

---

# An Ingroup Advantage for Confidence in Emotion Recognition Judgments: The Moderating Effect of Familiarity With the Expressions of Outgroup Members

Martin G. Beaupré

Ursula Hess

University of Quebec–Montreal

---

*The confidence we have in our assessment of an interaction partner's emotional state can have important consequences for the quality of the interaction. Two studies assessed the hypothesis that immigrants are more confident in their judgment of others' emotional facial expressions if the expresser is a member of their cultural ingroup rather than a member of the host community or another cultural group. In addition, the effects of the perceived familiarity with the type of expression, the length of residence in the host country, the quality of cross-cultural contact, the level of acculturation, and the intensity of the facial expressions were assessed. Overall, the results revealed an ingroup advantage effect for confidence ratings as well as support for the notion that individuals are more confident when judging expressions that they consider as more frequently displayed in everyday life. Furthermore, individuals were more confident when judging happiness expressions as well as more intense expressions in general.*

---

**Keywords:** confidence; culture; emotion; recognition; facial expression

When strangers meet, they aim to quickly increase their confidence in the prediction of the likely behavior of the other (Berger & Calabrese, 1975). In fact, the level of attributional confidence is one important factor for the quality of intergroup contact (e.g., Rose, 1981). The implications of attributional confidence on the quality of social interactions may in fact be linked to the notion that adaptive behaviors are more likely when attributional confidence is high (Gudykunst & Hammer, 1988). As Lipshitz and Strauss (1997) suggest, “low confidence in the context of action is a sense of doubt that blocks or delays action” (p. 150) and thereby has negative effects on human interactions.

In this sense, individuals also should strive to gain confidence when attempting to decode nonverbal emotional signals such as emotional facial expressions in others. In one of the few studies addressing this issue, Crozier (1981) found that individuals are less confident when judging shame compared to other types of facial expressions. However, this study is limited to attributional confidence for high intensity emotion expressions, which are less typical for everyday interactions (Motley & Camden, 1988).

One reason why individuals may be more or less confident in their interpretation of nonverbal behaviors is their familiarity with the expresser. This notion has been more recently evoked to explain differences between decoders in the wider domain of decoding accuracy in the recognition of both emotional facial expressions and faces. Specifically, evidence from cross-cultural studies suggests that individuals are more accurate in recognizing facial expressions of emotions (Elfenbein & Ambady,

---

**Authors' Note:** This research was supported by a grant from the Fonds pour la Formation des Chercheurs et l'Aide à la Recherche to Ursula Hess. The writing of this article was facilitated by a scholarship from the Fonds Québécois de la Recherche sur la Société et la Culture accorded to Martin G. Beaupré. We are grateful to Nicole Cheung, François Labelle, and Pedro Herrera for their valuable help in the creation of the stimuli and to Anthony Bourgeault, Véronique Castonguay, Marie-Laure Daxhelet, Jeffrey Ting, Isabelle Tremblay, and Bradeley Zhao for their valuable help with the data collection and entry. Correspondence concerning this article should be addressed to Ursula Hess, Department of Psychology, University of Quebec at Montreal, CP 8888, Station “centre-ville,” Montreal, Quebec, H3C 3P8, Canada; e-mail: hess.ursula@uqam.ca.

*PSPB*, Vol. 32 No. 1, January 2006 16-26

DOI: 10.1177/0146167205277097

© 2006 by the Society for Personality and Social Psychology, Inc.

2002a, 2002b, 2003; see also Matsumoto, 2002, for a different view) as well as faces (e.g., O'Toole, Peterson, & Deffenbacher, 1996) of cultural ingroup members, partially because individuals are more familiar with own-race expressions and faces (Elfenbein & Ambady, 2002b). One goal of the present study is to examine whether this greater familiarity with ingroup members also might translate into greater confidence, such that individuals are more confident in their ability to correctly decode emotions shown by cultural ingroup rather than cultural outgroup members. This prediction seems plausible given that individuals are generally more confident when predicting the behavior of culturally similar than culturally dissimilar individuals (e.g., Gudykunst, 1983; Simard, 1981; Thibault & Kelley, 1959). Moreover, to evaluate the unique effect of cultural group membership on confidence ratings (i.e., independently of cultural dialects of nonverbal expression), the ingroup advantage in emotion-judgment-related confidence will be evaluated in a context of stimulus equivalence.

At present, a number of factors have been found to increase confidence in the context of cross-cultural interactions. These include the frequency of communication with cultural outgroup members (Gudykunst, 1985; Gudykunst, Yang, & Nishida, 1985) as well as aspects of the quality of intercultural contact such as intimacy (Gudykunst, 1985). Hence, individuals who report having more frequent and higher quality interactions with cultural outgroup members may be more confident in judging (or detecting) emotions expressed by those cultural outgroup members. The present research assesses the influence of these dimensions of intercultural contact on confidence in the judgment of emotion expressions. In addition, the question of whether immigrants become more confident in judging facial expressions by members of the host community as a function of the length of residence and hence presumably familiarity with the host country will be assessed.

Familiarity with a specific type of facial expression also might influence how confident one feels in correctly judging that expression. Analogously, Biehl et al. (1997) proposed that accuracy in the recognition of facial expressions is linked to the frequency of occurrence of these expressions in real life. Although results of a recent study by Beaupré and Hess (in press) did not support this notion, their data revealed interesting cross-cultural differences in the perceived familiarity with different emotion expressions. More specifically, Asian participants generally considered sadness, disgust, and anger expressions to be less probable in everyday interactions than did African or French Canadian participants. It could therefore be predicted that Asian individuals are less confident in judging such negative emotions.

## OVERVIEW OF THE STUDIES

The principal aim of the present investigation was to test the cultural ingroup advantage hypothesis with regard to confidence in emotion judgments. In Study 1, this notion was assessed by comparing the confidence ratings of African, Chinese, and French Canadian participants when judging facial expressions displayed by cultural in- and outgroup members. Immigrants from sub-Saharan Africa and China were selected because they represent the most important visible minority groups in Quebec. A second and third objective of Study 1 was to assess the influence of the perceived frequency of occurrence of facial expressions in everyday life and of the type of facial expression (i.e., happiness, anger, sadness, fear, disgust, and shame) on confidence in emotion judgments. Study 2 addressed the development of Chinese immigrants' confidence in their judgments of emotional expressions by members of the cultural host community by assessing whether confidence increases and the ingroup advantage is consequently reduced as a function of length of residence in the host country. A further objective was to assess the influence of the frequency and quality of intercultural contact, feelings of interconnectedness with members of the host culture, as well as level of acculturation to the host culture on emotion-judgment-related confidence. In addition, the hypothesis that attributional confidence increases as a linear function of facial expression intensity was tested.<sup>1</sup>

## STUDY 1

### *Method*

*Participants.* Twenty each African, Chinese, and French Canadian men and women with a mean age of 28.3 ( $SD = 8.3$ ), 30.8 ( $SD = 10.9$ ), and 27.9 ( $SD = 10.9$ ), and a mean number of years of education of 16.7 ( $SD = 3.0$ ), 15.4 ( $SD = 2.5$ ), and 14.6 ( $SD = 2.3$ ), respectively, were recruited in the city of Montreal. The French Canadian participants were recruited from the host community, whereas the African participants were French-speaking, first-generation immigrants from the sub-Saharan region of Africa and the Chinese participants were first-generation immigrants from China or Hong Kong. All participants could read and speak the French language fluently. The mean number of years of residence in Canada was 5.1 ( $SD = 6.2$ ) for the African participants and 8.2 ( $SD = 7.3$ ) for the Chinese participants.

*Material.* Facial expressions of happiness, anger, sadness, fear, disgust, and shame shown by four male and four female Chinese, French Canadian, and sub-Saharan African young adults were selected from the Montreal Set of Facial Displays of Emotion (MSFDE;



**Figure 1** Examples of facial expressions of emotion from the Montreal Set of Facial Displays of Emotion. SOURCE: Beaupré and Hess (in press).

Beaupré & Hess, in press).<sup>2</sup> This set is composed of emotional facial expressions by Chinese, French Canadian, and sub-Saharan African young adults who were instructed via a directed facial action task to pose facial expressions of emotion.<sup>3</sup> The total set of 144 stimuli (3 expresser groups  $\times$  6 types of facial expressions  $\times$  2 gender of expresser  $\times$  4 actors) was divided into two blocks of expressions by two men and two women from each cultural group. The stimuli were presented in a different random order for each participant. Each participant rated only one block. The stimuli were presented as 7.6  $\times$  12.6 cm photos on a 30-cm computer screen using Authorware 3.5. An example for each type of facial expression is provided in Figure 1.

*Procedure.* After completing the consent form, participants received written instructions. Each facial stimulus was presented on a computer screen for 5 s. Following stimulus presentation, the participants rated the intensity of each stimulus on an emotion profile with continuous scales ranging from 0 to 100.<sup>4</sup> Level of confidence and presumed probability of occurrence were measured on continuous scales ranging from 0 to 100, anchored with *not at all* and *very high*.

#### Results and Discussion

*Initial analysis.* First, we assessed the possibility that differences in confidence are a reflection of variations in emotion recognition accuracy. For this, each partici-

pant's decoding accuracy scores and confidence ratings were averaged across emotions and conditions. A regression with recognition accuracy as the predictor variable and confidence as the dependent variable was conducted. The effect for recognition accuracy was not significant ( $\beta = .13$ ,  $SE = .001$ ),  $t(118) = 9.03$ ,  $p = .152$ , suggesting that variations in confidence are not simply due to variations in recognition accuracy.<sup>5</sup>

*Confidence, cultural group membership, and type of expression.* A 3 (decoder group)  $\times$  3 (expresser group)  $\times$  6 (type of expression) ANOVA with repeated measures on the last two factors was conducted to assess differences in confidence ratings in emotion judgments as a function of cultural group membership and type of expression.<sup>6</sup> A main effect of type of expression,  $F(4, 437) = 57.98$ ,  $p < .001$  ( $\eta^2 = .33$ ), as well as the predicted significant interaction between expresser and decoder group,  $F(4, 349) = 5.24$ ,  $p < .001$  ( $\eta^2 = .08$ ), emerged ( $M$ s and  $SD$ s are shown in Table 1).

The hypothesis that individuals are more confident when judging facial expressions of in- versus outgroup members was tested via contrast analysis. Planned contrasts were calculated using lambda ( $\lambda$ ) weights of +2 for ingroup confidence ratings and -1 for outgroup confidence ratings (e.g., African decoders received a weight of +2 for confidence in ratings of African encoders and a weight of -1 for their confidence in ratings of Chinese and French Canadian encoders, respectively). The con-

**TABLE 1: Mean Confidence Ratings as a Function of the Cultural Group of the Decoder and the Expresser as Well as of Type of Facial Expression**

Type of Facial Expression	Cultural Group of the Expresser	Cultural Group of the Decoder						Overall M
		Chinese		French Canadian		Sub-Saharan African		
		M	SD	M	SD	M	SD	
Anger	African	57.52	18.38	57.18	17.38	62.09	20.78	58.93
	Chinese	57.51	17.13	60.10	15.39	58.41	19.70	58.68
	French Canadian	59.07	18.34	60.04	15.59	61.57	20.26	60.22
	Overall	58.03		59.11		60.69		
Happiness	African	67.47	19.15	70.44	13.87	73.23	18.84	70.38
	Chinese	71.54	19.93	72.15	12.23	70.06	18.78	71.25
	French Canadian	68.01	19.04	70.94	13.92	72.93	19.18	70.63
	Overall	69.01		71.18		72.07		
Sadness	African	57.92	17.62	59.99	15.63	62.13	21.92	60.01
	Chinese	58.72	16.75	60.86	15.51	59.83	19.39	59.80
	French Canadian	56.67	18.89	61.35	15.57	59.73	20.25	59.25
	Overall	57.77		60.73		60.56		
Fear	African	60.38	19.37	59.24	15.60	68.04	20.11	62.55
	Chinese	61.61	17.11	61.36	16.48	65.91	19.76	62.96
	French Canadian	61.68	17.80	62.57	17.51	63.66	20.54	62.64
	Overall	61.22		61.06		65.87		
Disgust	African	56.45	18.09	60.58	15.83	63.99	20.15	60.34
	Chinese	62.19	20.06	60.35	14.66	63.58	21.73	62.04
	French Canadian	59.86	18.33	64.20	12.76	64.57	20.26	62.88
	Overall	59.50		61.71		64.05		
Shame	African	61.63	18.66	64.58	14.95	66.61	19.60	64.27
	Chinese	58.29	18.39	61.37	16.49	64.56	20.43	61.41
	French Canadian	59.55	19.91	62.36	15.09	67.26	19.56	63.06
	Overall	59.82		62.77		66.14		
Overall	African	60.23		62.00		66.02		62.75
	Chinese	61.64		62.70		63.73		62.69
	French Canadian	60.81		63.58		64.95		63.11
	Overall	60.89		62.76		64.90		62.85

trast was significant,  $F(1, 234) = 29.09, p < .001$ , with a medium effect size ( $r_{\text{contrast}} = .33$ ) (Rosenthal & Rosnow, 1991), suggesting that individuals are generally more confident in judging emotion expressions by ingroup members. Furthermore, we also evaluated the  $r_{\text{alerting}}$  correlation, which reflects the aggregate relationship between the group means and  $\lambda$  weights and is a measure of the fit between residuals and the predicted contrast (see Rosenthal, Rosnow, & Rubin, 2000). The  $r_{\text{alerting}}$  of .89 suggests a very good fit (Rosenthal & Rosnow, 1991).

Are individuals more confident when judging certain types of facial expressions than others? Pairwise comparisons (using Bonferroni correction) revealed that participants were overall considerably more confident when judging happiness expressions than any other type of emotion expression. Also, fear, disgust, and shame expressions received higher confidence ratings than did anger and sadness expressions. However, the effect of type of expression was qualified by an effect of expresser culture, such that participants were more confident when judging disgust expressions by French Canadian than by African expressers,  $F(1, 117) = 7.79, p < .006$ , and

when judging shame expressions by African than by Chinese expressers,  $F(1, 117) = 14.17, p < .001$ . This finding suggests that confidence in judgments of facial expressions of emotion depends on the type of emotion expressed as well as in some cases by whom it is expressed.

*Confidence as a function of the occurrence of emotion displays in everyday social interactions.* To assess whether, over and above any effects of decoding accuracy, the perceived probability of occurrence of facial expressions of emotion predicts confidence ratings, a multiple regression analysis was conducted with the predictor's perceived probability of occurrence and recognition accuracy and with confidence as the dependent variable. In this context, the two predictors as well as the dependent variable were averaged across conditions and therefore constitute overall means. Both predictors were entered into the equation simultaneously. A significant effect of perceived frequency of occurrence ( $\beta = .54, SE = .07$ ),  $t(117) = 6.92, p = .001$ , which explained 30% of variance of confidence ratings, as well as a nonsignificant effect of recognition accuracy ( $\beta = .07, SE = .07$ ),  $t(117) = .92, p = .360$ , emerged. The regression of perceived probability

**TABLE 2: Correlations Between Confidence in the Judgment of Facial Expressions of Emotion and Perceived Frequency of Occurrence of the Emotion Expressions in Everyday Life**

Cultural Group of Decoder	Type of Facial Expression											
	Happiness		Anger		Sadness		Fear		Disgust		Shame	
	r	p	r	p	r	p	r	p	r	p	r	p
African	.71	.001	.73	.001	.74	.001	.71	.001	.69	.001	.60	.001
Chinese	.63	.001	.23	.160	.24	.137	.30	.060	.38	.015	.30	.059
French Canadian	.77	.001	.41	.008	.36	.023	.44	.005	.44	.005	.33	.038

of occurrence on recognition accuracy also was nonsignificant ( $\beta = .11$ ,  $SE = .001$ ),  $t(118) = 1.23$ ,  $p = .222$ , suggesting that recognition accuracy was not a mediating factor for the association between probability of occurrence of expressions in everyday life and confidence in judging these expressions.

Furthermore, a correlational analysis was conducted to assess the relation between the perceived probability of occurrence and confidence for each type of facial expression separately for the three decoder groups (see Table 2). Overall, the results showed that the French Canadian and African participants were more confident when judging facial expressions that they perceived as frequently displayed in everyday interactions. In contrast, for the Chinese participants, significant correlations between confidence and perceived frequency of occurrence were found only for happiness and disgust. These results suggest that individuals are more confident when judging facial expressions that, according to their perception, are more frequently displayed in everyday interactions.

## STUDY 2

Study 1 provided evidence in favor of a cultural ingroup advantage for emotion-judgment-related confidence. Study 1 also yielded evidence that confidence in one's emotion judgments increases as a function of one's familiarity with the emotion displays. Study 2 was designed to explicitly address the effect of length of residence in a cultural host community as well as the effect of cross-cultural contact on Chinese immigrants' emotion-judgment-related confidence when decoding expressions signaled by members of the host community. In addition, Study 2 had the aim to investigate the effect of the intensity of facial expressions of emotion on attributional confidence.

### Method

**Participants.** A total of 50 French Canadians (32 men, 18 women), 50 Chinese immigrants (21 men, 29 women) who had resided in Canada for less than 1 year

(i.e., recent immigrants), and 50 Chinese immigrants (11 men, 39 women) who had resided in Canada for more than 5 years (i.e., established immigrants) participated in the study. Both the French Canadian and the established Chinese participants were recruited in the Montreal region through ads posted at the University of Quebec at Montreal campus and in local newspapers, whereas the recent Chinese immigrants were recruited at cultural integration centers of the Province of Quebec's "Ministère des Relations avec les Citoyens et de l'Immigration (MRCI)," located in the Montreal and Gatineau regions. The French Canadian participants were members of the host community who had lived in Canada since birth, whereas both groups of Chinese participants were born in China or Hong Kong. Chinese participants were fluent in either English or French. The three groups had comparable levels of education: French Canadians had an average of 15.9 ( $SD = 2.4$ ) years of education and the average was 16.0 ( $SD = 1.4$ ) and 17.3 ( $SD = 2.9$ ) years for the recent and established Chinese immigrants, respectively. The mean age was 29.8 ( $SD = 11.6$ ), 32.7 ( $SD = 4.9$ ), and 33.5 ( $SD = 8.2$ ) for the French Canadians and recent and established Chinese participants, respectively. The average of the length of residence was 0.6 years ( $SD = 0.3$ ) for the recent and 10.6 years ( $SD = 7.1$ ) for the established Chinese immigrants.

**Material.** Forty-eight (2 expresser groups  $\times$  2 expresser genders  $\times$  2 actors  $\times$  6 types of facial displays) facial stimuli were selected from the Montreal Set of Facial Displays of Emotion (Beaupré & Hess, in press). To create low and medium intensity facial expressions, the neutral and each of the strong intensity emotional expressions from a given stimulus person were morphed using Morph 2.5. Morphing to create stimuli of varying intensity has been shown to be a valid procedure by a number of investigators (Etcoff & Magee, 1992; Hess, Blairy, & Kleck, 1997; Young, Rowland, Calder, & Etcoff, 1997). Expressions representing 40% and 70% intensity were retained as low and medium intensity expressions, respectively, for a total of 144 stimuli. The facial stimuli measured 7.6  $\times$  12.6 cm and were placed in a 12.6-  $\times$  20.3-cm booklet in one of two predetermined random orders.

*Procedure.* The participants' task was the same as in Study 1.<sup>7</sup> The French Canadian and the established Chinese immigrants met individually with the experimenter in a laboratory at the University of Quebec at Montreal, whereas the recent Chinese immigrants met individually with the experimenter in a room at one of the cultural integration centers. After filling out the consent form, participants received written instructions. The experiment was conducted in either French or English depending on the participant's preference. Furthermore, to assure full comprehension of emotion labels by the Chinese participants who had recently immigrated, equivalent translations of emotion labels in Chinese also were furnished.<sup>8</sup> Following the judgment task, the Chinese immigrants were given questionnaires related to various dimensions of cross-cultural contact with members of the host community.

*Individual difference measures.* First, participants were asked to indicate their frequency of contact with French Canadians and Asians in the context of various types of relationships (family, friendships, neighborhood, workplace, and at school) on 7-point scales that were averaged as a single measure of frequency of contact. Quality of contact was measured with the cross-cultural Quality of Contact questionnaire (Tzeng & Jackson, 1994). For this, participants were asked to separately rate their relations with French Canadians and Asians on a series of 7-point scales that were anchored with *frequent-infrequent*, *unpleasant-pleasant*, *not constructive-constructive*, *involuntary-voluntary*, *superficial-intimate*, *not encouraged by others-encouraged by others*, and *unequal-equal*. In addition, a measure of interconnectedness was obtained using a modified version of the Inclusion of Other in Self Scale (Aron, Aron, & Smollan, 1992). For this, a scale consisting of a series of circles that overlap to differing degrees was presented. The respondents' task was to indicate for various types of relationships (see above) the level of overlap that best describes the relationship. To assess the level of acculturation to Quebec's mainstream culture, an adaptation of the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhus, 2000) was used. This questionnaire was translated into French from English by using a back-translation procedure and was identical to the VIA with the exception of the host community of reference, which was Quebec's mainstream culture.

### Results and Discussion

*Initial analysis.* As for Study 1, we first conducted a regression with overall emotion recognition accuracy as the predictor variable and overall confidence as the dependent variable to assess the possibility that differences in confidence constitute a reflection of variations in emotion recognition accuracy. For this, each participant's decoding accuracy scores and confidence ratings

were averaged across emotions and conditions. The analysis revealed a nonsignificant effect of recognition accuracy ( $\beta = .02$ ,  $SE = 13.1$ ),  $t(148) = .24$ ,  $p = .81$ , again suggesting that variations in confidence did not simply reflect variations in recognition accuracy.<sup>9</sup>

*Confidence ratings as a function of group membership, type of expression, and intensity of expression.* To evaluate the effect of group membership, type of expression, and intensity of expression on confidence ratings, a 3 (decoder group)  $\times$  2 (expresser group)  $\times$  6 (type of expression)  $\times$  3 (intensity of expression) analysis of variance with repeated measures on the last three factors was conducted. Significant main effects for decoder group,  $F(2, 145) = 6.24$ ,  $p = .003$  ( $\eta^2 = .08$ ), type of expression,  $F(4, 536) = 93.71$ ,  $p < .001$  ( $\eta^2 = .39$ ), and intensity,  $F(2, 208) = 224.42$ ,  $p = .002$  ( $\eta^2 = .61$ ), emerged, as well as a significant interaction between decoder and expresser group,  $F(1, 145) = 10.91$ ,  $p < .001$  ( $\eta^2 = .13$ ) (see Table 3 for *Ms* and *SDs*).

As in Study 1, pairwise comparisons revealed that participants were overall considerably more confident when judging happiness expressions than any other type of emotion expression. Also, fear, disgust, and shame expressions received higher confidence ratings than did anger and sadness expressions. Moreover, to assess whether confidence ratings vary linearly as a function of stimulus intensity, a linear contrast was conducted. The contrast was significant, suggesting that confidence increases as a linear function of the expression's intensity,  $F(1, 147) = 1104.91$ ,  $p < .001$ .

In regard to the effect of decoder group, post hoc tests showed that the recent Chinese immigrants reported overall the highest level of confidence in the judgment of expressions in French Canadian and Chinese encoders (Tukey,  $p < .05$ ). This finding therefore does not support the prediction that Chinese immigrants' confidence in the judgment of expressions in members of the cultural host community increases as a function of time. However, the effect of decoder group was qualified by an interaction with expresser group. Post hoc tests revealed that both recent Chinese immigrants and French Canadian decoders reported higher confidence ratings for the judgment of cultural ingroup than outgroup members,  $F(1, 48) = 24.97$ ,  $p < .001$ , and  $F(1, 49) = 5.64$ ,  $p < .022$ , respectively, whereas the established Chinese immigrants were equally confident judging Chinese and French Canadian expressers. Thus, as predicted, Chinese immigrants became equally confident in judging expressions of members of the host community and cultural ingroup members following a period of residence in the host country.

As in Study 1, the ingroup advantage hypothesis in regard to confidence ratings was assessed more directly through contrast analysis. Given that the established

**TABLE 3: Mean Confidence Ratings as a Function of the Cultural Group of the Decoder and the Expresser as Well as of Type and Intensity of Facial Expression**

Type of Facial Expression	Intensity of Expression	Cultural Group of the Expresser	Cultural Group of the Decoder						Overall M
			Recent Chinese		Established Chinese		French Canadian		
			M	SD	M	SD	M	SD	
Anger	Low	Chinese	73.85	14.58	62.99	20.93	59.76	20.60	65.53
		French Canadian	75.59	16.77	64.22	20.92	61.95	18.47	67.25
		Overall	74.72		63.61		60.86		
	Medium	Chinese	77.11	12.74	68.36	18.73	65.92	18.09	70.46
		French Canadian	79.28	13.97	71.63	17.18	69.95	15.95	73.62
		Overall	78.20		70.00		67.94		
	Strong	Chinese	79.91	11.72	74.69	15.96	67.88	17.28	74.16
		French Canadian	83.77	12.00	76.01	16.59	75.44	14.77	78.41
		Overall	81.84		75.35		71.66		
Happiness	Low	Chinese	85.03	10.19	76.64	15.90	75.72	17.56	79.13
		French Canadian	80.02	12.37	69.42	19.20	69.30	18.65	72.91
		Overall	82.53		73.03		72.51		
	Medium	Chinese	88.75	9.74	83.49	16.69	81.85	16.23	84.70
		French Canadian	88.41	8.89	81.35	17.02	78.56	17.22	82.77
		Overall	88.58		82.42		80.21		
	Strong	Chinese	90.94	9.03	86.70	13.78	83.49	13.48	87.04
		French Canadian	90.36	8.35	87.73	13.38	85.31	13.22	87.80
		Overall	90.65		87.22		84.40		
Sadness	Low	Chinese	76.55	12.52	65.36	20.62	65.56	19.26	69.16
		French Canadian	71.91	14.25	66.27	20.46	66.41	17.74	68.20
		Overall	74.23		65.82		65.99		
	Medium	Chinese	79.99	12.32	72.10	17.71	68.95	17.81	73.68
		French Canadian	74.59	14.30	70.52	19.86	70.43	17.93	71.85
		Overall	77.29		71.31		69.69		
	Strong	Chinese	80.77	12.04	72.97	19.06	69.45	17.93	74.40
		French Canadian	76.99	13.34	71.64	19.71	73.81	18.07	74.15
		Overall	78.88		72.31		71.63		
Fear	Low	Chinese	76.86	13.31	63.91	19.27	63.86	18.54	68.21
		French Canadian	73.40	13.42	63.68	23.13	62.20	17.44	66.43
		Overall	75.13		63.80		63.03		
	Medium	Chinese	82.47	11.80	75.58	16.86	73.10	17.20	77.05
		French Canadian	79.17	15.11	71.23	17.35	66.69	17.24	72.36
		Overall	80.82		73.41		69.90		
	Strong	Chinese	86.24	11.67	81.76	14.08	75.58	15.78	81.19
		French Canadian	80.46	12.89	73.55	17.13	72.65	15.76	75.55
		Overall	83.35		77.66		74.12		
Disgust	Low	Chinese	76.35	12.69	63.15	19.22	60.19	19.77	66.56
		French Canadian	70.26	15.44	61.10	21.22	63.75	17.95	65.04
		Overall	73.31		62.13		61.97		
	Medium	Chinese	77.49	13.83	72.88	19.11	70.78	17.31	73.72
		French Canadian	78.09	13.05	73.83	16.27	71.29	15.10	74.40
		Overall	77.79		73.36		71.04		
	Strong	Chinese	79.78	16.31	74.00	18.66	73.53	16.82	75.77
		French Canadian	82.26	11.46	78.85	14.04	74.92	16.06	78.68
		Overall	81.02		76.43		74.23		
Shame	Low	Chinese	79.11	13.53	66.44	18.01	64.86	20.24	70.14
		French Canadian	75.18	13.66	67.63	18.51	68.78	18.55	70.53
		Overall	77.15		67.04		66.82		
	Medium	Chinese	79.69	13.53	72.39	18.38	66.60	19.13	72.89
		French Canadian	77.72	12.99	72.80	18.89	73.43	17.39	74.65
		Overall	78.71		72.60		70.02		
	Strong	Chinese	81.96	12.16	72.46	20.83	71.15	16.93	75.19
		French Canadian	81.11	11.93	75.68	18.63	75.28	17.51	77.36
		Overall	81.54		74.07		73.22		

**TABLE 4: Correlations Between Confidence in the Judgment of Facial Expressions of Emotion and Perceived Frequency of Occurrence of the Emotion Expressions in Everyday Life**

Cultural Group of Decoder	Type of Facial Expression											
	Happiness		Anger		Sadness		Fear		Disgust		Shame	
	r	p	r	p	r	p	r	p	r	p	r	p
Recent Chinese immigrants	.09	.546	-.02	.920	.01	.960	.00	.984	.04	.804	-.02	.890
Established Chinese immigrants	.46	.001	.17	.244	.19	.197	.23	.105	.12	.389	.18	.210
French Canadians	.70	.001	.48	.001	.57	.001	.54	.001	.51	.001	.54	.001

Chinese immigrants were shown to be equally confident in judging the expressions of Chinese and Caucasian encoders, this group was excluded from the contrast. Hence, contrasts were calculated by using weights of 1 for ingroup judgments and  $-1$  for outgroup judgments for recent immigrants and French Canadians and weights of 0 for both ingroup and outgroup judgments by established Chinese immigrants. The contrast was significant,  $F(1, 146) = 817.07$ ,  $p < .001$ , with a large effect size ( $r_{\text{contrast}} = .88$ ). Moreover, the  $r_{\text{alerting}}$  of .998 suggests that the fit between residuals and the predicted contrast is nearly perfect. This finding provides strong evidence for the predicted ingroup advantage effect for both recent Chinese immigrants and French Canadians.

*Confidence as a function of the occurrence of emotion displays in everyday social interactions.* To assess the influence of the perceived probability of occurrence of facial expressions of emotion on confidence, we conducted a multiple regression analysis with overall perceived probability of occurrence and recognition accuracy as predictors and overall confidence as the dependent variable. As in Study 1, the two predictors as well as the dependent variable were averaged across conditions and therefore constitute overall means. Both predictors were entered into the equation simultaneously. A significant effect of perceived frequency of occurrence ( $\beta = .24$ ,  $SE = .05$ ),  $t(146) = 2.91$ ,  $p = .004$ , which explained 5% of variance of confidence ratings as well as a nonsignificant effect of recognition accuracy ( $\beta = -.001$ ,  $SE = 2.82$ ),  $t(146) = -.11$ ,  $p = .991$ , emerged. The regression of probability of occurrence on recognition accuracy also was not significant ( $\beta = .09$ ,  $SE = 19.67$ ),  $t(147) = 1.06$ ,  $p = .292$ , suggesting, as for Study 1, that recognition accuracy is not a mediating factor for the association between perceived probability of occurrence of expressions in everyday life and confidence in judging such expressions.

To evaluate the relation between perceived probability of occurrence and confidence separately for each type of facial expression and for the three decoder groups, correlations were computed (see Table 4). The results showed that the hypothesis that individuals are more confident when judging facial expressions that

they perceive as frequently displayed in everyday interactions was supported only for the French Canadian participants. For the established Chinese participants, a significant correlation was found for happiness only, thus yielding only partial support for this hypothesis. No significant correlations were found for the recent Chinese participants.

*Intercultural contact, acculturation, and emotion-judgment-related confidence.* Another aim of the present study was to examine whether confidence in the judgment of cultural outgroup members' facial expressions is related to dimensions of cross-cultural contact as well as to level of acculturation. For this, we assessed the correlation between confidence about outgroup judgments and (a) frequency of contact with the different categories of individuals of the outgroup, (b) dimensions of quality of contact with outgroup members, (c) level of interconnectedness with outgroup members, and (d) level of acculturation to the host culture. These correlations were computed separately for each decoder group.<sup>10</sup> The results showed that for the recent Chinese participants, confidence was solely related to frequency of contact with neighbors from the host community ( $r = .33$ ,  $p < .02$ ). In contrast, for the established Chinese group, confidence was related to frequency of contact with friends from the host community ( $r = .39$ ,  $p < .005$ ). Moreover, the perception that one's contacts with members of the host community are encouraged (an important dimension of the quality of contact) as well as the level of acculturation were also positively related to confidence for the established Chinese immigrants ( $r = .36$ ,  $p < .011$ ;  $r = .28$ ,  $p < .046$ ). It should, however, be noted that no significant correlations were found for the French Canadian decoders. In sum, these findings suggest that as close relationships with members of the host culture and acculturation have not yet taken place, frequency of contact with neighbors of the host culture is the only experience on which recently arrived immigrants can base their confidence relative to their interpretation of expressions signaled by members of the host community. However, as close relationships develop and as elements of the host culture are internalized, a more



refined conception of the host culture and the way emotions are generally expressed in that culture may render the Chinese more confident with regard to the meaning of the emotion signals they encounter.

#### GENERAL DISCUSSION

A first objective of the present studies consisted in evaluating the cultural ingroup advantage hypothesis for emotion-judgment-related confidence. This hypothesis was strongly supported by the results from both studies. Another, related goal of the present investigation was to verify the hypothesis that Chinese immigrants' confidence in the judgment of expressions displayed by members of the host community increases as a function of their length of residency in a host country. Overall, the findings do not support this hypothesis given that the recent Chinese immigrants showed, overall, the most confidence when judging emotion expressions by either in- or outgroup members. However, in partial support of the hypothesis, established Chinese immigrants were found to be equally confident when judging expressions of Chinese and French Canadian expressers, whereas recent Chinese immigrants were relatively more confident when judging cultural ingroup members.

What are the implications of the ingroup advantage in emotion-judgment-related confidence for everyday cross-cultural interactions? Based on the notion that low confidence may lead to a sense of doubt that blocks or delays action (Lipshitz & Stauss, 1997), it could be posited that lower confidence in the judgment of facial expressions of emotion by a cultural outgroup member may affect one's reactions. For instance, a decoder who perceives sadness in a cultural outgroup member but who is not confident about this interpretation may not engage in empathetic or helping behavior. Thus, the confidence with which an emotion expression is decoded may be just as important as decoding accuracy when it comes to the quality of cross-cultural interactions. In the example described above, although the decoder may have in fact correctly decoded the sadness signaled by the cultural outgroup member, it is the lack of confidence that would have kept her from responding with the appropriate social behavior.

One question that remains is whether the magnitude of the ingroup advantage in emotion-judgment-related confidence would increase in a context where individuals are exposed to other types of facial stimuli. It is noteworthy that the stimuli of the MSFDE used in the present studies are standardized to represent emotion prototypes as described by Ekman and Friesen (1978) that were developed based on data that came mainly from North American populations. Hence, it remains possible that the stimuli of the MSFDE mostly represent North

American emotional expressions (see Elfenbein & Ambady, 2002a, 2002b, for a discussion) and that the use of such stimuli may have obscured culture-specific modes of expression, hence reducing the magnitude of the advantage in emotion-judgment-related confidence for the Chinese and African participants. Therefore, it may be useful to use a wider variety of expression types in future studies assessing attributional confidence related to the judgment of facial expression of emotion.

Furthermore, the present findings support the notion that individuals are more confident when judging facial expressions that they consider as frequently displayed in everyday interactions. However, this tendency was notably less pronounced for the Chinese decoders in both studies. Given that the lack of association between perceived probability of occurrence and confidence ratings for Chinese individuals was generally restricted to negative emotion expressions, it may be speculated that the strong display rule against the expression and perception of negative emotions in Asian collectivist cultures (e.g., Matsumoto, 1992) limits increases in confidence for these emotions. That is, given the potential threat of perceiving negative emotions on relational harmony, Chinese individuals may not necessarily be more confident when judging these negative emotions, despite their familiarity with them.

Evidence of differential attributional confidence as a function of type of facial expression as well as intensity of expression also was found. Findings from both studies showed that individuals were considerably more confident when judging expressions of happiness than of other basic emotions. This tendency may be attributable to the fact that smiling is a highly valued social behavior (see Hess, Beaupré, & Cheung, 2002, for a review) and that individuals are more frequently exposed to smiles than to other types of emotional expressions (Beaupré & Hess, *in press*). Another explanation may be linked to the happy face advantage. Specifically, research on the process underlying the recognition of facial expressions suggests that happy facial expressions are recognized holistically, whereas other expressions such as sadness are recognized analytically, that is, by scanning the different expressive components of the face (e.g., Kiritani & Endo, 1995). It could be speculated that the holistic judgment is less arduous than the analytical approach, thus leading to increased confidence. Moreover, as predicted, emotion-judgment-related confidence was found to increase linearly with the intensity of the expression. Yet, it is noteworthy that confidence levels are already quite high even for low intensity facial expressions.

Finally, congruent with previous research showing that frequency of communication (Gudykunst, 1985;

Gudykunst et al., 1985) and quality of contact (Berger & Calabrese, 1975; Gudykunst, 1985) are nonnegligible factors affecting attributional confidence, the present study showed that these factors also influence how confident one feels when decoding nonverbal emotion signals by members of a cultural outgroup. More specifically, frequency of contact, particularly with neighbors from the host community, constitutes the main predictor of confidence in judging facial expressions of emotion in members of the host community for the recent Chinese immigrants. In contrast, for the established Chinese immigrants, confidence in judging expressions displayed by members of the host community appears to be influenced mostly by the more privileged frequency of contact with friends (vs. neighbors) from the host community, feelings of mutuality (i.e., relationship encouraged by members of the host community), as well as level of acculturation. Hence, cross-cultural familiarity, reflected by more profound and acute knowledge concerning the people and the culture of a host community, may foster confidence in the decoding of nonverbal emotional signals in everyday interactions.

The present research suggests that confidence in one's decoding of nonverbal emotion signals depends on one's familiarity with the type of expression signaled and on by whom it is signaled. Although generally supportive of the notion that individuals are more confident when predicting the emotional behaviors of culturally similar than culturally dissimilar individuals, the present research also shows that cross-cultural immersion and contact increases the level of confidence one feels when interpreting emotion expressions in cultural outgroup others and thus is beneficial in the context on cross-cultural interactions.

#### NOTES

1. It should be noted that the confidence ratings obtained in Studies 1 and 2 were collected simultaneously with emotion recognition accuracy data that are presented in Beaupré and Hess (2005, in press). Recognition accuracy scores will therefore not be presented in the present context. It also should be noted that the ingroup advantage hypothesis with regard to recognition accuracy was not supported in the context of Beaupré and Hess's (in press) study.

2. The stimuli of the Montreal Set of Facial Displays of Emotion (MSFDE; Beaupré & Hess, in press) are based on Ekman and Friesen's (1978) prototypes of basic emotions, except for the shame expressions that are based on Izard's (1979) descriptions. For each prototype, the action units and corresponding intensity are as follows: anger: 4+5B+23; happiness 6+12C+25; sadness: 1+4+15B; fear: 1+2+5B+20c; disgust: 9D+25C; and shame: 32+54.

3. The facial expressions were coded by two certified coders using the Facial Action Coding System (Ekman & Friesen, 1978). Only expressions for which both coders agreed on both the action units and their intensity were retained. For the final set of expressions, all actors showed the same action unit combination with the same intensities for the same expressions.

4. The 10 emotion labels of the profile were happiness, serenity, anger, sadness, fear, surprise, disgust, contempt, shame, and embarrassment.

5. In addition, we conducted a series of regression analyses separately for each type of facial expression and for each decoder group. Out of the 18 analyses (6 emotion expressions  $\times$  3 ethnic groups), no significant regression emerged following Bonferonni correction ( $p < .003$ ), thus providing further evidence that recognition accuracy did not overall predict confidence ratings.

6. Given the lack of sphericity of the data, the Greenhouse-Geisser correction was used.

7. Data pertaining to the emotion judgments in Study 2 will not be presented in the present context.

8. The equivalent emotion labels provided in Chinese were taken from the *Dictionnaire général chinois-français* (1990) and were validated by two Mandarin language professors from the University of Quebec at Montreal.

9. As for Study 1, we also conducted regression analyses for each type of facial expression separately for each decoder group. Again, out of the 18 analyses (6 emotion expressions  $\times$  3 decoder groups), no significant regression emerged following Bonferonni correction ( $p < .003$ ), suggesting that recognition accuracy is not a pertinent mediating variable in this context.

10. The correlation between confidence and acculturation to the French Canadian host culture was examined only for the two groups of Chinese participants.

#### REFERENCES

- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, 63, 596-612.
- Beaupré, M. G., & Hess, U. (2005). *The development of emotion recognition through cross-cultural immersion: A test of the cultural learning theory*. Manuscript submitted for publication.
- Beaupré, M. G., & Hess, U. (in press). Cross-cultural emotion recognition among Canadian ethnic groups. *Journal of Cross-Cultural Psychology*.
- Berger, C. R., & Calabrese, R. (1975). Some explorations in initial interactions and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, 1, 99-112.
- Biehl, M., Matsumoto, D., Ekman, P., Hearn, V., Heider, K., Kudoh, T., et al. (1997). Matsumoto and Ekman's Japanese and Caucasian facial expressions of emotion (JACFEE): Reliability data and cross-national differences. *Journal of Nonverbal Behavior*, 21, 3-21.
- Crozier, W. R. (1981). Do photographs of facial displays provide a sound basis for classifying the primary emotions. *Current Psychological Research*, 1, 199-202.
- Dictionnaire général chinois-français [General dictionary Chinese-French]*. (1990). Paris: Éditions langages croisés.
- Ekman, P., & Friesen, W. V. (1978). *Facial Action Coding System: A technique for the measurement of facial action*. Palo Alto, CA: Consulting Psychologists Press.
- Elfenbein, H. A., & Ambady, N. (2002a). Is there an ingroup advantage in emotion recognition? *Psychological Bulletin*, 128, 243-249.
- Elfenbein, H. A., & Ambady, N. (2002b). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, 128, 203-235.
- Elfenbein, H. A., & Ambady, N. (2003). When familiarity breeds accuracy: Cultural exposure and facial emotion recognition. *Journal of Personality and Social Psychology*, 85, 276-290.
- Etoff, N. L., & Magee, J. J. (1992). Categorical perception of facial expressions. *Cognition*, 44, 227-240.
- Gudykunst, W. B. (1983). Toward a typology of stranger-host relationships. *International Journal of Intercultural Relations*, 7, 401-413.
- Gudykunst, W. B. (1985). A model of uncertainty reduction in intercultural encounters. *Journal of Language and Social Psychology*, 4, 79-98.
- Gudykunst, W. B., & Hammer, M. (1988). The influence of social identity and intimacy of interethnic relationships on uncertainty reduction processes. *Human Communication Research*, 14, 569-601.
- Gudykunst, W. B., Yang, S. M., & Nishida, T. (1985). A cross-cultural test of uncertainty reduction theory: Comparisons of acquaintances.

- tance, friend, and dating relationships in Japan, Korea and the United States. *Human Communication Research*, 1, 407-455.
- Hess, U., Beaupré, M. G., & Cheung, N. (2002). Who to whom and why: Cultural differences and similarities in the function of smiles. In M. H. Abel (Ed.), *An empirical reflection on the smile* (pp. 187-216). New York: Edwin Mellen.
- Hess, U., Blairy, S., & Kleck, R. E. (1997). The intensity of emotional facial expressions and decoding accuracy. *Journal of Nonverbal Behavior*, 21, 241-257.
- Izard, C. E. (1979). *The maximally discriminative facial movement coding system (MAX)*. Newark, NJ: University of Delaware Instructional Resources Center.
- Kirita, T., & Endo, M. (1995). Happy face advantage in recognizing facial expressions. *Acta Psychologica*, 89, 149-163.
- Lipshitz, R., & Strauss, O. (1997). Coping with uncertainty: A naturalistic decision-making analysis. *Organizational Behavior and Human Decision Processes*, 69, 149-163.
- Matsumoto, D. (1992). American-Japanese cultural differences in the recognition of universal facial expressions. *Journal of Cross-Cultural Psychology*, 23, 72-84.
- Matsumoto, D. (2002). Methodological requirements to test a possible ingroup advantage in judging emotions across cultures: Comment on Elfenbein and Ambady (2002) and evidence. *Psychological Bulletin*, 128, 236-242.
- Motley, M. T., & Camden, C. T. (1988). Facial expression of emotion: A comparison of posed expressions versus spontaneous expressions in an interpersonal communications setting. *Western Journal of Speech Communication*, 52, 1-22.
- O'Toole, A. J., Peterson, J., & Deffenbacher, K. A. (1996). An "other-race effect" for categorizing faces by sex. *Perception*, 25, 669-676.
- Rose, T. L. (1981). Cognitive and dyadic processes in intergroup contact. In D. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 259-302). Hillsdale, NJ: Lawrence Erlbaum.
- Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis* (3rd ed.). New York: McGraw-Hill.
- Rosenthal, R., Rosnow, R. L., & Rubin, D. B. (2000). *Contrasts and effect sizes in behavioral research a correlational approach*. New York: Cambridge University Press.
- Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology*, 79, 49-65.
- Simard, L. (1981). Cross-cultural interaction. *Journal of Social Psychology*, 113, 171-192.
- Thibault, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New York: John Wiley.
- Tzeng, O. C. S., & Jackson, J. W. (1994). Effects of contact, conflict, and social identity on interethnic group hostilities. *International Journal of Intercultural Relations*, 18, 259-276.
- Young, A. W., Rowland, D., Calder, A. J., & Etcoff, N. L. (1997). Facial expression megamix: Tests of dimensional and category accounts of emotion recognition. *Cognition*, 63, 271-313.

Received July 20, 2004

Revision accepted March 7, 2005