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# A Minimal Ingroup Advantage in Emotion Identification Confidence

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BRIEF ARTICLE



# A minimal ingroup advantage in emotion identification confidence

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**ABSTRACT**

Emotion expressions convey valuable information about others' internal states and likely behaviours. Accurately identifying expressions is critical for social interactions, but so is perceiver *confidence* when decoding expressions. Even if a perceiver correctly labels an expression, uncertainty may impair appropriate behavioural responses and create uncomfortable interactions. Past research has found that perceivers report greater confidence when identifying emotions displayed by cultural ingroup members, an effect attributed to greater perceptual skill and familiarity with own-culture than other-culture faces. However, the current research presents novel evidence for an ingroup advantage in emotion decoding confidence across arbitrary group boundaries that hold culture constant. In two experiments using different stimulus sets participants not only labeled minimal ingroup expressions more accurately, but did so with greater confidence. These results offer novel evidence that ingroup advantages in emotion decoding confidence stem partly from social-cognitive processes.

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Expressions of emotion communicate important social information, including conveying internal mental states and forecasting likely behaviours. For example, smiling suggests contentment and benevolent approach (e.g. Parkinson, 2005). Accurately identifying emotional displays is critical for coordinating social interactions. Indeed, dating back to Darwin's seminal work (1965), evidence suggests that humans have an innate ability to both display emotions through facial movements and to decode others' expressions of emotions (see also Hess & Thibault, 2009).

Although emotion identification is accurate across a wide-range of contexts (Ekman, 1972), some factors are known to moderate expression recognition (e.g. Hugenberg, Young, Sacco, & Bernstein, 2011). For example, there is a reliable *cultural ingroup advantage*, such that emotion identification is most accurate when perceiver and expresser culture align. Elfenbein and Ambady (2002) proposed that this advantage arises from slight differences in how emotions are displayed in different cultures (i.e. non-verbal dialects akin to regional differences in spoken language), which interfere with perceivers' ability to decode expressions.

This *dialect theory* is well supported. For example, native-Japanese and American-Japanese faces can be accurately differentiated based on their expressions alone, suggesting the existence of culture-specific differences in the appearance of emotions (Marsh, Elfenbein, & Ambady, 2003). Additionally, the magnitude of the cultural ingroup advantage is predicted by perceivers' contact with cultural outgroup members, indicating that exposure to other-cultures' non-verbal dialects improves the ability to decode outgroup expressions (Elfenbein & Ambady, 2003).

Most relevant to the current research, the cultural ingroup advantage extends to other measures of emotion processing, including confidence, as perceivers report greater certainty when labeling own-culture than other-culture expressions (Beaupré & Hess, 2006). This is notable, as a lack of confidence when decoding expressions may delay appropriate responses and disrupt interpersonal communication

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across group boundaries, even if perceivers do correctly label the expression. With this in mind, the present research investigates whether an ingroup advantage in emotion identification confidence extends to other intergroup boundaries. We report two experiments that examine whether an ingroup advantage in emotion identification confidence can be generated in minimal intergroup contexts that hold culture constant.

### Mere ingroup advantages

There is evidence that social-cognitive factors contribute to ingroup advantages in emotion processing. In one demonstration, participants identified the expressions of ostensible basketball teammates more accurately than competitors, even when their teammates were from other cultures (Thibault, Bourgeois, & Hess, 2006). More recently, Young and Hugenberg (2010) found that lab-created minimal group distinctions generate an ingroup advantage in emotion decoding within a single culture, in part due to participants' greater motivation to attend to socially important ingroup faces. These results demonstrate that ingroup advantages in emotion identification exist even when expressive dialects are controlled.

However, although an ingroup advantage in emotion identification accuracy can be generated by creating ingroup/outgroup boundaries in the lab, it is unclear whether additional cultural ingroup effects can be similarly recreated. In the current work, we address whether the ingroup advantage in emotion identification *confidence* can be observed in minimal group contexts. This is a meaningful but unanswered question. Theoretically, the own-culture advantage in decoding confidence is attributed to low familiarity with cultural outgroups' expressive dialects (e.g. Beaupré & Hess, 2006). However, if minimal group distinctions can generate a similar ingroup confidence advantage when culture is held constant, this will offer a novel demonstration of how intergroup boundaries alone can create ingroup biases in face perception (e.g. Hugenberg et al., 2011).

### Emotion identification confidence in social interactions

A minimal ingroup advantage in emotion identification confidence also has implications for social interactions. If a perceiver correctly recognises furrowed brows and pursed lips as anger but is unsure of whether this perception is accurate, this uncertainty may disrupt appropriate behavioural reactions (e.g. Marsh, Ambady, & Kleck, 2005) and create misunderstandings. Thus, if confidence in emotion decoding is lower for outgroup than ingroup expressions, awkward or unpleasant intergroup interactions may follow (e.g. Gray, Mendes, & Denny-Brown, 2008), and empathic responding may be reduced (Marsh, Kozak, & Ambady, 2007).

All told, for emotion displays to successfully function as a signaling system that coordinates social behaviour (e.g. Parkinson, 2005), perceivers need to not only accurately identify expressions, but do so with confidence. Thus, understanding how even arbitrary group distinctions can lead to an ingroup advantage in emotion decoding confidence is theoretically and practically valuable. Although feelings of subjective confidence are a critical component of emotion decoding, this phenomenon has received little attention aside from the Beaupré and Hess' (2006) investigation of a cultural ingroup advantage in confidence. The present experiment aims to address this lacuna in the literature.

### The current research

The current research tests whether the ingroup confidence advantage previously observed across cultural groups generalises to minimal group contexts. This question is theoretically interesting, because a minimal ingroup confidence advantage could not be attributed to differential experience with other-culture dialects. To provide a stringent test of this hypothesis, we utilised a procedure that creates ingroups and outgroups in the lab while holding constant culture and other factors that may bias emotion decoding. Generalisability across stimulus sets was also established by using different expressive faces in Experiments 1 and 2, respectively. In each study, participants viewed expressive faces of ostensible ingroup or outgroup members and were tasked with identifying the emotion being displayed and recording how confident they were in their response (see Beaupré & Hess, 2006). Finally, as a manipulation check, we included self-report measures of motivation and group identification in each experiment.

## Experiment 1

### Method

#### Participants

Forty-five participants of European ancestry (31 Female, $M_{age} = 22.4$) from a private university in the Northeastern United States took part in the experiment in exchange for course credit. Sample size was determined assuming a medium effect size ($\eta^2 = .06$; Murphy, Myors, & Wolach, 2004) and desired power of .95.

#### Procedure

Participants were seated in individual workstations equipped with desktop computers and CRT monitors. The experimenter verbally informed participants they would complete a task measuring "personality and social cognition". All additional instructions were provided via computer. The experiment used a repeated-measures design.

Participants first completed an ostensible personality inventory that served as a minimal group induction (see Young & Hugenberg, 2010). In the present experiment, participants rated how much they enjoyed ten colorful images on a 1–7 scale. After a 10-second delay, the computer informed participants that they were either a "circle" or "square" personality type. This personality feedback had actually been randomly generated and served to assign participants to a newly created ingroup. To increase the apparent importance of this personality assessment, participants were informed that being a circle[square] personality type has important implications for their professional and personal lives, and that the test is often used as a personality assessment by psychologists and businesses.

Following the minimal group manipulation, participants were told they would view faces of either their own personality type (i.e. ingroup members) or of the other personality type (i.e. outgroup members). Additional instructions explained that the personality type of the individuals shown would be indicated by the shape of backgrounds and text labels for each face. Which background indicated ingroup or outgroup members was determined by which group participants were randomly assigned to.

The expressive targets were 10 White male faces taken from the NIMSTIM (Tottenham et al., 2009) database. Participants viewed each face identity displaying five different emotions: anger, fear, happiness, sadness, and disgust. The order of images was randomised. In total, participants completed 50 trials (25 ingroup; 25 outgroup), with 5 ingroup and outgroup faces expressing each emotion. For each image viewed, participants were instructed to make two judgments: (1) identify the emotional expression and (2) indicate their confidence level. Which faces were presented as ingroup or outgroup members was fully counterbalanced, such that all faces were viewed as both ingroup and outgroup members depending on counterbalancing condition.

To measure accuracy, we followed a procedure identical to Young and Hugenberg (2010). A central fixation point was shown for 1000 ms followed by a randomly presented background shape for 1000 ms. Then, an expressive face appeared for 500 ms before being replaced by a screen that offered five emotion labels that corresponded to a number on the keyboard (e.g. 1 = happy, 2 = angry). Participants answered by pressing the number that corresponded to the expression they believed the face had displayed. Correct responses were summed separately for ingroup and outgroup targets and by each expression, with scores ranging from 0 (none correct) to 5 (perfect). Immediately following the emotion identification question, participants were asked to indicate their confidence on a 0 (not at all) to 100 (very high) scale, taken directly from Beaupré and Hess (2006).

At the conclusion of the main task, participants answered two self-report questions designed to assess their motivation to affiliate with ingroup and outgroup targets. The questions were, "I was motivated to identify the expressions of my ingroup[outgroup] members." Participants responded on a 1 (strongly disagree) to 7 (strongly agree) scale. Question order was randomised.

### Results

#### Motivation

Confirming the success of the ingroup manipulation, participants reported greater motivation to identify ingroup ($M = 4.47$, $SD = 1.54$) than outgroup ($M = 3.76$, $SD = 1.53$) expressions, $t(44) = 3.24$, $p < .001$[2].

#### Confidence

To test our primary hypothesis, we submitted responses to the question gauging confidence in emotion identification to a 2 (group: ingroup, outgroup) × 5 (expression: anger, happiness, sadness, disgust, fear) repeated-measures ANOVA. This analysis revealed a main effect of emotion, $F(1,41) = 20.10$, $p$

**Table 1.** Means and standard deviations for confidence (left columns) and accuracy (right columns) for ingroup and outgroup expressions in Experiment 1.

| | Confidence | | | | Accuracy | | | |
|---|---|---|---|---|---|---|---|---|
| | Ingroup | | Outgroup | | Ingroup | | Outgroup | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Anger | 87.41 | 9.61 | 84.36 | 10.93 | 0.75 | 0.23 | 0.67 | 0.21 |
| Happiness | 96.29 | 6.84 | 94.72 | 9.22 | 0.98 | 0.06 | 0.99 | 0.04 |
| Sadness | 85.14 | 12.45 | 83.69 | 10.61 | 0.73 | 0.14 | 0.58 | 0.21 |
| Disgust | 88.82 | 7.70 | 88.75 | 9.67 | 0.76 | 0.18 | 0.71 | 0.23 |
| Fear | 84.87 | 11.11 | 83.82 | 10.58 | 0.76 | 0.21 | 0.84 | 0.22 |

Note: Confidence scores ranged from 0 to 100 and accuracy scores represent proportion correct.

< .001, $\eta^2 = .66$, indicating a Happy Face Advantage (Kirita & Endo, 1995). Most relevant to predictions, the main effect of group was also significant, $F(1, 44) = 5.47$, $p = .024$, $\eta^2 = .11$, as participants felt more confident when identifying ingroup ($M = 88.50$, $SD = 7.08$) than outgroup ($M = 87.07$, $SD = 6.90$) expressions. Group membership did not interact with expression, $F(4, 41) = .60$, $p = .44$, $\eta^2 = .01$ (see Table 1).

### *Accuracy*

We submitted emotion identification scores to a 2 (group) × 5 (expression: anger, happiness, sadness, disgust, fear) repeated-measured ANOVA. This analysis revealed a significant main effect of expression, $F(4, 41) = 145.03$, $p < .001$, $\eta^2 = .93$, corresponding to the Happy Face Advantage in confidence. More importantly, the predicted main effect of group was also significant, $F(1, 44) = 4.09$, $p = .049$, $\eta^2 = .085$, with ingroup expressions ($M = 0.80$, $SD = 0.45$) recognised more accurately than outgroup expressions ($M = 0.76$, $SD = 0.54$), replicating previous results (Young & Hugenberg, 2010). This main effect of group was qualified by expression, $F(4, 41) = 4.79$, $p = .003$, $\eta^2 = .32$ (see Table 1). Probing this interaction revealed an unexpected reversal of the usual ingroup advantage for fearful faces, as participants recognised fear more accurately on outgroup than ingroup faces, $t(44) = -2.36$, $p = .023$, $d = .37$. For all other expressions, emotion recognition was more accurate for ingroup than outgroup faces, although this effect was only significant for anger, $t(44) = 1.56$, $p = .027$, $d = .28$ and sadness, $t(44) = 4.08$, $p < .001$, $d = .81$. In summary, although we did observe the minimal ingroup advantage in identification, it varied in magnitude and reversed for fear expressions.

### *Confidence and accuracy*

To assess whether self-reported confidence in emotion identification was related to accuracy on each trial, we used sensitivity correlations. To do so, for each participant, we calculated the point-biserial correlation between the continuous confidence measure and the binary accuracy measure, separately for ingroup and outgroup trials. We then transformed each correlation coefficient to a Fisher's *z*-score. Comparing both ingroup and outgroup sensitivity correlations to 0, we see that trial-by-trial accuracy correlations were positive for both ingroup ($M = 0.48$, $SD = 0.23$, 95% CI [.41, .54]) and outgroup ($M = 0.35$, $SD = 0.30$, 95% CI [.27, .44]) trials. Furthermore, mean sensitivity correlations were significantly higher for ingroup than outgroup trials, $t(44) = 2.13$, $p = .04$, $d = .32$. As such, when measured on a trial-by-trial basis, confidence on ingroup trials was a better predictor of accuracy than confidence on outgroup trials.

### *Discussion*

Past research has revealed a cultural ingroup advantage in perceiver confidence when identifying emotional displays (Beaupré & Hess, 2006). The current research finds novel evidence that minimal group distinctions created in the lab can create similar ingroup biases in confidence, even when culture is held constant. Specifically, the results demonstrate that arbitrary intergroup boundaries exert an influence on not just the accuracy of emotion identification (cf. Young & Hugenberg, 2010), but also on participants' subjective feelings of confidence in identifying emotional displays, even when perceiver and expresser are from the same culture.

## Experiment 2

Experiment 1 provides initial support for the notion that arbitrary intergroup distinctions are sufficient to generate ingroup advantages similar to those seen

across cultural lines. However, the experiment used faces displaying high intensity expressions which may have inflated participants' judgments of confidence and deflated error rates. The faces were also identical to those used in Young and Hugenberg (2010), leaving open the question of whether minimal ingroup advantages generalise to other stimuli. Lastly, the group motivation questions that served as a manipulation check were face-valid and straightforward but potentially demand-laden. With these considerations in mind, we designed a second experiment that closely replicates Experiment 1, but with a different set of expressive faces and an alternative set of questions adapted from Van Bavel and Cunningham (2012) that measure group identification.

## Method

### Participants

Thirty-eight participants of European Ancestry (23 female, $M_{age} = 21.2$) attending a public university in the Northeastern United States took part in the experiment in exchange for partial course credit. Sample size was determined based on the main effect of confidence in Experiment 1 (which is the primary measure of interest) and desired power of .95. Data collection was halted at the conclusion of the spring 2016 semester. Two participants misunderstood the confidence task and were removed, leaving a final sample of 36.

### Method and procedure

The minimal group induction and emotion decoding and confidence rating task were identical to Experiment 1. However, expressive faces were selected from the Warsaw Set of Emotional Facial Expression Pictures (WSEFEP, see Olszanowski et al., 2015). Importantly, this database includes intensity ratings for each model and expression. This allowed us to select expressions near the middle of the intensity distribution, helping address a limitation of Experiment 1. With this in mind, 10 White male models[1] were chosen who displayed anger, happiness, sadness, fear, and disgust with moderate levels of intensity. These 10 faces were then randomly split into 2 groups of 5, which were randomly presented as ingroup or outgroup faces as in Experiment 1. Which group of five served as ingroup and outgroup targets was counterbalanced.

After completion of the primary emotion confidence and identification task, participants answered six self-report questions (adapted from Van Bavel & Cunningham, 2012), three each assessing identification with the ingroup and outgroup. Each question was answered on 1–7 Likert scales. Ingroup or outgroup identification questions were grouped together but which set were asked first was counterbalanced.

## Results

### Motivation

The questions measuring identification with the minimal ingroup and outgroup were both reliable ($\alpha > .83$ for both). As expected, participants reported greater identification with the ingroup ($M = 3.80$, $SD = 1.07$) than outgroup ($M = 2.45$, $SD = 1.10$), $t(35) = 4.79$, $p < .001$[2].

### Confidence

As in Experiment 1, participants' responses to the question assessing their emotion identification confidence were submitted to a 2 (group: ingroup, outgroup) × 5 (expression: anger, happiness, sadness, disgust, fear) repeated-measures ANOVA. There was a main effect of emotion, $F(4, 32) = 4.082$, $p = .009$, $\eta^2 = .34$, with participants most confidently identifying happiness (Kirita & Endo, 1995). Most relevant to predictions there was a main effect of group, $F(1, 35) = 8.11$, $p = .007$, $\eta^2 = .19$. Participants reported more confidence when identifying ingroup ($M = 87.70$, $SD = 7.08$) than outgroup ($M = 85.07$, $SD = 6.90$) expressions. This main effect was not qualified by an interaction with expression, $F(1, 41) = .60$, $p = .44$, $\eta^2 = .11$ (see Table 2). Overall, the results for confidence are consistent with Experiment 1, suggesting a generalised ingroup advantage that persists even when a different set of expressive faces is used.

### Accuracy

Participants' emotion identification scores were analysed with a 2 (group) × 5 (expression: anger, happiness, sadness, disgust, fear) repeated-measured ANOVA. This analysis found a main effect of expression, $F(4, 32) = 11.75$, $p < .001$, $\eta^2 = .56$, mirroring the Happy Face Advantage in confidence. Notably, the predicted main effect of group was also significant, $F(1, 35) = 4.18$, $p = .048$, $\eta^2 = .11$, with ingroup expressions ($M = 0.87$, $SD = 0.45$) recognised more accurately than outgroup expressions ($M = 0.84$, $SD = 0.54$). There was also no interaction between group and expression, $F(4, 32) = 1.84$, $p = .125$, $\eta^2 = .22$ (see Table 2). Unlike Experiment 1,

**Table 2.** Means and standard deviations for confidence (left columns) and accuracy (right columns) for ingroup and outgroup expressions in Experiment 2.

| | Confidence | | | | Accuracy | | | |
|---|---|---|---|---|---|---|---|---|
| | Ingroup | | Outgroup | | Ingroup | | Outgroup | |
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Anger | 88.09 | 12.01 | 85.63 | 13.69 | 0.82 | 0.23 | 0.77 | 0.19 |
| Happiness | 92.39 | 14.43 | 88.37 | 17.06 | 0.99 | 0.05 | 0.92 | 0.14 |
| Sadness | 84.36 | 16.91 | 85.19 | 15.08 | 0.86 | 0.18 | 0.88 | 0.17 |
| Disgust | 86.69 | 11.76 | 85.10 | 14.15 | 0.83 | 0.20 | 0.76 | 0.21 |
| Fear | 86.95 | 12.90 | 82.82 | 14.17 | 0.86 | 0.20 | 0.87 | 0.17 |

Note: Confidence scores ranged from 0 to 100 and accuracy scores represent proportion correct.

the ingroup advantage in identification was not qualified by expression.

### *Confidence and accuracy*

We again assessed correlations between confidence and accuracy on a trial-by-trial basis. For each participant, we calculated the point-biserial correlation between the continuous confidence measure and the binary accuracy measure, separately for ingroup and outgroup trials. We then transformed each correlation coefficient to a Fisher's *z*-score. Five of the 36 participants reported the same confidence level on every trial of at least one group's photos, rendering it impossible to compute a sensitivity correlation. We conducted the analysis on the remaining 31 participants. Comparing both ingroup and outgroup sensitivity correlations to 0, we see that trial-by-trial accuracy correlations were positive for both ingroup ($M = 0.36$, $SD = 0.34$, 95% CI [.24, .48]) and outgroup ($M = 0.28$, $SD = 0.24$, 95% CI [.20, .36]) trials. Here, mean sensitivity correlations were only descriptively higher for ingroup than outgroup trials, $t(30) = 1.32$, $p = .20$, $d = .22$.

### *Discussion*

Experiment 2 supports the central findings in Experiment 1. With respect to the primary measure of interest, the minimal ingroup bias in confidence was replicated using a different, and less intensely expressive set of faces. The minimal ingroup advantage in identification replicated as well. Unlike Experiment 1, however, there was no reversal of this effect for fear expressions and the most notable ingroup advantage was seen for happiness and sadness (instead of anger and sadness). Once more, participants also reported greater social interest in their newly found ingroup than outgroup. As a manipulation check, this supports the effectiveness of the manipulation. However, variability on this measure did not moderate the confidence or accuracy findings.

## General discussion

Past research has documented a cultural ingroup advantage in emotion decoding confidence attributable to a lack of familiarity with cultural outgroup expressive dialects (Beaupré & Hess, 2006). The current work reports a similar effect in minimal intergroup contexts. These findings suggest that mere intergroup distinctions affect perceiver confidence in emotion identification even in contexts where culture is held constant. This is a theoretically and practically valuable finding. Emotional expressions play a central role in coordinating social behaviours (Parkinson, 2005). However, responding appropriately to expressers requires not only accuracy in identifying their emotions, but confidence in doing so (Beaupré & Hess, 2006). Without confidence, the appropriate behavioural reactions to emotional displays (e.g. Marsh et al., 2005) may be inhibited as the perceiver seeks to confirm the correct interpretation of the expression. More generally, intergroup interactions are fraught with anxiety and discomfort (e.g. Stephan, 2014), and a lack of confidence when decoding outgroup emotional displays likely contributes to these uneasy interactions (e.g. Gray et al., 2008).

These results are conceptually in line with other demonstrations of relatively trivial intergroup boundaries creating ingroup favouring biases in emotion identification (e.g. Thibault et al., 2006; Young & Hugenberg, 2010) That said, while providing evidence for a social-cognitive perspective, our findings do not suggest that cultural effects in emotion identification can be entirely reduced to more generic ingroup/outgroup effects, as dialect theory is well supported (e.g. Elfenbein & Ambady, 2002). Instead, we suggest that ingroup favouring biases in emotion decoding

confidence and accuracy stem from a multitude of co-acting factors, including both greater familiarity with ingroup expressive norms and dialects (e.g. Elfenbein, Beaupré, Lévesque, & Hess, 2007) and greater baseline motivation to attend to and process ingroup emotional signals (e.g. Stevenson, Soto, & Adams, 2012; Young & Hugenberg, 2010). The current results show that even when controlling for former, the latter is sufficient to bring about an ingroup advantage in confidence.

### *Additional findings*

Beyond confirming the minimal ingroup advantage in emotion recognition and finding novel evidence for an ingroup advantage in confidence, we observed several additional interesting patterns. First, we found evidence that confidence ratings and accuracy were correlated, with this effect being significantly stronger for ingroup than outgroup expressions in Experiment 1 and descriptively so in Experiment 2. Although Beaupré and Hess (2006) did not find correlations between aggregate cultural ingroup advantages in accuracy and confidence in either of their studies, other research finds that analysing trial-by-trial judgments of emotion identification accuracy in the manner reported here predicts performance (Kelly & Metcalfe, 2011). Additionally, the relation between accuracy and confidence found in the current data fits nicely with recent evidence showing that participants are aware of their superior performance when processing ingroup compared to outgroup faces in a memory paradigm (Hourihan, Benjamin, & Liu, 2012). One possibility for this metacognitive awareness is that perceivers are motivated to devote more attentional resources to ingroup than outgroup faces (e.g. Zhou, Pu, Young, & Tse, 2014) and correctly infer that their greater attention translates to greater accuracy. That said, in light of the merely descriptive trend observed in Experiment 2, future work is needed to determine whether the greater ingroup confidence–accuracy correlation is robust.

Although accuracy was not the primary measure of interest, some unexpected findings emerged here, including superior identification of outgroup fear expressions in Experiment 1. However, this outgroup fear effect was not found in past research (e.g. Young & Hugenberg, 2010) and did not replicate in Experiment 2. Future research is necessary to identify whether this pattern is replicable and if so, what mechanism causes the effect. Moreover, the primary focus of the current paper was testing a minimal ingroup advantage in confidence, and this critical effect was not qualified by expression in either experiment.

Lastly, although participants self-reported greater motivation (Experiment 1) and identification (Experiment 2) with the ingroup, exploratory analyses including these measures as continuous predictors found that they did not moderate ingroup advantages in decoding confidence or accuracy.[2] Past research has found that similar explicit measures of ingroup motivation and identification moderate ingroup advantages in emotion identification (Stevenson et al., 2012) and memory (Van Bavel & Cunningham, 2012). However, these experiments differed in several important ways (e.g. testing identification of complex emotions or face memory) that may explain the discrepancy. It also may be the case that these motivation measures are not sensitive enough to reliably predict individual differences in the dependent variables of interest. Future work with motivation as a central objective may best measure motivation or group identification in different ways, including implicit measures or with alternative self-report items (e.g. inclusion-of-group in the self, see Thibault et al., 2006), and with a higher powered sample that is more appropriate for capturing individual differences.

## Conclusion

Overall, the current findings provide novel support for a minimal ingroup advantage in emotion identification confidence. These findings underscore how perceiver confidence, a critical aspect of emotion decoding, is sensitive to arbitrary group boundaries and can emerge even when expresser and perceiver are from the same cultural and racial group. In broad terms, the current work adds to a growing body of evidence (e.g. Hugenberg et al., 2011) that social-cognitive factors contribute to biases in face perception, even when factors like culture, race, and intergroup contact are held constant.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## Notes

1. Using the file names provided by Olszanowski et al. (2015), we used the following models: AG, HW, JG, KA, KM, MG, MK, MR2, PA, and PB.

2. Follow-up analyses including these motivation scores as continuous predictors found no significant relation between self-reported motivation and ingroup advantages in confidence or accuracy in either Experiment 1 or 2.

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