08 (.08)	−.00(.08)
Group 3	.08 (.12)	.04 (.14)	−.05 (.08)	.02 (.08)
Group 4	−.05 (.11)	−.12 (.14)	−.03 (.08)	−.18* (.09)
Model with number of languages spoken well				
Experimental group (ref.cat. = Group 1)				
Group 2	−.11 (.11)	−.11 (.14)	−.09 (.08)	−.02 (.08)
Group 3	.08 (.12)	.04 (.14)	−.04 (.08)	.03 (.08)
Group 4	−.05 (.11)	−.12 (.14)	−.03 (.08)	−.17† (.09)

Note. SE = standard error.
†$p < .10$. *$p < .05$.

Notes

1. These are likely particularly common due to secondary education, in which these languages are often taught and are mandatory parts of the curriculum in higher tiers.
2. The survey from which the data were taken had multiple aims beyond those considered in this study, and it also included several experimental manipulations. Two of these manipulations preceded the measures used in this article. To make sure that these experiments did not affect our variables of interest, controls for the survey versions were included in all the structural models tested here. There was only one version of the survey that had a negative effect on cognitive flexibility, whereas none of the remaining variables were affected by any of the experiments (for coefficients, see Table 2 in the appendix).
3. This requires constraining the average intercept of items constructing the factor to 0, and average loading on the latent variable to 1. The mean of the latent variable is freed to vary.
4. Potentially, since this item focused more on the situations one places oneself in, rather than directly on how an individual understands or reproduces information.
5. This may have been measuring the degree to which one conformed to situationally expected behaviors rather than solely one's ability to choose from a diverse set of behaviors correctly.
6. While the robust maximum likelihood estimator provides standard errors robust to violations of normality as is inherent in indirect effect calculations, bootstrapping with 5,000 samples was additionally conducted for the hypothesized model using an ML estimator, since B. Muthén (2015) suggests this may be more accurate, if conservative. Results remain qualitatively unchanged within a 99% CI. These results are available on request.
7. After asking which languages participants spoke, participants were also asked "Aside from Dutch, which other language/languages do you speak well? With speaking well is meant that you can use the language without much effort and that you can easily express yourself in this language."
8. Indirect effects were additionally tested using bootstrapping with 5,000 samples under an ML estimator. Results were unchanged using a 99% CI, and are available on request.
9. Results from these alternative models are available from the authors on request.
10. Since the hypothesized and alternate structural models are nonnested, χ^2 differences cannot be quantitatively compared. However, a measure of relative fit can be used; in this instance, the difference in Akaike's information criterion. A lower score indicates a better fitting model.

11. We tried to test whether the composition of languages that a multilingual person speaks matters for their out-group acceptance. A count variable was made of the number of language families within which one spoke languages (e.g., Indo-European, including among others Spanish, English, French, and Dutch; Uralic, including only Finnish; and Austronesian, including Malay and Bahasa Indonesia). A count of language branches was also considered (e.g., Semitic, including Arabic and Hebrew; Romance, including among others French and Italian; and Germanic, including among others German, English, and Dutch). These classifications were extracted from the 19th edition of Ethnologue (Lewis, Simons, & Fennig, 2016). However, the count of language families had very little variation in our data (see Table 1 in the appendix for a full list and count), while the number of branches was found to be collinear with the number of languages spoken, and both these measures were thus deemed unusable.

References

Adesope, O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and meta-analysis of the cognitive correlates of bilingualism. *Review of Educational Research*, *80*, 207-245.

Bak, T., Nissan, J., Allerhand, M., & Deary, I. (2014). Does bilingualism influence cognitive aging? *Annals of Neurology*, *75*, 959-963.

Bialystok, E., & Shapero, D. (2005). Ambiguous benefits: The effect of bilingualism on reversing ambiguous figures. *Developmental Science*, *8*, 595-604.

Coenders, M., & Scheepers, P. (1998). Support for ethnic discrimination in the Netherlands 1979–1993: Effects of period, cohort, and individual characteristics. *European Sociological Review*, *14*, 405-422.

Coenders, M., & Scheepers, P. (2003). The effect of education on nationalism and ethnic exclusionism: An international comparison. *Political Psychology*, *24*, 313-343.

Collins, K. A., & Clément, R. (2012). Language and prejudice: Direct and moderated effects. *Journal of Language and Social Psychology*, *31*, 376-396.

Council of Europe. (2001). *Common European framework of reference for languages: Learning, teaching, assessment*. Cambridge, England: Cambridge University Press.

Crisp, R., & Turner, R. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin*, *137*, 242-266.

Dewaele, J., & van Oudenhoven, J. (2009). The effect of multilingualism/multiculturalism on personality: No gain without pain for third culture kids? *International Journal of Multilingualism*, *6*, 443-459.

Elliot, A., & Devine, P. (1994). On the motivational nature of cognitive dissonance: Dissonance as psychological discomfort. *Journal of Personality and Social Psychology*, *67*, 382-394.

Engel, A. (2011). Working memory in multilingual children: Is there a bilingual effect? *Memory*, *19*, 529-537.

European Commission. (2009). *Study on the contribution of multilingualism to creativity*. Brussels, Belgium: Directorate-General for Education and Culture.

Eviatar, Z. (1997). Language experience and right hemisphere tasks: The effects of scanning habits and multilingualism. *Brain and Language*, *58*, 157-173.

Gunesch, K. (2008). *Multilingualism and cosmopolitanism: Meanings, relationships, tendencies*. Saarbrücken, Germany: VDM Verlag Dr. Müller.

Heerwegh, D. (2009). Mode differences between face-to-face and web surveys: An experimental investigation of data quality and social desirability effects. *International Journal of Public Opinion Research*, *21*, 111-121.

Hermer-Vazquez, L., Moffet, A., & Munkholm, P. (2001). Language, space, and the development of cognitive flexibility in humans: The case of two spatial memory tasks. *Cognition*, *79*, 263-299.

Huijnk, W., & Dagevos, J. (2012). *Dichter bij elkaar? De sociaal-culturele positie van niet-westerse migranten in Nederland* [Closer together? The socio-cultural position of non-Western immigrants in the Netherlands]. The Hague: Netherlands Institute for Social Research.

Kaas, L., & Manger, C. (2012). Ethnic discrimination in Germany's labor market: A field experiment. *German Economic Review*, *13*, 1-20.

Karakelle, S. (2009). Enhancing fluent and flexible thinking through the creative drama process. *Thinking Skills and Creativity*, *4*, 124-129.

Kharkhurin, A. (2008). The effect of linguistic proficiency, age of second language acquisition, and length of exposure to a new cultural environment on bilinguals' divergent thinking. *Bilingualism: Language and Cognition*, *11*, 225-243.

Kline, R. (2010). *Principles and practice of structural equation modelling* (3rd ed.). New York, NY: Guilford.

Kozulin, A. (1999). Reality monitoring, psychological tools, and cognitive flexibility in bilinguals: Theoretical synthesis and pilot experimental investigation. In P. Lloyd & C. Fernyhough (Eds.), *Lev Vygotsky: Critical assessments, future directions* (pp. 187-198), London, England: Routledge.

Lewis, P., Simons, G., & Fennig, C. (Eds.). (2016). *Ethnologue: Languages of the world* (19th ed.). Dallas, TX: SIL International.

Little, T., Slegers, D., & Card, N. (2006). A non-arbitrary method of identifying and scaling latent variables in SEM and MACS models. *Structural Equation Modeling*, *13*, 59-72.

Martin, M., & Anderson, C. (1998). The Cognitive Flexibility Scale: Three validity studies. *Communication Reports*, *11*, 1-9.

Martin, M., & Rubin, R. (1995). A new measure of cognitive flexibility. *Psychological Reports*, *76*, 623-626.

Martinovic, B., & Verkuyten, M. (2013). "We were here first, so we determine the rules of the game": Autochthony and prejudice towards out-groups. *European Journal of Social Psychology*, *43*, 637-647.

Muthén, B. (2015, March 11). Bootstrapping or MLR [Online forum comment]. Retrieved from http://www.statmodel.com/discussion/messages/11/20834.html

Muthén, L., & Muthén, B. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Pettigrew, T. F. (1997). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin*, *23*, 173-185.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology*, *38*, 922-934.

Ramírez-Esparza, N., Gosling, S., Benet-Martínez, V., Potter, J., & Pennebaker, J. (2006). Do bilinguals have two personalities? A special case of cultural frame switching. *Journal of Research in Personality*, *40*, 99-120.

Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement*, *21*, 173-184.

Rokeach, M. (1948). Generalized mental rigidity as a factor in ethnocentrism. *Journal of Abnormal and Social Psychology*, *43*, 259-278.

Rubenfeld, S., Clément, R., Vinograd, J., Lussier, D., Amireault, V., Auger, R., & Lebrun, M. (2007). Becoming a cultural intermediary: A further social corollary of second language learning. *Journal of Language and Social Psychology*, *26*, 182-203.

Satorra, A., & Bentler, P. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*, 507-514.

Satorra, A., & Bentler, P. (2010). Ensuring positiveness of the scaled difference chi square test statistic. *Psychometrika*, *75*, 243-248.

Scheepers, P., Gijsberts, M., & Coenders, M. (2002). Ethnic exclusionism in European countries: Public opposition to civil rights for legal migrants as a response to perceived ethnic threat. *European Sociological Review*, *18*, 17-34.

Statistics Netherlands. (2015). *Bevolking; generatie, geslacht, leeftijd en herkomstgroepering* [Data] [Population; generation, gender, age and ethnic background]. The Hague, Netherlands: CBS.

Stone, C. H., & Crisp, R. J. (2007). Superordinate and subgroup identification as predictors of intergroup evaluation in common ingroup contexts. *Group Processes & Intergroup Relations*, *10*, 493-513.

TNS-NIPO. (2012). *The Netherlands and Europe* [Data file and codebook]. Amsterdam, Netherlands: Author.

TNS Opinion & Social. (2012). *Special Eurobarometer 386: Europeans and their languages* (Wave EB77.1). Brussels, Belgium: European Commission Directorate-General for Communication.

Verkuyten, M., & Martinovic, B. (2015). Majority member's recognition and protest against discrimination of immigrants: The role of power threat, deprovincialization and common national identity. *Social Justice Research*, *28*, 257-273.

Verkuyten, M., Martinovic, B., & Smeekes, A. (2014). The multicultural jigsaw puzzle: Category indispensability and acceptance of immigrants' cultural rights. *Personality and Social Psychology Bulletin*, *40*, 1480-1493.

Verkuyten, M., Thijs, J., & Bekhuis, H. (2010). Intergroup contact and ingroup reappraisal: Examining the deprovincialization thesis. *Social Psychology Quarterly*, *73*, 398-416.

Verschaffel, L., Luwel, K., Torbeyns, J., & Van Dooren, W. (2009). Conceptualizing, investigating, and enhancing adaptive expertise in elementary mathematics education. *European Journal of Psychology of Education*, *24*, 335-359.

Wright, S. C., & Bougie, É. (2007). Intergroup contact and minority-language education: Reducing language-based discrimination and its negative impact. *Journal of Language and Social Psychology*, *26*, 157-181.

Zavala-Rojas, D. (2014). Thermometer scale (feeling thermometer). In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 6633-6634). Dordrecht, Netherlands: Springer.

Author Biographies

Kieran Douglas Mepham holds an MSc from Utrecht University's Faculty of Social Sciences. His research interests broadly cover ethnic relations, and in particular the role of language in prejudice reduction. He is also interested in quantitative research methodology.

Borja Martinovic is an assistant professor at Utrecht University's Faculty of Social Sciences, European Research Centre on Migration and Ethnic Relations (ERCOMER). Her research revolves around group identities, intergroup contacts, and interethnic attitudes both from ethnic minority and ethnic majority's perspective.