THE IMPACT OF GENDER AND INTERCULTURAL EXPERIENCES ON EMOTION RECOGNITION

Ashley N. HUTCHISON, Lawrence H. GERSTEIN

The Impact of Gender and Intercultural Experiences on Emotion Recognition

Ashley N. HUTCHISON[1], Lawrence H. GERSTEIN[2]

Abstract

This study investigated the differences among U.S. undergraduate college students' ability to recognize facially expressed emotions, their gender, and their amount of international travel experience. Two-hundred and ten students viewed photographs of Japanese and Caucasian-American facially expressed emotions. Participants provided information on their perceptions of the emotions, perceived intensity of the emotions, their international (outside the U.S.) travel experiences, and demographic data. Results indicated that women exhibited higher rates of emotion recognition than men, but international travel experience did not impact emotion recognition rates for either women or men. All the participants recognized Caucasian-American faces at higher rates than Japanese faces. In addition, students rated Japanese posers' expressions as more intense than Caucasian-American posers' expressions. Results are discussed in relation to prior research findings on the influence of gender and international travel experience on the ability to recognize emotions as well as implications for conducting research with non-U.S. populations. Suggestions for how to improve future research projects also are provided.

Keywords: emotion recognition, intercultural, gender, intensity, emotional intelligence.

Introduction

Emotions encompass a fundamental aspect of human life and nonverbal communication. Emotions provide meaning to others' actions and help guide individuals' responses to people. In fact, emotions have been described as the 'driving force' behind motivation, providing meaning to all human interactions

[1] University of North Dakota, Department of Counseling Psychology and Community Services, North Dakota, USA. E-mail: ashley.hutchison@und.edu (corresponding author)

[2] Department of Counseling Psychology, Social Psychology, and Counseling, George & Frances Ball Distinguished Professor of Psychology-Counseling, Ball State University, Muncie, Indiana, USA. E-mail: lgerstein@bsu.edu

(Ornstein & Nelson, 2006). Both positive and negative emotions provide important information regarding relationships between one's self, the environment, and interpersonal relationships (Matsumoto, Leroux, & Yoo, 2006).

Salovey and Mayer (1990) conceptualized the ability to use emotions in everyday interactions as a specific type of intelligence, coined 'emotional intelligence' (EI). Humans use EI in daily life to recognize, regulate, and control their emotions to optimize interpersonal situations (Goleman, 1996, 1998). EI also allows people to use emotions to foster critical thinking skills and cognitive ability (Mayer, Salovey, Caruso, & Sitarenios, 2001). There are four key aspects of EI, which have been characterized as EI competencies: (a) emotion regulation, (b) emotion recognition in self and others, (c) understanding emotions, and (d) using emotions to complement cognitive skills (Ciarrochi, Chan, & Bajgar, 2001; Mayer *et al.*, 2001). Deficits in EI (e.g., inability to regulate emotion) may negatively affect interpersonal communication, while high levels of EI (e.g., high levels of self-awareness) can foster communication, particularly through emotional regulation (Matsumoto *et al.*, 2006). For example, individuals who can regulate their reactions to others' emotions may be more apt to critically think about their own responses rather than simply acting on impulse or instinct (Matsumoto *et al.*, 2006).

However, before emotion regulation can occur, individuals must first recognize emotions in both the self and in other people. Yoo, Matsumoto, and LeRoux (2006) stated, "…recognition must be a precursor to regulation; conversely, if emotion is not recognized, there is nothing to regulate" (p. 347). Researchers have demonstrated that emotion recognition was consistently an important component of EI (Mayer & Geher, 1996; Mayer *et al.*, 2001). The ability to accurately infer internal feelings through external facial expressions allows individuals to manage communication efforts, and fosters mutual understanding among interpersonal relationships (Swenson & Casmir, 1998). Emotion recognition ability, or the ability to recognize facially expressed emotions in others, has implications for communication in one's relationships in a variety of occupations (e.g., managers, psychologists) (Elfenbein, Foo, White, Tan, & Aik, 2007; Rubin, Munz, & Bommer, 2005) and in EI training (e.g., emotion recognition training for people diagnosed with autism or schizophrenia) (Russell, Chu, & Phillips, 2006).

Emotion Recognition and Gender

Emotion recognition becomes critical in out-group interactions, where norms regulating emotional expression may differ greatly (Swenson & Casmir, 1998). This is particularly relevant when examining interactions between men and women, and between persons of different cultures. Gender has consistently been identified as a factor impacting emotion recognition ability (Hall, 1978). Meta-

analyses have found a female advantage in their ability to decode nonverbal cues of emotion displayed by the face, body, or voice, women tended to smile or gaze more at others, were rated as having more expressive faces, and displayed more expressive nonverbal body language than men (Hall 1978, 1984; Hall, Carter, & Horgan, 2000). Thompson and Voyer (2014) conducted a recent meta-analysis, focusing on emotion recognition tasks, and discovered a small but significant effect for a female advantage ($d = .19$), compared to previous meta-analyses (e.g., Hall, 1978, 1984). These authors also found that gender differences in emotion recognition are often moderated by other variables, such as specific emotion, type of emotion (negative vs. positive), sensory modality (presenting information auditorily, visually, or both), and age.

Although this brief review of the literature suggests gender differences in nonverbal emotion recognition, Wester, Vogel, Pressly, and Heesacker (2002) claimed that these differences may be based on situational influences rather than an innate gender effect. Wester and colleagues noted that continued research is critical to broadening researchers' knowledge of the relationship between gender and emotion. Thompson and Voyer (2014) also acknowledged the importance of not over- or under interpreting gender differences, and continuing to focus on possible moderators in emotion recognition tasks.

Emotion Recognition and Intercultural Experiences

Several authors have posited that increased international travel experience improves one's ability to communicate cross-culturally. For example, Abbe, Gulick, and Herman (2007) concluded that prior international experience improved workers' adjustment and coping in an international context, which can impact interpersonal relationships. Accurate emotion recognition is also considered a skill that can facilitate interpersonal relationships across cultures (Spitzberg, 1989). For example, Taylor (1994), in a qualitative study of individuals who had worked in a foreign culture, found that participants reported that their internal emotional experiences (e.g., anxiety or loneliness) impacted their ability to balance their distress in a new culture. He concluded that emotions were a critical facet of cross-cultural interactions and that additional research on emotions in a cross-cultural context was needed.

Increased international experience may expose individuals to different forms of emotional expression. Increased exposure may enhance their ability to recognize and understand emotions from a variety of cultures, and consequently improve interpersonal relationship skills. Elfenbein and Ambady (2002) conducted a meta-analysis of emotion recognition across multiple cultures and discovered what they called an 'in-group advantage' for emotion recognition. They found that participants often recognized emotions at higher accuracy rates when

expressed by members of their own culture versus people of different cultures. Given the nature of the 'in-group advantage' hypothesis, it is possible that increased cultural contact among members of different cultural groups may enhance cross-cultural emotion recognition ability. One way to investigate this is to determine whether international travel experiences have an impact on rates of emotion recognition.

In a study examining this possible relationship, Swenson and Casmir (1998) found that intercultural experience influenced the ability to recognize facially expressed emotions. They discovered that travel experience among U.S., German, South African, and Japanese participants contributed to their ability to recognize emotions expressed by people from the U.S. (Caucasian and African-American) and Asia. However, this was true only for persons who had traveled internationally 5 to 20 times, and not for individuals who had traveled internationally more than 20 times. Swenson and Casmir concluded that while intercultural experiences impacted emotion recognition ability in their study, this ability reached a 'plateau' as well. Gender also interacted with emotion recognition ability in this study. Swenson and Casmir suggested that the experience of travel to different countries and cultures may improve adaptive communication and interpretative skills that enhance cross-cultural emotion recognition.

As with all research endeavors, however, there are limitations linked with Swenson and Casmir's (1998) study. First, it was unclear how they established the validity and reliability of the photographs presented in their study. The photographs also were in black-and-white. While Swenson and Casmir argued this was to control for cultural bias in meanings assigned to colors, the black-and-white presentation could have detracted from how most individuals truly see emotions in everyday life (e.g., in color). Swenson and Casmir also grouped participants' travel experiences by sets of five (e.g., never traveled, traveled 1-5 times, traveled 5-10 times, etc.). This method of categorizing did not allow for testing how initial or early international travel experiences might affect emotion recognition abilities. Considering that many undergraduate students may have limited access to repeated opportunities for international travel, it may be important to determine whether or not initial, or formative, international travel experiences also impact emotion recognition.

Based on the studies just reviewed, it seems that additional research on the relationship between emotion recognition and international travel experience is warranted. Furthering our understanding of this relationship can help applied researchers, for example, comprehend the impact of emotions on international workers' distress in a new environment (e.g., Taylor, 1994).

Emotion Intensity

Another important aspect of the emotion recognition process is individuals' perceptions about the intensity of an emotion. Assessing emotion intensity, in conjunction with emotion recognition, provides information regarding individuals' perceptions of facially expressed emotions. Researchers have discovered evidence that people often differ in their perceptions of the intensity of facially expressed emotions (e.g., Hutchison & Gerstein, 2012; Matsumoto, 1993; Matsumoto & Ekman, 1989). Matsumoto (1993) defined emotional intensity as the strength of a perceived emotion (e.g., a person looks mildly sad versus extremely sad). Although researchers have consistently discovered differences in intensity ratings, these differences are inconsistent across various factors, such as person's nationality (Matsumoto & Ekman, 1989) or poser's (person in the photograph) ethnicity (Hutchison & Gerstein, 2012). Assessing emotion intensity provides a greater understanding of how individuals may differ in their interpretation of emotions, which impacts nonverbal communication and interpersonal relationships. For example, a person who tends to interpret facially expressed emotions as strong may respond differently to others compared to an individual who typically interprets emotions as more subtle.

Research on the relationship between emotion recognition, gender, and intergroup/culture contact can provide valuable information about the nature of emotion recognition for men and women and across different cultures. Gaining a greater understanding of these differences may help researchers bridge the emotional communication gap between individuals and out-group members.

The current study, therefore, further investigated the relationship between gender, intercultural contact, and emotion recognition. For the purpose of this study, we defined intercultural contact as the number of foreign countries participants had visited and we refer to this construct as international travel experience.

The current study also was designed to address limitations found in Swenson and Casmir's (1998) study. Unlike Swenson and Casmir, we used photographs with established psychometric properties (discussed later in more detail). We also were interested in understanding how initial or very early international travel experiences impacted emotion recognition. Therefore, in this study, we focused on participants who had zero, one, two, or three or more international travel experiences. Based on earlier research, it was expected that increased contact between in-group and out-group members would result in greater familiarity (Pettigrew & Tropp, 2006), and therefore, greater recognition of facial expressions among our participants who had visited more foreign countries. Lastly, this study examined the nature of participants' intensity ratings of facial expressions. The following hypotheses were investigated in this study: (1) Women will have higher emotion recognition accuracy rates than men; (2) Participants with greater

international travel experience will have higher emotion recognition accuracy rates than persons with less international travel experience; (3) Emotion intensity ratings will vary as a function of participant gender and level of international travel experience, and poser gender and ethnicity.

Method

Participants

Respondents were U.S. undergraduate students from a large Midwestern university. Initial recruitment was conducted via an introductory email distributed to the entire university (22,083 students). Of the potential student population, 1,051 students completed the survey. Participants (108 students) included in another study (Hutchison & Gerstein, 2012) were not included in the current investigation. An additional 179 students were dropped from the final analyses due to missing data (defined as four or more missing answers). This resulted in a final pool of 764 participants for this study. Of these students, 210 (100 men and 110 women) were randomly selected for the main analyses.

The mean age for the entire sample used in the study was 20.7 years (*SD* = 4.2). All participants identified as being from the U.S. and their self-identified ethnic background included the following: 85.7% of students (*n*=180) identified themselves as non-Hispanic Caucasian, 6.2% as Hispanic or Latina/o (*n*=13), 2.4% as African-American (*n*=5), 1.9% as biracial (*n*=4) and multiracial (*n*=4), and .5% as Middle Eastern or Middle Eastern-American (*n*=1). Three students did not report their ethnicity.

Stimulus Materials

The participants viewed a set of photographs called the Japanese and Caucasian Facial Expressions of Emotion (JACFEE) (Matsumoto & Ekman, 1988). The JACFEE is composed of 56 photographs of Caucasian-American and Japanese persons expressing anger, contempt, fear, disgust, happiness, sadness, and surprise. The photographs are balanced for poser gender and poser ethnicity. Matsumoto and Ekman (1988) used the Facial Action Coding System (FACS) (Ekman & Friesen, 1978) to standardize and validate the JACFEE photo set. The FACS is used to determine facial expression stimuli's internal validity. This training tool asks posers in photographs to move specific muscles to create a desired emotion. More than a thousand pictures were taken when developing the JACFEE to standardize the emotion each photograph captured.

Researchers conducting studies on the JACFEE's reliability adhered to Wolfgang and Cohen's (1988) standard of reliability. Wolfgang and Cohen proposed

that reliability is met if judges of photographs agree on the target emotion at a rate of at least 70%. Researchers testing the JACFEE's reliability concluded that the stimulus materials contained high reliability in terms of target emotion and emotion intensity (Biehl *et al.*, 1997; Matsumoto, 1992; Matsumoto & Ekman, 1989). Matsumoto and Ekman (1989) first discovered that the reliability of the photos was .91 and intensity ratings were described as "moderate to high." Matsumoto (1992) followed up this study by investigating accuracy scores among Japanese and U.S. participants. He found that accuracy scores ranged from 64.2% to 98.3% for Japanese respondents, and 81.9% to 97.6% for U.S. participants. Biehl *et al.* (1997) extended this research to other cultural groups, including persons from Hungary, Poland, Sumatra, the U.S., and Vietnam. They found that, although scores varied among countries and types of emotions, all cultural groups' accuracy scores were above chance. Based on these findings, the authors of all three studies argued that the stimulus materials maintain a high degree of consistency between the expressed emotions and levels of intensity within each emotion.

Procedures

After receiving an email introducing the study, participants had the option of clicking on a link that redirected them to the online informed consent. Participants received information about the study's incentives (cash in the amounts of $40, $25, $20, or $15), the option of participating for class credit, the project's purpose, their right to withdraw at any time, potential risks and benefits of participating in the project, their rights as a research participant, and the university's IRB contact information. Once they agreed to participate in the study, students completed the survey and a demographic questionnaire.

Participants viewed one photograph at a time, in a randomized order. Each photo was accompanied with the question, "Which emotion is the person in the photograph expressing?" Participants then selected the response option they felt best depicted the emotion expressed: anger, contempt, disgust, fear, happiness, sadness, surprise, none of these are correct, and an open ended 'other' category with a write-in option. Participants were asked to rate their perception of the intensity of the displayed emotion on a 9-point Likert-type scale, labeled: not at all (0), a little (1), a moderate amount (4), and a lot (8). This method of emotion recognition and intensity assessment has been used extensively by prior researchers (e.g., Biehl *et al.*, 1997; Hutchison & Gerstein, 2012; Matsumoto, 1992; Matsumoto, 1993).

Information regarding participants' international travel experiences was gathered through the demographic questionnaire. Students were asked to list how many countries they had visited. The researchers categorized students' international travel experience based on the number of countries they had visited: 0, 1,

2, or 3 or more countries. After completion of the study's materials, students received debriefing information, the first author's contact information, and instructions on how to obtain the results of the study.

Results

To investigate a potential relationship between accuracy and intensity ratings, three Pearson correlations were calculated: one for the total sample, one for men, and one for women. No significant correlations were obtained (*r's* ranged from .053 to .090). As a result, it was concluded that the accuracy and intensity variables were independent variables that could be analyzed separately.

Accuracy Scores

The researchers summed accuracy scores across all emotions and analyzed the scores in a 4 (number of countries visited: 0, 1, 2, 3 or greater) x 2 (participant gender: male or female) x 2 (poser gender: male or female) x 2 (poser ethnicity: Caucasian-American or Japanese) mixed-factors ANOVA. Independent variables were participant international travel experience and gender, and poser gender and ethnicity. The dependent variable was emotion accuracy scores summed across emotions.

Table 1 presents the ANOVA main and interaction effects for the students' accuracy scores. The four-way interaction was not significant, $F(3, 202) = 0.48$, $p > .05$, $\eta^2 = .007$. None of the three-way or two-way interactions were significant ($F's > .076$, $p's > .05$) as well.

To examine Hypothesis 1, that women would exhibit higher accuracy rates than men, the main effect for participant gender was investigated. A significant main effect for participant gender was found, $F(1, 202) = 5.50$, $p = .020$, $\eta^2 = .027$. Consistent with our hypothesis, women ($M = 11.26$) had higher accuracy rates than men ($M = 10.62$). To investigate Hypothesis 2, that participants with greater international travel experience would have higher accuracy scores, the main effect for international travel experience was examined. There was no significant effect for international travel experience, $F(1, 202) = .561$, $p = .641$, $\eta^2 = .008$. Thus, Hypothesis 2 was not supported.

The ANOVA yielded a significant main effect for poser ethnicity that was not associated with any proposed hypotheses, $F(1, 202) = 11.35$, $p = .001$, $\eta^2 = .053$. It was found that participants were more accurate in recognizing Caucasian-American posers ($M = 11.12$) compared to Japanese posers ($M = 10.76$).

Table 1. Source Table for Interactions and Main Effects for Accuracy Scores.

Source	SS	df	MS	F	p	η^2
Within-Subjects						
Pgender	1.47	1	1.47	1.12	.29	.01
Pgender x Countries	4.02	3	1.34	1.03	.38	.02
Pgender x RGender	1.22	1	1.22	.93	.34	.01
Pgender x Countries x RGender	1.07	3	.36	.27	.85	.00
Error (Pgender)	263.99	202	1.31			
Pethnicity	18.84	1	18.84	11.35	.00	.05
Pethnicity x Countries	3.12	3	1.04	.63	.60	.01
Pethnicity x RGender	.13	1	.13	.08	.78	.00
Pethnicity x Countries x RGender	7.58	3	2.53	1.52	.21	.02
Error(Pethnicity)	335.26	202	1.66			
Pethnicity x Pgender	5.43	1	5.43	3.49	.06	.02
Pethnicity x Pgender x Countries	7.85	3	6.62	1.68	.17	.02
Pethnicity x Pgender x RGender	.90	1	.90	.58	.45	.00
Pethnicity x Pgender x Countries x RGender	2.24	3	.75	.48	.70	.01
Error(Pethnicity x Pgender)	314.04	202	1.56			
Between-Subjects						
Countries	18.95	3	6.32	.56	.64	.01
RGender	61.93	1	61.93	5.50	.02	.03
Countries x RGender	26.59	3	8.86	.79	.50	.01
Error	2273.52	202	11.26			

Note: Pgender = poser's gender; RGender = respondent's gender; Pethnicity = poser's ethnicity; Countries = level of number of countries respondent traveled to.

Intensity Ratings

In the second analysis, intensity ratings were averaged across all emotions and assessed in a 4 (number of countries visited: 0, 1, 2, 3 or greater) x 2 (participant gender: male or female) x 2 (poser gender: male or female) x 2 (poser ethnicity: Caucasian-American or Japanese) mixed-factors ANOVA. Independent variables included participant international travel experience and gender, and poser gender and ethnicity. The dependent variable was the average intensity ratings. *Table 2* presents the ANOVA main and interaction effects for the students' intensity ratings.

Table 2. Source Table for Interactions and Main Effects for Intensity Ratings

Source	SS	df	MS	*F*	*p*	η^2
Within-Subjects						
Pgender	.01	1	.01	.08	.78	.00
Pgender x Countries	.02	3	.01	.05	.99	.00
Pgender x RGender	.21	1	.21	1.46	.24	.01
Pgender x Countries x RGender	.75	3	.25	1.63	.18	.02
Error (Pgender)	31.06	202	.15			
Pethnicity	4.20	1	4.21	19.62	.00	.09
Pethnicity x Countries	.24	3	.08	.38	.77	.01
Pethnicity x RGender	.10	1	.10	.05	.83	.00
Pethnicity x Countries x RGender	.60	3	.20	.93	.43	.01
Error (Pethnicity)	43.23	202	.21			
Pethnicity x Pgender	.16	1	.16	1.44	.23	.01
Pethnicity x Pgender x Countries	.12	3	.04	.36	.79	.01
Pethnicity x Pgender x RGender	.13	1	.13	1.17	.28	.01
Pethnicity x Pgender x Countries x RGender	.19	3	.06	.58	.63	.01
Error (Pethnicity x Pgender)	22.44	202	.11			
Between-Subjects						
Countries	1.01	3	.34	.12	.95	.00
RGender	.98	1	.98	.35	.56	.00
Countries x RGender	.39	3	.13	.05	.99	.00
Error	565.81	202	2.80			

Note: Pgender = poser's gender; RGender = respondent's gender; Pethnicity = poser's ethnicity; Countries = level of number of countries respondent traveled to.

All potential interactions were not significant (*F's* > .048, *p's* > .05). The researchers did discover, however, a significant main effect for poser ethnicity, $F(1, 202) = 19.62$, $p < .001$, $\eta^{2--} = .089$. Overall, participants rated Japanese posers' (M=6.21) emotions as more intense than Caucasian-American posers' (*M* = 6.04) emotions. Therefore, Hypothesis 3, which stated that emotion intensity ratings would vary across an independent variable, was supported.

Discussion

Consistent with our hypothesis it was found that women obtained higher accuracy rates of emotion recognition than men. This finding is also consistent with previous research that discovered that women tended to recognize basic emotions at higher rates than men (Hall, 1978; Hall & Matsumoto, 2004; Merten, 2005; Thompson & VOyer, 2014; Wester *et al.*, 2002). Investigators have reported this finding across multiple cultures (Merten, 2005). In addition, Hall and Matsumoto (2004) replicated this result even under time-limited circumstances (e.g.,

viewing the photographs in 1-second increments). An evolutionary perspective may help explain this finding. For example, Babchuk, Hames, and Thompson (1985) proposed the primary caretaker hypothesis, whereby women have evolved adaptations in interpreting facial affect as primary caretakers of infants. This evolved ability to decode facial affect provides caretakers (e.g., women) with the ability to quickly determine whether there is a threat to themselves and their offspring's survival. When testing this hypothesis, Hampson, van Anders, and Mullin (2006) discovered that women were faster decoders of positive and negative facially expressed emotions, and decoded negative emotions faster than positive emotions. To further explain this phenomenon, investigators suggested that women may process emotion information differently than men (Hall & Matsumoto, 2004). This general finding may be due to socialization processes that encourage women to decode emotions more than men beginning in early childhood (Hall & Matsumoto, 2004).

Unlike what we had expected, participants with more international travel experience did not have higher emotion recognition accuracy rates compared to persons with less international travel experience. It also does not support the proposition that early or initial international travel experiences significantly impact emotion recognition abilities. Various explanations can be offered for why this insignificant finding conflicts with prior researchers' discovery that greater international travel experience is related to higher rates of emotional recognition (Swenson & Casmir, 1998). Given the different operationalization of international travel experience between the current study and Swenson and Casmir's (1998) research, our insignificant result may suggest that improvements in emotion recognition may only occur after prolonged, repeated exposure to people from diverse cultures (e.g., traveling internationally 5 or more times). Alternatively, this insignificant finding may be in part due to how the current researchers defined intercultural experience. When defining intercultural travel experience, we examined differences between travel to zero, one, two, and three or more countries. Given that our sample included primarily young adult college students, we aimed to understand how initial or possible first-time international travel experiences might impact emotion recognition accuracy. However, it is possible the critical factor in increasing one's ability to accurately recognize emotion might be the *quality* rather than the sheer number of international experiences. Therefore, future studies may need to conceptualize intercultural experiences in a different manner.

It also was discovered that intensity ratings varied based on poser ethnicity, with participants rating Caucasian-American posers' emotions as less intense than Japanese posers. This finding supported our hypothesis that there would be differences in intensity ratings. Further, this result is consistent with Hutchison and Gerstein's (2012) discovery that participants rated Japanese as compared to American posers' emotional expressions as more intense. This finding, however, contradicts prior researchers' claim of reliability (e.g., no variability in intensity

ratings) of the JACFEE stimulus materials (e.g., Biehl *et al.*, 1997; Hutchison & Gerstein, 2012; Matsumoto, 1992; Matsumoto & Ekman, 1989). In the present study, participants rated Japanese expressions on average at 6.21 and Caucasian-American expressions on average at 6.04 (on a 9-point Likert scale). For both groups of posers, therefore, participants assigned ratings, in general, in the 'moderate-high' intensity range.

Although not predicted, it also was discovered that respondents had higher accuracy scores when decoding emotions expressed by Caucasian-American posers than Japanese posers. This finding is consistent with the theory behind the in-group advantage hypothesis outlined by Elfenbein and Ambady (2002). The in-group advantage hypothesis posits that individuals are better at decoding emotions expressed by members of their own in-group versus members of an out-group. Given that nearly 86% of participants identified as non-Hispanic Caucasian, it is not surprising that, overall, respondents were better at recognizing emotions expressed by Caucasian-American faces. This may suggest that the present study's participants had little intercultural contact with Japanese or Japanese-American individuals. It is possible, therefore, that our finding may not generalize to persons in more diverse settings. This finding, however, is inconsistent with prior research that found no differences in accuracy rates based on poser ethnicity (e.g., Hutchison & Gerstein, 2012).

To fully test the in-group advantage hypothesis, Matsumoto (2002) argued that a study must involve persons from multiple cultures in which they view faces from their own culture and a target culture. Because the design of our study did not include participants from multiple countries, our interpretation for participants' higher rates of recognition of Caucasian-American faces compared to Japanese faces should be viewed with caution. To fully evaluate the in-group advantage hypothesis, future researchers may need to ask Japanese and Caucasian-American individuals to identify emotional expressions of both Japanese and Caucasian-American posers.

Strengths and Limitations

The current study expanded prior investigations by examining the relationship between gender, intercultural experience, and emotion intensity. Prior researchers focused solely on emotion recognition (e.g., Swenson & Casmir, 1998). Further, this study used a stimulus set (the JACFEE; Matsumoto & Ekman, 1988) that is considered to be one of the few valid tools to assess emotion recognition (Biehl *et al.*, 1997; Matsumoto, 1992). The current researchers also made an effort to decrease error through random sampling. The participants in this study were randomly selected from a much larger pool of individuals. The photographs also were presented to participants in a fully randomized order, decreasing possible error related to priming effects and method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

A significant limitation of this study is that it did not allow for the examination of potential emotion recognition scores within U.S. multicultural groups. Rather, the researchers combined all respondents into a general U.S. participant group, making the assumption that all respondents had significant exposure to Caucasian-American faces. We agree with Matsumoto (1993), however, that prior research, including this study, on emotion recognition and intensity has been too simplistic, typically focusing on culture defined by an entire country's population, rather than examining in-country cultural differences. Unfortunately, there is a lack of stimulus materials that include standardized facial expressions of people from diverse U.S. racial and ethnic groups. The development of such materials would greatly benefit this line of research. Until these photographs or videos are developed, generalizability of emotion recognition research to diverse populations is limited.

Another limitation of this study was the definition of 'international travel experience.' It is possible that the method used to categorize exposure to other cultures was too simplistic (e.g., visiting zero, one, two, or three or more countries). For example, examining the quality of international experiences (e.g., length of stay, motivation for travel) versus the quantity may produce more robust findings.

Although the study's methodology enhanced internal validity, its generalizability to people's perceptions of emotions in 'real-life' is questionable. Emotions in nonverbal interactions in daily life are not static. They change from moment to moment and people typically do not have the luxury of taking more than a few seconds to recognize and interpret emotions. The JACFEE photos lack contextual information about the environment and relationships. It is likely that individuals' process of emotion recognition in everyday interactions is different from the process in a controlled study, such as the one we employed.

This study relied on a rigorous methodology that enhanced internal validity. The study provided additional evidence on the relationship between gender and emotion recognition and poser nationality and emotion intensity ratings. Because of the study's limitations, further research on the relationship between gender, international experience, and emotion recognition is still needed.

Future Research

Although the current investigators found a gender difference in emotion recognition and intensity ratings, additional studies are needed to fully understand this difference. For example, researchers could examine the effects of gender socialization on emotion recognition and integrate an evolutionary perspective. Investigating men and women's *reasons* for making their emotion judgments

would provide critical contextual information on gender differences in emotion recognition. As Thompson and Voyer (2014) noted in their meta-analysis of gender differences, investigating the moderators of gender differences in emotion re-cognition is critical to more fully understanding these dynamics, rather than presenting gender differences as a straightforward, gender-based difference. Re-searching these moderators would be especially relevant in international studies where gender role norms and socialization processes differ based on cultural identity (e.g., dimension of masculinity-femininity; Hofstede, 1980). Further, replicating the findings using real-world stimuli (rather than posed photographs), such as through videos or field experiments, would strengthen the claim that a true gender difference exists in decoding facial expressions. Investigators have repeatedly demonstrated women's advantage in emotion recognition under con-trolled conditions (e.g., Hall, 1978, 1984). It is critical to expand our metho-dologies to "real-life" situations, such as individuals' relationships, at work, or in conflict management situations.

The relationship between intercultural experiences and emotion recognition warrants further study as well. Since Swenson and Casmir (1998), there has been a lack of research on this association. Given the importance of emotion recognition when correctly interpreting intercultural relationships (e.g., Spitzberg, 1989), there is a need to better understand how intercultural experiences shape a person's ability to recognize and interpret emotional information. Results of such projects could benefit individuals working in applied cross-cultural settings. For example, these findings may benefit companies expanding internationally and also enhance the quality of their employees' intercultural relationships. Gathering data on how international experiences influence emotion recognition and subsequent inter-personal relationships also may be valuable to persons in the helping professions. Mental health practitioners working internationally, for example, could use such findings to shape how they interact with individuals from different cultures. Similarly, mental health clinicians working domestically might find these results beneficial when assisting people who are culturally different from them (e.g., working with immigrants).

Additionally, future researchers could pursue emotion recognition studies relevant to populations in their respective countries. For example, Canadian researchers could investigate and compare the emotion recognition abilities of Canadian or French Canadian individuals, Aboriginal individuals, Métis, and/or immigrant populations (e.g., Filipinos).

Researchers also should explore potential differences in how intercultural experiences are conceptualized. Defining experiences based on individuals' pur-pose for pursuing international travel is one way to examine the quality rather than quantity of experiences. It is possible that persons who pursue international travel for self-growth may have different experiences then people who travel and are not open to change or growth. Researchers also could study the link between

the depth of persons' intercultural experiences (e.g. length of stay, degree of interaction with host culture, relationships with people from host culture) and emotion recognition.

As previously discussed, emotion recognition is a critical component of EI (Mayer & Geher, 1996; Mayer *et al.*, 2001). EI may allow humans to navigate an increasingly globalized world of cross-cultural interpersonal relationships. The present study found a relationship between emotion recognition and gender, but did not discover an association between emotion recognition and intercultural travel experiences. Our findings, therefore, highlight the need to continue to look at emotion recognition in relation to gender and intercultural experiences. Future research that addresses the current study's limitations would greatly further our understanding of emotion recognition as a component of EI.

References

Abbe, A., Gulick, L.M.V., & Herman, J.L. (2007). *Cross-cultural competence in Army leaders: A conceptual and empirical foundation.* (SR 2008-01). Arlington, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences.

Babchuk, W.A., Hames, R.B., & Thompson, R.A. (1985). Sex differences in the recognition of infant facial expressions of emotion: The primary caretaker hypothesis. *Ethology and Sociobiology, 6,* 89-101. doi: http://dx.doi.org/10.1016/0162-3095(85)90002-0

Biehl, M., Matsumoto, D., Ekman, P., Hearn, V., Heider, K., Kudoh, T., & Ton, V. (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. doi: 10.1023/A:1024902500935

Ciarrochi, J., Chan, A.Y.C., & Bajgar, J. (2001). Measuring emotional intelligence in adolescents. *Personality and Individual Differences, 31,* 1105-1119. doi: http://dx.doi.org/10.1016/S0191-8869(00)00207-5

Ekman, P. & Friesen, W. (1978). *Facial Action Coding System.* Palo Alto: Consulting Psychologists Press.

Elfenbein, H.A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin, 128,* 203-235. doi: 10.1037/0033-2909.128.2.203

Elfenbein, H.A., Foo, M.D., White, J., Tan, H.H., & Aik, V.C. (2007). Reading your counterpart: The benefit of emotion recognition accuracy for effectiveness in negotiation. *Journal of Nonverbal Behavior, 31,* 205-223. doi:10.1007/s10919-007-0033-7

Goleman, D. (1995). *Emotional Intelligence.* NY: Bantam.

Goleman, D. (1998). Working with Emotional Intelligence. NY: Bantam.

Hall, J.A. (1978). Gender effects in decoding nonverbal cues. *Psychological Bulletin, 85,* 845-857. doi: 10.1037/0033-2909.85.4.845.

Hall, J.A. (1984). Nonverbal sex differences: Communication accuracy and expressive style. Baltimore: The Johns Hopkins University Press.

Hall, J.A., Carter, J.D., & Horgan, T.G. (2000). Gender differences in nonverbal communication of emotion. In A. Fischer (Ed.), *Gender and emotion: Social psychological perspectives* (pp. 97-117).

Hall, J.A., & Matsumoto, D. (2004). Gender differences in judgments of multiple emotions from facial expressions. *Emotion, 4*, 201-206. doi: 10.1037/1528-3542.4.2.201

Hampson, E., van Anders, S.M., & Mullin, L.I. (2006). A female advantage in the recognition of emotional facial expressions: Test of an evolutionary hypothesis. *Evolution and Human Behavior, 27,* 401-416. doi: http://dx.doi.org/10.1016/j.evolhumbehav.2006.05.002

Hofstede, G. (1980). Culture's consequences: International differences in work-related values. Sage: Beverly Hills, CA

Hutchison, A.N., & Gerstein, L.H. (2012). What's in a face? Counseling trainees' ability to read emotions. *Training and Education in Professional Psychology, 6,* 100-112. doi: 10.1037/a0028807

Matsumoto, D. (1992). American-Japanese cultural differences in the recognition of universal facial expressions. *Journal of Cross-Cultural Psychology, 23,* 72-84. doi: 10.1177/0022022192231005

Matsumoto, D. (1993). Ethnic differences in affect intensity, emotion judgments, display rule attitudes, and self-reported emotional expression in an American sample. *Motivation and Emotion, 17*, 107-123. doi: 10.1007/BF00995188

Matsumoto, D. (2002). Methodological requirements to test a possible in-group advantage in judging emotions across cultures: Comment on Elfenbein and Ambady (2002) and evidence. *Psychological Bulletin, 128*, 236-242. doi: 10.1037/0033-2909.128.2.236

Matsumoto D. & Ekman, P. (1988). *Japanese and Caucasian facial expressions of emotion (IACFEE)* [JPEG images]. San Francisco, CA: Intercultural and Emotion Research Laboratory, Department of Psychology, San Francisco State University.

Matsumoto, D., & Ekman, P. (1989). American-Japanese cultural differences in intensity ratings of facial expressions of emotion. *Motivation and Emotion, 13,* 143-157. doi: 10.1007/BF00992959

Matsumoto, D., LeRoux, J., & Yoo, S.H. (2006). Emotion and intercultural communication. In Helga Kotthoff and Helen Spencer-Oatley (eds.), *Handbook of Applied Linguistics, Volume 7: Intercultural Communication* (pp. 77-98). Mouton – de Gruyter Publishers.

Mayer, J. D., & Geher, G. (1996). Emotional intelligence and the identification of emotion. *Intelligence, 17,* 89–113. doi: http://dx.doi.org/10.1016/S0160-2896(96)90011-2

Mayer, J.D., Salovey, P., Caruso, D.R., & Sitarenios, G. (2001). Emotional intelligence as a standard intelligence. *Emotion, 1,* 232-242. doi: 10.1037//1528-3542.1.3.232

Merten, J. (2005). Culture, gender and the recognition of the basic emotions. *Psychologia, 48,* 306-316. doi: http://dx.doi.org/10.2117/psysoc.2005.306

Ornstein, S., & Nelson, T. (2006). Incorporating emotional intelligence competency building into the preparation and delivery of international travel courses. *Innovations in Education and Teaching International*, *43,* 41-55. doi: 10.1080/14703290500467442

Pettigrew, T.F., & Tropp, L.R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90,* 751-783. doi: 10.1037/0022-3514.90.5.751

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. (2003). Common method bias in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879-903. doi: 10.1037/0021-9010.88.5.879

Rubin, R.S., Munz, D.C., & Bommer, W.H. (2005). Leading from within: The effects of emotion recognition and personality on transformational leadership behavior. *The Academy of Management Journal, 48,* 845-858. doi: 10.5465/AMJ.2005.18803926

Russell, T.A., Chu, E., & Phillips, M.L. (2006). A pilot study to investigate the effectiveness of emotion recognition remediation in schizophrenia using the micro-expression training tool. *British Journal of Clinical Psychology, 45,* 579-583. doi: 10.1348/014466505X90866

Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality, 9,* 185-211. doi: 10.2190/DUGG-P24E-52WK-6CDG

Spitzberg, B.H. (1989). Issues in the development of a theory of interpersonal competence in the intercultural context. *International Journal of Intercultural Relations, 13,* 241-268. doi: http://dx.doi.org/10.1016/0147-1767(89)90012-6

Swenson, J., & Casmir, F.L. (1998). The impact of culture-sameness, gender, foreign travel, and academic background on the ability to interpret facial expression of emotion in others. *Communication Quarterly, 46,* 214-230. doi: 10.1080/01463379809370096

Taylor, E.W. (1994). Intercultural competency: A transformative learning process. *Adult Education Quarterly, 44,* 154-174. doi: 10.1177/074171369404400303

Thayer, J.F., & Johnson, B.H. (2000). Sex differences in judgment of facial affect: A multivariate analysis of recognition errors. *Scandinavian Journal of Psychology, 41,* 243-246. doi: 10.1111/1467-9450.00193

Thompson, A.E., & Voyer, D. (2014). Sex differences in the ability to recognise non-verbal displays of emotion: A meta-analysis. *Cognition and Emotion, 28,* 1164-1195. doi: http://dx.doi.org/10.1080/02699931.2013.875889

Wester, S.R., Vogel, D.L., Pressly, P.K., & Heesacker, M. (2002). Sex differences in emotion: A critical review of the literature and implications for counseling psychology. *The Counseling Psychologist, 30,* 630-652. doi: 10.1177/00100002030004008

Wolfgang, A., & Cohen, M. (1988). Sensitivity of Canadians, Latin Americans, Ethiopians, and Israelis to interracial facial expressions of emotion. *International Journal of Intercultural Relations, 12,* 139-151. doi: http://dx.doi.org/10.1016/0147-1767(88)90045-4

Yoo, S.H., Matsumoto, D., & LeRoux, J.A. (2006). The influence of emotion recognition and emotion regulation on intercultural adjustment. *International Journal of Intercultural Relations, 30,* 345-363. doi: http://dx.doi.org/10.1016/j.ijintrel.2005.08.006