



## Will you remember me? Cultural differences in own-group face recognition biases☆



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### HIGHLIGHTS

- We examine face memory biases with European Canadians (EC) and East Asians (EA).
- EC show better memory for minimal ingroup (vs. outgroup) faces.
- EC show better memory for same-university (vs. other-university) faces.
- EA do not show these two own-group face memory biases.
- Cultural differences in the conception of ingroup may explain these results.

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### ABSTRACT

East Asians often define their ingroups based on preexisting social relationships (e.g., friends, family), whereas North Americans define their ingroups largely based on broader social categories (e.g., race, nationality; Brewer & Yuki, 2007). In the present research we examined the consequences of this cultural difference for own-group face recognition biases. In Study 1, European Canadians and first-generation East Asian Canadians were assigned to minimal groups. Consistent with previous findings, European Canadians showed superior memory for own-group faces; however, as expected, first-generation East Asian Canadians did not. In Study 2, using university affiliation as the experimentally manipulated social group, European Canadians again showed superior memory for own-group faces, whereas first-generation East Asian Canadians did not. The results are consistent with current theorizing and suggest that the effect of mere social categorization on face recognition is moderated by culture.

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People generally find it easier to recognize same-race as compared to cross-race faces—a phenomenon known as the cross-race effect (CRE; see Anthony, Copper, & Mullen, 1992; Meissner & Brigham, 2001 for reviews). The CRE has been widely documented among European Americans (e.g., Chance, Goldstein, & McBride, 1975; Devine & Malpass, 1985; MacLin, van Sickler, MacLin, & Li, 2004; O'Toole, Deffenbacher, Valentin, & Abdi, 1994; Shepherd, Deregowski, & Ellis, 1974) and African Americans (e.g. Chance et al., 1975; Devine & Malpass, 1985; Malpass & Kravitz, 1969; Shepherd et al., 1974). There is also evidence to suggest a CRE among Asian Americans and East

Asians (e.g., Hayward, Rhodes, & Schwaninger, 2008; Michel, Rossion, Han, Chung, & Caldara, 2006; O'Toole et al., 1994), but a reverse CRE has also been documented, with East Asian participants in at least one study recognizing White faces better than East Asian faces (Valentine & Endo, 1992).

Although researchers initially believed that the CRE occurred exclusively due to people's greater perceptual experience with same-race versus cross-race faces (e.g. Shepherd et al., 1974; Wright, Boyd, & Tredoux, 2003), more recent theorizing suggests that this and other group-based face recognition biases (e.g., religious affiliation: Rule, Garrett, & Ambady, 2010; sexual orientation: Rule, Ambady, Adams, & Macrae, 2007) arise from a combination of perceptual experience, social categorization, and people's motivations to individuate (Hugenberg, Wilson, See, & Young, 2013; Hugenberg, Young, Bernstein, & Sacco, 2010). According to the Categorization–Individuation Model (CIM), own-group face recognition biases can emerge because people categorize outgroup members but are motivated to individuate ingroup members (Hugenberg et al., 2010), and as such, “the motivational nature of the CIM predicts that virtually any contextually meaningful shared

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ingroup membership may signal the need to individuate” (p. 1173). Building on the CIM, in the current research we tested the possibility that what serves as a motivationally relevant ingroup/outgroup distinction in one culture might not in another, leading to predictable cultural differences in face recognition biases.

## 1. Face recognition biases

Numerous findings support the idea that social categorization and motivational processes can both play a role in maintaining an own-group bias in face recognition. In one study, the hairstyle of ambiguously Hispanic–Black faces was manipulated to make the targets appear to be either Hispanic or Black (MacLin & Malpass, 2001). Although the facial features were identical, Hispanic Americans in this study were better at recognizing faces that, based on the hairstyle, appeared to be Hispanic (i.e., their racial ingroup) as opposed to Black (i.e., a racial outgroup). Additional research has established that face recognition accuracy for same-race faces similarly increased when participants believed that the targets belonged to the same (versus different) university (Bernstein, Young, & Hugenberg, 2007; Study 1), socioeconomic group (Shriver, Young, Hugenberg, Bernstein, & Lanter, 2008), or minimal group as themselves (Bernstein et al., 2007; Study 2). Notably, all of these experiments used the same target faces while simply manipulating social categorization. Hence, these findings support the notion that even holding perceptual expertise constant, recognition accuracy is increased for targets categorized into the same social group as the perceiver. This has led to the conclusion that mere social categorization alone is sufficient to elicit group-based face recognition biases (Bernstein et al., 2007).

It is important to note that experimental work examining the social motivational underpinnings of cross-category face recognition has primarily been conducted in North-American cultural contexts, predominantly with European American participants. In the current research we aimed to further our understanding of face recognition biases by examining whether cultural background can moderate these group-based face recognition biases.

## 2. Culture and the meaning of ingroups

Group processes, including the way that ingroups are conceptualized, are often shaped by the cultural context (Yuki & Brewer, 2014). In North American cultures, social groups tend to be represented as broad social collectives (Brewer & Yuki, 2007). Thus, strangers who share the same social category or group (e.g., university, sports team, or race) are treated as “ingroup” members even though there is no pre-existing interpersonal relationship between them. By contrast, in East Asian cultures, social groups are more likely to be conceived of as networks of interpersonal relationships (Brewer & Yuki, 2007). Hence, the “ingroup” includes only others with whom one has direct or indirect personal ties.

These two culturally divergent representations of the ingroup are substantiated by comparative studies of intergroup biases. With regard to category-based social groups, North Americans typically exhibit stronger ingroup biases than do East Asians. For example, North American students exhibited an own-group evaluative bias toward students in their own university, whereas Japanese students either did not demonstrate such a bias (Snibbe, Kitayama, Markus, & Suzuki, 2003) or showed a reversed bias, favoring students in a competing university (Heine & Lehman, 1997). Moreover, using a minimal group paradigm to artificially create two social categories, Americans were more likely to favor ingroup members when deciding the amount of a monetary bonus that other participants would receive, whereas Japanese participants showed no such bias (Falk, Heine, & Takemura, 2014).

These culturally distinct conceptualizations of the ingroup raise an interesting and as yet untested possibility for the process of face recognition. Unlike North Americans, East Asians may not treat strangers who

belong to the same social category as an ingroup member if they have no pre-existing direct or indirect personal connection with them (Yuki, 2003). Because East Asians may not hold ingroup biases toward category-based social groups in the first place (e.g., Falk et al., 2014), a shared social category alone may be sufficient to enhance memory of a target’s face for North Americans (e.g., Bernstein et al., 2007), but not for East Asians.

## 3. The present research

In the present research, we aimed to replicate and extend the findings of Bernstein et al. (2007) by examining the effect of target race (White and East Asian) and social group membership on face recognition biases among European Canadian and East Asian participants. We hypothesized a moderating effect of culture on the relationship between social categorization and face recognition. Specifically, consistent with previous findings (Bernstein et al., 2007), we predicted that European Canadians would show enhanced memory for faces that shared the same minimal group (Study 1) or university affiliation (Study 2). By contrast, we expected that for East Asians, sharing the same minimal group (Study 1) or university affiliation (Study 2) would not lead to a comparable face recognition bias.

## 4. Study 1

### 4.1. Method

#### 4.1.1. Design and participants

Ninety-one participants, including 39 European Canadians (30 female;  $M_{\text{age}} = 21.8$  years) and 52 first-generation East Asian Canadians<sup>1</sup> (32 female;  $M_{\text{age}} = 21.2$  years), completed a purported study of personality and face perception for course credit.<sup>2</sup> The study had a 2 (Culture: European vs. East Asian)  $\times$  2 (Target Race: White vs. East Asian)  $\times$  2 (Target Group: Ingroup vs. Outgroup) mixed design, with the last two factors within-subjects.

#### 4.1.2. Materials

**4.1.2.1. Personality test.** In order to create minimal groups, participants were asked to complete 40 questions from the Big Five Personality Test (Goldberg, 1993), purportedly to assess their personality type.

**4.1.2.2. Face stimuli.** One hundred and twenty gray-scaled photographs of White ( $n = 60$ ) and East Asian male targets ( $n = 60$ ), each displaying neutral facial expressions, were used as face stimuli.<sup>3</sup> Each photograph was 6  $\times$  5.25 in. and appeared on either an orange or green background, with half of the faces of each race appearing on each color background.

#### 4.1.3. Procedure

Consenting participants first completed the personality test on a computer. They were led to believe that their responses were analyzed by the computer which then provided ostensible results, indicating that the participant fit either an “orange” or a “green” personality type. In reality, participants’ color group was randomly assigned. To help foster identification with their purported personality group, participants were asked

<sup>1</sup> Thirty-four of the self-identified European Canadians were born in Canada and five were born in the United States or a European country (e.g., England). All of the self-identified first-generation East Asian Canadians were born in an Asian country (e.g., China, Korea) with the average length of residence in Canada being 8.8 years ( $SD = 5.35$ ).

<sup>2</sup> The data collection stop point for Study 1 was primarily determined by the availability of participants (aiming for at least 30 participants per culture group) and the end of term. The number was determined by convention and our anticipation of the power required to detect our effects.

<sup>3</sup> The face stimuli for the two studies were adapted from Blair, Judd, Sadler, and Jenkins (2002), Gao et al. (2008), and Minear and Park (2004).

to wear either an orange or a green wristband corresponding to their “personality type” and were reminded that the wristband identified them as a member of their group.

Next, participants viewed 60 faces on the computer screen, including 30 White (half with orange and half with green backgrounds) and 30 East Asian faces (half with orange and half with green backgrounds), presented individually and in a random order. Each photograph was presented for 3 s with an inter-stimulus interval of 0.5 s. Participants were told to pay attention to the photos, as their memory of these faces would be tested.

After a 5-min filler task, participants viewed a total of 120 faces presented sequentially in the middle of the computer screen. The faces included the 60 old faces on their original background color as well as 60 new faces (half White and half East Asian) presented equally on either an orange or green background. Participants were asked to indicate whether or not they had seen each of the faces previously. Each photograph remained on the computer screen until the participant responded. Participants then completed a few additional measures for exploratory purposes that are outlined in the Supplementary material. Finally, participants were thanked and debriefed.

4.2. Results and discussion

Face recognition accuracy scores were computed using the signal detection parameter sensitivity ( $d'$ ; Green & Swets, 1966), where  $d' = z(\text{hit}) - z(\text{false alarms})$  for each of the four groups of face targets (two target races crossed with two minimal groups). We then recoded the two minimal groups into “ingroup” and “outgroup” based on each participant’s own minimal group assignment. Hence, for each participant, there were four  $d'$  scores representing face recognition accuracy for White ingroup faces, White outgroup faces, East Asian ingroup faces, and East Asian outgroup faces.

We first ran a 2 (Culture: European vs. East Asian)  $\times$  2 (Target Race: White vs. East Asian)  $\times$  2 (Target Group: Ingroup vs. Outgroup) mixed ANOVA, with the first factor between-subjects and the last two factors within-subjects (see Table 1 for  $M$ s and  $SD$ s in each condition). Results indicated a marginal main effect of Culture,  $F(1, 89) = 3.41, p = .07, \eta_p^2 = .04$ . European Canadian participants showed better face recognition overall than did East Asian participants. There was also a marginal main effect of Target Race,  $F(1, 89) = 2.90, p = .09, \eta_p^2 = .03$ . White faces were better recognized than East Asian faces. Importantly, these two main effects were qualified by two two-way interactions. Results revealed an interaction between Culture and Target Race,  $F(1, 89) = 22.56, p < .001, \eta_p^2 = .20$ . European Canadians recognized White faces ( $M = 1.34, SD = 0.54$ ) better than East Asian faces ( $M = 0.96, SD = 0.45$ ),  $F(1, 89) = 18.21, p < .001, \eta_p^2 = .17$  (see Fig. 1a), whereas East Asians showed better memory for East Asian faces ( $M = 1.09, SD = 0.46$ ) over White faces ( $M = 0.90, SD = 0.50$ ),  $F(1, 89) = 5.42, p = .02, \eta_p^2 = .06$  (see Fig. 1b). In addition, for White faces, European Canadians demonstrated better recognition than did East Asians,  $F(1, 89) = 16.12, p < .001, \eta_p^2 = .15$ . For East Asian faces, there was not a significant difference in recognition accuracy between East Asian and European Canadian perceivers,  $F(1, 89) = 1.83, p = .18, \eta_p^2 = .02$ .

Critically, the anticipated interaction between Culture and Target Group also emerged,  $F(1, 89) = 4.25, p = .04, \eta_p^2 = .05$ . Replicating Bernstein et al. (2007, Study 2), European Canadians showed better

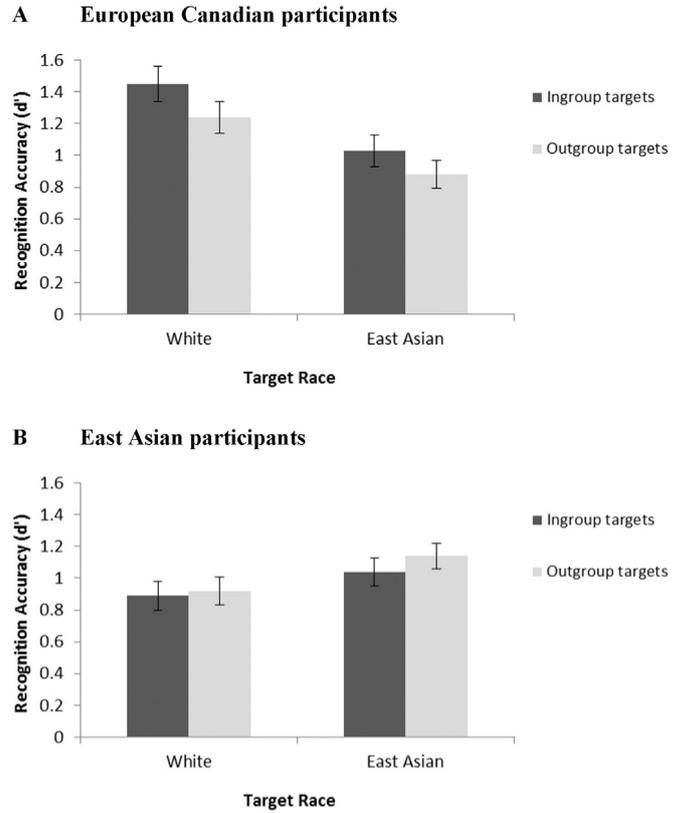


Fig. 1. Face recognition accuracy in Study 1 as a function of target race and target group (minimal group) among (a) European Canadian and (b) East Asian participants. Error bars indicate standard errors.

memory for ingroup faces ( $M = 1.24, SD = 0.53$ ) based on minimal group membership over outgroup faces ( $M = 1.06, SD = 0.47$ ),  $F(1, 89) = 4.04, p = .047, \eta_p^2 = .04$  (see Fig. 1a). As expected, however, this was not the case for East Asians, who showed no difference in their memory for ingroup ( $M = 0.96, SD = 0.49$ ) and outgroup faces ( $M = 1.03, SD = 0.46$ ),  $F(1, 89) = 0.69, p = .41, \eta_p^2 = .01$  (see Fig. 1b). No other significant effects emerged,  $F_s < 0.95, p_s > .33, \eta_p^2_s < .01$ .

In this study the CRE was evident for both European Canadians and East Asians, consistent with previous findings (e.g., Michel et al., 2006; O’Toole et al., 1994). However, it is important to recognize that when perceptual expertise was held constant through the use of a minimal group paradigm, the anticipated cultural difference emerged. For European Canadians, targets who shared the same (vs. different) experimentally manipulated minimal group membership were recognized more accurately. For East Asians, however, this effect did not emerge. As far as we are aware, this is the first known demonstration of cultural differences in cross-category face recognition biases.

5. Study 2

The goal of Study 2 was to conceptually replicate the findings of Study 1 using a pre-existing broad social group, specifically university affiliation (Bernstein et al., 2007; Study 1). Participants from York University, a large university located in central Canada, were randomly assigned to a color condition and were led to believe that faces with the same color background were similarly from York University. Participants were also told that faces with the different color backgrounds attend Simon Fraser University, a university of a comparable size located on the West Coast of Canada. We anticipated that participants would be aware that this school similarly has a large East Asian minority student population and hence would believe our cover story. In addition, we anticipated that because of its distant location, few participants

Table 1 Mean face recognition accuracy in Study 1 ( $d'$ ).

	European Canadian Perceivers	East Asian Perceivers
White ingroup targets	1.45 (0.74)	0.89 (0.61)
White outgroup targets	1.24 (0.64)	0.92 (0.64)
East Asian ingroup targets	1.03 (0.63)	1.04 (0.65)
East Asian outgroup targets	0.88 (0.54)	1.14 (0.60)

Note: Standard deviations are shown in parentheses.

would have friends attending that university, which may have influenced participants' motivation to individuate based on interpersonal relationships rather than social categories.

In Study 2, we predicted that European Canadians would show enhanced memory for faces that shared the same university affiliation, whereas East Asians would not.

## 5.1. Method

### 5.1.1. Design and participants

One hundred and four European Canadians and 66 first-generation East Asian Canadians participated in this study for course credit or \$10; all of them were students at York University.<sup>4</sup> Participants were excluded if they failed to give a correct answer to at least one of the two manipulation check questions described below ( $n = 5$ ), if they indicated that they had one or more friends at the outgroup university used in the present study ( $n = 23$ ), or if they encountered a technical difficulty during the face learning phase of the study ( $n = 5$ ). The remaining participants included 92 European Canadians (63 female;  $M_{\text{age}} = 21.4$  years) and 45 first-generation East Asian Canadians<sup>5</sup> (32 female;  $M_{\text{age}} = 20.7$  years). The study had a 2 (Culture: European vs. East Asian)  $\times$  2 (Target Race: White vs. East Asian)  $\times$  2 (Target Group: Ingroup vs. Outgroup) mixed design, with the last two factors within-subjects.

### 5.1.2. Materials

**5.1.2.1. Face stimuli.** The face stimuli used in this study were identical to those used in Study 1. Each photograph appeared on either an orange or green background, with half of the faces of each race appearing on each color background.

### 5.1.3. Procedure

The procedure was very similar to that of Study 1 with the following exceptions. First, participants did not complete a personality test. Second, participants were told that the wristband was used to identify them as a member of York University. Third, participants were instructed that they would view some face photos of York University and Simon Fraser University students, and the background color of the photos would identify the university affiliation of the targets. Finally, two manipulation check questions were asked at the end of the study: "What color is associated with York University in this experiment?" and "Do you remember why you are wearing the wristband?"

## 5.2. Results and discussion

As in Study 1, face recognition accuracy scores were computed using the signal detection parameter sensitivity ( $d'$ ; Green & Swets, 1966), where  $d' = z(\text{hit}) - z(\text{false alarms})$  for each of the four groups of face targets (two target races crossed with the two university affiliations of the targets). For each participant, there were four  $d'$  scores representing face recognition accuracy for White ingroup faces, White outgroup faces, East Asian ingroup faces, and East Asian outgroup faces.

We ran a 2 (Culture: European vs. East Asian)  $\times$  2 (Target Race: White vs. East Asian)  $\times$  2 (Target Group: Ingroup vs. Outgroup) mixed ANOVA, with the first factor between-subjects and the last two factors

<sup>4</sup> The data collection stop point for Study 2 was primarily determined by the results of Study 1 and the availability of participants (aiming for at least 40 participants per culture group who did not have any friends at Simon Fraser University) and the end of term. Due to the larger population of European Canadians than first-generation East Asian Canadians at this university and the method of recruitment for this study, more European Canadians were recruited and run than first-generation East Asian Canadians.

<sup>5</sup> Eighty-eight of the self-identified European Canadians were born in Canada and four were born in a European country (e.g., Ireland). All of the self-identified first-generation East Asian Canadians were born in an Asian country (e.g., China, Korea) with the average length of residence in Canada being 7.9 years ( $SD = 5.38$ ).

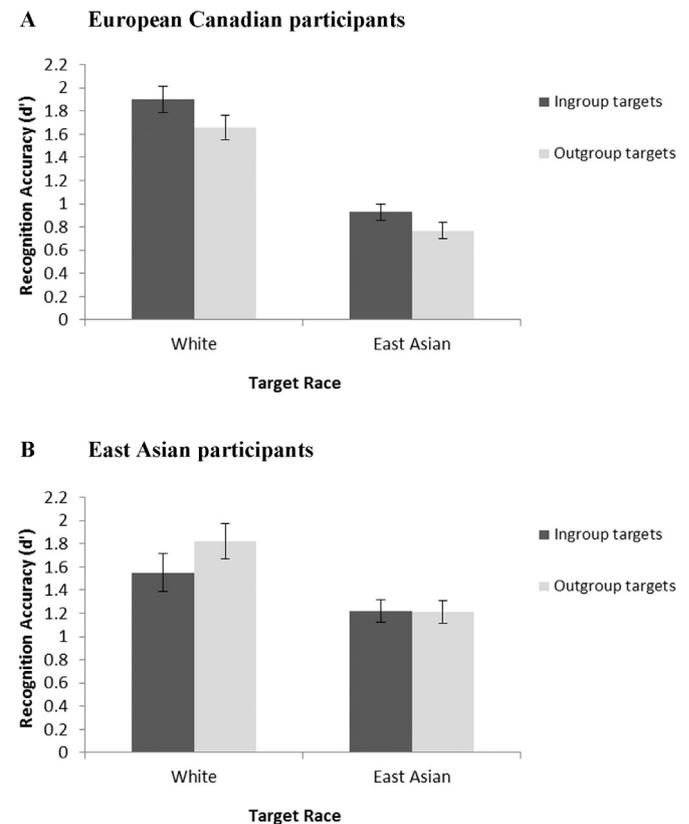
**Table 2**  
Mean face recognition accuracy in Study 2 ( $d'$ ).

	European Canadian Perceivers	East Asian Perceivers
White ingroup targets	1.90 (1.03)	1.55 (1.25)
White outgroup targets	1.66 (1.00)	1.82 (1.03)
East Asian ingroup targets	0.93 (0.64)	1.22 (0.72)
East Asian outgroup targets	0.77 (0.61)	1.21 (0.72)

Note: Standard deviations are shown in parentheses.

within-subjects (see Table 2 for  $M$ s and  $SD$ s in each condition). Results indicated a marginal main effect of Culture,  $F(1, 135) = 3.01, p = .09, \eta_p^2 = .02$ . In this study, the East Asian sample showed better face recognition overall than the European Canadian sample. Results also indicated a marginal main effect of Target Race,  $F(1, 135) = 2.90, p = .09, \eta_p^2 = .03$ , with White faces being recognized more accurately than East Asian faces, as was the case in Study 1. Importantly, these two main effects were again qualified by two two-way interactions. Results revealed an interaction between Culture and Target Race,  $F(1, 135) = 12.16, p = .001, \eta_p^2 = .08$ . European Canadians recognized White faces ( $M = 1.78, SD = 0.55$ ) better than East Asian faces ( $M = 0.85, SD = 0.48$ ),  $F(1, 135) = 151.96, p < .001, \eta_p^2 = .53$  (see Fig. 2a); however, in this study, East Asians also showed better memory for White faces ( $M = 1.69, SD = 0.63$ ) over East Asian faces ( $M = 1.21, SD = 0.63$ ),  $F(1, 135) = 19.06, p < .001, \eta_p^2 = .12$  (see Fig. 2b). In addition, replicating Study 1, for White faces, European Canadians again demonstrated better recognition than did East Asians,  $F(1, 135) = 13.96, p < .001, \eta_p^2 = .09$ . Also consistent with Study 1, for East Asian faces, there was not a significant difference in recognition accuracy between East Asian and European Canadian perceivers,  $F(1, 135) = 0.86, p = .36, \eta_p^2 = .01$ .

Importantly, the expected interaction between Culture and Target Group also emerged,  $F(1, 135) = 3.50, p = .06, \eta_p^2 = .03$ , conceptually



**Fig. 2.** Face recognition accuracy in Study 2 as a function of target race and target group (university affiliation) among (a) European Canadian and (b) East Asian participants. Error bars indicate standard errors.

replicating Study 1. Consistent with the findings of Bernstein et al. (2007, Study 1), European Canadians showed better memory for ingroup faces ( $M = 1.42$ ,  $SD = 0.61$ ) based on university affiliation over outgroup faces ( $M = 1.21$ ,  $SD = 0.62$ ),  $F(1, 135) = 4.02$ ,  $p = .047$ ,  $\eta_p^2 = .03$  (see Fig. 2a). As predicted, however, East Asians showed no difference in their memory for ingroup ( $M = 1.39$ ,  $SD = 0.74$ ) and outgroup faces ( $M = 1.51$ ,  $SD = 0.63$ ),  $F(1, 135) = 0.77$ ,  $p = .38$ ,  $\eta_p^2 < .01$  (see Fig. 2b). No other significant effects emerged,  $F_s < 1.01$ ,  $p_s > .31$ ,  $\eta_p^2_s < .01$ .

In this study we observed the CRE for European Canadians but not East Asians, consistent with Valentine and Endo (1992). Importantly, when university affiliation of the targets was experimentally manipulated, the anticipated cultural difference emerged. For European Canadians, targets who shared the same university affiliation were recognized more accurately than participants from a different university. For East Asians, however, no such effect was found. Conceptually replicating Study 1, these findings provide converging evidence that social categorization alone may not be sufficient to elicit face recognition biases for everyone. In cultures where ingroups are defined by pre-existing interpersonal networks, face recognition accuracy for strangers is not enhanced by mere social categorization.

## 6. General discussion

In the current research, we built on current theory and research to examine whether culture moderates the relationship between social categorization and face recognition accuracy. In Study 1, we found an own-group bias with European Canadians when the same novel faces were manipulated to be members of minimal ingroups and outgroups and demonstrated that, as predicted, East Asians did not show an own-group bias. In Study 2, we conceptually replicated this moderating effect of culture using university affiliation as the experimentally manipulated social group. When the same novel faces were manipulated to be members of ingroups and outgroups based on university affiliation, European Canadians showed the own-group bias whereas East Asians did not. Across these two studies, when perceptual experience was held constant, European Canadians, but not East Asians, exhibited a social categorization induced face recognition bias. These results suggest that the enhanced motivation to process novel faces that belong to the same social group applies to people of European, but not East Asian, cultural backgrounds. Building on recent theorizing about face recognition, which emphasizes the importance of social categorization and motivational processes (Hugenberg et al., 2010), the current findings suggest that group-based face recognition biases can depend on cultural differences in the tendency to psychologically treat “same-group strangers” as “ingroup members.”

### 6.1. Implications for the malleability of memory for novel faces

The current research raises the possibility that it might be easier to enhance face memory for strangers among people of European, as opposed to East Asian, cultural backgrounds. In a more Western cultural context, it has been shown that intergroup biases can be shifted fairly easily by social categorization processes. For instance, prejudice reduction research based on the Common Ingroup Identity Model has demonstrated that by creating or making salient a common superordinate group, prejudice can be reduced as previous outgroup members are re-categorized as ingroup members (Gaertner & Dovidio, 2000). With a similar logic, recent face recognition bias research has found that making salient a common ingroup, such as university affiliation, can increase face recognition for cross-race targets who belong to the same social group (Hehman, Mania, & Gaertner, 2010). However, if shared social group membership does not enhance face recognition accuracy as easily among East Asians, face memory for strangers among East Asian perceivers may be more difficult to improve by merely highlighting a common social group. In the East Asian cultural context, the presence of an

interpersonal connection may be more critical than a shared social category when determining ingroup membership. If there is no pre-existing interpersonal relationship between the two people, as is the case in novel face recognition, the target person is likely to remain an outgroup member no matter what social group that stranger belongs to (see also Ng, Steele, Sasaki, Sakamoto, & Williams, 2015).

### 6.2. Future directions

Given that the present results suggest that the motivation to connect with ingroup members who share a broad social category is not likely to be a predominant factor underlying the CRE among East Asians, the question of why East Asians still show the CRE remains. Consistent with the perceptual expertise account of the CRE (Hancock & Rhodes, 2008; Wright et al., 2003), it seems likely that at least some East Asian samples might have better memory for East Asian than White faces because of more extensive perceptual experience with East Asian, as opposed to White, faces.

On the other hand, factors other than perceptual experience may also influence cross-race face recognition accuracy among East Asians. For instance, it has been found that social targets are more likely to be recognized if they are perceived as having higher social status, being more powerful, or as being more important than those who are perceived as having lower social status (Ratcliff, Hugenberg, Shriver, & Bernstein, 2011), being less powerful (Shriver & Hugenberg, 2010), or as being less important (Ackerman et al., 2006; Baldwin, Keefer, Gravelin, & Biernat, 2013), respectively. If targets of European cultural backgrounds are perceived as having higher social status than targets of other cultural backgrounds, this may enhance cross-race face recognition among East Asian perceivers, potentially explaining the reverse CRE for East Asians documented in some studies, including our Study 2. In future research, it would be useful to systematically investigate the conditions under which these social motivational factors play a role in cross-race face recognition among East Asian perceivers. In fact, it seems possible that under certain conditions, such as when social status is manipulated, East Asian perceivers' face recognition biases might be particularly malleable because of their cultural emphasis on social hierarchy and deference to authorities (Triandis & Gelfand, 1998).

### 6.3. Conclusions

The current paper contributes to research examining face perception by demonstrating cultural differences in face recognition biases that are predicted by recent theorizing on culture and group processes. Overall, our results provide additional evidence that social categorization and motivational processes can affect face recognition biases; however, what constitutes a meaningful ingroup may depend on one's cultural background. Although it has been suggested that “the mere presence of ingroup-specifying features, ingroup category labels, or other ingroup-specifying characteristics outside of race...can signal that encoding the identity of a target is of greater importance thereby eliciting the motive to individuate” (Hugenberg et al., 2010; p. 1175), these features may be much more likely to elicit individuation among people with European, as opposed to East Asian, cultural backgrounds.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.jesp.2016.01.003>.

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