

## ARTICLE

# Perceiving ingroup and outgroup faces within and across nations

Kerry Kawakami<sup>1</sup>  | Justin P. Friesen<sup>2</sup>  | Xia Fang<sup>3</sup> <sup>1</sup>York University, Toronto, Ontario, Canada<sup>2</sup>University of Winnipeg, Winnipeg, Manitoba, Canada<sup>3</sup>Zhejiang University, Hangzhou, China**Correspondence**Kerry Kawakami, York University,  
4700 Keele St., Toronto, ON M3J 1P3, Canada.  
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435-2013-0992; Canada Foundation for  
Innovation, Grant/Award Number: 9297**Abstract**

The human face is arguably the most important of all social stimuli because it provides so much valuable information about others. Therefore, one critical factor for successful social communication is the ability to process faces. In general, a wide body of social cognitive research has demonstrated that perceivers are better at extracting information from their own-race compared to other-race faces and that these differences can be a barrier to positive cross-race relationships. The primary objective of the present paper was to provide an overview of how people process faces in diverse contexts, focusing on racial ingroup and outgroup members *within* one nation and *across* nations. To achieve this goal, we first broadly describe social cognitive research on categorization processes related to ingroups vs. outgroups. Next, we briefly examine two prominent mechanisms (experience and motivation) that have been used to explain differences in recognizing facial identities and identifying emotions when processing ingroup and outgroup racial faces within nations. Then, we explore research in this domain across nations and cultural explanations, such as norms and practices, that supplement the two proposed mechanisms. Finally, we propose future cross-cultural research that has the potential to help us better understand the role of these key mechanisms in processing ingroup and outgroup faces.

**KEYWORDS**

emotion recognition, face perception, intergroup relations, own-race bias, social vision

## BACKGROUND

With record-high international migration (Koser, 2016), previously racially homogenous nations are becoming more diverse. The inclusion of people from different ethnicities and cultures means cross-race interactions within those nations are becoming more common.<sup>1</sup> Moreover, many longstanding conflicts between racial communities within nations continue to simmer. Because of these trends, examining how individual perceivers within single cultures view members of their own-race and other-race faces has become critical. Furthermore, in keeping with calls to make psychology more universal and less WEIRD (Western, Educated, Industrial, Rich, Democratic; e.g. Henrich et al., 2010; Rad et al., 2018), investigating how these processes differ across nations is also vital. Rather than assuming that some basic processes apply to everyone, researchers are advised to take a more cross-cultural approach and include participants from a diverse range of nations. Because many countries have different languages, religions, customs, rituals, and children-rearing practices, they may process information and communicate in distinct ways. However, with globalization, particularly the Internet, communities around the world are becoming more integrated (Hermeking, 2005; Jack, 2013; Koser, 2016; Krishna et al., 2004; Marcus & Gould, 2000). Because we are interacting more often with different racialized groups within a single country and between countries, understanding cross-race communication is increasingly important.

A significant determinant of successful communication is the ability to process faces (Freeman & Ambady, 2011; Kawakami et al., 2017). The human face is arguably the most important of all social stimuli because it is such a rich source of information about others' thoughts, feelings, and intentions (Adams & Kleck, 2003, 2005; Elfenbein, Foo, White, et al., 2007b; Niedenthal et al., 2010). Given that perceivers are typically better at extracting information from their own-race compared to other-race faces and that these differences can be a barrier to positive intergroup relationships (Elfenbein & Ambady, 2002; Friesen, Kawakami, Vingilis-Jaremko, et al., 2019; Hugenberg et al., 2010), a better understanding of what drives these differences is critical.

To achieve this goal, we first broadly describe social cognitive research on categorization processes related to ingroups vs. outgroups. Next, we briefly examine two prominent mechanisms that have been used to explain differences in processing ingroup and outgroup racial faces within nations. Specifically, we describe *experience* and *motivation* and how they impact facial identity recognition and emotion identification. Because research conducted in both a single nation and across nations is critical for a complete understanding of intergroup face processes, next we explore research in this domain across nations and cultural explanations (norms and practices) that supplement the two proposed mechanisms. Finally, we propose future cross-nations' research that has the potential to help us better comprehend the role of experience, motivation, and cultural practices/norms in processing ingroup and outgroup faces.

## SOCIAL COGNITIVE THEORIZING AND RESEARCH ON FACE PROCESSING

In a recent review, we described the earliest stages of processing ingroup and outgroup members based on research in social neuroscience, social vision, face perception, and social cognition (Kawakami et al., 2017). The goal of our framework (see Figure 1) was to understand the initial categorization of ingroup and outgroup members, implicit associations with these groups, and the downstream consequences of this process. This model highlights that how we categorize others has profound consequences for interpersonal and intergroup relations. This may be particularly the case for racial ingroups and outgroups.

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<sup>1</sup>We acknowledge the controversy around the term "race," particularly when used as a biological category or to legitimize a group's superiority. We agree with its abandonment in those contexts. However, we note that it is still has widespread use within social psychology to refer to a "socially constructed and malleable" (Richeson & Sommers, 2016, p. 441) element of social categorization processes that has important implications for social identities, and we use "race" in that context where it is still the conventional term.

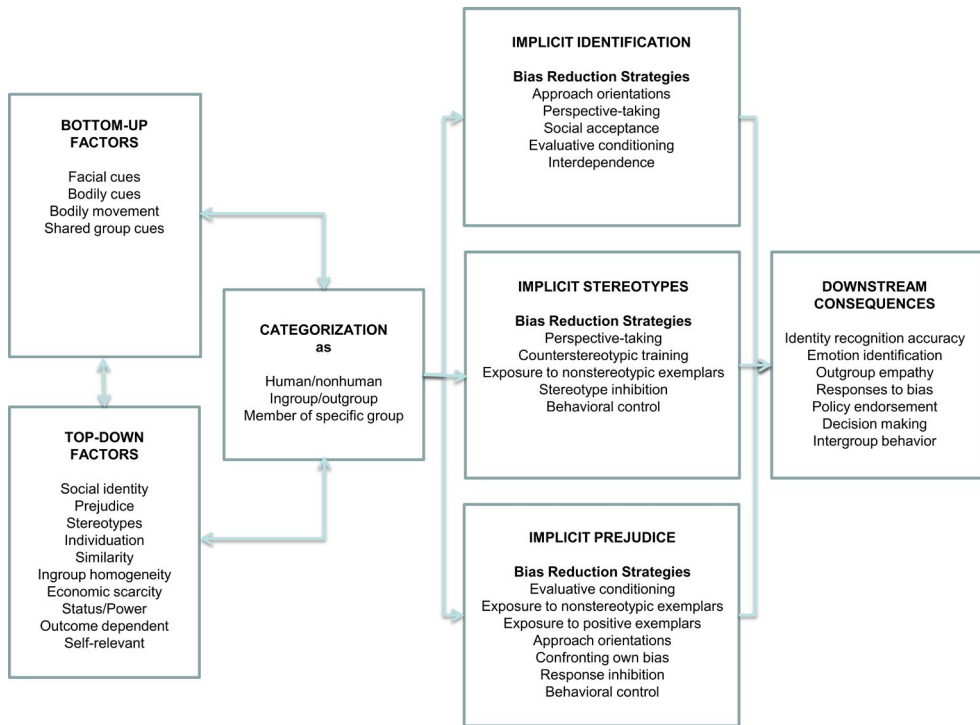


FIGURE 1 A framework for understanding the causes and consequences of social categorization

A broad range of bottom-up visual cues related to facial features as well as top-down cues related to motives, expectancies, and context factors can impact how we construe people according to race (Freeman & Ambady, 2011; Kawakami et al., 2017). For example, while targets with a darker skin tone may be more likely to be categorized as Black (Dunham et al., 2015), socioeconomic threat can modify the degree to which we rate the skin tone of Black targets as lighter or darker (Krosch & Amodio, 2014). Specifically, when White participants believed that resources were scarce, they viewed the same targets as ‘Blacker’. Once categorized as a member of a racial group, and subsequently as part of the same group as the perceiver (ingroup) or belonging to another group (outgroup), a host of culturally learned associations become activated and influence how we respond to others.

Category-based cultural knowledge, such as the extent to which we associate the person with the self, evaluations (prejudice), and group characteristics (stereotypes) shape our impressions (Kunda & Spencer, 2003; Macrae & Bodenhausen, 2000). These associations can have further downstream consequences on behaviours and responses to ingroup and outgroup members. For example, they can impact accuracy in facial identity recognition and the identification of emotions, to name just two key intergroup biases in face processing.

While this framework depicts how categorization can lead to implicit associations and downstream consequences, it does not specify potential mechanism related to these latter consequences. Furthermore, much of the research on social categorization processes related to race has compared differential responding within a single nation rather than cross-culturally between nations. For example, researchers have investigated construal and categorization processes related to Asian and White targets only in the United States or only in Japan, but rarely in two or more countries simultaneously. In the next section, we explore two prominent mechanisms related to processing ingroup and outgroup faces within a single culture.

## MECHANISMS FOR DIFFERENCES IN PROCESSING INGROUP AND OUTGROUP FACES WITHIN NATIONS

In this section, we examine how experience and motivation may explain differences in processing ingroup and outgroup effects within nations. While some theorists have proposed that extensive experience with one's own racial category members can explain differences in ingroup and outgroup face processing within a single culture (Gauthier et al., 1998, 1999; Hills & Lewis, 2006, 2011; Tanaka et al., 2004; Valentine et al., 2016), other theorists suggest that motivations to individuate one's own group better account for these differences (Hugenberg et al., 2007; Kawakami et al., 2014; Levin, 1996). In this section, we will provide a brief summary related to these two mechanisms.

### Experience

One prominent explanation for divergent processing of racial ingroups and outgroups is differential contact and experience with these groups. Because people presumably have more contact and interact more with members of racial ingroups relative to outgroups, they develop greater expertise in processing ingroup faces (Tanaka & Simonyi, 2016). This expertise increases their ability to differentiate between exemplars and to extract, process, and integrate facial information from this group (Gauthier et al., 1998, 1999; Maurer et al., 2002; Richler et al., 2011; Tanaka et al., 2004).

Furthermore, because people have more visual exposure to ingroup members, it has been proposed that they have better defined prototypes of faces of their own-race compared to other-races (Michel et al., 2006; Rhodes et al., 1989; Valentine, 2001). Through experience, members of racial groups learn which facial features are most useful when processing faces of their particular group (Hills & Lewis, 2006, 2011; Valentine et al., 2016). For example, it has been suggested that the eyes are relatively more important for distinguishing between White faces and that the lower part of a face, such as the nose, may be relatively more important for distinguishing between Black (Ellis et al., 1975; Hills & Pake, 2013; but see Nguyen & Pezdek, 2017) and Asian (Wang et al., 2015) faces. Differences in other-race face processing are proposed to occur because perceivers apply visual scan paths and strategies that optimize distinguishing between own-race faces to all targets, regardless of race. Critically, experience-based lab interventions can reduce intergroup biases for important interpersonal outcomes such as identity recognition (Lebrecht et al., 2009; Tanaka et al., 2013) and emotion recognition (Friesen et al., unpublished data).

### Motivation

According to motivated accounts of face perception in an intergroup context (Hugenberg et al., 2010), once a person is categorized and identified as a member of an ingroup versus outgroup, differential facial processing occurs. In particular, factors such as interdependence increase the motivation to know and understand members of our own groups, leading to individuation. Alternatively, because outgroup members may be less relevant, we are not as likely to individuate these targets and are more likely to process them as category members (Bernstein et al., 2007; Levin, 1996, 2000; MacLin & Malpass, 2001). These tendencies can lead to more effort when processing ingroups (Macrae & Bodenhausen, 2000; Fiske & Neuberg, 1990) but a greater reliance on categorical associations when processing outgroups (Bijlstra et al., 2010, 2014; Hugenberg et al., 2013). They can also lead to an attentional focus on characteristics that differentiate between ingroup members but on characteristics that are category-prototypic of outgroup members (Hugenberg & Sacco, 2008; Pauker et al., 2009; Rhodes et al., 2009).

Specifically, researchers have suggested that when processing ingroup faces, people may be motivated to deploy more effort (Hugenberg et al., 2010; Sporer, 2001) and when processing outgroup faces, they may be willing to rely on low effort feelings of familiarity (Marcon et al., 2009) and

characteristics (stereotypes) that they have learned to associate within a given culture with outgroup categories (Kawakami et al., 2017). When motivated (e.g., by external incentives), however, people can exert more effort to individuate even outgroup members (Hugenberg et al., 2007; Kawakami et al., 2014).

In contrast to the perceptual expertise explanation, some researchers propose that rather than using a single attentional strategy related to ingroup diagnostic features for all groups (Kawakami et al., 2018), people may focus on specific features that can differentiate among category members when processing ingroups (Hugenberg & Sacco, 2008; Hugenberg et al., 2010; Pauker et al., 2009; Rhodes et al., 2009), such as the eyes (Itier & Batty, 2009; McKelvie, 1976). Alternatively, because outgroup targets are less likely to be relevant enough to motivate individuation (Fiske & Neuberg, 1990), they propose that people will focus on shared categorical features when processing outgroups. In accordance with this theorizing, Kawakami and colleagues (Friesen, Kawakami, Vingilis-Jaremko, et al., 2019; Kawakami et al., 2014) found that White perceivers attend more to the eyes of White ingroup compared to Black outgroup targets (see also Arizpe et al., 2016; Burgund, 2021; Stelter et al., 2021; Wheeler et al., 2011; but see Hills & Pake, 2013; McDonnell et al., 2014). This preference for ingroup eyes has also been found for White ingroup and Asian outgroup targets (Arizpe et al., 2016; Brielmann et al., 2014; Wu et al., 2012; but see Burgund, 2021; Caldara et al., 2010).

In the next two sections, we examine how these two mechanisms have been used to explain two key domains in face processing: recognition accuracy of facial identity and emotion identification. Specifically, we describe how research has demonstrated that people often show better recognition accuracy when identifying the faces of ingroup compared to outgroup members (Kawakami et al., 2014; Meissner & Brigham, 2001; Vingilis-Jaremko et al., 2020). People are also often better at recognizing emotions on ingroup compared to outgroup faces. Our goal is to extend the theoretical framework presented in Figure 1 by examining how experience and motivation can explain these two particular downstream consequences. We chose these domains because these processes have been investigated both within a single nation and across nations, demonstrate a robust intergroup bias, and have important implications for intergroup relations.

## OWN RACE EFFECTS WITHIN NATIONS

Accurate recognition of others is a critical element in establishing and maintaining interpersonal relationships. The cost of misidentifying a person ranges from mild social embarrassment, if one forgets someone they have met before, to wrongful imprisonment, in cases of mistaken eyewitness identification (Scheck et al., 2000; Smith et al., 2004; Sporer, 2001). Unfortunately, people are generally better at identifying members of their own racial group compared to another racial group, often referred to as the Own Race Effect (ORE). For example, while White participants are typically more accurate in recognizing White than Black targets, Black participants are typically more accurate in recognizing Black than White targets (Kawakami et al., 2014; Meissner & Brigham, 2001; Vingilis-Jaremko et al., 2020).

Most ORE experiments within one nation have included White, Asian, or Black participants (Meissner & Brigham, 2001; Singh et al., 2021). In a traditional ORE study that includes both target groups as participants, the size of the ingroup advantage can vary (see Sporer, 2001). Although in some experiments the size of the ORE is comparable across participant groups (e.g., Brigham & Malpass, 1985; Devine & Malpass, 1985; Vingilis-Jaremko et al., 2020), a more common result in studies comparing groups within a single culture is that the ORE is stronger for one participant race. In particular, a meta-analysis of 74 ORE studies (mostly consisting of Black and White participants) found that White participants had a stronger ingroup bias than both Black and 'other' (Arab/Turkish, Asian, and Hispanic) participant groups (Meissner & Brigham, 2001; see also Anthony et al., 1992).

## Experience and the ORE

One common explanation for the ORE is perceptual experience. For example, Hills and Pake (2013) propose that extensive experience with own-race faces determines participants' attention to specific facial features that facilitate differentiating between own-race more than other-race faces. However, when participants' attention is drawn toward diagnostic features that are proposed to be important for processing faces of other races, such as instructing White participants to attend to the lower parts of the face when presented with Black targets, outgroup face recognition can improve (Hills & Pake, 2013; but see Wittwer et al., 2019). These findings suggest that when induced not to rely on scan patterns that people have learned through experience with ingroup racial faces by default, and instead to attend to features more diagnostic for a particular racial outgroup, the ORE can be reduced.

It is important to note, however, that both an earlier and more recent meta-analysis have shown only a small effect of cross-race contact on greater recognition accuracy for own-race over other-race faces (Meissner & Brigham, 2001,  $r = -.13$ ; Singh et al., 2021,  $r = -.15$ ). While these reviews indicate that more contact is somewhat related to a reduced ORE, a number of studies have found no correlation between the size of the ORE and contact with other-race members (Brigham & Barkowitz, 1978; Michel et al., 2006; Ng & Lindsay, 1994; Wong et al., 2020). For example, Korean children adopted before the age of 3 by White families and raised in a primarily White environment, showed better recognition accuracy for Asian than White faces (de Heering et al., 2010). It is unclear, however, whether intergroup contact needs to occur during a critical period, such as before 12 years of age (McKone et al., 2019) or in adulthood (Tanaka & Simonyi, 2016), to circumvent the ORE. Notably, Tutenberg and Wiese (2019) recently found that while White people living in the United Kingdom were better in sorting and matching the images of White compared to Asian faces that contained natural variability (e.g., photographs that vary in angle, expression, and hairstyle), Asian participants who had only recently arrived in the United Kingdom did not show an advantage in face processing for their own group. These results, along with previous findings related to a relatively small effect of cross-race contact suggest that there is plenty of variation in the ORE that might be predicted by motivation or other mechanisms (Hugenberg et al., 2010; MacLin & Malpass, 2001).

## Motivation and the ORE

Proponents of motivational explanations for the ORE find that differences in recognition accuracy for ingroup and outgroup racial faces can be reduced with incentives that implicate effort and goals to individuate others. Specifically, while these theorists propose that the default mode is to individuate ingroup members and to categorize outgroup members (Macrae & Bodenhausen, 2000; Fiske et al., 1999; Hugenberg et al., 2010), when provided with external incentives, either monetary or social normative (e.g., discouraging bias), people can learn to individuate outgroups (Hugenberg et al., 2007). For example, Kawakami et al. (2014) instructed White participants to individuate Black targets, individuate White targets, or were given no additional instructions. Specifically, participants in the individuate Black targets condition were told before the initial face presentation phase that, 'For every Black face that you correctly recognize in the memory test you will be given 25¢. Therefore, it is important that you try to remember the Black faces that you are presented with as individuals, paying attention to what makes them unique'. Participants in the individuate Whites condition were compensated for the correct recognition of White faces. Participants who did not receive any additional instructions or who were instructed to individuate White targets showed the standard ORE with better recognition for White than Black faces. In contrast, participants instructed to individuate Black targets showed an attenuated effect. In fact, these participants were marginally better, not worse, at recognizing Black than White faces.

While there is some evidence that both experience and motivation are important determinants of the ORE, it is informative to also investigate the impact of these mechanisms on another important domain in face processing – emotion identification. Because being able to identify facial expressions is a critical

component of harmonious social interactions (Freeman & Ambady, 2011; Hugenberg & Wilson, 2013; Niedenthal & Brauer, 2012), investigating ingroup and outgroup differences in this process is vital to understanding intergroup relations.

## EMOTION IDENTIFICATION WITHIN NATIONS

Decoding emotions is key to understanding others (Ames & Johar, 2009; Feinberg et al., 2012; Miles, 2009) and when this process is compromised, communication and interpersonal relations suffer (Adolphs, 2002; Baron-Cohen et al., 1997; Keltner & Haidt, 1999). However, accurately decoding emotional expressions is more challenging when processing faces of outgroup relative to ingroup members (Bijlstra et al., 2014; Elfenbein & Ambady, 2002; Hess et al., 2012; Izard, 1971; Kang & Chasteen, 2009). In this section, we examine the relationship between the two key mechanisms, experience and motivation, and differences in identifying emotions with ingroups and outgroups.

### Experience and emotion identification

Recently, theorists have proposed that experience can help explain differences in emotion identification within the same nation. Friesen et al. (unpublished data), for example, suggested that because of the cognitive tendency to associate familiarity with trustworthiness (Pennycook et al., 2018), differences in the frequency of exposure to certain outgroup facial expressions might create biases in the interpretation of those expressions. Specifically, interracial interactions can be marred by misunderstandings (Dovidio et al., 2002; Richeson & Sommers, 2016; Vorauer, 2005) and Whites can elicit unease from Blacks in social interactions (Holoien et al., 2015; Word et al., 1974). One product of this discomfort may be the expression of false smiles that indicate placating politeness instead of authentic happiness (Rychlowska et al., 2017). If so, it could be that non-Blacks are exposed more often to false smiles on Black than White faces. In accordance with this theorizing, Friesen et al. (unpublished data) found that true compared to false smiles were rated as both more familiar and trustworthy on White but not Black faces. However, repeated presentation of Black faces depicting true but not false smiles increased subsequent ratings of trustworthiness of Black faces depicting true smiles. By temporarily manipulating familiarity through repeated exposure to certain pairings of emotions and racial faces (e.g., Black targets and true smiles), this research provides initial evidence for the potential role of experience in the biased construal of characteristics closely associated with emotions.

### Motivation and emotion identification

Research has also recently demonstrated that racial differences in emotion identification may be related to preferential attention to the eyes of ingroup compared to outgroup members. Specifically, Friesen, Kawakami, Vingilis-Jaremko, et al., (2019) proposed that because happiness expressions associated with true and false smiles are distinguishable for the most part by Duchenne markers and action units around the eyes and because it has been found that White participants attend more to the eyes of White than Black targets (Kawakami et al., 2014; Stelter et al., 2021), participants would be better at differentiating between these two expressions on White than Black faces. Six studies confirmed these hypotheses by demonstrating racial biases in the identification of true and false smiles and highlighting differences in visual attention as a mechanism for this effect. These authors theorized that increased attention to the eyes of White targets was driven by a motivation to know ingroup members (Kawakami et al., 2018).

Notably, when presented with outgroup members, theorists have suggested that people may be less motivated to exert effort when processing faces and may instead rely on stereotypes that they have learned to associate with that category (Macrae & Bodenhausen, 2000; Fiske & Neuberg, 1990;

Hugenberg et al., 2010; Kawakami et al., 2017). In support of this theorizing, researchers have provided evidence that racial stereotypes related to specific emotions can also explain differences in face processing. In particular, when a cultural stereotype suggests that an outgroup is prone to certain emotions, perceivers are more likely to interpret facial expressions in accordance with that stereotype (Hess & Kirouac, 2000; Kawakami et al., 2017; Masuda et al., 2008). For example, because Black individuals are stereotyped as hostile and angry in the United States (Devine, 1989), White Americans categorize angry expressions faster on Black than White faces (Hugenberg, 2005), perceive expressions as angrier on Black than White faces (Hutchings & Haddock, 2008; Maner et al., 2005; Shapiro et al., 2009), and see angry expressions lingering longer and appearing earlier on Black than White faces (Hugenberg & Bodenhausen, 2003). Notably, even relatively neutral expressions on Black faces can be perceived as angry (Hugenberg & Bodenhausen, 2003). In addition to emotion perception on Black faces, a similar pattern has been found in the decoding of expressions on Moroccan faces. For example, in the Netherlands, White participants were more likely to see anger than sadness on Moroccan than White faces because of negative stereotypes related to this group (Bijlstra et al., 2010). Moreover, Dutch perceivers with stronger stereotypic associations between Moroccans and anger more readily identified anger on Moroccan than White faces (Bijlstra et al., 2014).

While our brief review provides some evidence for both experience and motivation as explanations for differences in processing ingroup and outgroup faces, such as the ORE and biases in emotion identification, it is clear that this support is neither strong nor consistent (Stelter et al., 2021). Given that these mechanisms may work alone or in conjunction to predict certain face processes, recent theories have attempted to integrate these mechanisms into a single framework (Hugenberg et al., 2013; Tüttenberg & Wiese, 2019). Hugenberg et al. (2010), for example, explain how both experience and motivation can combine in their Categorization–Individuation Model to predict the ORE. It may be useful, however, to include this theorizing into a broader framework that explicitly incorporates not only research conducted within nations but also research conducted across nations and that examines not only the ORE but also other face processing effects, such as emotion identification. Given the growing interconnectivity between countries around the world and the importance of not limiting participant recruitment to only WEIRD countries, it is imperative to explore cultural research on processing ingroup and outgroup faces across nations and potential mechanisms for these effects.

## CULTURE AND PROCESSING OF INGROUP AND OUTGROUP FACES

Although the boundaries of culture are often blurred, it has been broadly defined as a particular group of individuals who exist within a shared context (Heine, 2020). Specifically, people within a given culture are exposed to many of the same cultural ideas with common experiences. For example, they may attend the same institutions, follow the same traditions, and consume the same media. Although a short-hand practice is to use nationality as an indicator of culture, researchers have classified cultures in various ways, from broad contexts that incorporate many different countries to more fine-grained distinctions between people within one country. For example, a common strategy is to compare Eastern cultures (e.g., Japan, Korea, and China) with Western cultures (e.g., Canada, the United States, and West European countries such as Germany, England). Psychological differences between these two cultures are some of the most widely researched and reported (e.g., Markus & Kitayama, 1991; Peng & Nisbett, 1999). Cultural comparisons and contrasts, however, are also made between the populations of single countries, such as Canadians and Germans, or even between populations living within a single country, such as Indigenous people and European Americans in Canada.

Culture is important because it provides us with the basic components for intergroup bias, see Figure 1. In particular, each culture teaches us the characteristics to use as a basis for social categorizations, the evaluative and semantic associations with those categories (i.e., prejudices and stereotypes), and the ways in which members of those groups are treated (i.e., norms related to



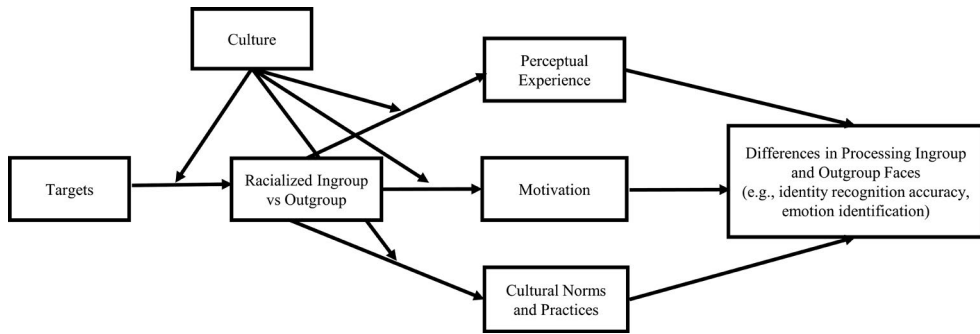


FIGURE 2 The impact of culture on differences in processing racial ingroup and outgroup faces

discrimination; Kawakami et al., 2020; Pauker et al., 2010; Taylor et al., 2009). Furthermore, it is not just that different categories are more salient or relevant across cultures, but *how* categories are represented can also differ (Karasawa et al., 2014). For example, in the United States, perceivers generally engage in hypodescent – categorizing mixed-race individuals in terms of lower-status non-White groups (Chen et al., 2018). They also weight parentage information over phenotypic cues when determining category membership. Thus, in the United States, a biracial child with a Black and a White parent is typically considered Black. In contrast, Brazilian perceivers do not engage in hypodescent or use parentage information. Instead, they use appearance cues, especially skin colour, to determine a target's race. Culture, therefore, defines early in the process which categories are culturally relevant, how we construe those categories, and how we define others as a member of the ingroup or outgroup (see Figure 2).

There is extensive research demonstrating that the self is represented differently across cultures. In comparison to individualistic cultures such as the United States, collectivist cultures such as Japan often view the self in relation to others (Markus & Kitayama, 1991). However, because of more social obligations related to belonging to a group, members of collectivist cultures may be more reluctant to affiliate with some group and to ascribe importance to new social identities (Dunham, 2018; Fischer & Derham, 2016). For example, when members of Eastern cultures are assigned to arbitrary minimal groups compared to real-world groups, they show less bias (Falk et al., 2014) and would presumably show smaller differences in processing ingroup and outgroups faces.

Although the literature on processing ingroup and outgroup faces often does not explicitly distinguish between studies that examine these processes within a nation or across nations, social cognitive researchers typically investigate responses to racial ingroups and outgroups living within a single nation. Cultural researchers, alternatively, investigate responses to racial ingroups and outgroups living in two distinct cultures. In general, while the theoretical focus of research examining face processes within a single nation is on the targets and how characteristics associated with the target, or perceiver by target interactions, impact perceptions, research examining face processes across nations has emphasized perceiver effects. For example, research within nations might examine how White perceivers decode emotions on Black and White faces and emphasize how the race of the target influences perceptions (Hugenberg & Bodenhausen, 2013).<sup>2</sup> Research across nations, on the other hand, might examine how White perceivers from Canada and Asian perceivers from China decode emotions on White and Asian faces and emphasize how culture influences perceptions of both White and Asian targets (Fang et al., 2021). Perhaps not surprisingly, given these different perspectives, the pattern of findings related to processing ingroup and outgroup faces within nations or across nations can differ and the mechanisms used to explain these results can vary. In the next section, we will describe how the previous mechanisms related to processing ingroup and outgroup faces within nations – experience and motivation – as

<sup>2</sup>Although Black and White Americans have a distinct culture, they also share a common culture related to living in the U.S.

well as new mechanisms proposed by cultural researchers, are used to explain differences in face processes across nations.

## MECHANISMS FOR DIFFERENCES IN PROCESSING INGROUP AND OUTGROUP FACES ACROSS NATIONS

Experience and motivation have been used to explain difference in processing ingroup and outgroup faces within and across nations. Additional explanations, however, have also been proposed across nations, such as cultural norms and practices. In this section, we describe cross-cultural research examining the relationship between each of these mechanisms and the ORE and emotion identification. We also explore how studies that include across nation comparisons can be designed to test the universal efficacy of these mechanisms. In short, our goal is to use cultural research to increase our understanding of intergroup differences in face processing.

### Culture and experience

Theorists propose that because people have more experience and expertise in processing members of their own racial group, they can integrate featural information from ingroup faces more efficiently and attend to facial features that optimize processing faces of racial ingroups over outgroups (Hills & Lewis, 2006; Rhodes et al., 1989; Tanaka & Simonyi, 2016; Valentine et al., 2016). Cross-cultural research on face perception comparing Eastern with Western cultures has provided mixed support for this mechanism. While previous findings generally indicate that gaze patterns depend on the culture of the perceiver (Caldara et al., 2010; Gobel et al., 2017; Jack et al., 2009; Miellet et al., 2012, 2013), evidence that perceivers apply the same attentional strategies to facial features regardless of whether the targets are members of ingroups versus outgroups is limited.

In one foundational study, Blais et al. (2008) presented Western and Eastern participants with White and Asian faces. The results indicated that fixation patterns did not differ according to the race of the target face, with both ingroup and outgroup faces generally receiving the same pattern of fixations. Strong cultural effects, however, were found. While Westerners showed the triangular pattern of attention that was previously thought universal (Yarbus, 1967), with a primary focus on the eyes and a secondary focus on the mouth, Easterners attended relatively more to the central and nose regions.

These findings suggest, in accordance with the perceptual expertise explanation, that participants may apply an attentional pattern to facial features that is more diagnostic of their own race to both ingroup and outgroup members. Other research, however, suggests that people may use different attentional strategies for ingroups and outgroups. Notably, around 9 months, infants begin to demonstrate attentional preferences that indicate that they are differentiating between own-race and other-race faces (Anzures et al., 2010; Hayden et al., 2009). In particular, White 6- to 10-month-olds become increasingly attentive to the eyes and less to the mouths of own-race faces as they age, a shift which does not occur for other-race faces (Wheeler et al., 2011; Xiao et al., 2013). In contrast, East Asian infants develop an attentional preference for the central facial area of ingroups, but reduce their attention to this area for outgroups (Liu et al., 2011; 2015). Theorists suggest that these differences in processing own-race and other-race members may reflect learning culturally specific differences in attention (Wheeler et al., 2011).

Research on adults in Western contexts provides further evidence that participants attend more to the eyes of racial ingroups than outgroups, but to the nose and mouths of racial outgroups than ingroups (Kawakami et al., 2017; Stelter et al., 2021). By contrast, adults in Eastern contexts attend more to the nose and mouth of Asian ingroups than White outgroups, but to the eyes of White outgroups than Asian ingroups (Fu et al., 2012; Hu et al., 2014). Taken together, it seems that people learn cultural conventions when attending to facial features of ingroups, for Westerners that means attending to the

eyes and for Easterners that means attending to the central area of the face. Importantly, and counter to the perceptual expertise theorizing, they may attend to different features for outgroups.

Not all research that examines attention to facial features, however, demonstrates a larger effect for perceiver culture over race of the target. For example, Goldinger et al. (2009) presented White participants from the United States and Asian participants from China, Japan, Taiwan, and Thailand (who had all resided in the United States for less than one year) with faces of White and East Asian targets. Notably, the pattern of effects was similar across participant culture but differed based on the race of the target. Specifically, both Westerners and Easterners focused more on the eyes of ingroup than outgroup targets (see also Wu et al., 2012).

## Culture and motivation

How motivations to individuate ingroups and outgroups play out across nations is not clear. Some psychological motivations (e.g., sociopolitical motives), however, may be more relevant to within-nation than to cross-nation intergroup relations. For example, some perceivers might be more inclined to categorize and stereotype a racial outgroup member from their own nation because that target might threaten the perceiver's dominant position (Ho et al., 2013; Pratto et al., 1994; Sidanius & Pratto, 1999). However, these perceivers might be less concerned about an outgroup member from another nation, because these individuals do not threaten the domestic intergroup status hierarchy. In other words, motivations related to dominance may be more likely to be elicited in within-nation rather than cross-nation contexts. These context-based predictions are consistent with research on other sociopolitical motives that demonstrates that system justification motives affect judgements about within-nation targets that are relevant to the participant but not cross-nation targets that are irrelevant (Friesen, Laurin, Shepherd, et al., 2019b; Jost, 2020; Jost & Banaji, 1994; Kay et al., 2009). More research, however, is clearly necessary to explore differences in motivations to categorize versus individuate outgroup members within and between nations and their impact on face processing.

## Culture and social norms/practices

Face processing can also be determined by social norms and practices. For example, differences in gaze patterns may be driven by cultural norms. While eye contact is considered a sign of respect in Western cultures, it is deemed disrespectful in Eastern cultures (Argyle & Cook, 1976; Argyle et al., 1986). In a cross-culture context, therefore, differences in face processing may be related to learned norms rather than perceptual expertise. Notably, Gobel et al. (2017) presented participants from Eastern and Western cultures with video clips in which targets displayed direct gaze or averted gaze. When targets displayed direct gaze, the typical pattern of attentions was found, Westerners focused more on the eyes and Easterners focused more on the nose. However, when targets had averted gaze, there were no cultural differences in perceiver fixations. One reason for these distinct attentional patterns for direct and averted gaze may be related to social norms in some cultures that looking directly into another's eyes may signal disrespect.

In the next two sections, we examine research related to the ORE and emotion identification across nations. We also describe studies that have investigated the relationship between the three proposed mechanisms (experience, motivation, and cultural norms/practices) and these domains. Finally, we propose avenues for future research that have the potential to provide better insight into the value of these mechanisms within nations and across nations for explaining differences in processing ingroup and outgroup faces.

## OWN RACE EFFECT ACROSS NATIONS

Notably, most experiments related to the ORE have compared recognition accuracy within a single nation, with significantly fewer studies examining this process between nations (Meissner & Brigham, 2001; Singh et al., 2021). Nonetheless, research that has examined identity recognition accuracy across nations provides reliable evidence for the ORE, though the magnitude of this ingroup advantage varies. While some studies have found similar ORE effects across nations, other studies have found significant differences in the size of the ORE. For example, Chiroro and Valentine (1995) found that White participants from Britain and Black participants from Zimbabwe each showed greater recognition for ingroup than outgroup faces, with a similarly sized ingroup advantage in each country (see also Childs et al., 2021). In contrast, when Zhao et al. (2014) compared White participants from Germany and Asians participants from China and Hong Kong, they found an ORE for both groups, but the effect was stronger in the German than Asian group. When Ng and Lindsay (1994) compared White and East Asian participants living in Canada and Singapore, although OREs were found for both groups, the effect was largest for Asians living in Canada. So why might the ORE be smaller in countries such as China, Hong Kong, and Singapore than in Canada and Germany?

### Experience and the ORE

One part of the puzzle might be exposure to different racial categories. Nations differ not only in which racial group makes up the majority but also in the extent to which the population is diverse, with groups from multiple cultures residing within its borders. These factors can impact experience with members of particular racial categories. For instance, compared to Western countries such as Canada and Germany, Eastern countries such as China and Japan have proportionally fewer visible minorities (Central Intelligence Agency, 2020). Notably, many large cities in North America may soon be majority-minority environments (Frey, 2018). For example, recent data from Statistics Canada (2016) indicate that 52% of the population of Toronto is a visible minority. Although the largest proportion of the population remains White (48%), the size of other groups (e.g., Black, South Asians, and East Asians) are also relatively large (9%, 13%, and 13%, respectively). Given these differences in the potential for contact and visual exposure to a variety of racial groups, it would be informative to explore the impact of racial diversity at the national, municipal, and local level on face processing and attention to specific facial features.

Another productive avenue for future research would be to examine how changes in cultural environments, and corresponding perceptual experiences, change attentional patterns to ingroup and outgroup faces. In particular, do experiences of immigrants in a new culture that includes significantly greater exposure to outgroup racial faces impact face processing? Research by Sangrigoli et al. (2005) on the ORE suggests that the answer might be yes. Specifically, these researchers compared adult perceivers from two different cultures and a third group of perceivers who moved from one culture to another as young children. Notably, while White participants from France and Asian participants from Korea showed an ingroup advantage of similar magnitude, Korean immigrant participants who lived in France responded like residents of their host culture – with better recognition of White than Asian faces. Furthermore, a study examining the ORE in Chinese and Vietnamese children who were adopted by Belgian parents found comparable recognition for Asian and White faces (de Heering et al., 2010). Although several findings suggest that extensive visual experience with outgroups can impact face processing of outgroup faces, differences in motivations to individuate ingroup over outgroup members may also influence recognition accuracy across nations (Hugenberg et al., 2010, 2013; Kawakami et al., 2014).

## Motivation and the ORE

In general, few studies have been conducted that include experimental designs that can differentiate between the effects of experience and motivation (Tüttenberg & Wiese, 2019). This issue is even more problematic when focusing on research across nations. Despite the fact that examining these processes in different nations may provide new and more conclusive evidence for the importance of motivation in processing ingroup and outgroup faces, for the most part, research has only indirectly investigated this mechanism.

For example, in a study by Wright et al. (2003), Black South Africans, White South Africans, and White English participants all showed better recognition accuracy for White than Black faces (see also Sadozai et al., 2019). Although one alternative explanation for these findings is related to the stimuli (e.g., White faces were more distinct), another explanation is related to motivation. Because of the history of apartheid in South Africa, in which the White population dominated that nation politically, socially, and economically, one reason why Black South Africans show better outgroup recognition may be related to power and status (see also Shriver et al., 2008).

While most ORE studies within nations have focused on how a majority group (typically Whites) and a minority group (typically Blacks or Asians) differ in their recognition of ingroup versus outgroup faces, comparing recognition accuracy between outgroups within the same nation and in different nations can be informative. In a study in Malaysia, for example, Chinese participants, a cultural minority, showed similar recognition accuracy for Chinese ingroup faces, Malay outgroup majority faces, and White outgroup minority faces (Tham et al., 2017). They, however, showed worse recognition for Black outgroup faces than Chinese ingroup faces. Vingilis-Jaremko et al. (2020), alternatively, found that minority group perceivers (Black, East Asian, and South Asian) in Canada were more accurate at recognizing majority group (White) faces than outgroup minority faces. This majority group recognition bias, however, was less than half the magnitude of the recognition advantage for ingroup faces. It is notable, that majority group members, whether Malay in Malaysia or White in Canada, as well as high status groups such as White minority group members in Malaysia may receive more effortful processing and therefore be better remembered.

To better understand the role of motivation in the ORE, several questions come to mind when exploring these processes cross-culturally: Are members of outgroups that are more relevant to one's nation because of proximity, economic relationships, or similarities in politics and culture processed differently than less relevant nations (Kawakami et al., 2021; Malpass, 1990)? Are there different types of motivations, besides motivation to individuate others, that foster processing of racial ingroups and outgroups across compared to within nations?

Besides examining characteristics related to nations, investigating changes in the face processing of immigrants in a new culture could also be informative. While cultural research suggests that recent immigrants maintain some of their original culture in their host country, they also acculturate over time and adapt to their new home's culture (Berry & Sam, 1997). Although the impact of the culture of the original country can last generations, at some point (e.g., in the 3rd generation), descendants may experience and respond in many ways in accordance with the host culture even in multicultural settings (Heine & Lehman, 2004). Therefore, does increasing acculturation with the host culture impact motivations to individuate members of the host culture over time? By examining the ORE as immigrants age and become more integrated with their host country (Bar-Haim et al., 2006; Sangrigoli & de Schonen, 2004), both in the short-term and long-term (over generations), by measuring how exposure to racial outgroups changes over time, and how/if motivations to individuate the host group increases, the impact of motivations on the ORE can be better understood.

Evidence for the ORE has been found both within and across nations. Furthermore, initial research provides convincing evidence that experience and exposure to racial outgroup categories can be an important determinant of this effect. Research related to the significance of motivation as a mechanism for the ORE, however, is less direct and convincing. While future research across nations has the potential to increase our grasp of how both experience and motivation determine the ORE, investigating how these mechanisms are related to another face processing domain, emotion identification results across nations, is also informative.

## EMOTION IDENTIFICATION ACROSS NATIONS

Notably, the number of studies on emotion perception on ingroup and outgroup faces across nations is much larger than within nations. The extent to which emotion perception is universal versus culturally specific, however, is the subject of considerable debate (Ekman & Cordaro, 2011; Elfenbein & Ambady, 2003; Gendron et al., 2018; Jack et al., 2012; Keltner et al., 2019). Early research suggested that the perception of basic emotions is highly similar across cultures, with people from different nations perceiving similar emotions for a given facial expression (e.g., Ekman, 1973; Izard, 1994). For example, Ekman et al. (1969) showed photographs of facial expressions on White targets of six basic emotions (happiness, sadness, anger, disgust, fear, and surprise) to participants in America, Borneo, Brazil, Japan, and New Guinea and provided six emotion categories. They instructed participants to select the category that best described the emotion in each photograph. The results showed that all perceiver groups could recognize all six basic emotions at above chance performance. Based on these findings, that have been replicated across a variety of other cultures, theorists proposed that facial expressions of emotions are universal (e.g., Ekman, 1972; Ekman et al., 1987; Izard, 1971).

More recent research, however, has uncovered cultural differences in more intricate patterns of emotion perception. In a meta-analysis of 97 studies on cross-cultural differences in the recognition of emotional expressions, Elfenbein and Ambady (2002) found that facial expressions of emotions were recognized better when the perceiver and target were from the same cultural background. The researchers reasoned that because members of different cultures have diverse styles of producing and decoding emotions, people who do not share a culture are at a disadvantage. Even though these cultural differences are systematic, they are subtle enough to allow accurate communication across cultural boundaries. They are substantive enough, however, to make the recognition of emotional expressions less accurate across cultural boundaries.

Two other notable differences have been found in emotion identification across cultures. First, there is a relatively low recognition accuracy for negative facial expressions by Easterners compared to Westerners (Beaupré & Hess, 2005; Biehl et al., 1997; Ekman et al., 1987; Jack et al., 2009; Yik & Russell, 1999). For example, when comparing Japanese to American participants, Matsumoto (1992) found that Japanese were worse at identifying facial expressions of anger, disgust, fear, and sadness on both Japanese and White targets. Second, Easterners compared to Westerners tend to see multiple concurrent emotions in a single facial expression (Fang et al., 2018, 2019). Leu et al. (2003), for example, showed that Asian participants used more emotion words than White participants to describe expressions. Furthermore, when Asian and White participants were asked to rate facial expressions on Asian and White targets, both groups consistently rated the intended target emotions higher than non-target emotions (Fang et al., 2019). Asian compared to White participants, however, were also more likely to perceive non-target emotions in the same expressions.

### Experience and emotion identification

One potential reason for better recognition of facial expressions on racial ingroup compared to outgroup members across cultures may be exposure. Because people within a given culture have more experience perceiving, and are more familiar with, different dialects of emotional expressions in general, they are better at decoding them (Elfenbein, Beaupré, Lévesque, et al., 2007a). Furthermore, experience may impact decoding of certain emotions. In particular, because cultures differ in their display norms for emotions, their exposure to certain expressions can vary. For example, negative emotions may pose a threat to group harmony, which is valued to a greater degree in collectivistic Eastern cultures compared to individualistic Western cultures. Members of Eastern countries may therefore be reluctant to express their true emotions (Matsumoto, 1989). Consequently, Westerners compared to Easterners are exposed more to negative emotional expressions (Biehl et al., 1997; Ekman, 1972) and therefore may be more adept at identifying negative emotions such as anger on both White and Asian faces (Nisbett

et al., 2001). According to Buck and colleagues (Buck, 1994; Buck et al., 1992), it is also possible that the display norms for emotions guide how emotions are perceived. In general, individuals tend to be worse at decoding expressions that are discouraged in a given culture. Consequently, cultures that differ in display rules for certain emotions are also expected to differ in decoding rules for certain emotions. Theoretically, however, it is equally conceivable that suppression of negative emotions in collectivistic cultures could make Easterners more, rather than less, sensitive to these signals; perceptual acuity may be particularly advantageous when clear signals are scarce. In addition to experience and exposure to emotional expressions, another potential reason for an ingroup advantage in decoding emotions may be motivation.

## Motivation and emotion identification

Because people usually have a greater preference for one's own cultural group or expect to develop more frequent and deep connections with ingroup members, they are more motivated to accurately decode their emotional expressions. In contrast, perceivers are less motivated to accurately decode emotional expressions from members of different cultural groups (Kilbride & Yarczower, 1983; Markham & Wang, 1996). Note, however, that motivation does not invariably produce ingroup advantages and can also increase the decoding accuracy for outgroup emotional expressions. In particular, Kunstman et al. (2016) found that Black perceivers who were highly suspicious of Whites' egalitarian motives, and presumably were more motivated to detect duplicity among White people, were more accurate at identifying false smiles expressed by White targets than Black perceivers who were low in suspicion. While research examining intergroup face processing within nations has focused on the impact of experience and motivation, research across nations has also examined more specific mechanisms related to cultural differences.

## Cultural mechanisms of emotion identification

Research has provided evidence that cultural mechanisms can also play a role in explaining differences in perceptions of emotions across nations. For example, cognitive styles (Ji et al., 2000; Markus & Kitayama, 1991; Nisbett et al., 2001) and dialectical thinking (Peng & Nisbett, 1999; Peng et al., 2006) can impact face processing. While Easterners are characterized by holistic thinking in which they attend to the entire field and relations between the components (Kitayama et al., 2003, 2009; Miyamoto, 2013), Westerners are characterized by analytical thinking in which they attend primarily to focal objects and are less influenced by others in their social context (Cohen et al., 2017; Lo et al., 2021). As a result, Easterners may be more attuned to the presence of multiple emotions (and their interrelations) within an expression compared with Westerners, who may focus primarily on the most salient emotion. In addition, Easterners typically demonstrate dialectical thinking (Peng & Nisbett, 1999; Spencer-Rodgers et al., 2004) and are less troubled by perceived inconsistencies and discrepancies. Easterners compared to Westerners may therefore be more open to endorsing multiple, often contradictory, emotions.

Although together this research highlights the importance of cultural norms and practices in face processing, future research is clearly needed to investigate variations in these norms and practices between nations and how they inform face processing. Comparing how these cultural perspectives develop in children and unfold among adults across cultures would be particularly informative in discovering the importance of these mechanisms. Furthermore, monitoring long term changes in cultures may provide additional evidence.

Not surprisingly, the world and its cultures are constantly changing. Large scale socioeconomic transformations, such as shifts from agricultural to industrial and postindustrial economies, higher education attainment, greater occupational prestige and income, and urbanization, are affecting even foundational orientations (Inglehart & Baker, 2000; Kraus et al., 2012). For example, in an investigation

of 78 countries over 51 years, researchers showed that individualism is on the rise in most societies (Santos et al., 2017). These changes can have a profound impact on cognitive thinking styles and the way people from distinct cultures see their social world. By investigating whether changes in face processing are linked to such cultural changes in interdependence or social norms over time can provide us with important information on mechanisms related to attention to specific facial features, the ORE, and emotion identification (DeWall et al., 2011; Greenfield, 2013; Twenge et al., 2016; Varnum et al., 2010).

## CONCLUSIONS

Communication is a cultural practice and we can learn a lot about face processes by examining how the processing of ingroup and outgroup members differs and is the same within nations and across nations. Whereas research within nations often focuses on and demonstrates target effects related to racial ingroups and outgroups, including implicit associations and downstream consequences (see Figure 1), research across nations often focuses on and demonstrates perceiver effects related to different cultures and how culture impacts the relevance of social categories, how we define others as part of the ingroup or outgroup, and how we construe category members (see Figure 2). In our review of mechanisms related to such basic face processing domains as recognition identity accuracy and emotion identification, we found that the efficacy of experience and motivation to explain the complex pattern of effects within nations is often limited. This problem is even more substantial when examining effects across nations. Although it is clear that more research is needed to fully appreciate the impact of these factors in isolation or in combination, cross-cultural research has the potential to facilitate this goal. Because expertise and motivational mechanisms of face perception may sometimes be confounded in within nation research, a more fulsome integration of within and across nation perspectives may allow researchers to partial out the separate contributions of these mechanisms along with cultural explanations in explaining intergroup bias.

Interactions between ingroups and outgroups are often characterized by misperceptions (Dovidio et al., 2002; Richeson & Sommers, 2016; Vorauer et al., 1998; Vorauer & Sakamoto, 2006). This problem is caused, in part, by how initial impressions are formed. Gaining a better understanding of differences in processing faces of ingroup and outgroup members and their mechanisms can be critical to fostering harmonious social interactions and improving communication between social categories within one culture and across cultures (Freeman & Ambady, 2011; Hugenberg & Wilson, 2013; Niedenthal & Brauer, 2012). Given growing interracial tensions in many countries and an increasingly integrated world in which people from different countries are in constant interaction, the importance of this knowledge is undeniable.

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## CONFLICT OF INTEREST

All authors declare no conflict of interest.

## AUTHOR CONTRIBUTION

**Kerry Kawakami:** Conceptualization; Writing – original draft; Writing – review & editing. **Justin Friesen:** Conceptualization; Writing – original draft; Writing – review & editing. **Xia Fang:** Conceptualization; Writing – original draft; Writing – review & editing.

## DATA AVAILABILITY STATEMENT

Data sharing is not applicable. No new data was generated.



## ORCID

Kerry Kawakami  <https://orcid.org/0000-0002-5320-3472>

Justin P. Friesen  <https://orcid.org/0000-0002-1624-5315>

Xia Fang  <https://orcid.org/0000-0001-8485-2910>

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