Group Processes & Intergroup Relations
G P I R

Article

Group Processes & Intergroup Relations
2019, Vol. 22(7) 1021–1038

DOI: 10.1177/1368430218789495
journals.sagepub.com/home/gpi
SAGE

When words become borders: Ingroup favoritism in perceptions and mental representations of Anglo-Canadian and Franco-Canadian faces

R. Thora Bjornsdottir,[1] Simon Yeretsian,[2] Greg L. West[2] and Nicholas O. Rule[1]

Abstract

Language is critical to social identity, including nationality. However, some nations encompass multiple languages, raising questions about how their citizens perceive members of their national versus linguistic groups. We explored perceptions of Canadian nationality, which consists of two linguistic groups: Anglo-Canadians and Franco-Canadians. In Study 1, we used reverse correlation methods to visualize how Anglo- and Franco-Canadians mentally represent the faces of linguistic ingroup and outgroup members, and of Canadians in general. Structural similarity analyses and subjective ratings of the resulting images showed that both groups mentally represented Canadians as more similar to their own linguistic ingroup. In Study 2, Anglo-Canadians and Franco-Canadians rated photos of real Anglo- and Franco-Canadian targets. Both samples showed some ingroup favoritism when inferring their traits but only Anglo-Canadians could accurately differentiate group members. Differences between Anglo-Canadians and Franco-Canadians therefore extend beyond language, with linguistic groups impacting impressions before any words are spoken.

Keywords

first impressions, nationality, person perception, reverse correlation

Paper received 19 March 2018; revised version accepted 23 June 2018.

In 2017, the people of Catalonia, a region within the nation of Spain, voted in a referendum to separate from their nation and form an independent state. Although many factors contributed to the Catalans' move towards self-government, one element that distinguishes them from their fellow Spanish citizens is that they speak a different language (i.e., Catalan vs. Spanish). Similarly, the French-speaking province of Québec held referendums in 1980 and 1995 to separate from the rest of Canada, the vast majority of which speaks English. And in Belgium, the Dutch-speaking

[1]University of Toronto, Canada
[2]Université de Montréal, Canada

Corresponding author:
R. Thora Bjornsdottir, Department of Psychology, University of Toronto, 100 Saint George Street, Toronto, Ontario M5S 3G3, Canada.
Email: thora.bjornsdottir@mail.utoronto.ca

Flemish and French-speaking Walloons have continued to experience hostile divisions even in the face of recent terrorist attacks that traditionally bring citizens of a country together (e.g., Erdbrink, 2016). Thus, language can serve as a bridge between individuals when it is shared but a barrier between them when it is not.

Indeed, intergroup relations research has shown that language provides an important source of identity, particularly in nations with more than one linguistic group (e.g., Bourhis, Giles, & Tajfel, 1973; Liebkind, 2010; see also Tajfel, 1982). Given that other group memberships central to people's identities heavily influence interpersonal impressions (e.g., race, sexual orientation; Eberhardt, Goff, Purdie, & Davies, 2004; Rule, Bjornsdottir, Tskhay, & Ambady, 2016), we hypothesized that linguistic group membership would relate to impression formation as well—particularly in multilingual countries. We therefore tested the impact of linguistic group membership on person perception in a context where linguistic divides parallel larger identity and subcultural differences: Francophones and Anglophones in Canada. Understanding perceptions of linguistic group members is important for intergroup and intranational dynamics, as initial impressions create a lens through which more substantive interactions occur (e.g., Zebrowitz, 1997).

Canadian Nationality

Canadian nationality spans two linguistic subgroups: Anglo-Canadian and Franco-Canadian. These groups have previously clashed politically and socially (e.g., the Québec independence movement of the 20th century and recent unrest in New Brunswick; Bothwell, 1998; CBC News, 2016). Although a wealth of research has detailed the acculturation strategies and identities of Anglo- and Franco-Canadians (see Berry, 1993; Berry, Kim, Power, Young, & Bujaki, 1989), little research has explored how these linguistic group memberships influence Canadians' perceptions of themselves and others.

Previous work by Taylor and colleagues found that Anglo-Canadian perceivers attributed stereotypically Franco-Canadian traits to a speaker with a Franco-Canadian accent (e.g., emotional, proud; Gardner & Taylor, 1968; Taylor & Gardner, 1970). More important, Anglo-Canadians and Franco-Canadians each rated the linguistic outgroup as quite different from their own linguistic group when considering similarities and differences between them—in some cases, rating them as more different than other nationalities (Taylor, Bassili, & Aboud, 1973; Taylor, Simard, & Aboud, 1972). This suggests a divide that surpasses language.

Beyond this, no research has empirically explored how Anglo- and Franco-Canadians perceive themselves, one another, or their unifying Canadian group membership. Moreover, the most recent research on the topic occurred almost 50 years ago, despite significant changes in domestic Canadian politics since then (Bickerton & Gagnon, 2014). Understanding these perceptions has the potential to help alleviate intergroup conflict, highlighting the importance of such research. Here, we focus on perceptions of the face because of its outsized influence on impression formation and subsequent interactions (see Perrett, 2010; Zebrowitz, 1997). Our investigation explores this in two ways: (a) through mental representations of Anglo- and Franco-Canadian faces, and (b) through impressions of the faces of real Anglo- and Franco-Canadian individuals.

Mentally Representing Nationality

People's mental representations of a social group can reveal the assumptions and stereotypes they hold about its members (e.g., Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017; Dotsch, Wigboldus, Langner, & van Knippenberg, 2008; Imhoff, Woelki, Hanke, & Dotsch, 2013; Tskhay & Rule, 2015). Researchers have recently made great strides in understanding the mental representations that groups and individuals hold using reverse correlation. This method is unique in that it is purely data-driven, can reveal participants' stereotypes without any explicit mention of them or

any assumptions driven by the experimenter, and results in a visual depiction (rather than just a description) of participants' mental representations that can then be viewed by others. One popular method of reverse correlation allows researchers to visualize individuals' mental representations of faces by presenting two versions of a given face (usually a neutral average or composite of faces) superimposed with random noise, asking them to choose which more closely resembles a person with a particular attribute (e.g., a social group). Averaging a participant's choices after hundreds of trials creates a classification image (CI) that reveals that person's mental representation of the given characteristic in their mind's eye (see Dotsch & Todorov, 2012). Given the differing stereotypes and self-views of Anglo- and Franco-Canadians found by Taylor and colleagues, it seems likely that the two groups would mentally represent themselves and one another differently—potentially in line with stereotypes. We tested this question here.

Indeed, researchers have previously used reverse correlation to successfully visualize people's mental representations of nationality. Imhoff, Dotsch, Bianchi, Banse, and Wigboldus (2011) asked German and Portuguese participants to complete a reverse correlation task that constructed their representations of a "European" (i.e., their superordinate national group membership as citizens of EU member states). Ratings from a separate group of participants showed that each national group's European CI appeared to resemble their own nationality—that is, the Germans' CI of a European appeared more stereotypically German and less stereotypically Portuguese than the Portuguese participants' CI of a European did. These findings demonstrate ingroup projection, whereby people project aspects of their own group onto other groups (here, their superordinate group; see also Imhoff & Dotsch, 2013). Assuming that Anglo- and Franco-Canadians mentally represent themselves differently, this raises the question of whether they might also mentally represent Canadians, as a whole, as more similar to their linguistic ingroup versus outgroup. That is, might members of each linguistic group see their own linguistic group membership as more representative of their nationality, in effect excluding the linguistic outgroup from being truly Canadian? We tested the possibility of ingroup projection within one nation in Study 1.

Perceiving Ambiguous Groups

If mental representations of each linguistic subgroup do differ, might it be because the members of these two groups actually look distinct? A wealth of research demonstrates the perceptibility of a variety of perceptually ambiguous groups, such as sexual orientation, social class, religion, and political affiliation (Bjornsdottir & Rule, 2017; Tskhay & Rule, 2013). Perceptions of these differences (consciously and unconsciously) moreover lead people to treat members of each group differently, such as by showing favoritism towards ingroup members (e.g., Rule, Ambady, Adams, & Macrae, 2007; Rule, Garrett, & Ambady, 2010). A critical precursor to these differences is the importance and salience of the groups (see Hehman, Mania, & Gaertner, 2010; Young, Hugenberg, Bernstein, & Sacco, 2012). Thus, given the value of linguistic group membership to Canadians, the different stereotypes attributed to them, and the different immigrant groups from which they descend (historically, English and French), it seems tenable that Anglo- and Franco-Canadians could be discerned from just their faces.

If so, we might also observe an ingroup advantage in perceptions of ingroup and outgroup members' faces; for example, a superior ability to recognize and remember ingroup members (e.g., Meissner & Brigham, 2001; Rule et al., 2007; Rule et al., 2010). Likewise, if Anglo- and Franco-Canadians do show ingroup projection, then it seems plausible that they might perceive their linguistic ingroup and outgroup members as more and less Canadian, respectively. We explored these questions in Study 2.

Current Aims

Considering the occasional civil unrest that subcultural linguistic divisions can provoke in multilingual nations such as Belgium, Canada, and Spain, we sought to better understand how linguistic groups imagine and perceive their fellow

citizens vis-à-vis their linguistic group. In doing so, we worked to bridge the gap between previous research on linguistic groups within intergroup relations and that on person perception by using innovative methods from social perception and visual cognition. Because one's impressions and expectations about others in social interactions can scaffold the way that subsequent interpersonal interactions unfold (e.g., Harris & Garris, 2008), achieving a better understanding of the role that linguistic group membership plays in ingroup and outgroup perceptions may help to inform efforts targeted at ameliorating tensions within nations. In the current work, we therefore tested the degree to which Anglo- and Franco-Canadians differentiated themselves from their linguistic outgroup members in their mental representations, including exploring whether they excluded the linguistic outgroup from the superordinate Canadian group (i.e., whether they showed ingroup projection). We furthermore examined whether such differentiation and ingroup biases would manifest when viewing faces of actual Anglo- and Franco-Canadian individuals, thereby testing the role of linguistic group membership in person perception. These representations and perceptions may not only reflect ingroup biases, but moreover have the potential to influence downstream intergroup interactions. Our work thus provides a critical first step to understanding the association between linguistic intergroup bias in person perception and sustained intergroup conflict.

Study 1A

We began by visualizing Anglo- and Franco-Canadians' mental representations of their linguistic groups and unifying (i.e., Canadian) nationality using reverse correlation. We then computed the similarity of the resulting representation images to test for ingroup projection.

Method

We recruited 101 Anglo-Canadian undergraduates from the University of Toronto (71 female, 21 male, nine unknown; M_{age} = 18.80 years, *SD* = 2.58; 21 Caucasian, 20 East Asian, 16 South Asian, 10 mixed-race, 6 Middle Eastern, 5 Hispanic, 5 Southeast Asian, 4 African, 4 Pacific Islander, 10 unspecified ethnicity) and 90 Franco-Canadian undergraduates from Université de Montréal (50 female, 40 male; M_{age} = 21.21 years, *SD* = 2.39; 78 Caucasian, 4 Middle Eastern, 1 African, 1 North African, 2 mixed-race, 4 unspecified ethnicity) to yield at least 30 participants per condition in each sample (a sample size sufficient to produce clear CIs in previous research; e.g., Tskhay & Rule, 2015).

Participants from each linguistic group were randomly assigned to one of three conditions: Canadian, Anglo-Canadian, or Franco-Canadian. They then completed a reverse-correlation task using a base face (a composite of neutral male faces) overlaid with a random sinusoidal noise (see Dotsch et al., 2008). Each trial displayed a pair of faces in which a different random noise pattern was added to and subtracted from the base face to create two distinct images. Depending on condition, participants were asked to select which of the two faces in each trial looked either more Canadian, Anglo-Canadian, or Franco-Canadian. For example, participants in the Anglo-Canadian condition selected the face that "looks more like someone who is Anglo-Canadian" on each trial.[1] Participants worked for roughly 30 minutes, completing up to 770 trials (following previous work; e.g., Dotsch, Wigboldus, & van Knippenberg, 2011; Imhoff & Dotsch, 2013; Imhoff et al., 2011; Imhoff et al., 2013). Finally, participants reported their demographic characteristics: age, gender, ethnicity, and whether they considered themselves Anglo- or Franco-Canadian.

Results and Discussion

We first constructed each participant's CI by averaging the noise patterns that the person chose. We then aggregated the participants' average images within each condition for each linguistic group to create a clearer group-level image, as is typical in reverse-correlation research (e.g., Imhoff et al., 2011; see Figure 1A). To assess the objective similarity between

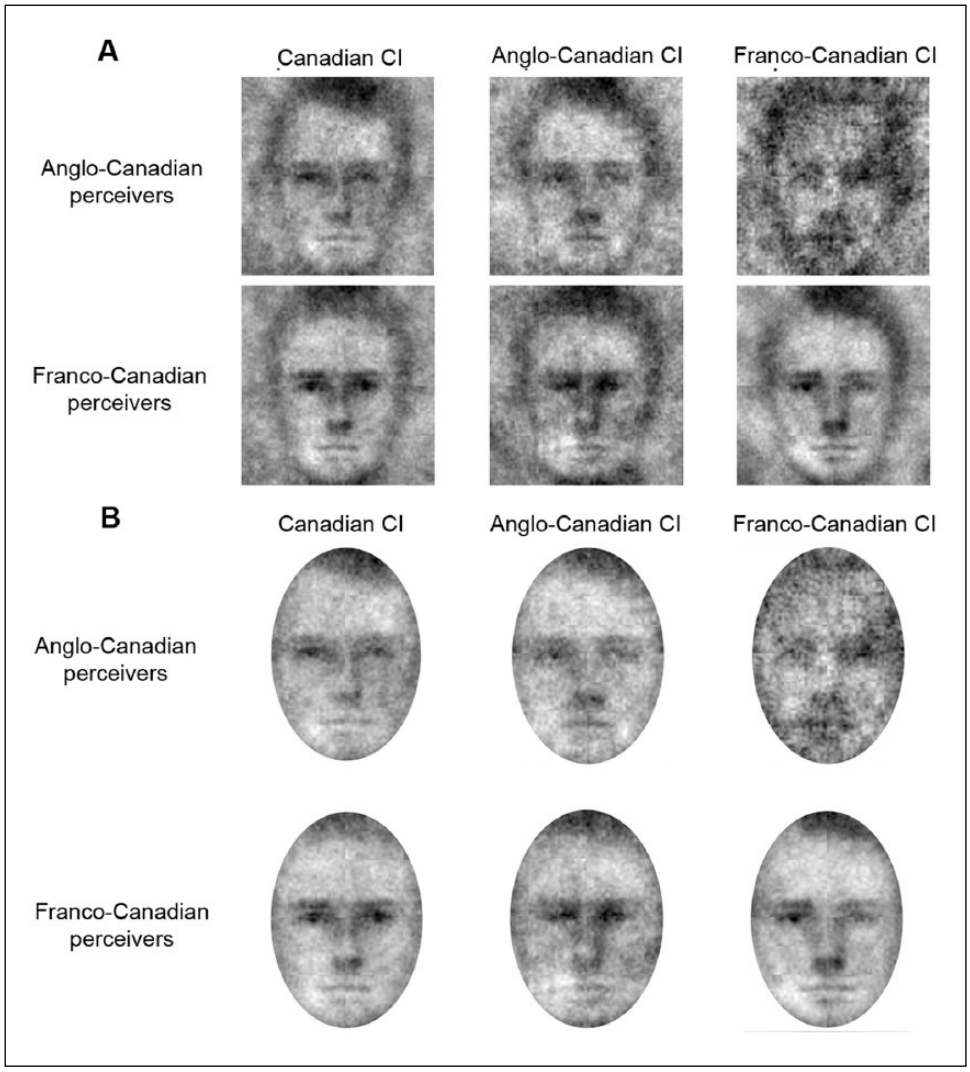

Figure 1. (A) Classification images (CIs) created in Study 1A. (B) Masked CIs used for structural similarity analyses.

these group-level CIs, we calculated the similarity of the masked group-level images (see Figure 1B) in MATLAB using a metric called structural similarity index (SSIM; Wang, Bovik, Sheikh, & Simoncelli, 2004), which computes the similarity of two images, producing scores ranging from 0 (completely different images) to 1 (identical images). The results showed greater similarity between Anglo-Canadian perceivers' Anglo-Canadian and Canadian CIs (.68) than between their Anglo-Canadian and Franco-Canadian CIs (.58), or between their Franco-Canadian and Canadian CIs (.58). The Franco-Canadian perceivers' CIs showed comparable similarity between their Franco-Canadian and Canadian CIs (.69), and between their Franco-Canadian and Anglo-Canadian CIs (.69), which was somewhat greater than the overlap between their Anglo-Canadian and Canadian CIs (.66).

Table 1. Inferential statistics for the comparison of individual CIs' structural similarity.

Comparison pair	*b*	*SE*	*t*	*df*	*p*	$r_{\text{effect size}}$
Anglo-Canadian perceivers						
Anglo-Canadian and Canadian vs. Franco-Canadian and Canadian	−0.007	0.003	−1.90	132.89	.06	−.16
Anglo-Canadian and Canadian vs. Anglo-Canadian and Franco-Canadian	−0.005	0.004	−1.42	124.54	.16	−.13
Anglo-Canadian and Franco-Canadian vs. Franco-Canadian and Canadian	0.002	0.003	0.57	127.40	.57	.05
Franco-Canadian perceivers						
Anglo-Canadian and Canadian vs. Franco-Canadian and Canadian	0.002	0.004	0.44	111.40	.66	.04
Anglo-Canadian and Canadian vs. Anglo-Canadian and Franco-Canadian	0.0004	0.005	0.08	114.10	.94	.01
Anglo-Canadian and Franco-Canadian vs. Franco-Canadian and Canadian	0.002	0.004	0.54	112.90	.59	.05

These SSIM values only provided us with point-estimates, however. To statistically compare the similarity among the CIs, we therefore also calculated the SSIM for comparisons between the individual participants' (rather than group-level) CIs across samples. For example, we iteratively compared each Anglo-Canadian CI created by Anglo-Canadian perceivers to each Canadian CI created by Anglo-Canadian perceivers. We then used these values to compute a series of cross-classified multilevel models that nested the SSIM scores for the individual CIs within comparison pair type: Anglo-Canadian CI compared to Canadian CI, Anglo-Canadian CI compared to Franco-Canadian CI, or Franco-Canadian CI compared to Canadian CI (see Judd, Westfall, & Kenny, 2012). We treated the individual CIs as random factors in a model with an unstructured covariance matrix using the lmer function from the lme4 package in R 3.5.0 (Bates, Maechler, Bolker, & Walker, 2015; R Core Team, 2015). Results revealed a marginal main effect whereby Anglo-Canadian's Anglo-Canadian and Canadian CIs were marginally more similar ($M = 0.704$, $SD = 0.017$) than their Franco-Canadian and Canadian CIs were ($M = 0.697$, $SD = 0.015$), $b = -0.007$, $SE = 0.003$, $t(132.89) = -1.90$, $p = .06$, $r_{\text{effect size}} = -.16$. No other comparisons reached significance (see Table 1).

Anglo-Canadians therefore appear to mentally represent Anglo-Canadians and Canadians similarly (and more similarly than they do Canadians and Franco-Canadians), providing some evidence for ingroup projection. We did not see an analogous pattern among Franco-Canadians, however—their mental representations looked similar across all three groups. This may arise from Franco-Canadians' greater exposure to Anglo-Canadians in Montréal compared to Anglo-Canadians' exposure to Franco-Canadians in Toronto, given the relative proportions of each linguistic group in these cities (9.9% of people in Montréal speak English at home, but only 0.2% of people in Toronto speak French at home; Statistics Canada, 2011), or perhaps because Franco-Canadians' representations are simply more inclusive. Yet, structural similarity provides only one measure of comparison and may obscure more nuanced differences that the SSIM index cannot detect. We therefore obtained subjective impressions of the CIs in Study 1B to further interrogate the linguistic groups' mental representations.

Study 1B

An objective measure of structural similarity in Study 1A showed evidence of ingroup projection

among Anglo-Canadian participants. This measure may not wholly account for the full extent of how well images actually resemble one another, however. We therefore expanded our investigation in Study 1B by asking participants to subjectively rate the CIs for how *Canadian* they looked (as a direct measure of ingroup projection; Imoff et al., 2011), as well as for how warm and dominant they looked (key traits distinguishing social groups; Fiske, Cuddy, & Glick, 2007; Oosterhof & Todorov, 2008). These three ratings allowed us to test whether participants in Study 1A represented Anglo- and Franco-Canadians similarly. Furthermore, we recruited non-Canadian participants to make the ratings, ensuring that the assessments were free from any potential ingroup bias. We then compared these ratings for Anglo- and Franco-Canadians' Canadian CIs, linguistic ingroup CIs, and linguistic outgroup CIs as a second test of ingroup projection.

Method

We recruited American Mechanical Turk (MTurk) workers to rate the six group-level Anglo-Canadian, Franco-Canadian, and Canadian CIs generated by the Anglo-Canadian and Franco-Canadian participants in Study 1A. One group of 31 participants (15 female, 15 male, one other; M_{age} = 35.52 years, SD = 10.68; 27 Caucasian, 2 East Asian, 1 African, 1 unspecified ethnicity) rated the images one at a time in random order for how *Canadian* they looked (1 = *not at all*, 7 = *very*).[2] To avert biasing participants' judgments in any way, we did not provide any further explanation or definition of the term "Canadian," thereby requiring participants to draw upon their own mental representations and stereotypes. A second group of 60 participants (21 female, 39 male; M_{age} = 33.52 years, SD = 9.57; 40 Caucasian, 10 East Asian, 4 African, 4 Hispanic, 1 Pacific Islander, 1 mixed-race) rated the CIs on either warmth or dominance (n = 30 each, randomly assigned; 1 = *not at all*, 7 = *very*). We instructed all participants to base their judgments on their first impressions.

Results and Discussion

Canadian ratings. We first conducted separate one-way repeated-measures ANOVAs to compare the *Canadian* ratings for the three CIs generated by the Anglo-Canadian and Franco-Canadian participants in Study 1A, respectively. These revealed main effects among the images generated by both the Anglo-Canadian, $F(2, 60) = 18.98$, $p < .001$, $r_{effect\ size} = .62$, and Franco-Canadian participants in Study 1A, $F(2, 60) = 15.26$, $p < .001$, $r_{effect\ size} = .58$.

Decomposing the omnibus effect for the Anglo-Canadians' CIs, we found that their Anglo-Canadian CI (M = 3.97, SD = 1.02) and overall Canadian CI (M = 4.10, SD = 1.04) looked similarly *Canadian,* $t(30) = 0.94$, $p = .35$, $r_{effect\ size} = .17$. Additionally, both their Anglo-Canadian, $t(30) = 4.90$, $p < .001$, $r_{effect\ size} = .67$, and Canadian CIs, $t(30) = 4.64$, $p < .001$, $r_{effect\ size} = .65$, looked significantly more *Canadian* than their Franco-Canadian CI (M = 3.03, SD = 1.05). Thus, Anglo-Canadians appeared to mentally represent their ingroup as looking more genuinely *Canadian* than their (Franco-Canadian) outgroup.

Likewise, decomposing the omnibus effect for the Franco-Canadians' CIs showed that they too seemed to mentally represent their Franco-Canadian linguistic ingroup (M = 4.19, SD = 1.01) as looking similarly *Canadian* as Canadians, in general (M = 4.23, SD = 1.06), $t(30) = 0.18$, $p = .86$, $r_{effect\ size} = .03$. They furthermore mentally represented their Anglo-Canadian outgroup (M = 3.19, SD = 1.11) as looking significantly less *Canadian* than both ingroup Franco-Canadians, $t(30) = 4.50$, $p < .001$, $r_{effect\ size} = .64$, and Canadians in general, $t(30) = 4.41$, $p < .001$, $r_{effect\ size} = .63$. Thus, both Anglo-Canadian and Franco-Canadian participants generated mental representations of their nationality that aligned with their linguistic ingroup (see Figure 2).

These results provide evidence of ingroup projection: Each group imagined their linguistic ingroup, compared to their linguistic outgroup, as a better representation of a prototypical Canadian. Importantly, these

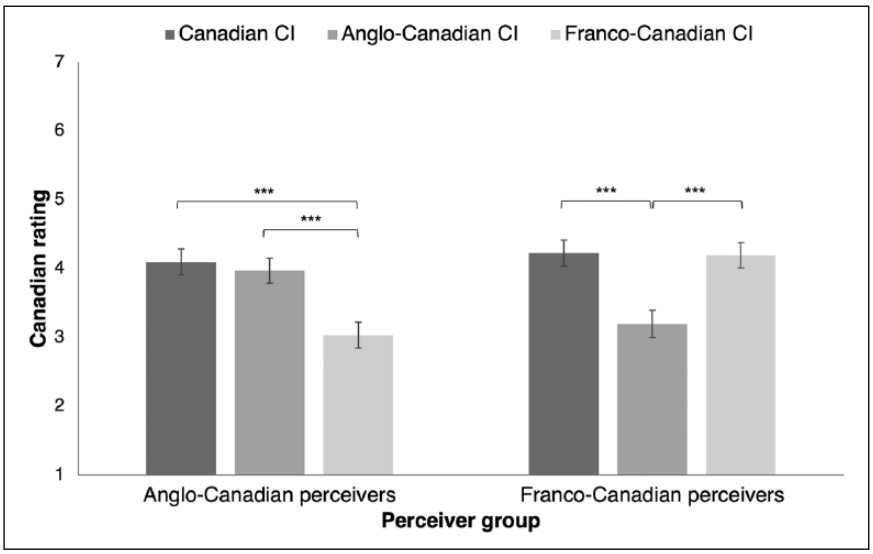

Figure 2. Canadian ratings in Study 1B of the CIs created in Study 1A.

Table 2. Means and standard deviations for dominance and warmth ratings of the Study 1A classification images in Study 1B.

Classification image	Dominance		Warmth	
	M	*SD*	*M*	*SD*
Anglo-Canadian sample				
Canadian	4.38	1.21	2.94	1.15
Anglo-Canadian	4.41	1.24	2.26	0.96
Franco-Canadian	3.69	1.26	3.29	1.10
Franco-Canadian sample				
Canadian	3.69	1.44	2.90	1.45
Anglo-Canadian	5.27	1.31	1.65	0.84
Franco-Canadian	3.24	1.12	3.48	1.23

differences were visible to non-Canadian (i.e., American) perceivers, suggesting that they are quite strong. It is unclear from these results, however, whether Anglo- and Franco-Canadians projected their linguistic ingroup onto their representation of Canadians or if they projected their representation of Canadians onto their linguistic ingroup. We therefore examined the warmth and dominance ratings to help clarify the direction of this projection.

Dominance and warmth ratings. We performed analogous analyses for the dominance and warmth ratings. For dominance, within-subjects ANOVAs showed that both the Anglo-Canadians' CIs, $F(2, 56) = 3.55$, $p = .04$, $r_{\text{effect size}} = .34$, and Franco-Canadians' CIs, $F(2, 56) = 27.67$, $p < .001$, $r_{\text{effect size}} = .71$, significantly differed (see Table 2 for means and standard deviations). Simple effects *t* tests showed that both the Anglo-Canadians, $t(28) = 2.20$, $p = .04$, $r_{\text{effect size}} = .39$, and Franco-Canadians, $t(28) = 6.61$, $p < .001$, $r_{\text{effect size}} = .78$, had imagined Anglo-Canadians as more dominant than Franco-Canadians. Similarly, Anglo-Canadians imagined Canadians, in general, to be more dominant than Franco-Canadians, $t(28) = 2.19$, $p = .04$, $r_{\text{effect size}} = .38$, and Franco-Canadians showed a trend to perceive Canadians as somewhat more dominant than their linguistic ingroup, $t(28) = 1.72$, $p = .10$, $r_{\text{effect size}} = .31$. The two groups diverged when comparing Canadians to Anglo-Canadians, however: Anglo-Canadians had imagined their own linguistic group as similarly dominant as Canadians, in general, $t(28) = -0.13$, $p = .90$, $r_{\text{effect size}} = -.02$, whereas Franco-Canadians imagined Anglo-Canadians to be more dominant than Canadians, in general, $t(28) = 5.44$, $p < .001$, $r_{\text{effect size}} = .72$ (see Figure 3).

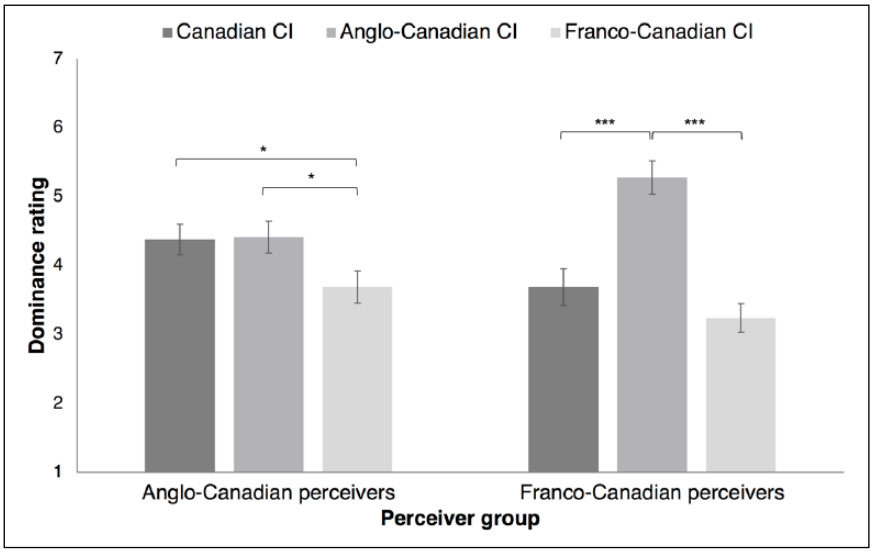

Figure 3. Dominance ratings in Study 1B of the CIs created in Study 1A.

For warmth, the within-subjects ANOVAs again showed that both the Anglo-Canadians' CIs, $F(2, 58) = 14.05$, $p < .001$, $r_{\text{effect size}} = .57$, and Franco-Canadians' CIs, $F(2, 58) = 34.15$, $p < .001$, $r_{\text{effect size}} = .75$, significantly differed. Simple effects t tests showed that both Anglo-Canadians, $t(29) = 5.11$, $p < .001$, $r_{\text{effect size}} = .69$, and Franco-Canadians, $t(29) = 8.78$, $p < .001$, $r_{\text{effect size}} = .85$, had imagined Franco-Canadians as warmer than Anglo-Canadians. Moreover, both the Anglo-Canadians, $t(29) = 4.58$, $p < .001$, $r_{\text{effect size}} = .65$, and Franco-Canadians, $t(29) = 5.11$, $p < .001$, $r_{\text{effect size}} = .69$, had imagined (the superordinate) Canadians as warmer than Anglo-Canadians. Furthermore, the Franco-Canadians imagined Franco-Canadians as warmer than Canadians, $t(29) = 2.58$, $p = .02$, $r_{\text{effect size}} = .43$, and the Anglo-Canadians' Franco-Canadian and Canadian CIs displayed a trend in the same direction, $t(29) = 1.51$, $p = .14$, $r_{\text{effect size}} = .27$, though we did not have the statistical power to detect a significant effect of this size (see Figure 4).

We therefore observed that both groups shared distinct representations of Anglo- and Franco-Canadians: The Anglo-Canadian CIs looked more dominant and less warm than the Franco-Canadian CIs, perhaps due to Anglo-Canadians' majority status in Canada (e.g., Fiske, Cuddy, Glick, & Xu, 2002). Moreover, members of both groups project these differences onto their mental representations of Canadians, in general, such that Anglo-Canadians and Franco-Canadians each see Canadians' dominance as more similar to that of their own linguistic group, compared to their linguistic outgroup—a pattern that was particularly pronounced among Anglo-Canadians. We did not observe this pattern of projection for warmth, however, perhaps due to the pervasive stereotype associating Canadians with warmth (e.g., Brambilla, Ravenna, & Hewstone, 2012).

Together, the results of Studies 1A and 1B suggest ingroup projection among Canada's linguistic subgroups, perhaps particularly Anglo-Canadians, who may have less exposure to Franco-Canadians than Franco-Canadians do to Anglo-Canadians. Furthermore, they indicate that members of both groups represent themselves and one another distinctly. These studies only assessed mental representations, however, which could simply reflect stereotypes or exaggerate legitimate group differences. We therefore conducted Study 2 to test whether actual Anglo- and Franco-Canadian individuals' faces differ.

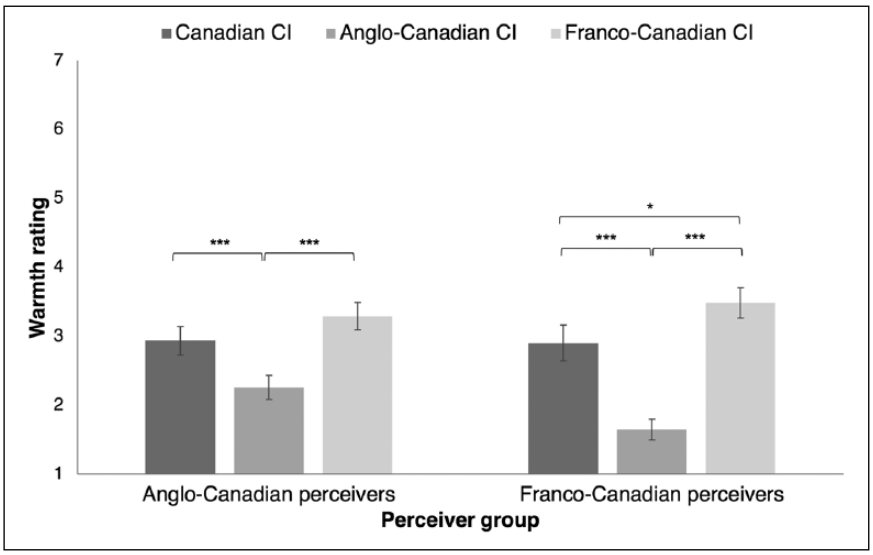

Figure 4. Warmth ratings in Study 1B of the CIs created in Study 1A.

Study 2A

In Study 1, we observed ingroup projection in the mental representations of Anglo- and Franco-Canadians that reflected stereotypes about those groups. In Study 2, we explored whether these might bear any kernel of truth. Specifically, do Anglo- and Franco-Canadians actually appear distinct from one another and, if so, do their differences align with the stereotypes of dominance and warmth appearing in Canadians' mental representations? We also tested whether members of these two linguistics groups might show other ingroup advantages, such as better memory for ingroup members (e.g., Rule et al., 2007; Rule et al., 2010), and explored whether ingroup projection might lead Anglo- and Franco-Canadians to perceive their linguistic ingroup members as belonging more to the superordinate (Canadian) group by assessing their ratings of how *Canadian* Anglo- and Franco-Canadian individuals look.

Method

Eighty-five Anglo-Canadians (43 female, 40 male, two unknown; M_{age} = 21.14 years, SD = 5.83; 71 Caucasian, 9 mixed-race, 2 East Asian, 1 African, 1 Hispanic, 1 Middle Eastern) and 80 Franco-Canadians (40 female, 40 male; M_{age} = 21.10 years, SD = 1.98; 56 Caucasian, 5 Middle Eastern, 5 mixed-race, 3 North African, 2 East Asian, 2 Hispanic, 1 African, 6 unspecified ethnicity) recruited from the University of Toronto and Université de Montréal, respectively, participated in the study. This sample size afforded over 95% power to detect the average effect size in social psychology (r = .21; Richard, Bond, & Stokes-Zoota, 2003) in a paired t test. We assigned participants to view 68 faces of their own gender[3] to avoid gender-based ingroup memory advantages from overwhelming any possible linguistic ingroup memory advantage. We copied facial photographs from Ontario (n = 68) and Québec (n = 68) high school yearbooks using a digital scanner and cropped them to the top of the head, bottom of the chin, and limits of the ears before converting them to grayscale and standardizing them to the same width. All targets were Caucasian, lacked facial hair or adornments (glasses, piercings), and were chosen from a larger sample of available targets prerated on attractiveness and perceived age, such that the chosen targets did not statistically differ on either attribute across the two linguistic groups.

Table 3. Means and standard deviations for participants' hit and false-alarm rates for both categorization and memory in Study 2A.

			Memory			
	Categorization		Anglo-Canadian targets		Franco-Canadian targets	
Participants	*M*	*SD*	*M*	*SD*	*M*	*SD*
Anglo-Canadians						
Hits	0.71	0.56	0.52	0.18	0.50	0.20
False alarms	0.52	0.14	0.27	0.18	0.33	0.18
Franco-Canadians						
Hits	0.51	0.11	0.57	0.19	0.51	0.19
False alarms	0.50	0.12	0.31	0.19	0.31	0.17

Note. Categorization hit rates calculated as the proportion of Anglo-Canadian targets categorized as Anglo-Canadian, categorization false-alarm rates calculated as the proportion of Franco-Canadian targets categorized as Anglo-Canadian.

After receiving instructions to attend to the images they would see on the screen, participants viewed 34 targets (17 Anglo-Canadian, 17 Franco-Canadian) individually for 1 second, each preceded by a 500-ms fixation cross. They then completed an unrelated word search as a filler task for 3 minutes, followed by a recognition memory task with all 34 targets from the first task plus 34 novel targets (17 Anglo-Canadian, 17 Franco-Canadian). Each face appeared in random order with the question, "Have you seen this face before?" Participants responded "yes" or "no" via key press at their own pace. They then saw all 68 targets again, this time with instructions to categorize each as either Anglo-Canadian or Franco-Canadian. Finally, participants rated how *Canadian* each target seemed (1 = *not at all*, 7 = *very*) and ended the study by providing demographic information.

Results and Discussion

We began by calculating accuracy for categorization and memory using the signal detection statistic A' and corresponding response bias measure B'' (see Macmillan & Creelman, 2005).[4] Among Anglo-Canadian perceivers, categorization accuracy ($M = 0.62$, $SD = 0.12$) significantly exceeded chance guessing (.50), $t(84) = 8.94$, $p < .001$, $r_{\text{effect size}} = .70$, and response bias ($M = -0.07$, $SD = 0.20$) fell significantly below zero—indicating a tendency to categorize targets as Anglo-Canadian, $t(84) = -3.34$, $p = .001$, $r_{\text{effect size}} = -.34$ (see Table 3 for hit and false-alarm rates). Furthermore, they recognized ingroup Anglo-Canadian faces ($M = 0.70$, $SD = 0.12$) significantly better than outgroup Franco-Canadian faces ($M = 0.63$, $SD = 0.16$), $t(84) = 3.47$, $p < .001$, $r_{\text{effect size}} = .35$. Finally, they rated the Anglo-Canadian faces ($M = 4.93$, $SD = 0.79$) as more *Canadian* than the Franco-Canadian faces ($M = 4.62$, $SD = 0.84$), $t(84) = 5.00$, $p < .001$, $r_{\text{effect size}} = .48$.

We next conducted target-level analyses to understand how targets' actual group membership, perceived group membership, *Canadian* ratings, and memorability related to one another. First, a greater proportion of participants categorized the Anglo-Canadian targets ($M = 0.66$, $SD = 0.10$) than the Franco-Canadian targets ($M = 0.51$, $SD = 0.14$), $t(134) = 6.75$, $p < .001$, $r_{\text{effect size}} = .50$, as Anglo-Canadian, confirming the visibility of group membership. Next, we aggregated the participants' *Canadian* ratings for each target and found that targets' mean *Canadian* ratings positively correlated with the proportion of Anglo-Canadian participants who categorized them as Anglo-Canadian, $r(134) = .56$, $p < .001$. Actual Anglo-Canadian targets ($M = 4.92$, $SD = 0.38$) furthermore appeared more *Canadian*

than actual Franco-Canadian targets ($M = 4.61$, $SD = 0.44$), $t(134) = 4.26$, $p < .001$, $r_{\text{effect size}} = .35$. Thus, the Anglo-Canadian participants showed a bias to perceive actual and perceived ingroup members as representative of Canadians. We then examined memory, finding that neither targets' *Canadian* ratings, $r(134) = -.02$, $p = .83$, nor mean categorization as Anglo-Canadian significantly correlated with the proportion of perceivers who correctly remembered them, $r(134) = .03$, $p = .77$. Consistent with this, the Anglo-Canadian targets ($M = 0.62$, $SD = 0.14$) were not significantly more memorable than the Franco-Canadian targets ($M = 0.59$, $SD = 0.14$), $t(134) = 1.07$, $p = .29$, $r_{\text{effect size}} = .09$.

A somewhat different pattern emerged among the Franco-Canadian participants. First, they did not categorize the faces better than chance ($M = 0.51$, $SD = 0.13$), $t(79) = 0.74$, $p = .23$, $r_{\text{effect size}} = .08$, and their response bias did not differ from zero ($M = -0.01$, $SD = 0.05$), $t(79) = -0.78$, $p = .44$, $r_{\text{effect size}} = -.09$. They also remembered the outgroup Anglo-Canadian faces ($M = 0.70$, $SD = 0.14$) better than the ingroup Franco-Canadian faces ($M = 0.65$, $SD = 0.16$), $t(79) = 2.12$, $p = .04$, $r_{\text{effect size}} = .23$, and rated the Anglo-Canadian targets ($M = 4.95$, $SD = 0.86$) as more *Canadian* than the Franco-Canadian targets ($M = 4.73$, $SD = 0.82$), $t(79) = 4.07$, $p < .001$, $r_{\text{effect size}} = .42$.

Analyses at the target level showed that a similar proportion of Franco-Canadian participants categorized Anglo-Canadian targets ($M = 0.51$, $SD = 0.12$) and Franco-Canadian targets ($M = 0.49$, $SD = 0.13$) as Anglo-Canadian, $t(134) = 0.57$, $p = .57$, $r_{\text{effect size}} = .05$. Yet, the targets' mean aggregated *Canadian* ratings positively correlated with the proportion of participants who categorized them as Franco-Canadian, $r(134) = .44$, $p < .001$. Thus, like the Anglo-Canadians, the Franco-Canadians also showed a bias to perceive *supposed* ingroup members as representative of Canadians. In contrast, actual Anglo-Canadian targets appeared more *Canadian* ($M = 4.96$, $SD = 0.45$) than actual Franco-Canadian targets ($M = 4.73$, $SD = 0.61$), $t(134) = 2.44$, $p = .02$, $r_{\text{effect size}} = .21$; thus, although Franco-Canadians rated perceived ingroup members as more *Canadian*, they showed ingroup favoritism toward the wrong targets because their impressions of who belonged to their ingroup were incorrect. Finally, we tested how these ratings related to the targets' memorability, finding that the proportion of Franco-Canadian perceivers who correctly remembered each target did not correlate with the proportion who categorized them as Franco-Canadian, $r(134) = -.15$, $p = .07$, or with how *Canadian* they looked, $r(134) = .01$, $p = .94$ (as with the aforementioned Anglo-Canadian perceivers). Similarly, the memorability of Anglo-Canadian ($M = 0.63$, $SD = 0.13$) and Franco-Canadian targets ($M = 0.60$, $SD = 0.15$) did not differ, $t(134) = 1.18$, $p = .24$, $r_{\text{effect size}} = .10$.

Anglo-Canadian participants' ability to distinguish Anglo- and Franco-Canadians from their faces suggests that the two groups look distinct from one another. Yet, Franco-Canadian participants could not accurately categorize the targets' group membership. The two perceiver groups may have therefore employed different cues when making their categorizations—consistent with their lack of consensus in categorizing targets as Anglo-Canadian, $r(134) = -.03$, $p = .76$. Furthermore, Anglo-Canadians appeared to show ingroup favoritism by rating actual and perceived ingroup members as more *Canadian*, whereas Franco-Canadians rated outgroup (Anglo-Canadian) targets as more *Canadian* because they misperceived them as Franco-Canadian. Indeed, the Franco-Canadians' mean *Canadian* ratings strongly correlated with the Anglo-Canadians mean *Canadian* ratings, $r(134) = .67$, $p < .001$.

In other words, the Anglo-Canadians and Franco-Canadians agreed about how *Canadian* the targets looked and assigned the more Canadian-looking people to their own group. Because the Anglo-Canadian targets did actually look more *Canadian* to both groups of perceivers, however, the Anglo-Canadian participants correctly assigned them to their own group whereas the Franco-Canadians did not. These results suggest that Anglo-Canadians and Franco-Canadians may use different cues to identify group members,

Table 4. Means and standard deviations for the dominance, warmth, and distinctiveness ratings of Anglo- and Franco-Canadian yearbook photos in Study 2B.

Targets	Dominance		Warmth		Distinctiveness	
	M	*SD*	*M*	*SD*	*M*	*SD*
Anglo-Canadians	3.43	0.51	4.41	0.65	4.10	0.40
Franco-Canadians	3.44	0.48	4.32	0.71	4.42	0.50

whereby the former lead to accurate judgments and the latter do not.

Similarly, Anglo-Canadian perceivers appeared to remember their ingroup members better, whereas Franco-Canadian perceivers showed better memory for their outgroup members. Importantly, however, target-level correlations for both perceiver groups showed no significant association between how memorable each target was and either their actual or perceived group membership. This suggests some other feature of their faces may predict how memorable they are. We therefore explored the relevant cues to memory, categorization, and *Canadian* impressions in Study 2B.

Study 2B

To better understand why the Anglo-Canadian and Franco-Canadian participants diverged in their categorizations of group membership in Study 2A, we examined the cues they used to categorize, rate, and remember those faces. Because Study 1B revealed distinct representations of the warmth and dominance of Anglo- and Franco-Canadians' mental representations of the two groups, we again asked outside (i.e., non-Canadian) raters to evaluate the targets on these two traits. We also asked a group of participants to rate the targets' distinctiveness, as Franco-Canadians comprise a population descended from a smaller set of ancestors than Anglo-Canadians (Brais et al., 2007; CBC News, 2017), potentially leading them to appear more homogeneous and, thus, distinct. We then tested whether ratings of these three traits differed by targets' linguistic group membership and whether these ratings correlated with perceivers' categorization, memory, or ratings of how *Canadian* the targets looked.

Method

We randomly assigned 60 MTurk workers (27 female, 33 male; M_{age} = 36.20 years, SD = 11.86; 50 Caucasian; 3 Hispanic, 3 African, 2 Native American, 1 East Asian, 1 unspecified ethnicity) to rate either the targets' dominance or warmth (1 = *not at all*, 7 = *very*), excluding the data from three participants who reported trouble viewing the photos. We also recruited a sample of 30 MTurk workers (12 female, 18 male; M_{age} = 32.27 years, SD = 6.63; 20 Caucasian, 3 African, 3 East Asian, 3 Hispanic, 1 South Asian) to rate the targets' distinctiveness (1 = *not at all*, 7 = *very*). We excluded data from one participant who reported trouble viewing the photos. Comparable sample sizes yielded good interrater reliability in previous person perception research (Cronbach's $\alpha \geqslant .80$; e.g., Bjornsdottir & Rule, 2017; Tskhay & Rule, 2015).

Results and Discussion

We first assessed interrater reliability for dominance (α = .80), warmth (α = .93), and distinctiveness (α = .73). As all were acceptable, we averaged the participants' ratings for each target in order to conduct target-level analyses, as in Study 2A. We began by testing whether the Anglo- and Franco-Canadian targets differed on any of the ratings. In contrast to the mental representations in Study 1B, neither dominance, $t(134) = 0.11$, $p = .91$, $r_{\text{effect size}} = .01$, nor warmth significantly differed between the actual Anglo- and Franco-Canadian faces, $t(134) = 0.73$, $p = .47$, $r_{\text{effect size}} = .06$ (see Table 4). Franco-Canadian

targets did appear more distinct than Anglo-Canadian targets, however, suggesting that distinctiveness serves as a valid cue to differences between the groups, $t(134) = 4.16$, $p < .001$, $r_{\text{effect size}} = .34$.

We next explored how these ratings related to the Anglo- and Franco-Canadian perceivers' categorization, memory, and *Canadian* rating data from Study 2A. Targets' distinctiveness scores significantly correlated with the Anglo-Canadians' consensus perception of the targets' Anglo-Canadian group membership, $r(134) = -.40$, $p < .001$, and mean *Canadian* ratings, $r(134) = -.48$, $p < .001$, suggesting that the Anglo-Canadians in Study 2A correctly used distinctiveness to categorize the targets and saw more distinct targets as less Canadian. However, distinctiveness did not relate to how memorable the targets were to the Anglo-Canadian participants, $r(134) = -.05$, $p = .53$. Dominance, on the other hand, positively correlated with the proportion of Anglo-Canadian participants that correctly remembered a given target; hence, more dominant-looking individuals were more memorable to the Anglo-Canadian participants, $r(134) = .18$, $p = .03$. Targets' dominance did not significantly correlate with the proportion of Anglo-Canadian participants who categorized them as Anglo-Canadian, $r(134) = -.07$, $p = .40$, nor with how *Canadian* they looked, $r(134) = .01$, $p = .94$. Finally, warmth related to neither categorization, $r(134) = .03$, $p = .76$, memorability, $r(134) = -.04$, $p = .66$, nor *Canadian* ratings, $r(134) = .15$, $p = .07$.

Franco-Canadian perceivers in Study 2A appeared to use a different set of cues, as expected. Both dominance, $r(134) = -.30$, $p < .001$, and warmth, $r(134) = .18$, $p = .04$, correlated with the proportion of Franco-Canadian participants who categorized the targets as Franco-Canadian; thus, Franco-Canadians were more likely to categorize targets who they thought looked warmer and less dominant as ingroup members. They also incorrectly employed distinctiveness to make their categorizations, as the proportion of participants who categorized targets as Franco-Canadian negatively correlated with how distinctive they looked, $r(134) = -.20$, $p = .02$. Furthermore, they rated warmer looking targets as more *Canadian,* $r(134) = .22$, $p = .01$, and more distinctive targets as less *Canadian,* $r(134) = -.55$, $p < .001$. Dominance did not significantly relate to *Canadian* ratings, however, $r(134) = -.15$, $p = .10$. The Franco-Canadian perceivers therefore incorrectly applied group stereotypes and misused valid cues to judge linguistic group membership and *Canadian* appearance. Like the Anglo-Canadian perceivers, however, they remembered the dominant faces better, $r(134) = .19$, $p = .03$, suggesting that more threatening or high-status targets are remembered more accurately (see Öhman, Lundqvist, & Esteves, 2001; Ratcliff, Hugenberg, Shriver, & Bernstein, 2011; Young et al., 2012). Indeed, this aligns with previous research finding better memory for threatening or socially powerful targets, even (and in some cases particularly) when the targets are outgroup members (Ackerman et al., 2006; Baldwin, Keefer, Gravelin, & Biernat, 2013; Hugenberg & Sacco, 2008; Shriver & Hugenberg, 2010). Finally, like the Anglo-Canadian perceivers, the proportion of Franco-Canadian perceivers who correctly remembered the targets did not relate to how distinctive, $r(134) = -.05$, $p = .59$, or warm they looked, $r(134) = .01$, $p = .89$.

Overall, these results suggest that Anglo- and Franco-Canadians' faces indeed differ, but not in the stereotypical manner reflected in the mental representations from Study 1. Instead, actual Franco-Canadians look more distinctive than Anglo-Canadians, albeit not because they were more homogeneous, as the variance was relatively similar between the Anglo-Canadian and Franco-Canadian targets for all three ratings (Levene's tests: all Fs $\leqslant 0.60$, ps $\geqslant .44$, rs$_{\text{effect size}} \leqslant .07$). Anglo-Canadian perceivers used the significant mean difference in distinctiveness between the two groups to correctly identify linguistic group membership. Franco-Canadian perceivers, in contrast, erroneously relied on dominance and warmth stereotypes that did not actually differentiate the two groups, explaining their inaccurate categorizations in Study 2A. Furthermore, what appeared to be an ingroup advantage in memory for Anglo-Canadian perceivers and an outgroup

advantage for Franco-Canadian perceivers in Study 2A can be explained by facial dominance, which did not differ by targets' linguistic group membership.

General Discussion

These data provide the first evidence of differences in the mental representations and actual faces of different linguistic group members within a single nation—specifically Anglo- and Franco-Canadians. Clearly distinguished by their languages and subcultures, we found that Anglo- and Franco-Canadians also differ in how distinctive they appear. Furthermore, we found that Canadians generally hold mental representations of these groups that conform to (invalid) stereotypes about their relative warmth and dominance, differentiating the two linguistic groups from one another. Members of each linguistic group moreover appear to project the dominance stereotypes of their group onto their nationality, providing evidence of ingroup projection within a single nation. An even starker demonstration of this phenomenon is that Anglo- and Franco-Canadians mentally represent their linguistic outgroup as less Canadian-looking than their linguistic ingroup or superordinate nationality. Thus, the linguistic outgroup is excluded from the superordinate group—a clear reflection of ingroup favoritism.

We also observed that Anglo- and Franco-Canadians express ingroup favoritism when presented with the faces of actual Anglo- and Franco-Canadian individuals. Anglo-Canadians rated perceived and actual Anglo-Canadian targets as more *Canadian*, whereas Franco-Canadians rated the faces they perceived as Franco-Canadian as more *Canadian*. Thus, the linguistic ingroup member belongs more in the superordinate national group than the linguistic outgroup member does, echoing the pattern of results we found with the mental representations. This suggests that ingroup projection operates in a bidirectional manner: Anglo- and Franco-Canadians each imagined Canadians to be more like their linguistic ingroup than their outgroup, and further perceived their ingroup members as more Canadian. However, although unconventional to compute memory at the target level, our results showed that more dominant faces were more memorable to perceivers from both linguistic groups, suggesting that threat or status inferences could overcome possible ingroup advantages in memory (e.g., Ackerman et al., 2006; Öhman et al., 2001; Ratcliff et al., 2011; Shriver & Hugenberg, 2010; van Bavel & Cunningham, 2012). Future work could consider whether the intergroup context of the study might have stimulated threat's salience to support this association (see Little, 2014; Little, Burriss, Jones, & Roberts, 2007).

The advances of these findings notwithstanding, Anglo- and Franco-Canadian perceivers' different strategies to judge group membership remain unclear. Anglo-Canadians correctly used distinctiveness as a cue, whereas Franco-Canadians applied dominance and warmth stereotypes. Given their majority status in Canada, Anglo-Canadians may have less exposure to Franco-Canadians than Franco-Canadians do to Anglo-Canadians. This asymmetry might have led Anglo-Canadians to look for particularly distinctive features, whereas Franco-Canadians might see their ingroup as less distinctive-looking than it actually is, causing them to instead apply trait stereotypes. This possibility requires multiple levels of speculation, however, and the question therefore certainly warrants future research.

Finally, our samples consisted of Anglo-Canadians in Ontario and Franco-Canadians in Québec, whose behavior may not generalize to all Anglo- and Franco-Canadians in Canada. Franco-Canadians in the Maritime provinces (i.e., Acadians) have a culture distinct from the Québécois, for example (Moogk, 2000). Furthermore, exploring how Anglo- and Franco-Canadians within the same province (e.g., New Brunswick) perceive one another could provide a particularly enlightening extension of this work, as intergroup tensions and differences could be more salient in such a sample—perhaps leading to even stronger manifestations of ingroup projection and favoritism.

We moreover tested our hypotheses with only a Canadian sample. Future research should test the generalizability of our findings to other nations encompassing multiple linguistic groups, such as Belgium, Finland, Spain, and Switzerland. We expect the broad pattern of ingroup projection to replicate in other samples, but it remains to be seen whether stereotypes of dominance and warmth might apply to other majority and minority linguistic groups, respectively, and whether this depends on the tension between the groups (e.g., Fiske et al., 2002). Linguistic group membership may also only be visible in linguistic groups that differ in ancestry, as the Anglo-Canadian and Franco-Canadian groups studied here may have principally originated in England and France, respectively. Overall, our studies provide an initial step into exploring the myriad ways in which linguistic groups in Canada, and perhaps other nations, differ beyond language. This research furthermore opens avenues to explore the ways in which ingroup projection (and, thus, exclusion of the linguistic outgroup from the superordinate national group) might impact interpersonal interactions, including perpetuating intergroup conflict.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Ontario Graduate Scholarship, and the Social Sciences and Humanities and Natural Sciences and Engineering Research Councils of Canada.

Notes

1. In all studies, Anglo-Canadian participants completed the study in English, whereas Franco-Canadians completed the study in French; please see the supplemental material for English and French instructions.
2. This sample size afforded us over 95% power in single-sample *t* tests anticipating an effect size of $r = .49$, the average in CI differences across several distinct reverse correlation studies (e.g., Dotsch & Todorov, 2012; Imhoff et al., 2011; Tskhay & Rule, 2015).
3. One female and five male Anglo-Canadians completed the wrong condition, and one person in each condition failed to report their own gender. Excluding these participants does not change our results.
4. Participant and target gender did not consistently moderate the results of any of the studies reported here. We therefore collapsed across gender in all of our analyses.

References

Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., Kenrick, D. T., Becker, D. V., Griskevicius, V., . . . Schaller, M. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to out-group heterogeneity. *Psychological Science*, *17*, 836–840. doi:10.1111/j.1467-9280.2006.01790.x

Baldwin, M., Keefer, L. A., Gravelin, C. R., & Biernat, M. (2013). Perceived importance of cross-race targets facilitates recall: Support for a motivated account of face memory. *Group Processes & Intergroup Relations*, *16*, 505–515. doi:10.1177/1368430212460893

Bates, D., Maechler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*, 1–48. doi:10.18637/jss.v067.i01

Berry, J. W. (1993). Ethnic identity in plural societies. In M. E. Bernal & G. P. Knight (Eds.), *Ethnic identity: Formation and transmission among Hispanics and other minorities* (pp. 271–296). Albany: State University of New York Press.

Berry, J. W., Kim, U., Power, S., Young, M., & Bujaki, M. (1989). Acculturation attitudes in plural societies. *Applied Psychology*, *38*, 185–206. doi:10.1111/j.1464-0597.1989.tb01208.x

Bickerton, J., & Gagnon, A. G. (Eds.). (2014). *Canadian politics*. Toronto, Canada: University of Toronto Press.

Bjornsdottir, R. T., & Rule, N. O. (2017). The visibility of social class from facial cues. *Journal of Personality and Social Psychology*, *113*, 530–546. doi:10.1037/pspa0000091

Bothwell, R. (1998). *Canada and Quebec: One country, two histories*. Vancouver, Canada: UBC Press.

Bourhis, R. Y., Giles, H., & Tajfel, H. (1973). Language as a determinant of Welsh identity. *European Journal of Social Psychology*, *3*, 447–460. doi:10.1002/ejsp.2420030407

Brais, B., Desjardins, B., Labuda, D., St-Hilaire, M., Tremblay, M., & Vezina, H. (2007, October 1). The genetics of French Canadians. The Biomedical and Life Sciences Collection, Henry Stewart talks. Retrieved from https://hstalks-com.myaccess.library.utoronto.ca/bs/322/

Brambilla, M., Ravenna, M., & Hewstone, M. (2012). Changing stereotype content through mental imagery: Imagining intergroup contact promotes stereotype change. *Group Processes & Intergroup Relations*, *15*, 305–315. doi:10.1177/1368430211427574

Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The relationship between mental representations of welfare recipients and attitudes toward welfare. *Psychological Science*, *28*, 92–103. doi:10.1177/0956797616674999

CBC News. (2016, August 12). *Anglophone Rights Association mobilizes with Moncton meeting*. Retrieved from http://www.cbc.ca/news/canada/new-brunswick/anglophone-rights-association-moncton-1.3718071

CBC News. (2017, March 30). *Most French Canadians are descended from these 800 women*. Retrieved from http://www.cbc.ca/2017/canadathestoryofus/most-french-canadians-are-descended-from-these-800-women-1.4029699

Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, *3*, 562–571. doi:10.1177/1948550611430272

Dotsch, R., Wigboldus, D. H., Langner, O., & van Knippenberg, A. (2008). Ethnic out-group faces are biased in the prejudiced mind. *Psychological Science*, *19*, 978–980. doi:10.1111/j.1467-9280.2008.02186.x

Dotsch, R., Wigboldus, D. H., & van Knippenberg, A. (2011). Biased allocation of faces to social categories. *Journal of Personality and Social Psychology*, *100*, 999–1014. doi:10.1037/a0023026

Eberhardt, J. L., Goff, P. A., Purdie, V. J., & Davies, P. G. (2004). Seeing Black: Race, crime, and visual processing. *Journal of Personality and Social Psychology*, *87*, 876–893. doi:10.1037/0022-3514.87.6.876

Erdbrink, T. (2016, April 7). Rattled by attacks, many Belgians still want nation split in two. *The New York Times*, p. A6.

Fiske, S. T., Cuddy, A. J., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences*, *11*, 77–83. doi:10.1016/j.tics.2006.11.005

Fiske, S. T., Cuddy, A. J., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*, 878–902. doi:10.1037//0022-3514.82.6.878

Gardner, R. C., & Taylor, D. M. (1968). Ethnic stereotypes: Their effects on person perception. *Canadian Journal of Experimental Psychology*, *22*, 267–276. doi:10.1037/h0082767

Harris, M. J., & Garris, C. P. (2008). You never get a second chance to make a first impression: Behavioral consequences of first impressions. In N. Ambady & J. J. Skowronski (Eds.), *First impressions* (pp. 147–168). New York, NY: Guilford Press.

Hehman, E., Mania, E. W., & Gaertner, S. L. (2010). Where the division lies: Common ingroup identity moderates the cross-race facial-recognition effect. *Journal of Experimental Social Psychology*, *46*, 445–448. doi:10.1016/j.jesp.2009.11.008

Hugenberg, K., & Sacco, D. F. (2008). Social categorization and stereotyping: How social categorization biases person perception and face memory. *Social and Personality Psychology Compass*, *2*, 1052–1072. doi:10.1111/j.1751-9004.2008.00090.x

Imhoff, R., & Dotsch, R. (2013). Do we look like me or like us? Visual projection as self- or ingroup-projection. *Social Cognition*, *31*, 806–816. doi:10.1521/soco.2013.31.6.806

Imhoff, R., Dotsch, R., Bianchi, M., Banse, R., & Wigboldus, D. H. (2011). Facing Europe: Visualizing spontaneous in-group projection. *Psychological Science*, *22*, 1583–1590. doi:10.1177/0956797611419675

Imhoff, R., Woelki, J., Hanke, S., & Dotsch, R. (2013). Warmth and competence in your face! Visual encoding of stereotype content. *Frontiers in Psychology*, *4*, 386. doi:10.3389/fpsyg.2013.00386

Judd, C. M., Westfall, J., & Kenny, D. A. (2012). Treating stimuli as a random factor in social psychology: A new and comprehensive solution to a pervasive but largely ignored problem. *Journal of Personality and Social Psychology*, *103*, 54–69. doi:10.1037/a0028347

Liebkind, K. (2010). The Swedish-speaking Finns: A case study of ethnolinguistic identity. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 367–422). Cambridge, UK: Cambridge University Press.

Little, A. C. (2014). Facial appearance and leader choice in different contexts: Evidence for task contingent selection based on implicit and learned face–behaviour/face–ability associations. *The Leadership Quarterly*, *25*, 865–874. doi:10.1016/j.leaqua.2014.04.002

Little, A. C., Burriss, R. P., Jones, B. C., & Roberts, S. C. (2007). Facial appearance affects voting decisions.

Evolution and Human Behavior, *28*, 18–27. doi:10.1016/j.evolhumbehav.2006.09.002

Macmillan, N. A., & Creelman, C. D. (2005). *Detection theory: A user's guide*. New York, NY: Taylor and Francis.

Meissner, C. A., & Brigham, J. C. (2001). Thirty years of investigating the own-race bias in memory for faces: A meta-analytic review. *Psychology, Public Policy, and Law*, *7*, 3–35. doi:10.1037/1076-8971.7.1.3

Moogk, P. N. (2000). *La nouvelle France: The making of French Canada—a cultural history*. East Lansing: Michigan State University Press.

Öhman, A., Lundqvist, D., & Esteves, F. (2001). The face in the crowd revisited: A threat advantage with schematic stimuli. *Journal of Personality and Social Psychology*, *80*, 381–396. doi:10.1037/0022-3514.80.3.381

Oosterhof, N. N., & Todorov, A. (2008). The functional basis of face evaluation. *Proceedings of the National Academy of Sciences*, *105*, 11087–11092. doi:10.1073/pnas.0805664105

Perrett, D. (2010). *In your face: The new science of human attraction*. New York, NY: Palgrave Macmillan.

R Core Team. (2015). R: A language and environment for statistical computing [Computer software]. Vienna, Austria: R Foundation for Statistical Computing.

Ratcliff, N. J., Hugenberg, K., Shriver, E. R., & Bernstein, M. J. (2011). The allure of status: High-status targets are privileged in face processing and memory. *Personality and Social Psychology Bulletin*, *37*, 1003–1015. doi:10.1177/0146167211407210

Richard, F. D., Bond, C. F., Jr., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, *7*, 331–363. doi:10.1037/1089-2680.7.4.331

Rule, N. O., Ambady, N., Adams, R. B., & Macrae, C. N. (2007). Us and them: Memory advantages in perceptually ambiguous groups. *Psychonomic Bulletin and Review*, *14*, 687–692. doi:10.3758/bf03196822

Rule, N. O., Bjornsdottir, R. T., Tskhay, K. O., & Ambady, N. (2016). Subtle perceptions of male sexual orientation influence occupational opportunities. *Journal of Applied Psychology*, *101*, 1687–1704. doi:10.1037/apl0000148

Rule, N. O., Garrett, J. V., & Ambady, N. (2010). Places and faces: Geographic environment influences the ingroup memory advantage. *Journal of Personality and Social Psychology*, *98*, 343–355. doi:10.1037/a0018589

Shriver, E. R., & Hugenberg, K. (2010). Power, individuation, and the cross-race recognition deficit. *Journal of Experimental Social Psychology*, *46*, 767–774. doi:10.1016/j.jesp.2010.03.014

Statistics Canada. (2011). *Linguistic characteristics of Canadians*. Retrieved from http://www12.statcan.gc.ca/census-recensement/2011/as-sa/98-314-x/98-314-x2011001-eng.cfm

Tajfel, H. (1982). Social psychology of intergroup relations. *Annual Review of Psychology*, *33*, 1–39. doi:10.1146/annurev.ps.33.020182.000245

Taylor, D. M., Bassili, J. N., & Aboud, F. E. (1973). Dimensions of ethnic identity: An example from Quebec. *The Journal of Social Psychology*, *89*, 185–192. doi:10.1080/00224545.1973.9922590

Taylor, D. M., & Gardner, R. C. (1970). Bicultural communication: A study of communicational efficiency and person perception. *Canadian Journal of Behavioural Science*, *2*, 67–81. doi:10.1037/h0082712

Taylor, D. M., Simard, L. M., & Aboud, F. E. (1972). Ethnic identification in Canada: A cross-cultural investigation. *Canadian Journal of Behavioural Science*, *4*, 13–20. doi:10.1037/h0082285

Tskhay, K. O., & Rule, N. O. (2013). Accuracy in categorizing perceptually ambiguous groups: A review and meta-analysis. *Personality and Social Psychology Review*, *17*, 72–86. doi:10.1177/1088868312461308

Tskhay, K. O., & Rule, N. O. (2015). Emotions facilitate the communication of ambiguous group memberships. *Emotion*, *15*, 812–826. doi:10.1037/emo0000077

Van Bavel, J. J., & Cunningham, W. A. (2012). A social identity approach to person memory: Group membership, collective identification, and social role shape attention and memory. *Personality and Social Psychology Bulletin*, *38*, 1566–1578. doi:10.1177/0146167212455829

Wang, Z., Bovik, A. C., Sheikh, H. R., & Simoncelli, E. P. (2004). Image quality assessment: From error visibility to structural similarity. *IEEE Transactions on Image Processing*, *13*, 600–612. doi:10.1109/tip.2003.819861

Young, S. G., Hugenberg, K., Bernstein, M. J., & Sacco, D. F. (2012). Perception and motivation in face recognition: A critical review of theories of the cross-race effect. *Personality and Social Psychology Review*, *16*, 116–142. doi:10.1177/1088868311418987

Zebrowitz, L. A. (1997). *Reading faces: Window to the soul?* Boulder, CO: Westview Press.