

Understanding Patterns of Emotion Perception and Expression Across Cultures

by

Yay-hyung Cho

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Psychology)
in The University of Michigan
2018

Doctoral committee:

Professor Phoebe Ellsworth, Chair
Professor Richard Gonzalez
Professor Shirli Kopelman
Professor Ethan Kross

Yay-hyung Cho
choyang@umich.edu
ORCID iD: 0000-0001-9705-3923
© Yay-hyung Cho 2018

ACKNOWLEDGEMENTS

I dedicate this dissertation to a group of people who supported me to get through this journey.

I would like to first thank Phoebe Ellsworth for her endless support. I will be forever indebted for your mentorship. Thank you so much for not giving up on me even when I gave up on myself. It has been and always will be my honor to be your student. I am also thankful for my committee members (Richard Gonzalez, Ethan Kross, Shirli Kopelman) and Ramaswami Mahalingam for their time advising my work and for their encouragement.

I would like to thank Elizabeth Axelson for her teaching me how to write and for being a tireless cheerleader. I also thank Jiyoung Park, Stephanie Chen, Ziyong Lin, Jackie Kim, Erin Bogan, Adrienne Doherty, David Lee, Patricia Chen, Katie Foster, Jeong Eun Kim, Juhyun Julie Song, Yujeong Yang, Bomi Lee, Ruby Kim, Kamin Kim, Holly Shablack, Soomin Bang, Jihyun Sung, Daun Lee, Yuri Lee for their friendship and support.

My deep appreciation and affection go to my patient and loving partner, BC, for always being there for me.

Finally, I would like to thank my family (Byungkoo Cho, Younglan Chung, Deukhyung Cho) for their unending love and encouragement.

TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
ABSTRACT	vi
CHAPTER	
I. Introduction.....	1
II. Perception of Mixed Emotions Across Cultures.....	5
III. The Perceived Sincerity of Facial Expressions Across Cultures.....	35
IV. Emotion Expression Across Cultures in Online Settings.....	84
V. Discussion.....	106

LIST OF TABLES

2.1 Means of External Attribution Scores and Internal Attribution Scores in Study 2.....	30
2.2 Emotion Groups that Subjects Perceived from Faces in Study 3.....	30
2.3 Frequency of Reported Primary Emotions by Expression Type in Study 3.....	32
2.4 Means of Non-social, Social, and Internal Attributions in Study 3.....	33
3.1 Descriptive Statistics of Emotion Perception and Perceived Sincerity in Study 1.....	75
3.2 The Positive and Negative Vignettes Used in Study 1.....	75
3.3 14 Emotion Groups Mentioned by Participants in Study 1.....	77
3.4 Categorization for Appraisal-based Coding in Study 1 and Study 2.....	79
3.5 Percentage of Following the Valence of the Face and the Situation in Study 1.....	81
3.6 The Positive and Negative Vignettes Used in Study 2.....	81
4.1 Chi-square Analysis (Culture x Presence of Emoticons) from Study 1.....	104
4.2 Text Based Emoticons Used in Study 1.....	104
4.3 Means of Emotion Expressions Online from Study 2.....	105

LIST OF FIGURES

2.1 Mediation of Cultural Difference in Mixed Emotion Perception by Internal Attribution.....34

3.1 The Percentage of East Asians and European Americans Following the Valence of the Face,
Situation, Being Dialectical, and Attributing New Neutral Emotions.....83

ABSTRACT

The aim of this three-paper dissertation is to investigate cultural differences between East Asians and European Americans in how they perceive and express emotions. Broadly, I look at emotional expressions of both cultural groups in three ways, through facial expressions only, with face and the context combined, and through emotion expression online. In the first paper, I present evidence that East Asians more frequently perceive mixed emotions from facial expressions than European Americans do. Building on these results, in the second paper I couple contextual information with facial expression and test the idea that East Asians may not believe facial expressions are an authentic indicator of genuine feelings, perhaps because they are more likely to experience constraints themselves on the expression of emotion, particularly negative emotion in the presence of others. We found both expected and unexpected results from a series of studies. This social dimension to emotion expression and perception is further explored in the third paper, which consists of a series of studies that investigate emotional expression through the use of emoticons online. We found that East Asians are more expressive than European Americans in their use of emoticons.

CHAPTER I

Introduction

The aim of this dissertation is to investigate cultural differences in emotion perception and expression of East Asians and European Americans, and the mechanisms underlying them. By cultural differences, I refer to differences in perceiving mixed emotion, interpreting facial expression, and expressing emotions online.

Decades of empirical work indicate that cultural differences exist in many aspects of the emotional world. People across cultures perceive emotion differently and express emotion differently (Matsumoto, 1989). However, the reasons for cultural differences in affective patterns are not well understood and remain speculative. Very few studies have touched on these aspects of emotion (Grossmann, Hyun, and Ellsworth, 2016). This dissertation is in line with this important endeavor in its focus on investigating reasons for observed cultural differences in the expression of emotion and in the perception of emotion in others.

The three studies in this dissertation address gaps in the previous literature. First, perception of mixed emotion across cultures has not been a topic of research for emotion researchers. Although many researchers who studied mixed emotions were interested in the role of culture, the only existing studies focus on the self-reported experience of mixed emotion across cultures, showing that East Asians experience more mixed emotion (Bagozzi, Wong, & Yi, 1999; Kitayama, Markus, & Kurokawa, 2000; Schimmack, Oishi, & Diener, 2002). A number of scholars have commented on the possibility of *expressing* mixed emotion (Ekman & Friesen, 1969; Plutchik, 1962; Tomkins & McCarter, 1964; Albrecht et al., 2005), but not on the

ability to *perceive* mixed emotion in the expressions of others, and there has been no cross-cultural research on the perception of mixed emotion. Chapter Two of this dissertation investigates cultural difference in mixed emotion perception.

Second, this dissertation weighs in on the question of the relative importance of facial expression and context in perceiving the emotions of others. Over the past century, a few studies have been conducted to determine the relative importance of face and context in people's interpretation of emotion (e.g., Niedenthal et al., 2006). The results from these studies have been inconsistent, conferring greater weight on the expression, on the situation, or on a combination of the two, depending on the method they used. One limitation of the closed-ended question format of all these studies is that we do not know the reasoning by which participants interpret inconsistencies between emotion expression and the situation. It might be the case that participants recognize both sources separately and choose the better source or that both sources of information are combined and only one emotion is perceived. A second limitation of the existing research is that it studies only Western subjects, ignoring the effects culture might have on addressing inconsistencies in facial expression and context. Chapter Three of this dissertation uses an open-ended essay prompt in addition to the closed-ended format to observe not only which information is more influential (face or context) when judging the emotions the person in the picture is feeling when the face and the context suggest opposite emotions, but also how people explain possible inconsistencies. We test our hypothesis that culture affects whether people rely primarily on the face or the situational information in inferring emotions.

Lastly, greater mobility and communication capabilities in the modern world mean that people engage in more intercultural communication than ever before (Samovar et al., 2014). New technology, in particular, has rapidly changed how and with whom people communicate and express themselves. Modern channels such as FaceBook, twitter, and texting have greatly expanded the contexts in which emotions are commonly expressed, and offer unparalleled opportunities for investigating emotions. However, we still know little about how different cultural groups express and perceive emotions on modern platforms. A better grasp of differences in the expression and perception of emotion and in the underlying mechanisms that support them is a critical piece of the picture. Chapter Four of this dissertation investigates similarities and differences across culture in expressing emotions in an online setting.

The three papers presented here address these gaps in the understanding of cultural difference in emotional perception and expression in the following ways. Using a large cross-culturally representative sample of young adults, Chapter Two first shows that Japanese perceive more mixed emotions than European Americans. Subsequent studies replicate this finding and test possible explanations for such cultural differences by investigating the appraisals generated by participants. Chapter Three investigates the relative weight of the context as compared to facial expression in the perception of emotion. Specifically, it considers whether people infer other people's emotions more from their facial expression or more from the context when they are provided with contradictory information. Research has come to differing conclusions on this topic (Niedenthal et al., 2006). On the one hand, much research suggests that facial expression is more important than contextual information (Frijda, 1969; Wallbott, 1988; Fernandez-Dols,

Wallbott, & Sanchez, 1991); on the other hand, some research shows that context outweighs the information facial expressions convey (Carroll and Russell, 1996; Goldberg, 1951). Also, as previously mentioned, this line of research has only been conducted with European American samples. To address these mixed results from homogeneous samples, I test whether people from different cultures infer emotion primarily from the facial expression or from the contextual information when face and the context are incongruent (e.g., a smiling face in a negative situation). Finally, Chapter Four investigates the idea that East Asians have different patterns of emotional expression online, where there is less pressure to control their feelings. Given that emotions are conveyed via multiple channels of communication, an investigation of emotional expression and recognition beyond the facial channel would contribute to better representing and understanding actual modern affective behaviors.

CHAPTER II

Perception of Mixed Emotions Across Cultures

Abstract

Previous cross-cultural comparisons of the experience of mixed emotions have found that East Asians, compared to European Americans, report experiencing more positive and negative emotions simultaneously. However, little is known about differences across cultures in how people perceive mixed emotion from facial expressions. By presenting participants with facial expressions varying in valence, race, and gender, we aimed to discover whether East Asians not only experience but also perceive more mixed emotions than European Americans. Study 1 compared the mean number of opposite-valence emotions perceived across 80 facial stimuli (i.e., perceiving both anger and happiness when presented with a frowning face), and found that Japanese participants perceived more mixed emotions than European Americans. Study 2 replicated the findings with more facial stimuli, and also found that this cultural difference was mediated by the degree to which participants believed the expression of emotion was caused by the person's personality (internal attribution). In Study 3, we asked open-ended questions and replicated the findings from Study 1 and 2. The results from the three studies consistently supported our hypothesis, showing that Japanese perceived more mixed emotions from facial expressions than European Americans did.

Other people's feelings are among the most important things we care about, and inferences we make about others' emotions are among the most crucial inferences we make. If we misinterpret others' feelings too often – if, for example, we perceive hostility every time we interact with others – we may be labeled as cynical or paranoid (Schneider, Hastorf, & Ellsworth, 1979).

However, recognizing how other people feel is not an easy job, because emotion is complex. People often report multiple emotions when asked about their emotional states, and sometimes these emotions seem contradictory. For example, students say they feel both happiness and sadness at a graduation ceremony. They feel happy about starting a new chapter of their lives, but also feel sad about saying goodbye to their old classmates and teachers. A host of similar evidence suggests that people often feel complex and mixed emotion (Izard, 1977; Larsen, McGraw, & Cacioppo, 2001; Labouvie-Vief, 2003; Lindquist & Barrett, 2010).

Adding extra layers to this complexity, some researchers have also shown that cultures vary in how much people experience mixed emotions (Bagozzi, Wong, & Yi, 1999; Kitayama, Markus, & Kurokawa, 2000; Schimmack, Oishi, & Diener, 2002). A plausible hypothesis is that in a culture where mixed emotions are common, people will be more likely to perceive others' expressed emotions as mixed, but no work has been done to study the perception of mixed emotion in facial expressions. The present paper explores the perception of mixed emotion by European Americans and Japanese. We also investigate cultural differences in the inferences people make when perceiving emotion expressions in an attempt to investigate the mechanism behind mixed emotion perception.

Mixed Emotion and Culture

The experience of mixed emotions has generally been studied and defined in one of two ways. The first operationalizes mixed emotions in terms of the magnitude of correlation between positive and negative emotions over time, such as, in the course of a week (Bagozzi et al, 1999; Miyamoto & Ryff, 2011; Schimmack et al., 2002), while the second examines the frequency of co-occurrence of positive and negative emotions in a given situation (Larsen, McGraw, Mellers, & Cacioppo, 2004; Miyamoto, Uchida, & Ellsworth, 2010). Regardless of which method is used, East Asians report experiencing more mixed emotion than European Americans do. European Americans show a strong negative correlation between positive and negative emotions, while the correlation for East Asians ranges from a weak negative to a positive relationship (Bagozzi, Wong, & Yi, 1999; Kitayama, Markus, & Kurokawa, 2000; Schimmack, Oishi, & Diener, 2002). The frequency of reporting opposite-valenced emotions in the same situation is also higher for East Asians, although this has only been found for the reporting of negative emotions in positive situations (Miyamoto, Uchida, & Ellsworth, 2010).

These findings raise the question of whether East Asians are also more likely to perceive both positive and negative emotions when inferring another person's experience of emotion. We hypothesized that East Asians not only experience more mixed emotion, but also perceive more mixed emotion.

Culture and Attribution Pattern

One reason why East Asians might perceive more mixed emotions in others is that there may be cultural differences in the type of attribution people make when inferring other peoples'

emotion (Shweder & Bourne, 1984). Americans are more inclined to explain people's behavior by reference to properties of the person (e.g., personality), and East Asians tend to explain the same behavior by reference to situational and contextual factors (Miller, 1984). Morris et al. (1994), for example, have shown that Americans explain murders and sports events in terms of the innate dispositions of the individuals, whereas Chinese and Hong Kong citizens attribute the same events to contextual factors. Although Koreans make attributions to the disposition of the actor when external cues are absent, they are more focused on contextual cues (Norenzayan et al., 2002) when predicting how people in general would be expected to behave in a given situation. Also, Koreans make more external attributions when predicting the behavior of a particular individual. East Asians, in general, rely more on external factors than European Americans.

We reasoned that these cultural differences in attribution style would emerge in people's appraisal of others' emotions. When people consider why another person is feeling happiness, anger, surprise, or other emotions, they may see any expressed emotions as primarily the result of an innate trait or the result of external factors. That is, they may view others' emotions as a product of their personality (internal attribution) or as a result of outside circumstances or other people (external attribution). Similar to our hypothesis, Masuda and his colleagues (2008) found that Japanese were more likely than European Americans to take account of the social context in interpreting the emotional expression of an individual. Thus, East Asians may perceive more mixed emotions because they explain the emotions using complex external factors in addition to internal attributions.

General Overview of the Present Study

Our hypothesis is that when perceiving facial expressions, East Asians see more opposite-valence emotions in facial expressions (e.g., seeing anger in smiling faces) than European Americans do. In order to test this hypothesis, we created a set of facial expressions varying the model's gender, race, and valence, and asked Japanese and European American participants to judge their perception of 13 different emotions.

In order to further explore the hypothesis, Study 2 additionally measured whether participants make internal or external attributions when judging facial expressions. As noted above, previous research has identified that East Asians tend to perceive more external factors in explaining situations, whereas European Americans often make internal attributions (Norenzayan & Nisbett, 2000). Our aim was to observe whether the cultural difference in attribution that has been found also occurs when subjects report perception of the emotions of others based on facial expression. By conducting mediation analysis, we also wanted to see if the cultural difference in the tendency to make internal attributions or external attributions partly explains the cultural difference in mixed emotion perception.

In Study 3, we used an open-ended essay format to investigate the perception of mixed emotion across cultures. Our understanding of how emotions are recognized is often constrained by the methods we use to ask about this process. Although simpler for the researcher, closed-ended methods limit the participants' possible answers and explanations to those the researcher has pre-determined as likely or appropriate. In contrast, free-response methods allow participants greater freedom to explain their process of reading facial expressions. We expected that, when

asked about their perception of facial expressions, the Japanese participants would report more opposite valence emotions than European Americans in these open-ended essays. We also coded the attributions participants made, in order to see whether Westerners made more internal attributions.

Study 1

Method

Participants

Eighty-one European American undergraduate students (36 women and 45 men) at a large Midwestern university (mean age = 18.95, S.D = 1.09, range from 18 to 23) and 69 Japanese undergraduate students (46 women and 23 men) from a University in the Tokyo area (mean = 20.27, S.D = 1.04, range from 18 to 23), participated in the experiment to fulfill a course requirement. All of the European American students self-identified as European Americans who had spent at least the first 18 years of their lives in the United States.

Materials

We selected photographs of male and female Caucasian and East Asian faces from a pre-tested set of stimuli (Beaupre & Hess, 2005). Digital images of 16 faces were used in a 2 x 2 x 2 [gender, ethnicity (Caucasian/East Asian), and expression (smiling or frowning)] design. Both smiling and frowning faces displayed fairly intense, unambiguous expressions. We had two stimulus sets with 8 faces each because there were two different individuals for each category.

Participants did not see the picture of the same individual twice. All photographs, showing only the head, were presented as black-and-white passport style pictures.

Procedure

In a within-subject study, each participant observed one of two sets of stimuli. Each set of stimuli included eight faces, counterbalanced for emotion display (smiling, frowning), model's race (Asian, White), and model's gender (male, female). In response to the smiling face and the frowning face, participants were asked to rate how strongly they thought the model felt each of 10 emotions (*0=Not At All, 1= A Little, 4= Somewhat, to 8= Extremely*): *surprise, amusement/enjoyment, contentment/satisfaction, happiness/pleasure, pride, disgust/hate, fear, contempt/scorn, sadness, and anger*. This use of strong expressions is a particularly stringent that of the hypothesis.

Results

Perception of Mixed Emotions. To test the hypothesis that Japanese would be more likely than Americans to perceive mixed emotions in facial expressions, we created a variable that captured the mean number of opposite-valence emotions perceived across facial stimuli for each participant. We counted intensity ratings of 1 or higher ("a little" or more) for negative emotions in smiling faces (e.g., disgust/hate, fear, contempt/scorn, sadness, and anger) and for positive emotions in frowning faces (e.g., amusement/enjoyment, contentment/satisfaction, happiness/pleasure, and pride). These counts were averaged across the eight faces. Using a

repeated measures MANOVA, we tested for the between-subject factor of cultural group, controlling for the effects of stimulus set, and participant gender. Additionally, we controlled for the within-subject factors of valence (smiling vs. frowning), model race (White, Asian), and model gender (female, male). As predicted, we found that Japanese participants ($M=1.88$, $SE=0.12$) reported more opposite-valence emotions than European American participants did ($M = 0.72$, $SE = 0.11$; $F(1, 146) = 47.87$, $p < .001$; partial $\eta^2 = .25$, 95% [0.92, 1.63]). This finding applied to both smiling faces ($F(1,146) = 46.38$, $p < .001$) and frowning faces ($F(1,146) = 33.67$, $p < .001$). There was no effect of participant's gender in the perception of mixed emotion ($p > .05$).

Study 2

Study 2 was designed to directly replicate Study 1 adding attribution scales to measure the extent to which participants made internal or external attributions when reading people's emotions. Whether we see emotional states as the result of primarily internal factors of personality or as produced by a combination of contextual factors can lead to differing conclusions when guessing others' feelings. We hypothesized that European Americans would make more internal attributions, thinking that expressed emotion is driven by a person's innate personality, while East Asians would make more external attribution, appraising the emotional expression as the outcome of external situational factors. We further improved our methods by randomly presenting the photographs in a computer-based study rather than as a paper-and-pencil study. No gender difference was found in Study 1, therefore, in Study 2 we only presented female faces and recruited female participants from both cultural groups.

Method

Participants

Fifty-two female European American ($M=19.12$, $SD=1.00$) and 58 female international Japanese ($M=23.17$, $SD=3.78$) students at a large Midwestern University were recruited for the study. As in Study 1, European American participants self-identified as European American and had lived in the United States for at least 18 years (average number of years outside the United States was $M=0.67$, $SD=1.12$). Qualified Japanese participants reported that they had spent no more than five years of their life outside Japan (average number of years outside Japan was $M=1.28$, $SD=1.23$). All European American participants had two parents and at least 2 grandparents who were US-born; Japanese participants' generational background was similar, with 95% having two Japan-born parents and 97% having at least two Japan-born grandparents. European American students participated in the experiment to receive extra credit for an introductory psychology course; Japanese participants received either a 10-dollar gift certificate or extra course credit as compensation.

Procedure

We used the same procedures and photographs (Beaupre & Hess, 2005) as in Study 1. For Study 2, however, four faces rather than eight faces were presented since only female faces were used. Participants completed a one-hour, computer-based (MediaLab) study in their native language. In addition to the emotion intensity scales described in Study 1, participants completed a scale of internal ('How much is this person's expression caused by this person's personality?') and external attributions of emotions ('How much is this person's expression caused by other

people?; ‘How much is this person’s expression caused by a combination of factors?; ‘How much is this person’s expression caused by chance?). Otherwise, the procedure was the same as in Study 1.

Results and Discussion

Perception of Mixed Emotions. To test our hypothesis about cultural differences in the perception of mixed emotions in facial expressions, we created the same variable as in Study 1, which captured the mean number of opposite-valence emotions perceived across facial stimuli for each participant. These counts were averaged across the four faces. Using a repeated measures MANOVA, we tested for the between-subject factor of cultural group, controlling for the within-subject factors of stimulus set, valence (smiling or frowning), and model race (White or Asian). Replicating the results from Study 1, we found that Japanese participants ($M=1.39$, $SE=0.15$) reported more opposite-valence emotions than European American participants did ($M = 0.92$, $SE = 0.16$; $F(1, 107) = 4.88$, $p = .03$; partial $\eta^2 = .04$). There were no significant effects of stimulus, race of the model, or emotional display.

Attributional Style and Mixed Emotions. We expected that European Americans would make more internal attributions for emotions expressed by models, while East Asians would make more external attributions. Our hypotheses were partially supported.

Internal attribution. We tested this prediction using a repeated measure MANOVA. We tested for the between-subject factor of cultural group controlling for the effects of stimulus set; we additionally controlled for the within-subject factors of display type (smiling versus frowning)

and model race (White, Asian). As predicted, we found that European American participants ($M=5.86$, $SE=0.18$) made more attributions of the emotion to personality traits than Japanese participants did ($M=3.78$, $SE=0.18$; $F(1, 101) = 67.27$, $p < .001$; partial $\eta^2 = .40$). Interestingly, we also found an effect for the type of emotional display, such that greater internal attributions were made for smiling ($M=5.81$, $SE=.16$) than frowning faces ($M=3.83$, $SE=.17$, $F(1,101)=15.93$, $p<.001$). According to the appraisal theory of emotion (Smith & Ellsworth, 1985), anger is associated with the perception that someone else caused something bad to happen. Since frowning faces express emotions related to anger (e.g., anger, contempt), we considered that people might be more likely think frowning faces reflect something happening outside of the person and make an external attribution.

External attribution. Our results for external attribution were more surprising. We tested whether the three scales of external attribution (i.e., ‘How much do you think this emotion was caused by others?’, ‘How much do you think this emotion was caused by chance?’, and ‘How much combination of factors?’) were reliable (Cronbach $\alpha = .83$). Then, a summary variable was created which captured the mean of all three scales for each participant. Contrary to our expectation, European American participants ($M=7.03$, $SD= .15$) rated emotions as being caused more by external attributions than Japanese did ($M=5.83$, $SD=.15$; $F(1, 101)=33.21$, $p<.001$; partial $\eta^2 = .25$) (Table 2.1).

Difference Score between Internal Attribution and External Attribution. Previous studies showed that cross-cultural comparisons for attitude measures failed to show existing patterns due to the reference-group effect (Heine et al., 2002). European Americans compare themselves with other

European Americans and East Asians with other East Asians when using Likert-like scales. This led us to compute a difference score between internal attribution and external attribution (difference score: internal attribution-external attribution). If we compute difference score for each groups separately, then we can compare each group tendency to rely on either external or internal attribution. If there is a difference between attribution style, this measure will show it. We tested for the between-subject factor of cultural group controlling for the effects of stimulus set; we additionally controlled for the within-subject factors of display type (smiling versus frowning) and model race (White, Asian). We found that both cultural groups made more external attributions than internal attributions. As predicted, however, this tendency was stronger for the Japanese (internal attribution- external attribution: $M_{\text{Japan}} = -2.05$, $SE = .173$) than for the European Americans ($M_{\text{Euro}} = -1.17$, $SE = .173$, $F(1, 101) = 12.76$, $p < .001$, $\text{partial } \eta^2 = .11$).

Mediation of Cultural Differences in Mixed Emotion Perception by Attribution. We tested whether cultural group differences in the recognition of opposite-valenced emotions in faces were mediated by internal attribution ratings using a bootstrap method (Preacher & Hayes, 2004). The benefit of using a bootstrap method over a traditional series of regression analyses is that the bootstrap does not assume normality in the distribution of the dependent variable. We found that there was a significant indirect effect of culture on mixed emotion perception through internal attribution ($B = -.16$, $SE = .08$, 95% CI $[-.3049, -.3014]$).

Study 3

In Study 3, we wanted to further explore attributions of emotions to better understand the reasons for the cultural differences in the perception of mixed emotions. To do so, we used an open-

ended method in addition to a closed-ended format, and content-coded participants' essays. This study brings open-ended instruments to bear on the categories and language used by participants themselves, in order to see if participants' responses in their own words would change or confirm the categories employed in the closed-ended format.

Russell and his colleagues (1993) refer to Woodworth and Schlosberg (1954) who describe facial expressions as having emotion labels that belong to "broad, overlapping cluster[s]...rather than specific, discrete basic emotions" (348). Using the emotion terms described by participants, we created a set of emotion clusters to better capture participants' descriptions of emotions. To test our hypotheses in the open-ended emotion data, we created groups of emotion words that are similar in valence and arousal level. There were three steps in creating the emotion groups. First, each subjects' demographic information was removed from the open-ended responses and all emotion terms were written down. Second, the first author created emotion groups out of similar words, using labels from research on basic emotion (Ekman, 1971) and appraisal research (Smith & Ellsworth, 1985) as a general guide. Third, for each subject we coded the group as a 1 if they mentioned at least one word in the group and a 0 if they did not.

Participants

Participants were 304 (172 women) undergraduate students. 178 identified as European American (112 women) and attended a large university from the Pacific Northwest of the U.S. 124 were either international students at that university or were Japanese nationals from two universities in the Tokyo area (60 women). European American students volunteered in

exchange for extra credit for an introduction to psychology course, and Japanese students participated in exchange for either a 10-dollar or a 1000-yen gift certificate (equivalent to 10-dollars) as compensation.

Measures and Procedure

Participants from both cultural groups completed a paper-and-pencil survey individually in their native language. The stimulus set was the same one used in Study 2 (Beaupre & Hess, 2005), and as in Study 2 included only female faces. Participants were asked to describe in their own words what each model was feeling (e.g., “For each face, please indicate the feeling(s) of the person in the picture. You may list more than one feeling. What is Person X feeling?”), as well as their reasons for their choice of emotion (e.g., “Why do you think this person is feeling this way?”) using an open-ended essay format. Lastly, participants completed a series of demographic questions, including their gender, age, and the number of years they had lived outside the United States (for European American participants) or Japan (for Japanese participants).

Content Coding of Data

The coding team consisted of five research assistants (Japanese and European American). All coders were blind to the demographic information. All were trained to code open-ended data until the value of the inter-rater reliability Cronbach alpha reached an acceptable level (alpha range from .91 to 1.00).

Perceived emotions coding. For emotions, we coded participants’ answers to the question, ‘What do you think this person is feeling?’ Responses were coded when the participant attributed a

feeling or motivational state to the model in the picture (e.g., “She is happy”); attributions to the situation of the model, however, were not coded (e.g., “She is in a great situation”). Table 2.2 displays the ten emotion groups that subjects perceived from faces, which we categorized into 15 categories: positive (high arousal positive/low arousal positive/pride/amusement/other positive), negative (anger/sadness/disgust/contempt/fear/general unpleasantness), and other emotions (surprise/in thought/unemotional/confusion/neutral). We added ‘general unpleasantness (e.g., unhappy) and ‘other positive’ (e.g., carefree) emotion groups based on prior research from appraisal theory of emotion (Smith & Ellsworth, 1985). The final set of emotions, therefore, included five categories of positive emotions (high arousal positive/low arousal positive/amusement, pride, other positive), four categories of other emotions (surprise, in thought/unemotional, confusion, neutral), and five categories of negative emotions (anger/sadness/disgust/contempt/fear).

Internal and external attribution coding. We also coded participants’ answers to the question ‘Why do you think this person is feeling that way?’ Internal attributions were coded as present if a participant responded that a model was feeling a certain emotion because of her personality (e.g., “She is a happy and congenial person”). External attributions were coded as present when a participant’s response described any situational cause of a model’s emotion. We found two types of situational attributions: “Non-social” which referred to an external cause which did not involve other people (e.g., “She is frustrated that she cannot solve a difficult math problem”); and “Social” which referred to an external cause involving other people (e.g., “She looks angry

and stern because she is a teacher disciplining her students” or “She is feeling happy and accomplished because she has a good family resulting in her smiling”).

Results

Number of emotion labels. European Americans ($M=1.72$, $SE=.04$) used more emotion labels than Japanese did ($M=1.50$, $SE=.04$), $t(290)=3.98$, $p<.001$.

Target emotion recognition. Both European American and Japanese participants reported the targeted emotions (happiness, anger) more than any other emotion labels (see Table 2.3).

European American participants more frequently listed the target emotion high arousal positive for smiling displays than Japanese participants did, $\chi^2(4, N = 292) = 126.09$, $p<.001$; an opposite trend emerged for anger mentions in frowning displays, $\chi^2(4, N = 292) = 8.32$, $p=.07$. Japanese more frequently listed the target emotion anger and contempt for frowning displays.

Perception of Mixed Emotions. We computed a percentage score for each participant of how many opposite-valence emotions they recognized in a face, divided by the total number of emotions they observed. For example, for smiling faces, a participant’s score would be the number of negative emotions they listed, divided by the sum of the number of negative, positive, and neutral emotions they listed for that particular stimulus. Using a repeated measure MANOVA, we tested for the between-subject factor of cultural group controlling for the effects of participant gender; we additionally controlled for the within-subject factors of display type (smiling versus frowning) and model race (White, Asian). Replicating the results from Studies 1 and 2, we found that Japanese participants ($M=0.20$, $SE=0.01$) reported a greater percentage of

opposite-valence emotions than European American participants did ($M=0.14$, $SE=0.01$; $F(1, 281) = 17.39$, $p < .001$; partial $\eta^2 = .06$). We also found a greater percentage of mixed emotions observed in Asian ($M=.29$, $SE=.01$) than White faces ($M=.05$, $SE=.01$), $F(1, 281)=47.69$, $p < .001$).

Attribution Style Difference. European American participants were more likely than Japanese participants to make an internal attribution (Table 2.4). When separately analyzed by the valence of facial expression, smiling displays produced more internal attributions than did frowning displays (Table 2.4). Consistent with previous literature, Japanese made more external attributions than European Americans for both non-social external attribution and social external attributions (Table 2.4).

Mediation of Cultural Differences in Mixed Emotion Perception by Attribution. We tested whether cultural group differences in the recognition of opposite-valenced emotions in faces were mediated by internal attribution ratings using a bootstrap method (Preacher & Hayes, 2004). The benefit of using a bootstrap method over a traditional series of regression analyses is that the bootstrap does not assume normality in the distribution of the dependent variable. We found that there was a significant indirect effect of culture on dialectical emotion perception through internal attribution ($B = -.16$, $SE = .08$, 95% CI $[-.3049, -.3014]$) (Figure 2.1).

Discussion

Previous cross-cultural studies have shown that East Asians are more likely than European Americans to experience mixed emotions. This research presents the first known cross-cultural

research investigating the perception of mixed emotion, using multiple methods. Unlike most studies, we examined the attributions and processes of perceiving emotion from native Japanese and European Americans in both a closed-ended format and an open-ended format.

The results from the three studies all showed that Japanese perceived more mixed emotions than European Americans in the facial expressions. This result was not only replicated in all studies, but also found with both closed-ended and open-ended measures. Furthermore, we explored whether the type of attribution was linked to the cultural differences in perception of mixed emotion. Our results show that both cultures made more external attributions than internal attributions, but Americans made more internal attributions than Japanese. This difference between internal attributions and external attributions was greater for Japanese than Americans (Study 3). This finding, however, was not consistent with the previous findings when subjects were asked in the closed-ended format (Study 2). In Study 2, European made more internal attributions than Japanese did, as expected. Contrary to our expectation, however, European American participants also made more external attributions than Japanese did. We found that both cultural groups made more external attributions than internal attributions. However, this tendency was stronger for the Japanese than for the European Americans. We also investigated whether the tendency to make internal or external attribution mediates the effect of culture on mixed emotion perception. Our results showed that the degree of making internal attribution mediated the effect of culture on mixed emotion perception. Overall, such results suggest culture affects how we appraise facial expression and perceive complex emotions. However, crucial questions remain for future studies.

Possible Mechanisms for Perception of Mixed Emotion

Why would East Asians perceive more mixed emotions in others' faces? One possibility is the tradition of dialectical thinking in East Asians, compared to the Western tradition of analytical thinking. Dialectical thinking refers to the traditional teachings of East Asia about the complementarity of opposites (i.e. the ying-yang principle) and the view that life is full of contradictions and change (Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999). This view contrasts with the Western analytical way of thinking, which is reflected in linear thinking (Ji & Nisbett, 2001) and a greater focus on the features of an object than on its gestalt (Nisbett et al., 2001). A number of scholars have suggested that the greater prevalence of dialectical thinking among East Asians leads them to perceive positive and negative emotions together more often than Westerners do (Bagozzi et al., 1999; Spencer-Rogers, Peng et al, 2010).

A second possibility involves differences in the construal of the self (Markus & Kitayama, 1991). European American socialization contexts have traditionally embraced independence. Independent self-construal manifests in the emotional world as a perception of emotions as a reflection of the authentic self (Uchida, Townsend, Markus, & Bergsieker, 2009). East Asian traditions, on the other hand, have emphasized interdependence, resulting in a tendency to see emotions as a reflection of a person's interactions with other people (Uchida et al., 2009; Greenfield, 2013; Kashima et al., 1992). Interdependence can promote greater emotional complexity (Bagozzi et al., 1999), because it enables recognition that the *same situation* could evoke different emotional responses in different people (Masuda, Ellsworth,

Mesquita, Leu & Van De Veerdonk, 2008; Ortony, Clore & Collins, 1988; Grossman, Hyun, & Ellsworth, 2016).

Similar to the previous possibility, culture might also enable recognition that the *same face* can indicate different emotional responses. The fact that greater interdependence in a culture appears to foster recognition of multiple emotional responses to a given situation suggests the possibility that it could also heighten awareness of complex emotional responses as they are expressed by one individual's expression. This could be because members of such a culture become aware that emotional responses to situations are potentially complex. A person who knows that different individuals can feel differently about an event, may be less inclined to feel a single, uncomplicated emotion, and may believe that others have complex emotions like their own in the same circumstance. Alternatively, cultural differences in the belief in the authenticity of facial expressions might play a role: East Asians are culturally taught to regulate their facial expression (Rothbaum et al., 2002). As East Asians know that their own expressions do not necessarily reflect their true feelings, they might assume that is true of others too. This might lead East Asians to perceive emotions that are not shown in the face. On the other hand, facial expressions might be seen as a more reliable indicator of true feeling in Westerners, who in many settings are encouraged to display their emotions fully (Kim and Markus, 1999; Mauss and Gross, 2004; Butler et al., 2007).

Our studies did not include scales that can either test or counter alternative hypotheses [e.g., dialectical self scale (DSS; Spencer-Rodgers, Srivastava, & Peng, 2001), or self-construal (Singelis, 1994)]. Also, neither dialectical beliefs nor the self-construal related attribution were

found in the open-ended essay data, partly because there was little room to make such judgments when facial expressions alone were presented without giving specific contexts. Future research may shed light on the mechanism behind cultural influence on the perception of emotions by measuring the pattern of dialectical thinking, level of independence or interdependence, and the belief in the authenticity of facial expressions separately. Also, presenting contextual information with varying valence (e.g., positive, negative, and neutral) with facial expressions would be an interesting addition to identify the condition of mixed emotion perception and the relative role of context in comparison with facial expression.

Valence and Attribution

We also do not have data that explain why people make more internal attributions when they are presented with smiling faces compare to frowning faces. It is interesting that this pattern of the data emerges in both cultural groups. We can speculate that frowning faces are more surprising stimuli than smiling faces. People are inclined to present the best possible selves when interacting with others, and smiles are the face we usually display. Frowning faces, on the other hand, seem to need some external explanation (e.g., something that made the person angry). Otherwise, the perceiver must reach a rather drastic conclusion, that the person is innately unhappy. This may be a conclusion we all are inclined to avoid. Further investigation of this result could yield interesting implications for interpersonal emotion perception.

Conclusion

Cross-cultural studies have documented that East Asians are more likely to experience mixed emotions than European Americans do (Bagozzi, Wong, & Yi, 1999; Kitayama, Markus, &

Kurokawa, 2000; Schimmack, Oishi, & Diener, 2002). Our study extended the previous literature by investigating the perception of mixed emotion, which has not been explored previously. In addition, possible interactions between attribution and mixed emotion perception were explored. These findings show how culture can influence various aspects of perceiving and making sense of others' emotional experience.

Reference

Albrecht, I., Schröder, M., Haber, J., & Seidel, H. P. (2005). Mixed feelings: expression of non-basic emotions in a muscle-based talking head. *Virtual Reality*, 8(4), 201-212.

Bagozzi, R. P., Wong, N., & Yi, Y. (1999). The role of culture and gender in the relationship between positive and negative affect. *Cognition & Emotion*, 13(6), 641-672.

Beaupré, M. G., & Hess, U. (2005). Cross-cultural emotion recognition among Canadian ethnic groups. *Journal of cross-cultural psychology*, 36(3), 355-370.

Heine, S. J., Lehman, D. R., Peng, K., & Greenholtz, J. (2002). What's wrong with cross-cultural comparisons of subjective Likert scales?: The reference-group effect. *Journal of personality and social psychology*, 82(6), 903.

Kitayama, S., Markus, H. R., & Kurokawa, M. (2000). Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition & Emotion*, 14(1), 93-124.

Labouvie-Vief, G. (2003). Dynamic integration affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*, 12(6), 201-206.

Larsen, J. T., McGraw, A. P., & Cacioppo, J. T. (2001). Can people feel happy and sad at the same time?. *Journal of personality and social psychology*, 81(4), 684.

Larsen, J. T., McGraw, A. P., & Cacioppo, J. T. (2001). Can people feel happy and sad at the same time?. *Journal of personality and social psychology*, 81(4), 684.

Larsen, J. T., Peter McGraw, A., Mellers, B. A., & Cacioppo, J. T. (2004). The agony of victory and thrill of defeat: Mixed emotional reactions to disappointing wins and relieving losses. *Psychological science*, 15(5), 325-330.

Masuda, T., Ellsworth, P. C., Mesquita, B., Leu, J., Tanida, S., & Van de Veerdonk, E. (2008). Placing the face in context: cultural differences in the perception of facial emotion. *Journal of personality and social psychology*, 94(3), 365.

Miller, J. G. (1984). Culture and the development of everyday social explanation. *Journal of personality and social psychology*, 46(5), 961.

Miyamoto, Y., & Ryff, C. D. (2011). Cultural differences in the dialectical and non-dialectical emotional styles and their implications for health. *Cognition and Emotion*, 25(1), 22-39.

Miyamoto, Y., Uchida, Y., & Ellsworth, P. C. (2010). Culture and mixed emotions: co-occurrence of positive and negative emotions in Japan and the United States. *Emotion*, 10(3), 404.

Norenzayan, A., & Nisbett, R. E. (2000). Culture and causal cognition. *Current Directions in Psychological Science*, 9(4), 132-135.

Norenzayan, A., Choi, I., & Nisbett, R. E. (2002). Cultural similarities and differences in social inference: Evidence from behavioral predictions and lay theories of behavior. *Personality and Social Psychology Bulletin*, 28(1), 109-120.

Schimmack, U., Oishi, S., & Diener, E. (2002). Cultural influences on the relation between pleasant emotions and unpleasant emotions: Asian dialectic philosophies or individualism-collectivism?. *Cognition & Emotion*, 16(6), 705-719.

Schneider, D. J. Hastorf, AH, & Ellsworth, P.(1979). Person perception. Reading, MA: Addison-Wesley.

Table 2.1

Means of External Attribution Scores and Internal Attribution Scores in Study 2

	European American			Japanese		
	n	M (SD)	95% CI	n	M (SD)	95% CI
External Attribution Score	52	7.03 (1.2)	[6.73, 7.32]	58	5.83 (.94)	[5.52, 6.11]
Internal Attribution Score	52	5.85 (1.42)	[5.50, 6.20]	58	3.75 (1.11)	[3.41, 4.07]

Table 2.2

Emotion Groups that Subjects Perceived from Faces in Study 3

Emotion Category	Additional Emotion Labels in Category
<i>Positive Emotions</i>	
High Arousal	Happy, Cheerful, Delighted, Eager, Ecstatic, Elated, Gleeful, Joy, Pleased
Pride	Accomplished, Confident, Proudful, Proud
Amusement	Funny, Goofy, Light-hearted
Low Arousal	Content, Calm, Comfortable, Glad, Peaceful, Placid, Pleasant, Relaxed
Other Positive ¹	Curious, Carefree, Energetic, Enthusiastic, Excited, Expectant, Fantastic, Hopeful, Humble, Inquisitive, Interested, Intrigued, Love, Optimistic, Quizzical, Thrilled, Unafraid
<i>Negative emotions</i>	

¹Emotional labels in the categories “Other Positive”, “Neutral”, and “Generic Bad” occurred infrequently.

Anger	Irritated, Aggressive, Annoyed, Defiant, Enraged, Frustrated, Furious, Grumpy, Hostile, Infuriated, Irate, Mad, Outraged, Pissed, Ticked
Fear	Anxious, Afraid, Alarmed, Apprehensive, Fight/Flight, Frightened, Nervous, Scared, Worried
Sadness	Depressed, Disappointed, Lonely, Melancholy, Morose, Solemn, Somber
Contempt	Bitter, Condescending, Dislike, Disdain, Distaste, Resentment, Scornful
Disgust	Grossed out
Generic bad ³	Agitated, Affronted, Appalled, Awkward, Betrayed, Bored, Bothered, Concerned, Defensive, Disapproval, Discomfort, Disconnected, Discontent, Disgruntled, Disillusioned, Displeased, Dissatisfied, Distraught, Distressed, Disturbed, Embarrassed, Frazzled, Grim, Horrible, Hurt, Impatient, Insulted, Jealous, Offended, Overwhelmed, Stressed, Suspicious, Tired, Uncomfortable, Unhappy, Upset
<i>Other Emotions</i>	
Surprise	Astonished, Amazed, Disbelief, Dumbfounded, Incredulous, Shocked, Startled
Confusion	Baffled, Bewildered, Nonplussed, Perplexed, Perturbed, Puzzled, Uncertain, Vexed
Neutral ³	Conflicted, Complacent, Distant, Distracted, Hesitant, Lazy, Numb, Reserved, Alert, Dazed, Focused, Preoccupied
In thought/Unemotional	No emotion, Contemplative, Serious, Thinking, Unemotional, Indifferent

Table 2.3

Frequency of Reported Primary Emotions by Expression Type in Study 3

Emotion Category	Smiling Displays		Frowning Displays	
	European American	Japanese	European American	Japanese
<i>Positive Emotions</i>				
High Arousal Positive	69.60%	32.30%	0.30%	0%
Pride	1.90%	0.50%	0.90%	0.20%
Amusement	1.50%	12.80%	0.30%	0.70%
Low Arousal Positive	9.30%	14.40%	1.60%	0%
Other Positive	8.50%	12.10%	0.70%	0.20%
<i>Negative emotions</i>				
Anger	0.60%	0.50%	43.00%	46.60%
Fear	1.20%	3.70%	2.30%	2.40%
Sadness	0.10%	0.70%	5.20%	2.20%
Contempt	0%	3.00%	1.10%	4.10%
Disgust	0%	0.20%	1.00%	7.50%
Generic Bad	3.60%	8.60%	20.40%	21.10%
<i>Neutral Emotions</i>				
Surprise	1.00%	1.90%	2.40%	2.90%
Confusion	0.90%	1.20%	12.80%	7.00%
Neutral (low arousal)	1.10%	4.40%	3.90%	1.40%
In Thought/Unemotional	0.60%	3.90%	4.20%	3.40%

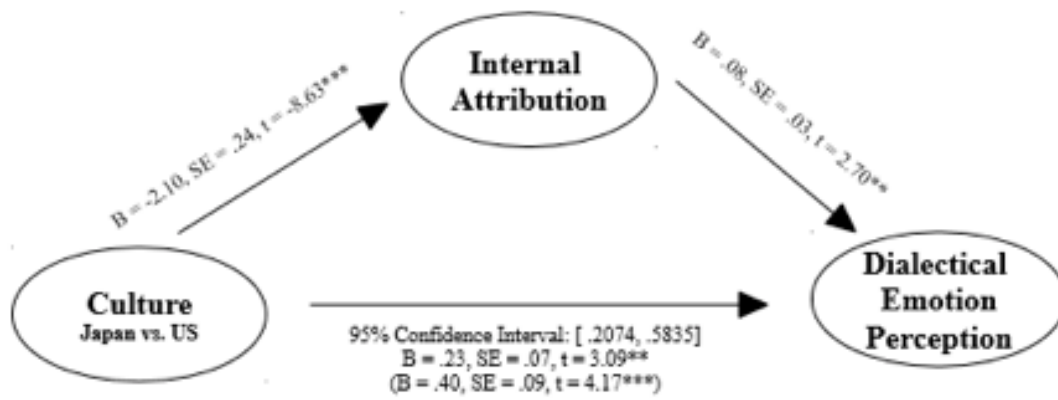
Table 2.4

Means of Non-social, Social, and Internal Attributions in Study 3

	Participant Ethnicity		
	European American	Japanese	p-value*
Attributions			
Non-social external attributions	.07 (.01)	.17 (.01)	< .001
Social external attributions	.21 (.02)	.50 (.03)	< .001
Internal attributions	.03 (.01)	.01 (.004)	0.023
	Expression Type		
Dependent Variable	Smiling	Frowning	p-value*
Attributions			
Non-social external attributions	.14 (.01)	.09 (.01)	<.001
Social external attributions	.31 (.02)	.34 (.02)	0.071
Internal attributions	.04 (.01)	.01 (.003)	< .001
* paired sample t-test			

Figure 2.1

Mediation of Cultural Difference in Mixed Emotion Perception by Internal Attribution



CHAPTER III

The Perceived Sincerity of Facial Expressions Across Cultures

Abstract

This research takes a cross-cultural perspective to explore how much people consider facial expression to be a genuine indicator of feelings. Literature on emotion expression across culture suggests that most East Asians are taught to regulate their facial expression in response to social needs, whereas European Americans are encouraged to express their emotions fully. We therefore reasoned that East Asians would be less likely than Americans to trust facial expression as an authentic expression of feelings. We hypothesized that when given a prompt in which a person's facial expression was inconsistent with the situation (e.g., a smiling face in a sad situation) East Asians would tend to think of the face as not showing what the person actually feels. By contrast, we expected that European Americans would most likely think the situation was not what it seemed. We used open-ended question prompts and content-coded participants' essays, as well as using closed-ended questions, to discover which emotions participants perceived from facial images accompanied by either congruent or incongruent stories, and to elicit reasons for their choices. Study 1 showed that European Americans perceived facial expressions as more sincere. Also, East Asians were more likely than European Americans to see the poser as suppressing emotions in the smiling face – negative situation condition. However, contrary to our expectation, we found no difference in East Asians' and European Americans' overall reliance on the face or the situation. We hypothesized that this result occurred because the situational stimuli did not involve social situations. Thus, in Study 2, we used 'social'

situational stimuli. However, the results of this study showed that European Americans perceived facial expressions as less sincere. Our interpretation of this result and our additional suggestions for research are described.

Both scholarly (Graham, 1993; Zhang et al., 1989; Brett et al., 1998; Adair et al., 2001) and non-scholarly observations (Salacuse, 2004; Shonk, 2015) have been made about cultural differences in direct versus indirect communication in negotiation settings, suggesting it is hard to read the intention of Japanese businessmen's facial expressions, compared to those of American businessmen. In particular, negotiators from Western cultures see Japanese people's expressions as ambiguous and contradictory. In contrast, East Asians seem more sensitive in their response to emotions in negotiation settings (Kopelman and Rosette, 2008).

These cultural anecdotes suggest a set of intriguing questions about the judgment of perceived sincerity of facial expressions across cultures, and why we see these cultural differences. Do East Asians more often express emotions that are incongruent with their true feelings? And do East Asians reserve judgment on the perceived sincerity of the facial expression when they perceive other people's emotion?

In this study, we examined how European Americans and East Asians perceive emotions when presented with incongruent combinations of facial expression and context. We predicted that East Asians would think the *face* is not what it seems, while European Americans would think the *situation* is not what it seems.

Culture and Emotion Expression

Although emotional expression has biological underpinnings (Darwin, 1872; Ekman, 1987), culture influences people's conception of the functions, meanings, and expression of emotion (Kitayama & Markus, 1994; Ekman et al., 1987). At one extreme, Mead (1975) argued, "What is shown on the face is written by their culture." Psychologists and anthropologists who

agree with this view claim that people of different cultures live in different environments, with different emotion expressions and emotion display rules; thus, the same expression can imply different feelings and intentions. Klineberg (1938), who studied descriptions of emotion expression in Chinese literature, reported that happiness is not always expressed with a smile. Conversely, a smile does not always signal happiness but may serve to mask feelings that are not acceptable to show. Similar cultural norms can be found among the Japanese in terms of *honne* and *tatemae*, roughly translated as “real feelings” versus “socially accepted feelings”. *Honne* and *tatemae* are Japanese words that describe the contrast between a person’s genuine feelings and desires (本音 *honne*) and the behaviors and opinions one displays in public (建前 *tatemae*) (Naito et al., 1992). Rather than being seen as hypocrisy, the discrepancy between *honne* and *tatemae* is generally seen as merely reflecting the way society works. Individuals might feel certain emotions, but in the interest of group harmony, would not express them if they conflicted with the opinions of others (Clancy, 1986).

A body of evidence regarding cultural differences in emotion expression supports and develops this idea. For example, Murata et al. (2013) hypothesized that Asians are ‘culturally trained’ to down-regulate emotional processing when required to suppress emotional expressions. In their experiment, both East Asians and European Americans were exposed to either unpleasant or neutral pictures while instructed to either attend to or suppress expression of emotions. In the attend condition, participants were instructed to pay attention to the emotional responses that were naturally elicited by the picture. For the suppress condition, participants were instructed to hide their emotional responses. The authors adopted a component of event-

related potential called the parietal late positive potential (LPP) as an objective indicator of suppression of emotion. As predicted, East Asians showed significant activity of the LPP in the suppression condition, while the effect was completely absent for European Americans. These results show that East Asians are capable of spontaneously regulating emotion expression, while European Americans showed no attenuation of emotional processing as indicated by the LPP.

A review of the emotion expression literature (Rothbaum et al., 2000) argues that whereas East Asians are trained to attenuate the overt expressions of their feelings, European Americans are encouraged to express emotions fully. Others observe that in European American culture, emotional expression is more valued, and correspondingly, expressive suppression is considered not only undesirable but also unhealthy (Kim and Markus, 1999; Mauss and Gross, 2004; Butler et al., 2007).

There is some evidence suggesting that European Americans use different working strategies instead of suppression to regulate their emotions. For instance, Goldin et al. (2008) showed that European Americans successfully modulated their emotional reactivity in response to an aversive film by using reappraisal techniques. They showed reduced amygdala activity when using reappraisal compared to when they were instructed to use suppression. The same pattern was observed when Murata et al. (2013) conducted a follow-up study with European Americans. When European Americans were instructed to reappraise the aversive emotional stimuli, significant LPP activity was found, which was absent during the suppression condition.

The above research suggests that East Asians may be culturally trained to control the expression of emotions, while European Americans are culturally trained to more fully express

them. Evidence suggests that control of emotional expression by suppression (Matsumoto et al., 2008) is valued in East Asia. Also, extreme emotions are discouraged; even positive emotions are thought to create jealousy in others (Edwards, 1996). These cultural practices suggest that spontaneous expression of oneself, including one's genuine feelings, may be less valued in East Asian contexts (Kim and Markus, 1999). The East Asian practice of emotion suppression stands in stark contrast to European Americans' norms of emotional expression.

If East Asians make the assumption that suppressing emotional expression is appropriate, does this view affect the way they interpret the facial expressions of others? For example, what emotions would East Asians and European Americans infer when they see a smiling person in a bad situation? Would East Asians think that a person is actually feeling negative emotion, but suppressing or hiding his or her true feelings? Would European Americans think that a person is feeling positive emotion and for some reason does not see the situation as negative?

The research reported here focuses on these questions regarding the perception of emotion in others. Specifically, we are interested in how people perceive others' emotion when the facial expression does not match the situation. Our current study presents facial expressions that are both congruent and incongruent with the situation. With this design, we aimed to observe which affective information was more important for each cultural group (e.g., Do East Asians follow the emotional valence of the situation rather the facial expression?), but also the reasons for making such decisions (e.g., Do East Asians follow the valence of the situation because they do not trust the facial expression as the genuine expression of one's feeling?).

Using Face vs. Context in Perceiving Emotions

To determine the relative importance of face and context in people's interpretation of emotion, three major experimental paradigms have been used (Niedenthal et al., 2006).

The first and most commonly used paradigm for this question is the "person scenario" approach, developed by Goodenough and Tinker (1931). In this approach, European American participants are presented with photographs of posed facial expressions with short verbal descriptions of the person's situation (for example, "The woman is listening to a noise which she believes is a burglar trying to get in at the window"). Studies using this approach have typically found that facial cues are more influential than context (Fernandez-Dols, Wallbott, & Sanchez, 1991; Frijda, 1969; Knudsen & Muzekari, 1983; Billings, 1989).

A second paradigm uses "candid pictures" of real-life situations, taken from magazines and newspapers, showing the face only or face with the situational context as stimuli (Munn, 1940). For this paradigm, the photographs show individuals' spontaneous facial expressions in naturally occurring emotion-eliciting situations. In the few studies using this paradigm neither source of information was dominant (Spignesi & Shor, 1981; Wallbott, 1988a).

A third paradigm, introduced by Goldberg (1951), uses film clips to show participants both context and facial information. For example, in one clip, there is a car accident followed by a woman screaming. In the other clip, a child is riding a tricycle and again a woman is screaming. Goldberg found context to have a greater influence on emotion judgments than facial expression. To our knowledge, the only other study that used this paradigm found similar results (Wallbott, 1988b).

The results from these three types of studies have been inconsistent, conferring greater weight on the expression, on the situation, or on the combination of the two, depending on the method they used. One limitation of the closed-ended question format of all these studies is that we do not know the reasoning behind the process of how participants resolve the inconsistency. It might be the case that participants recognize both sources and choose what they regard as the better one or that the stimulus suggests only one interpretation. A second limitation of the existing research is that it studies only Western subjects, ignoring the different effects culture might have on addressing inconsistencies in facial expression and context.

Present Research

The present research uses an open-ended essay prompt in addition to the closed-ended format to observe not only which information is more influential (face or context) when judging the emotions the person in the picture is feeling, but also how people explain the inconsistency. We further hypothesize that culture affects whether people rely primarily on the face or the situational information in inferring emotions.

Our hypothesis is that East Asians are likely to follow the valence of the situation because they think the facial expression is not an authentic expression of genuine feelings, while European Americans follow the valence of the face and assume that the situation is somehow different for the perceiver from what it seems to be. We especially expected to find the most prominent cultural difference in the smiling face -negative situation condition, due to the cultural norm in East Asia to down regulate negative emotions for the promotion of group harmony.

Study 1

Method

Overview

In a within-subject study, participants were randomly assigned to one of two conditions that manipulated congruency of facial expression and situational description. In the congruent condition, the facial expression matched the valence of the situation (i.e., Smiling face – positive situation, frowning face – negative situation). For example, a subject would see a smiling facial expression with a positive situation, such as ‘M.J. is alone in a gym practicing basketball. She has made all her shots’. In the incongruent situation, a subject was presented with an incongruent combination of a facial expression and a situation (i.e., Smiling face – negative situation, frowning face – positive situation). For instance, a participant was presented with a smiling facial expression, while the vignette written next to the picture was ‘M.J. is alone in a gym practicing basketball. She has missed all her shots.’

We predicted that East Asians would think the face is not what it seems and Americans would think the situation is not what it seems. That is, East Asians would follow the valence of the situation, contradicting the face’s emotion. By contrast, the European Americans would follow the valence of the facial expression to infer the model’s feelings. These judgments follow from the underlying difference that East Asians have learned to assume that the face is masking true emotion, whereas European Americans see the person as expressing authentic emotion after interpreting the situation differently from what it seems. A smiling face with a negative situation

condition is especially likely to appear to East Asians as a means of promoting harmony. Thus, we predicted the strongest cultural differences in this condition.

Participants

Participants were 185 (143 women) undergraduate students from a large university from the Pacific Northwest of the U.S. who received course credit as compensation. Their ages ranged from 18 to 26 ($M = 19.27$, $SD = 1.33$); 82 identified as European American (46 women), 83 East Asian or Asian American students (54 women), and 50 students from other ethnic heritages. Asian Americans and native Asians were combined.

Facial/vignette stimuli

We selected photographs of Caucasian and East Asian, male and female faces from a pre-tested set of stimuli (Beaupre & Hess, 2005). Digital images of 16 faces were used in a 2 x 2 x 2 (gender, ethnicity (European American/East Asian), and expression (smiling or frowning)) design. There were two different individuals for each category, and participants did not see the picture of the same individual twice. All photographs showed the head only and were presented to observers as black-and-white passport style pictures.

The vignettes used in the present study (16 vignettes) were designed to exclude any direct or indirect indication of the person's emotions or appraisals of the situation. We constructed 8 pairs of vignettes representing various ordinary daily life events (e.g., driving a car, playing a video game, reading a book). The protagonist in the vignette was always alone in the situation to

prevent participants from using other people in the vignettes to resolve the inconsistency.² Each pair of vignettes depicted the same context, with different valence. The positive and negative situations used in this study are shown in Table 3.2.

Procedure

Participants from both cultural groups completed a one-hour, computerized experiment (MediaLab) in English. Each participant observed eight faces varying in the model's cultural background, gender, emotional display, and accompanying vignette. Four of them were congruent combinations (smiling Asian face with positive situation, smiling Caucasian face with positive situation, frowning Asian face with negative situation, and frowning Caucasian face with negative situation) while the other four were incongruent (smiling Asian face with negative situation, smiling Caucasian face with negative situation, frowning Asian face with positive situation, and frowning Caucasian face with positive situation).

Participants were first asked to describe what each model was feeling in their own words ("What do you think this person is feeling? You may list more than one feeling."), as well as their reasons for their choice of emotion ("Why do you think this person is feeling this way?") using an open-ended essay format.

Emotions

Participants were then asked to rate how strongly the protagonist felt each of 13 emotions (0 = Not at all, 4 = Somewhat, 8 = Extremely): disgust/hate, fear, happiness/pleasure,

² The data we analyzed were collected for a different study with a different purpose. The original research questions explored cultural difference in the perception of dialecticism and attributional style. Thus, the vignette stimuli were constructed so that the person pictured was always alone. As will be seen, social situations in which people perceive pressure to control their emotion would have been useful.

contempt/scorn, sadness, anger, surprise, amusement, contentment/satisfaction, pride, perplexed/puzzled, neutral, and contemplative. Also, we asked participants to separately rate the general valence of the facial expression: ‘How pleasant is this facial expression?’; ‘How unpleasant is this facial expression?’ Participants were also asked to separately rate the situational stories when asked the questions: ‘How pleasant is this situation?’; ‘How unpleasant is this situation?’

Attributions

Participants then completed scales to measure their perception of the facial expression as a genuine expression of the poser’s feelings and their personal or situational attributions for the expressions. The two sincerity items were ‘How sincere is this person’s expression?’ and ‘How much is this person’s expression fake or forced?’ The four personal attribution items were as follows: ‘How much is this person’s expression caused by his or her personality?’; ‘How much is this person’s expression caused by his/her innate abilities?’; ‘How much is this person’s expression caused by his/her current feelings?’; ‘How much is this person’s expression caused by his/her current thoughts?’. The four situational attribution items were ‘How much is this person’s expression caused by something that happened to him/her?’ ‘How much is this person’s expression caused by other people?’; ‘How much is this person’s expression caused by his/her role or job?’; ‘How much is this person’s expression caused by the situation or circumstances?’

Next, we asked participants to complete the Singelis scale (Singelis, 1994) to assess their cultural orientation. This scale has two subscales (independence and interdependence), and each subscale is composed of 12 items designed to assess the respondent’s construal of the self as

independent, e.g., ‘I feel it is important for me to act as an independent person’ and interdependent, e.g., ‘My happiness depends on the happiness of those around me’ (1 = Strongly disagree, 7 = Strongly agree). Also, participants were asked to fill out a 32 item dialectical-self scale to measure tolerance for contradiction, e.g., ‘When I hear two sides of an argument, I often agree with both’(1 = Strongly disagree, 7 = Strongly agree).

Finally, participants completed background and demographic questions, including their gender, age, and major. Since nationality and ethnicity are a rough proxy for cultural background, we also collected generational status (their parents' and grandparents' country of birth) and years living abroad as additional criteria for socialization in an independent (e.g, U.S.) or an interdependent culture (e.g., Japan). Finally, participants were debriefed.

Development of the coding scheme

The use of an open-ended question format was a major contribution of this study. To test our hypotheses in the open-ended emotion data, we started with a previously developed coding scheme by Leu et al. (in press). We coded emotions and appraisals to determine *which* emotion the subject perceived and *why* the subject perceived that emotion. Based on this coding scheme, we set up new research questions with a team of research assistants. The coding team consisted of an East Asian female, an Asian American male, and a European American male and female to represent each gender and ethnic group. All coders were blind to the demographic information while they coded. All four coders were trained to code open-ended data until the value of the inter-rater reliability Cronbach alpha reached an acceptable level ($\alpha = .97$).

Perceived emotions coding

For emotions, we coded participants' answers to the question, "What do you think this person is feeling?" Responses were coded when the participant attributed a feeling or motivational state to the person in the picture (i.e., "She is happy"); attributions to the situation of the poser, however, were not coded for this measure (i.e., "She is in a great situation"). Synonyms for feelings previously mentioned by the same respondent were included in frequency calculations. For example, "She is sad and depressed" was coded as two negative emotions.

We coded the total number of reported emotions and categorized them as positive (high arousal positive/low arousal positive/amusement/pride), negative (anger/sadness/disgust/contempt/fear), and neutral emotions (surprise, in thought, unemotional, confusion, neutral). We added a 'generically bad emotion' (e.g., feeling bad, feeling discomfort) and 'other positive' (e.g., carefree, refreshed) emotion categories because participants mentioned emotions that were hard to categorize within the previous categories. The final set of emotions, therefore, included five categories of positive emotions (high arousal positive, low arousal positive, amusement, pride, other positive), five categories of neutral emotions (surprise, in thought, unemotional, confusion, neutral), and six categories of negative emotions (anger, sadness, disgust, contempt, fear, and generically bad). This scheme was developed on the basis of the emotions subjects actually reported. Perception of dialectical emotion was coded when participants reported emotions that were opposite in valence ("She is happy that she is driving alone, but sad that her least favorite song came on"). Table 3.3 displays the 14 emotion groups that were mentioned by participants in response to the question, "What do you think this person is feeling?". The emotions were pride, happiness, amusement, calm, other positive, surprise,

confusion, neutral, cognition, unemotional, fear, sadness, anger, contempt, disgust, and generic bad.

Appraisal coding

We also coded participants' answer to the question "Why do you think this person is feeling that way?". First, we checked whether participants were using one source of information (facial expression only: 'Because she is smiling', context only: 'She just failed on exam') or using both ('She is smiling, but I think she should be angry since her least favorite song came on'). Next, we created five categories based on our research questions (i.e., inferring facial expression, not genuine, appraisal, personal attribution, situational attribution). Responses were coded for the 'Not genuine' category when participants questioned the perceived sincerity of the facial expression as the genuine indicator of true feelings (e.g., face looks faked/forced/insincere/unnatural). Responses were coded for 'appraisal' when participants reappraised the valence of the situation to match the incongruent facial expressions. The 'Inferring facial expression' category was coded as present if participants described any facial expression as a cause of a model's emotion. Personal attributions were coded as present if a participant responded that a model was feeling a certain emotion because of her personality. Situational attributions were coded as present when a participants' response described any situational cause of a model's emotion.

Responses were coded if the participant gave a reason for the person's emotional state (e.g., "She is happy because she is smiling"). Responses were not coded when subjects misread the context rather than reappraising it. For example, a handful of participants misread

the vignette stimuli and perceived the story as the opposite valence. When the participant wrote multiple reasons for the poser's feelings, all cases were included in the calculations. For example, "Her face is smiling, and the situation might not be that bad" was coded for one appraisals in the 'inferring facial expression' category and one in the 'appraisal' category. Table 3.3 displays the eight categories of appraisals we used to code participants' answer in response to the question, "Why do you think this person is feeling that way?"

Data Analysis (The perceived sincerity of Facial Expression)

We tested four main hypotheses. When faced with incongruent situations, we predicted that East Asian participants would follow the valence of the situation (H1), while the European Americans would follow the valence of the face (H2). The two remaining hypotheses are contingent on our first two hypotheses. We predicted that East Asian participants would follow the valence of the situation because they would think the facial expression would not authentically signify the individual's feelings (H3), and we predicted that European American participants would choose the valence of the facial expression because they would believe that the individual was not appraising the situation in the way suggested by the vignette (H4). We did not predict any difference for congruent conditions (smiling face with positive situation, frowning face with negative situation).

This research explores the general idea that emotional experiences are significant cultural products (Markus & Kitayama, 1991; Shweder & Levine, 1984). We explored how our variables of interest were related to cultural orientation (independence vs. interdependence) of participants, which is measured by the Singelis scale (Singelis, 1993). We aimed to investigate

whether social orientation (independent self vs. interdependent self) is a defining factor of emotion perception. By comparing subject's ratings of the sincerity of facial expressions to the frequency of questioning the perceived sincerity of the expressions, we tried to show the impact of culture on perceiving emotion expression. To explore the association between the *independent* and *interdependent* cultural self, we computed the average of 12 items, half assessing *independent* self-beliefs and the other half assessing *interdependent* self-beliefs.

Results (The perceived sincerity of Facial Expression)

Overview

The analyses were designed to address several issues regarding cultural differences in emotion perception. The first question of interest was whether any cultural differences would emerge as to which source of information (i.e., face or context) participants from each culture follow (H1 and H2).

Most importantly, once the main source of information for each cultural group was identified, we looked at the reason why each source of information was more important. Accordingly, we calculated the percentage of the participants' mentioning each variable (e.g., not genuine, reappraisal) across eight combinations of face and context. We next observed whether East Asians would question the perceived sincerity of the facial expression more than European Americans (H3), and whether European Americans would more frequently reappraise the situations (H4).

Manipulation Check: General Valence

The ratings of pleasantness/unpleasantness of the situation and positivity/negativity of facial expression were analyzed to check the general valence.

In order to examine whether the positive situations were perceived as more pleasant than negative situations, we performed a 2 (situations: positive vs. negative) X 2 (facial expression: positive vs. negative) X 2 (culture: East Asian vs. European American) ANOVA. The result suggested that the participants perceived the positive situations to be relatively more pleasant ($M = 4.87$) than unpleasant ($M = 2.46$), compared to the unpleasant situations [$F(1, 320) = 783.064, p < .001, \eta_p^2 = .71$]. Participants also perceived the negative situations to be more unpleasant ($M = 4.71$) than pleasant ($M = 2.74$), compared to the pleasant situations [$F(1, 320) = 728.549, p < .001, \eta_p^2 = .704$].

In regards to valence of the face, participants perceived positive faces more positively ($M = 5.53$) than negatively ($M = 2.08$) [$F(1, 320) = 2802.78, P < .001$]. Also, participants perceived negative faces more negatively ($M = 5.26$) than positively ($M = 1.98$) [$F(1, 320) = 2410.93, p < .001, \eta_p^2 = .883$]. No cultural differences were observed, indicating that both the situations and the facial expressions were perceived by the participants as intended.

Congruent Conditions

We did not expect to find any cultural differences in perception of the perceived sincerity of the facial expression in the congruent condition. To examine how genuine participants thought the facial expression was, we focused on two scales related to the perceived sincerity of facial

expression from the closed-ended data and the frequency of questioning the sincerity of facial expression from the open-ended data.

Closed-ended data

Emotion perception. We performed a 2 (participant culture) X 2 (poser culture) X 2 (condition; Smiling face-positive situation vs. Frowning face-negative situation) repeated ANOVA. We created a mean score of positive emotion perception from four emotions (i.e., happiness, amusement, contentment, and pride) and negative emotion perception from five emotions (i.e., anger, disgust, contempt, sadness, fear).

For the positive emotion perception, we found a culture by condition interaction effect [$F(1, 306) = 5.38, p = .021, \eta_p^2 = .017$]. European Americans perceived more positive emotions in positive situations ($M_{\text{Euro}} = 6.94$ vs. $M_{\text{Asian}} = 6.72$) and Asians perceived more happiness in the frowning face-negative situation condition ($M_{\text{Euro}} = 1.63$ vs. $M_{\text{Asian}} = 1.75$) as shown in Table 3.3. For the negative emotions perception, we saw no effect of culture. However, a similar culture by condition interaction effect was observed in positive emotions perception [$F(1, 306) = 14.79, p < .001, \eta_p^2 = .046$]. European Americans perceived more negative emotions in the frowning face - negative situation condition ($M_{\text{Euro}} = 5.65$ vs. $M_{\text{Asian}} = 5.28$), and Asian perceived more anger in the positive situation ($M_{\text{Euro}} = 1.50$ vs. $M_{\text{Asian}} = 1.67$). In general, while European Americans perceived emotions as expressed in the facial expression and the context, East Asians perceived emotions not portrayed in either facial expressions or situations, regardless of the valence of stimuli.

For neutral emotion perception, there was an effect of condition [$F(1, 306) = 16.79, p < .001, \eta_p^2 = .052$]. Subjects perceived more neutral emotions in the frowning face - negative situation condition than in the smiling face - positive situation condition ($M_{\text{Frown}} 4.06$ vs. $M_{\text{Smile}} 3.06$). Also, there was a culture by condition interaction effect [$F(1, 306) = 7.76, p = .006, \eta_p^2 = .025$]. Both cultural groups perceived more neutral emotions in negative conditions, but Asians perceived more neutral emotion in the smiling face - positive condition than European Americans did, and European Americans perceived more neutral emotions in the frowning face - negative conditions than Asians did.

The Perceived Sincerity of Facial Expression. In order to test our hypothesis about the perceived sincerity of the facial expressions, we performed a 2 (participant culture) X 2 (poser culture) repeated ANOVA measures for both the smiling face - positive situation condition and the frowning face – negative situation condition. For a scale which asks about the sincerity of the facial expression (‘How sincere is this person’s expression?’), we found a main effect of participant culture for both the frowning face – negative situation condition [$M_{\text{Euro}} = 5.00$ vs. $M_{\text{Asian}} = 4.63, F(1, 320) = 6.18, p < .05, \eta_p^2 = .019$] and the smiling face – positive conditions [$M_{\text{Euro}} = 5.45$ vs. $M_{\text{Asian}} = 5.06, F(1, 320) = 6.52, p < .05, \eta_p^2 = .02$]. Thus, in the congruent conditions, European Americans perceived the facial expression to be more sincere than East Asians did.

For the frowning face – negative situation condition, we found a main effect of the poser’s race [$F(1, 320) = 5.249, p < .05, \eta_p^2 = .016$]. The participants perceived the European American model’s expression as more sincere. Similarly, we found consistent race effects from a

scale of asking how fake or forced the expression was ('how much is this person's expression fake or forced?') [$F(1, 320) = 18.662, p < .001, \eta_p^2 = .055$]. Participants thought that the East Asians' facial expressions were more fake or forced than those of the European Americans.

Open-ended data

Overall, we did not find any cultural differences in perception of the perceived sincerity of the facial expression in the congruent conditions. There was a marginal effect of culture for the frowning face – negative situation condition with East Asian facial expression, but somewhat contrary to our predictions, it was the European American group that reported that the facial expression looked forced. European Americans reported that the facial expression looked fake or forced 2.6% of the time. However, this percentage is very low, and in general, hardly anyone in either culture saw the congruent expressions as insincere.

Incongruent conditions

We expected to find cultural differences in information source (face or situation; H1 and H2) and in perception of the perceived sincerity of the facial expression in the incongruent condition. Again, we focused on the two scales related to the perceived sincerity of facial expression from the closed-ended data and the frequency of questioning the sincerity of facial expression from the open-ended data. We predicted the biggest effect of culture in the smiling face - negative situation condition.

Closed-ended data

Emotion Perception. As in congruent situations, we performed a 2 (participant culture) X 2 (poser culture) X 2 (condition; Smiling face-positive situation vs. Frowning face-negative situation) repeated ANOVA measures and used mean score of positive and negative emotion perception.

For both the negative and the positive emotion perception, there was no effect of culture, condition, or gender. For neutral emotion perception, we found a condition by culture interaction effect [$F(1, 306) = 3.96, p = .047, \eta_p^2 = .013$]. European Americans perceived more neutral emotions in the smiling-negative situation ($M_{\text{Euro}} = 4.06$ vs $M_{\text{Asian}} = 3.86$) while Asians perceived more neutral emotions in the frowning-positive situation ($M_{\text{Euro}} = 4.16$ vs $M_{\text{Asian}} = 4.25$).

The perceived sincerity of Facial Expression. Unexpectedly, we did not observe any effect of culture for either the sincerity of the facial expression scale or the fake/forced scale [$F(1, 320) < 1$]. Also, the pattern of response did not differ by model's culture. However, participants responded differently to the two kinds of incongruent condition (smiling face-negative situation, frowning face-positive situation). Participants thought the facial expressions looked more sincere when they saw frowning faces with positive situations ($M = 4.18, S.E. = .073$) than when they saw smiling faces with negative situations ($M = 3.76, S.E. = .076$) [$F(1, 320) = 18.57, p < .001, \eta_p^2 = .055$]. We found a consistent main effect of the condition for the fake/forced scale ('How much is this person's expression fake or forced') [$F(1, 320) = 115.818, p < .001, \eta_p^2 = .266$]. Participants thought that facial expressions looked more fake or forced when looking at smiling faces with negative situations ($M = 4.135, S.E. = .081$) than at frowning faces with positive

situations ($M = 3.08$, $S.E. = .071$). Additionally, we found an interesting main effect of the model's culture [$F(1, 320) = 14.27$, $p < .001$, $\eta_p^2 = .043$] as well as an interaction effect for the model's culture and participant culture [$F(1, 320) = 6.80$, $p < .05$, $\eta_p^2 = .021$]. Participants thought that the Caucasian faces ($M = 3.75$, $S.E. = .070$) looked more fake than the East Asian faces ($M = 3.47$, $S.E. = .069$). This race effect was mainly driven by European Americans, who thought that the Caucasian faces looked more fake than those of the East Asians ($M_{Asian} = 3.49$, $M_{Caucasian} = 3.97$). By contrast, East Asians did not show a significant difference between the two model's races ($M_{Asian} = 3.44$, $M_{Caucasian} = 3.53$).

Open-ended data

As in the congruent condition, we did not find any cultural differences in questioning the perceived sincerity of the facial expression. Also, we did not find a main effect of culture on perception that the person reappraised the situation as different from what it seemed.

To find which source of information (i.e., face or context) participants from each culture followed (H1 and H2), we calculated the percentage of following the valence of face, situation, and being dialectical across four incongruent combinations of faces and situations. The result was the opposite of what we predicted. The percentage of East Asians following the valence of the face was significantly higher than that of European Americans [$F(1, 293) = 4.539$, $p < .05$, $\eta_p^2 = .015$]. Also, the percentage of European Americans' following the situation was

significantly higher than that of East Asians [$F(1, 293) = 7.431, p = .007, \eta_p^2 = .025$], as shown by Table 3.5 and Figure 3.1.

Since participants responded differently to the two kinds of incongruent condition they were exposed to (frowning face-positive situation, smiling face-negative situation), we separately analyzed by the types of incongruent conditions. The smiling face - negative situation condition is most likely to be related to masking of genuine emotions, and we predicted the more prominent cultural difference in that condition.

Frowning face – Positive situation

Closed-ended data. For a scale which asks about the sincerity of facial expressions ('How sincere is this person's expression?'), we found a main effect of model's culture [$F(1, 320) = 4.255, P < .05, \eta_p^2 = .013$] Participants perceived the East Asians' frowning face ($M = 4.28, S.E = .1$) to be more sincere than the European Americans' frowning face ($M = 4.17, S.E. = .106$). Consistently, participants thought that the Caucasian's frowning face ($M=3.32, S.E. = .08$) looked more fake than the East Asian's face ($M= 3.31, S.E. = .093$) [$F(1, 320) = 21.07, p < .001, \eta_p^2 = .062$]. Lastly, there was a marginal main effect of culture [$F(1, 320) = 2.36, p = .125, \eta_p^2 = .007$]. European Americans perceived the expression as more fake ($M = 3.20, S.E. = .098$) than the East Asians ($M = 2.98, S.E. = .103$).

Open-ended data. Similar to our findings for the congruent and general incongruent conditions, we did not find a significant cultural difference in how much each cultural group

questioned the perceived sincerity of facial expression or how much each group reappraised the situation.

Smiling face – Negative situation

Closed-ended data. Again, we found an unexpected marginal main effect of culture [F (1, 320) = 2.755, $p = .098$, $\eta_p^2 = .009$]. Surprisingly, European Americans perceived the expression as more fake (M = 4.27.20, S.E. = .112) than East Asians did (M = 4.00, S.E. = .118).

Open-ended data. Most of the responses to the open-ended questions (i.e., “Why do you think this person has these feelings?”) were short descriptions of the situational stimuli. Although we did not find a significant cultural difference in the frequency of questioning the sincerity of facial expression or the frequency of reappraisal, there was a marginal cultural difference in mentioning emotion suppression when the poser was Asian. While 6.7% of European Americans mentioned that the poser was suppressing emotions, 13% percent of East Asians made an appraisal related to emotion suppression.

Relationship Between Self-construal and the perceived sincerity of Facial Expression

Consistent with prior work, the Singelis scale showed that East Asians were more interdependent than European Americans [4.88 vs. 5.11, F (1, 320) = 9.274, $p < .005$, $\eta_p^2 = .028$]. Although European Americans were not significantly more independent than East Asians [4.72 vs. 4.58, F (1, 320) = 2.456, $p > .1$], the construal difference score (interdependence – independence) showed a significant main effect of culture [.159 vs. .522, F (1, 320) = 12.564, p

< .001, $\eta_p^2 = .038$]. We created a single index of interdependence (vs. independence) as in prior work in this area (Na & Kitayama, 2011) to address potential acquiescence bias that can result from the fact that the self-construal scale has no reverse-coded items.

However, we did not observe a strong relationship between social orientation (independent self vs. interdependent self) and how much participants trust the facial expression as a sincere expression of emotion. Only in congruent situations did we find a significant correlation between the Singelis scale and the scales related to the perceived sincerity of facial expression. We found a positive correlation between the independent self-construal ($r = .125, p < .01$) and the perceived sincerity of the facial expression scale. Consistently, the sincerity of the facial expression scale was negatively correlated with the construal difference score (interdependence – independence).

Discussion

Contrary to our expectations, we did not find any difference in East Asians' and European Americans' reliance on the face or the situation. However, European Americans did perceive the face as more sincere in the congruent conditions, but not in the incongruent conditions. Also, East Asian frowning faces in negative situations were perceived as more sincere than European American frowning faces. Most importantly, in the smiling face- negative situation condition, East Asians mentioned that the poser was suppressing emotions with greater frequency than European Americans did. Lastly, we found that cultural difference in attribution style is also significant in the realms of emotion perception. Across different conditions, East Asians made more external attributions than European Americans did.

In our view, it is likely that cultural differences in the belief in the perceived sincerity of facial expression were not found because we used vignettes that had no other people in them. In all 16 stories, the poser was alone in the situation, a necessary condition for the research questions for which the data were originally collected. These non-social situations, however, are the ones where we may be least likely to see the cultural differences. A study by Ekman (Ekman, 1973) showed that when the participants watched films in the presence of others (experimenters), European American participants expressed the negative emotions of disgust, fear, and distress, while the Japanese masked their negative feelings with smiles. When the participants then watched the film alone, all participants, even Japanese participants, expressed negative emotions. Smiling in a negative situation is consistent with the interdependent cultural model of emotion. The values regarding group harmony are demonstrated by smiling when confronted by negative stimulation in the presence of others, but not when people are alone and there is no social pressure.

We, therefore, conducted a subsequent study using social vignettes, to see if we could observe the cultural difference in the perception of perceived sincerity of facial expression. Also, we investigated native East Asians rather than Asian Americans, to address the possibility that the inclusion of Asian Americans blurred cultural differences.

Study 2

Overview

As in Study 1, the analyses were designed to address several issues regarding cultural differences in emotion perception. The first question of interest was whether any cultural

differences would emerge on which source of information (i.e., face or context) participants from each culture follow (H1 and H2).

We next observed whether East Asians would question the perceived sincerity of the facial expression more than European Americans did (H3), and whether European Americans would more frequently reappraise the situations (H4).

Method

Participants

Sixty-eight European American students ($M = 19$, $SD = 2.44$) at a large Midwestern university (39 women and 29 men) and 63 Japanese undergraduate students (50 women and 13 men) from a University in the Kyoto area ($M_{age} = 19.81$, $SD = 1.04$) participated in the experiment to fulfill a course requirement. All of the European American students self-identified as European Americans who had spent at least 18 years of their lives in the United States.

Procedure

We used the same procedures and photographs as in Study 1. For Study 2, however, we improved the experimental method by 1) using social vignettes rather than non-social vignettes and 2) having participants use their respective native languages.

The vignettes used in the present study (16 vignettes) were designed to include different kinds of significant others (e.g., friends, family, and romantic partner). We constructed 8 pairs of vignettes that are equivalent in content to those we created for Study 1. The only difference between these and the vignettes of Study 1 was the presence of significant others; the protagonist

in the vignette was always with other people in the situation. As in study 1, each pair of vignettes depicted the same context, with different valence. The positive and negative situations used in this study are shown in Table 3.6. Participants completed a one-hour computerized experiment (Qualtrics) in their language.

Manipulation Check: General Valence

The ratings of pleasantness/unpleasantness of the situation and positivity/negativity of facial expression were analyzed to check the general valence.

In order to examine whether the positive situations were perceived as more pleasant than the negative situations, we performed a 2 (situations: positive vs. negative) X 2 (facial expression: positive vs. negative) X 2 (model's gender: male vs. female) X 2 (culture: East Asian vs. European American) repeated measures ANOVA. The result suggested that the participants perceived the positive situations to be more pleasant than negative situations [$M_{\text{Positive}} 5.80$ vs. $M_{\text{Negative}} 1.50$, $F(1, 129) = 643.90$, $p < .001$, $\eta_p^2 = .833$]. They also perceived the negative situation as more unpleasant than the positive situation [1.25 vs. 5.79, $F(1, 129) = 809.16$, $p < .001$, $\eta_p^2 = .862$]. Interestingly, European Americans perceived the positive situation as more positive than Japanese did [$M_{\text{Japanese}} 3.30$ vs. $M_{\text{American}} 4.00$, $F(1, 129) = 29.05$, $p < .001$, $\eta_p^2 = .184$], and Japanese perceived the negative situation as more negative than European Americans did [$M_{\text{Japanese}} 3.65$ vs. $M_{\text{American}} 3.39$, $F(1, 129) = 3.93$, $p < .05$, $\eta_p^2 = .030$].

In regards to the valence of the face, participants perceived positive faces as more positive ($M = 5.24$) than negative ($M = 1.23$) [$F(1, 129) = 639.53$, $p < .001$, $\eta_p^2 = .832$]. Also,

participants perceived negative faces as more negative ($M = 5.55$) than positive ($M = 1.73$) [$F(1, 320) = 506.30, p < .001, \eta_p^2 = .797$]. Interestingly, there was a significant effect of culture on participants' perception of positivity from faces. European Americans tended to perceive all faces as more positive than Japanese did ($M_{\text{Japanese}} = 3.00$ vs. $M_{\text{American}} = 3.48, F(1, 129) = 14.57, p < .001, \eta_p^2 = .102$).

Congruent Conditions

Emotion perception. For the positive emotions perception, there was a significant effect of culture [$F(1, 112) = 4.279, p = .041, \eta_p^2 = .037$]. European Americans perceived more positive emotions than Japanese did ($M_{\text{American}} = 3.39$ vs. $M_{\text{Japanese}} = 3.10$). For the negative emotions perception, no effect of culture or gender was shown. For neutral emotion perception, we found a culture by model's race interaction effect. Japanese perceived more neutral emotions from Asian faces ($M_{\text{Asian face}} = 2.41$ vs. $M_{\text{Caucasian face}} = 2.35$), while European Americans perceived more neutral emotions from Caucasian faces ($M_{\text{Asian face}} = 2.30$ vs. $M_{\text{Caucasian face}} = 2.53$).

Perceived sincerity of emotion expression. We did not expect to find any cultural differences in perception of the perceived sincerity of the facial expression in the congruent condition. To examine the extent to which participants thought the facial expression was genuine, we focused on two scales related to the perceived sincerity of facial expression from the closed-ended data and the frequency of questioning the sincerity of facial expression from the open-ended data.

Closed-ended data

There were two items to test our hypothesis about the perceived sincerity of the facial expressions ('How sincere is this facial expression?'; 'How fake or forced is this facial expression?'). However, we did not combine these two items due to the poor reliability value (Cronbach alpha < .1).

Sincerity Scale. In order to test our hypothesis about the perceived sincerity of the facial expressions, we performed a 2 (participant culture) X 2 (poser gender) X 2 (valence of expression) repeated ANOVA for both the smiling face - positive situation condition and the frowning face – negative situation condition. For a scale which asks about the sincerity of the facial expression ('How sincere is this person's expression?'), we found a main effect of participant culture [Euro 5.29 vs. East Asians 4.30, $F(1, 129) = 18.79, p < .001, \eta_p^2 = .127$]. European Americans perceived the facial expression to be more sincere than East Asians did.

We also found a main effect of the poser's gender [Male 4.53 vs Female 5.05, $F(1, 129) = 5.249, p < .05, \eta_p^2 = .016$] and the valence of the face and situation (smiling face with positive situation vs. frowning face with negative situation). The participants perceived the female model's expression as more sincere. Also, we found that people perceive a smiling face with a positive situation as more sincere than a frowning face with a negative situation [$M_{\text{Smiling face}} = 5.49$ vs. $M_{\text{Frowning face}} = 4.10, F(1, 129) = 54.276, p < .001, \eta_p^2 = .127$].

Fake or Forced Scale. Consistent with the previous sincerity scale result, we found that male faces were perceived as more fake or forced than female faces [$M_{\text{Male}} = 2.54$ vs. $M_{\text{Female}} = 2.11, F(1, 129) = 5.52, p = .02, \eta_p^2 = .041$]. Although we did not find cultural differences on this scale, we found an interesting culture by valence (positive vs. negative) interaction. Japanese

perceived a smiling face as more fake than a frowning face ($M_{\text{Smiling face}} = 2.79$ vs. $M_{\text{Frowning face}} = 2.03$), while European Americans perceived frowning faces as more fake than smiling faces ($M_{\text{Smiling face}} = 1.88$ vs. $M_{\text{Frowning face}} = 2.61$) [$F(1, 129) = 22.08, p < .001, \eta_p^2 = .146$].

Open-ended data

We did not find any cultural differences in perception of the perceived sincerity of the facial expression in the open-ended data. No one reported that facial expressions look forced when presented with smiling faces. In frowning faces with negative situation conditions, only 1 Japanese and 4 European American reported that faces looked fake or forced.

Incongruent conditions

General

We expected to find cultural differences in information source (face or situation, H1 and H2) and perception of the perceived sincerity of the facial expression in the incongruent condition. Again, we focused on the two scales related to the perceived sincerity of facial expression from the closed-ended data and the frequency of questioning the sincerity of facial expression from the open-ended data.

Closed-ended data

Emotion Perception. For positive emotion perception, there was a significant effect of culture, showing that European Americans perceived more positive emotions than Japanese did [$F(1, 112) = 5.35, p = .023, \eta_p^2 = .046$, European Americans 2.92 vs. Japanese 2.43]. The data also show an effect of condition. Participants from both cultural groups perceived more positive emotions in the frowning face - positive situation condition (3.51) than smiling face - negative

situation condition. There was also a condition effect for negative emotion perception. Participants, across cultures, perceived more negative emotions in the smiling face - negative situation condition (3.10) than in the frowning face - positive situation condition (1.88). Overall, participants seemed to follow the valence of the situation rather than that of the face in perceiving the emotion of others.

The Perceived Sincerity of Facial Expression.

Sincerity Scale. We did not observe any effect of culture on the sincerity of the facial expression scale [$F(1, 129) < 3$]. Also, the pattern of response did not differ by model's gender and participants did not respond differently to the two kinds of incongruent condition (smiling face-negative situation, frowning face-positive situation).

Fake or Forced Scale. We found an effect of condition [$F(1, 129) = 22.09, p < .001, \eta_p^2 = .146$]. Participants thought that facial expressions looked more fake or forced when looking at smiling faces with negative situations ($M = 4.90, S.E. = .164$) than frowning faces with positive situations ($M = 3.94, S.E. = .184$). We did find an interesting effect of culture from the fake or forced scale. Unexpectedly, European Americans perceived facial expressions to be more fake than the Japanese did [Japan 3.91 vs. Euro 4.92, $F(1, 129) = 12.68, p = .001, \eta_p^2 = .90$]. Additionally, we found an interesting culture by condition interaction effect. Both cultural groups perceived smiling faces with a negative situation as more fake or forced than a frowning face with a positive situation, but this tendency was more pronounced for Japanese than for European Americans (Difference score between conditions: Japanese 1.38 vs. American .52).

Open-ended data

We found a main effect of culture on the source of information participants used (i.e., facial expression, situational stimulus) to infer emotions. Both cultural groups relied more on vignettes than facial expressions to infer emotions of others, but European Americans used facial expression as a source of information more than Japanese did [$\chi^2(1, N = 470) = 4.32, p = .038$]. We did find a marginal cultural difference in questioning the perceived sincerity of the facial expression [$\chi^2(1, N = 524) = 5.44, p = .14$]. Japanese questioned the perceived sincerity of the facial expressions more than European Americans did. Also, we found a marginal main effect of culture on reappraising the situation differently from what it seemed [$\chi^2(1, N = 524) = 6.59, p = .08$]. As we expected, European Americans reappraised the situation more often than Japanese did.

Discussion

We expected that, when presented with inconsistent combinations of faces and vignettes, East Asians would follow the context while European Americans would follow the facial expression. As we expected, East Asians followed the valence of context information rather than that of faces. As predicted, changing the non-social vignettes into social ones affected the way East Asians made use of information from facial expressions and situational information. European Americans, however, also followed the valence of the contexts rather than those of the faces. This pattern was consistent with the previous study, which used non-social vignettes. This result is surprising considering the results from other studies which used a similar experimental

method. As mentioned earlier, studies using this approach have shown that facial cues were more influential than context information (Fernandez-Dols, Wallbott, & Sanchez, 1991; Frijda, 1969; Knudsen & Muzekari, 1983; Billings, 1989).

We think this inconsistency with previous findings maybe was due to the intensity of both facial expressions and situational stimuli in our studies. Considering the result that European Americans perceived the facial expressions as sincere and genuine in congruent conditions to a greater degree than East Asians did, we believe that European Americans' inclination toward the lack of judgment of perceived sincerity of facial expression was mainly driven by the strong contradiction between facial expressions and contextual information. Compared to East Asians, who tend to be more comfortable with the idea of complementarity of opposites (i.e. the ying-yang principle) and the view that life is full of contradictions and change (Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999), European Americans may have a contrasting Western analytical way of thinking, which is more linear (Ji & Nisbett, 2001). This difference might have led European Americans to perceive facial expressions as fake, rather than reinterpreting facial expressions or vignettes. In our next study, we plan to use vignettes with decreased intensity of valence in order to provide more room for reinterpretation of context information.

References

- Adair, W. L., Okumura, T., & Brett, J. M. (2001). Negotiation behavior when cultures collide: the United States and Japan. *Journal of Applied Psychology*, 86(3), 371.
- Bagozzi, R. P., Wong, N., & Yi, Y. (1999). The role of culture and gender in the relationship between positive and negative affect. *Cognition & Emotion*, 13(6), 641-672.
- Billings, E. (1989). *The social psychology of emotion: Appraisal and resolution of inconsistency*. Stanford University.
- Brett, J. M., & Okumura, T. (1998). Inter-and intracultural negotiation: US and Japanese negotiators. *Academy of Management Journal*, 41(5), 495-510.
- Clancy, P. M. (1986). 11. The acquisition of communicative style in Japanese. *Language socialization across cultures*, (3), 213.
- Darwin, C. (1998). *The expression of the emotions in man and animals*. Oxford University Press.
- Edwards, P. (1996). Honour, shame, humiliation and modern Japan. *Friendship East and West: Philosophical perspectives* (pp. 32-55). New York: Curzon.

Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacoyanni-Tarlatzis, I., Heider, K., ... & Tzavaras, A. (1987). Universals and cultural differences in the judgments of facial expressions of emotion. *Journal of personality and social psychology*, 53(4), 712.

Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacoyanni-Tarlatzis, I., Heider, K., ... & Tzavaras, A. (1987). Universals and cultural differences in the judgments of facial expressions of emotion. *Journal of personality and social psychology*, 53(4), 712.

Fernández-Dols, J. M., & Carroll, J. M. (1997). Is the meaning perceived in facial expression independent of its context?

Goldin, P.R., McRae, K., Ramel, W., Gross, J.J. (2008). The neural bases of emotion regulation: reappraisal and suppression of negative emotion. *Biological Psychiatry*, 63(6), 577–86.

Graham, J. L. (1993). The Japanese negotiation style: Characteristics of a distinct approach. *Negotiation Journal*, 9(2), 123-140.

Ji, L. J., Nisbett, R. E., & Su, Y. (2001). Culture, change, and prediction. *Psychological Science*, 12(6), 450-456.

Kim, H., & Markus, H. R. (1999). Deviance or uniqueness, harmony or conformity? A cultural analysis. *Journal of Personality and Social Psychology*, 77(4), 785.

King, L. (2011). Japan's massive earthquake has little effect on culture's impeccable manners. *Los Angeles Times*, March 13.

Kitayama, S., Markus, H.R., Kurokawa, M. (2000). Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition and Emotion*, 14, 93–124.

Klineber, O. (1938). Emotion expression in Chinese literature. *Journal of Abnormal and Social Psychology*, 33, 517-520

Leu, J. (2004). *Emotional dialecticism versus optimism: Cultural styles of emotion regulation among Chinese, Japanese, and Americans*. University of Michigan.

Matsumoto, D., Yoo, S. H., & Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of personality and social psychology*, 94(6), 925.

Mead, M. (1975). Review of Darwin and facial expression, *Journal of Communication*, 25, 209-213

Mesquita, B.G. (2001). Emotions in collectivist and individualist cultures. *Journal of Personality and Social Psychology*, 80, 68–74.

Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social psychology*, 67(6), 949.

Na, J., Na, J., Kitayama, S., & Kitayama, S. (2011). Spontaneous Trait Inference Is Culture-Specific: Behavioral and Neural Evidence. *Psychological Science*, 22(8), 1025–1032.

Naito, T., & Gielen, U. P. (1992). Tatemaie and honne: A study of moral relativism in Japanese culture. *Psychology in international perspective*, 50, 161-172.

Napa Scollon, C., Diener, E., Oishi, S., & Biswas-Diener, R. (2005). An experience sampling and cross-cultural investigation of the relation between pleasant and unpleasant affect. *Cognition & Emotion*, 19(1), 27-52.

Niedenthal, P. M., Krauth-Gruber, S., & Ric, F. (2006). *Psychology of emotion: Interpersonal, experiential, and cognitive approaches*. Psychology Press.

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, 54(9), 741.

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, 54(9), 741.

Perloff, L. S., & Fetzer, B. K. (1986). Self–other judgments and perceived vulnerability to victimization. *Journal of Personality and social Psychology*, 50(3), 502.

Rothbaum, F., Pott, M., Azuma, H., Miyake, K., & Weisz, J. (2000). The development of close relationships in Japan and the United States: Paths of symbiotic harmony and generative tension. *Child development*, 71(5), 1121-1142.

Salacuse, J. W. (2004). Negotiating: The top ten ways that culture can affect your negotiation, Ivey Business Journal

Shonk, K (2015), A cross cultural negotiation example: How to overcome cultural barriers. Daily Blog, Program, June 4th

Weinstein, N. D. (1982). Unrealistic optimism about susceptibility to health problems. *Journal of behavioral medicine*, 5(4), 441-460.

Zhang, D., & Kuroda, K. (1989). Beware of Japanese negotiation style: how to negotiate with Japanese companies. *Nw. J. Int'l L. & Bus.*, 10, 195.

Table 3.1

Descriptive Statistics of Emotion Perception and Perceived Sincerity in Study 1

	European American		East Asian	
	Smiling-Positive Situation	Frowning-Negative Situation	Smiling-Positive Situation	Frowning-Negative Situation
Emotion Perception				
Positive	M = 6.94, S.E = .078	M = 1.63, S.E = .061	M = 6.72, S.E = .082	M = 1.75, S.E = .064
Negative	M = 1.50, S.E = .062	M = 5.65, S.E = .093	M = 1.69, S.E = .065	M = 5.28, S.E = .097
Neutral	M = 2.95, S.E = .084	M = 4.11, S.E = .093	M = 3.18, S.E = .088	M = 4.00, S.E = .097
Perceived Sincerity				
Fake	M = 2.56, S.E = .099	M = 2.57, S.E = .100	M = 2.63, S.E = .103	M = 2.62, S.E = .104
Sincerity	M = 5.45, S.E = .094	M = 5.02, S.E = .104	M = 5.06, S.E = .097	M = 4.62, S.E = .109

Table 3.2

The Positive and Negative Vignettes Used in Study 1

	Positive vignette	Negative vignette
1	K.C. is alone in her car and driving on an isolated stretch of road. Her <i>favorite</i> song has just come on the	K.C. is alone in her car and driving on an isolated stretch of road. Her <i>least favorite</i> song has just come on

	radio.	the radio.
2	A.J. is alone in a café. She has just read a newspaper story about rescued puppies.	A.J. is alone in a café. She has just read a newspaper story about abused puppies
3	M.C. is alone in her room and checking her grades online. She has just found out that she has gotten an <i>A grade</i> in an important course she tried very hard in.	M.C. is alone in her room and checking her grades online. She has just found out that <i>she failed</i> an important course she tried very hard in.
4	J.K. is alone in his room reading a book, which is <i>well written</i> .	J.K. is alone in his room reading a book, which is offensive and <i>poorly written</i> .
5	M.J. is alone in a gym practicing basketball. She has <i>made all her shots</i> .	M.J. is alone in a gym practicing basketball. She has <i>missed all her shots</i> .
6	T.J. is alone in his room playing a video game. He has just completed a difficult level and his video game character has <i>received additional strength</i> .	T.J. is alone in his room playing a video game. He has just failed a difficult level and his video game character has <i>lost additional strength</i> .
7	K.C. is alone in her yard preparing to sunbathe. The sun has just appeared, and it is now <i>warm and sunny</i> .	K.C. is alone in her yard preparing to sunbathe. Clouds have just appeared, and it is now <i>cold and rainy</i> .
8	A.J. is alone in her room working on an	A J. is alone in her room working on an

	important project. <i>She has just finished and saved her work.</i>	important project. <i>She forgot to save and has lost her work.</i>
--	---	---

Table 3.3

14 Emotion Groups Mentioned by Participants in Study 1

Positive Emotions	Words
Pride	Accomplished, Confident, Prideful, Proud
Happy (High arousal positive)	Happy, Cheerful, Delighted, Eager, Ecstatic, Elated, Gleeful, Joy, Pleased, Excited, Enjoy, Upbeat
Amusement	Funny, Goofy, Light-hearted, Amused, Humorous
Calm (Low arousal positive)	Calm, Comfortable, Glad, Peaceful, Placid, Pleasant, Relaxed, Satisfied, Relieved, At peace
Other positive	Curious, Carefree, Energetic, Enthusiastic, Fantastic, Freedom, Hopeful, Humble, Inquisitive, Interested, Intrigued, Loved, Optimistic, Quizzical, Thrilled, Unafraid, Euphoric, Contented, Refreshed, Motivated

Neutral Emotions	Words
-------------------------	--------------

Surprise	Astonished, Amazed, Disbelief, Dumbfounded, Incredulous, Shocked, Startled, Expectant
Confusion	Baffled, Bewildered, Nonplussed, Perplexed, Puzzled, Uncertain, Confused, Unsure, Doubt
Neutral	Complacent, Distant, Distracted, Hesitant, Lazy, Numb, Reserved, Alert, Dazed, Focused, Preoccupied, Concentrated, Determined, Impartial, Bored, Tired, Persistent
Cognition	Normal, Contemplative, Serious, Thinking, All right, OK, Accepting
Unemotional	Indifferent, Unemotional, Unaffected, Unamused, Not caring, Nonchalant

Negative Emotions	Words
Fear	Anxious, Afraid, Alarmed, Apprehensive, Concerned, Frightened, Nervous, Scared, Worried, Creeped out, Stressed out, Helpless, Tensed
Sadness	Depressed, Disappointed, Lonely, Melancholy, Morose, Solemn, Somber, Deserted, Discouraged, Defeated, Let down

Anger	Irritated, Aggressive, Annoyed, Defiant, Enraged, Frustrated, Furious, Grumpy, Hostile, Infuriated, Irate, Mad, Outraged, Pissed, Ticked, Disappointed, Meaninglessness, Bummed
Contempt	Bitter, Condescending, Dislike, Disdain, Distaste, Resentment, Scornful, Pity, Pathetic
Disgust	Disgusted, Grossed out
Generic bad	Bad, Discomfort, Tired of, Unpleasant, Upset, Unhappy, Discontent, Dissatisfied, Unamused, Sarcasm, Embarrassed, Awkward, Sheepish, Worthless, Unlucky

Table 3.4

Categorization for Appraisal-based Coding in Study 1 and Study 2

Category	Description	Example
Fake/Forced/Not Genuine Expression	Does the subject think the person in the picture is faking his/her true emotion or the expression looks forced, not genuine, authentic, or sincere?	“She is faking her true feeling. Her smile is fake.”
External Situation (Non-Social)	Does the subject mention a <i>specific</i> external situation/environment that can be observed by another person? (None social)	“She is angry to be stuck in traffic.”

External Situation (Social)	Are other people mentioned (implicitly or explicitly)? If yes, is the relationship functional or professional? (Social)	“She is angry that her teammates are not joining the basketball practice.”
Inferring Facial Expression	Does the subject use facial features to infer emotions?	“Looking at her expression around the eyes, she looks happy.”
Internal enduring Traits	Does the subject describe the emotion/expression as a personal trait (something enduring)?	“She is a confident and happy person.”
Reappraisal	Does the subject reinterpret the situation in a way that will fit with the valence of the facial expression of the picture? Subjects can reinterpret the positive situation into the negative one, or vice versa for the negative situations.	“The death scene of the game must have been amusing.”
Emotion Acceptance	Does the subject think the person in the picture is either suppressing, ignoring, or setting aside emotional experience?	“She is sad that he didn’t win the award, but she is accepting that reality.”

Table 3.5

Percentage of Following the Valence of the Face and the Situation in Study 1

Background															
European American								East Asian							
Face		Situation		Dialecticism		Neutral		Face		Situation		Dialecticism		Neutral	
M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
.35	.29	.41	.31	.12	.17	.09	.15	.43	.30	.32	.28	.12	.19	.11	.15

Table 3.6

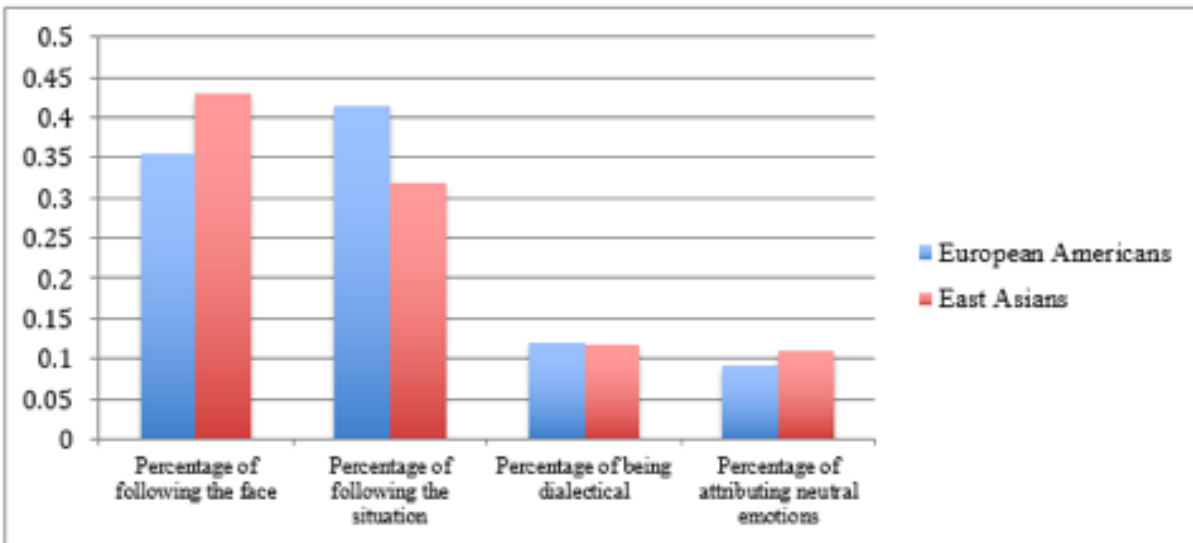
The Positive and Negative Vignettes Used in Study 2

	Positive vignette	Negative vignette
1	K.C. is in his/her car with a group of close friends. One of his/her friends just put on his/her favorite song.	A.J. is in his/her car with a group of close friends. One of his/her friends just put on his/her least favorite song.
2	A.J. is in a cafe with his/her family. He/She checked his/her phone and read a text message from his/her best friend with compliments.	A.J. is in a cafe with his/her family. He/She checked his/her phone and read an insulting text message from a friend he/she does not like.
3	M.C. is in a library with his/her roommates and checking his/her grades online. He/She has just found out that he/she has gotten an A grade in an important course he/she tried very hard in.	M.C. is in a library with his/her roommates and checking his/her grades online. He/She has just found out that he/she failed an important course he/she tried very hard in.

4	J.K. is watching a movie in the living room with his/her family. He/She just found out that his/her favorite actress is playing the main character.	J.K. is watching a movie in the living room with his/her family. He/She just found out that his/her least favorite actress is playing the main character.
5	M.J. is playing basketball in a gym full of people. He/she has made all his/her shots.	M.J. is playing basketball in a gym full of people. He/She has missed all his/her shots.
6	T.J. in an arcade with his/her girlfriend/boyfriend playing a video game. He/She has just completed a difficult level and his/her video game character gained a life.	T.J. is in an arcade with his/her girlfriend/boyfriend playing a video game. He/She has just failed a difficult level and his/her video game character lost a life.
7	K.C. went to a beach with his/her girlfriend/boyfriend preparing to sunbathe. He/She just found a beautiful shell for his/her shell collection.	K.C. went to a beach with his/her girlfriend/boyfriend preparing to sunbathe. He/She just found a pile of dirty garbage right on his/her favorite place to sunbathe.
8	A.J. is in a library with other students working on an important project. He/She has just finished and saved his/her work, and he/she gets to go to a party with friends.	A J. is in a library with other students working on an important project. He/She forgot to save and has lost his/her work, and now has to work all night.

Figure 3.1

The Percentage of East Asians and European Americans Following the Valence of the Face, Situation, Being Dialectical, and Attributing New Neutral Emotions



CHAPTER IV

Emotion Expression Across Cultures in Online Settings

Abstract

Previous cross-cultural comparisons of the expression of emotion have found that East Asians, compared to European Americans, are encouraged to limit expression of emotions (Markus & Kitayama, 1991; Tsai & Levenson, 1997). However, little is known about whether this comparatively subdued expression of emotion would manifest itself in online settings. We aimed to discover cultural differences and similarities of emotion expression, by analyzing actual emoticon usage across cultures. Study 1 compared the number of emoticons from 843,251 tweets on the Twitter server by North Americans and East Asians, and found that East Asians used more emoticons overall and also used more text-based emoticons, while European Americans used more unicode-based emoticons. Study 2 investigated the expression of emotion across cultures in four conditions that manipulated the valence of the situation (i.e., positive versus negative) as well as the person directly affected by the situations (self vs. other). The results showed that East Asians/Asian Americans used more emoticons than European Americans across conditions. We also saw a marginal interaction effect for the self vs. other condition by culture. While European Americans used more emoticons when they were relaying news about themselves than when responding to an interlocutor's news, East Asians used more emoticons when responding to an interlocutor's news than when texting about their situations. We additionally replicated previous findings that females are more emotionally expressive than males. Our interpretation of this result and our additional suggestions for research are described.

New technology has rapidly changed how people communicate and express themselves. Most previous work on culture and emotion focuses on off-line situations (e.g., laboratory situations and remembered face-to-face interactions). Thus, whether findings translate to the online social context is unclear. Addressing this issue is important because online social networks are now ubiquitous.

One of the few studies to look at the experience and perception of emotions across cultures online is Lu et al., 2016. By analyzing data from 3.88 million active users of unicode-based emoticon keyboards from 212 countries, they showed that a significant correlation exists between the degree of individualism and emoticon usage, using Hofstede's dimensions of culture. They found that expressing happiness is encouraged in individualism-oriented cultures, while expressing sadness is discouraged. Despite some limitations, such as the lack of East Asian samples and exclusion of text-based emoticons in their analysis, theirs was the first large-scale analysis of emoticon usage. Based on their findings, one might expect more emoticon usage among European Americans than by East Asians, but this comparison does not yet exist.

One study that links online behavior and emotions is Huang et al. (2008), who studied the effects of emoticons and found that users of emoticons felt greater enjoyment and personal interaction, and perceived the information as richer and more useful. However, this research was conducted only on samples of undergraduate students in the United States. Other research has shown that emoticons are not just enjoyable to use, but also a valuable addition to communication. Wang (2015) studied how using emoticons can contribute to the perception of

an intimate experience for Taiwanese people. Wang found that using a combination of text and emoticons produces a higher sense of intimacy than using text or emoticons alone. No studies so far have asked, as this one does, whether East Asian and Western cultures differ in the use of emoticons, and whether this expression of emotion may or may not align with cultural differences in the expression and perception of emotion offline.

Emotion expression across cultures

Cultures differentially encourage emotional expression, resulting in differences in which emotional responses are reinforced in what circumstances (Kitayama, Markus, & Kurokawa, 2000; Markus & Kitayama, 1991; Matsumoto, 1990; Mesquita, 2001; Mesquita & Frijda, 1992; Scherer, 1997). Previous cross-cultural research has shown that European American values such as independence encourage emotion expression in most situations, while constraining the use of emotion suppression primarily to self-protective acts of withdrawal in the face of social threats (Markus & Kitayama, 1991; Matsumoto, 1990; Oyserman, Coon, & Kemmelmeier, 2002; Tsai & Levenson, 1997; Wierzbicka, 1993, 1994). On the other hand, research suggests that East Asian values such as interdependence encourage suppression of emotion. Researchers have argued that Asian cultures encourage suppression in an effort to preserve relationships, and especially in circumstances where there is a concern about hurting someone else.

For example, Matsumoto (1989) examined the intensity ratings of facial expressions of negative emotions as a function of the power distance ranking of the country (Hofstede, 1983). Power distance is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. The results

from his studies showed a negative correlation between the average perceived intensity of negative expressions and the power distance ranking of the countries. That is, individuals in high power distance countries reported seeing less intense negative emotions expressed on faces than by individuals in low power distance countries. Matsumoto argued that high power distance countries have a hierarchical structure, and that the expression of negative emotions is threatening to the existing social order. Thus, it would be protective of the social order to not express or perceive a high degree of negative emotion in faces.

While most studies provide evidence of emotion suppression by East Asians, we believe there are contexts where East Asians are as expressive of emotion or more expressive than European Americans. One of the first studies to investigate cultural differences in emotion expression was done by Ekman and Friesen (Ekman, 1973; Friesen, 1972). When the participants watched stressful films in the presence of an experimenter, American participants expressed the negative emotions of disgust, fear, and distress, while the Japanese participants masked their negative feelings with slight smiles. However, when the Japanese and American participants watched a stressful film alone, then they all expressed their negative feelings on their faces, and differences were not detected.

In online situations, two hypotheses are plausible. The emotion expression in online settings could resemble that of off-line situations, showing that European Americans are expressive of their emotions while East Asians are suppressing theirs. On the other hand, East Asians might be as or more expressive than European Americans. This reversal could occur for a couple of reasons. First, online settings are free of the need to be sensitive to others' expressions

or to regulate one's own emotional expressions, because the people cannot see each other. This lack of constraint might allow people to express emotions more freely. Second, online settings are more ambiguous than offline settings, where various non-verbal cues (e.g., facial expression, tone of voice, bodily expression) exist. Since East Asians are motivated to express emotions promoting group harmony, they might use more emoticons to clearly express their emotions.

Study 1

Method

Procedure

Two hundred North American (100 Americans and 100 Canadians) and 200 East Asian (100 Japanese and 100 South Koreans) users were randomly selected from the Twitter wall. To verify the authenticity of each cultural group member, we used Twitter's advanced search function (<https://twitter.com/search-advanced>) to filter the language each user used and the place the users were located. For example, we selected Korean samples that used Korean and were tweeted in Korea only. From this search, we collected 100 user names for each region (Korea, Japan, U.S., and Canada). In total, there were 418,690 North American tweets and 424,561 East Asian tweets.

To collect tweets from these users, we used the application programming interface (API) Twitter offers. All tweets are saved on the Twitter server, and API is the channel to communicate with that server. To have access to the Twitter server, we created an ID for this research and received an authentication from Twitter. We used a Python library called 'tweepy' for

authentication and data collection, and coded additional scripts for the emoticon search using Python.

After collecting tweets from our subjects, we searched for unicode based emoji, provided on phone, as well as text-based emoticons. Unicode emojis are pictographs (pictorial symbols) that are typically presented in a colorful form and used online in text, such as ☺. Text-based emoticons were emoticons made with the combination of letters, as in :). We did not have a specific hypothesis about cultural differences in using different modes of emoticons (i.e., unicode vs. text-based). We then counted the number of emoji/emoticons from each tweet and then categorized each emoticon by valence: positive (smiling and laughing faces), surprise, neutral (faces in thought, unemotional faces), and negative (faces expressing anger, sadness, disgust, contempt, and fear). This dataset provided information only on user's' tweeted language, location of users, and emoticons used by these users. Other information, such as participants' gender, could not be obtained due to the limited access. The only available information from user information was the language used from tweets and location of users.

Results

Overview

The analyses were designed to address cultural differences and similarities in emoticon use across two regions (U.S., Canada; Japan, Korea). The first question of interest is whether any differences emerge in the frequency of emoticon use in Twitter.

Total Emoticons. We first performed a chi-square analysis to examine the relation between culture and presence of emoticons in tweets (Table 4.1). There was a significant association

between the culture and whether or not emoticons were present in tweets [$\chi^2(1, N=843251) = 2268, p < .001$]. East Asians were more likely to have emoticons in their tweets (43.1 %) than North Americans (38%). We also performed a Welch t test for cultural difference, because the equal variance assumptions did not hold. The results showed a main effect of participant culture for the total number of emoticons ($t(1, 802793.164) = -35.054, p < .001, 95\% \text{ CI } [-.080, -.072]$). East Asians used more emoticons ($M = .569, S.E. = .002$) than European Americans did ($M = .492, S.E. = .002$). This hypothesis still held when we performed a linear mixed model with our subjects' user identification as a correlated random factor [$F(1, 413.55) = 5.53, p = .019, 95\% \text{ CI } [-.15, -.01]$].

Text-based Emoticons. East Asians used more text-based emoticons than North Americans did [$F(1, 413.98) = 26.62, p < .001, 95\% \text{ CI } [-.249, -.111]$]. This was the case for positive, negative, and neutral emoticons. The full range of text-based emoticons used can be seen in Table 4.2. This cultural difference was more pronounced in the use of positive emoticons [$F(1, 413.17) = 26.77, p < .001, 95\% \text{ CI } [-.103, -.046]$] than in the use of neutral emoticons [$F(1, 419.53) = 8.76, p = .003, 95\% \text{ CI } [-.006, -.001]$], or negative emoticons [$F(1, 415.30) = 10.24, p = .001, 95\% \text{ CI } [-.016, -.039]$]. There was no difference between culture in using emoticons for surprise [$F(1, 478.817) = .010, p = .919$].

Unicode-based Emoji. North Americans used more unicode-based emoji than East Asians did [$F(1, 420.49) = 44, p < .001, 95\% \text{ CI } [.115, .211]$]. North Americans used more positive, neutral, and negative emoji.

Discussion

Results from Study 1 support our hypothesis that East Asians use more emoticons than North Americans do, showing that context of use matters when considering expression of emotion. The online environment may ease the constraint on expressing emotion that has been observed in face-to-face East Asian communicative contexts. Similar to being alone in the laboratory without the experimenter as in the Ekman & Friesen research, East Asians might be free of pressure to control their expression of emotion when they tweet. The explanation remains to be further explored with follow-up research.

Thus, we conducted a further study to investigate the mechanism behind the cultural difference in the expression of emotion in online settings. We also included additional means of expression in Study 2. In Study 1, the only dependent variable we looked at was the usage of emoticons, because it was too challenging to analyze other ways to express emotion due to the size of the dataset (i.e., 845,251 tweets). To address this limitation from the previous study, in Study 2, we compared not only the number of emoticons, but also special symbols used for expression of emotion, verbal expression of emotion, and extra letters used for expression of emotions.

Study 2

Method

Overview

In a within-subject study, each participant was assigned to four conditions in random order that varied the valence of the situation (i.e., positive versus negative situation) as well as the person directly affected by the situation (self vs. recipient). In the positive conditions,

participants were asked to type in what they would normally say in a text message when something positive happened (e.g., winning a lottery) to them or to their friends. In the negative conditions, they were asked to do the same for negative situations (e.g., a death in the family).

We predicted that East Asians would be more emotionally expressive (e.g., have more emoticon usage) than European Americans. The other-happiness condition seemed especially likely as a means of promoting harmony. Thus, we predicted the strongest cultural differences in that condition. We expected that participants in general would use fewer emoticons for the other-sadness condition (e.g., a death in the family) because emotion expression is not encouraged in sad situations in either culture even in face-to-face interactions.

We also expected a gender difference in emotion expression in texting. Gender differences in emotion expression have been widely studied, and, with few exceptions (Cupchik & Poulos, 1984; Fridlund, 1990; Zuckerman et al., 1976) results have shown that women are more emotionally expressive than men. This conclusion has been reached using a variety of expression measures, such as Electromyography (EMG) (Lang, Greenwald, Bradley, & Hamm, 1993), and self-report of expression (Gross & John, 1995; Kring et al., 1994). Replicating previous studies, we hypothesized that females would be more expressive than males in the online texting context.

Coding schemes. A coder who was blind to the cultural group counted the number of both text-based emoticons and unicode emoticons,³ specific symbols used for expression of emotion (! to represent surprise, ~ to represent emphasis of their message), verbal expression of emotion (e.g.,

³ There were only two instances of unicode-based emoticons used by participants.

yay, wow, lol (laugh out loud)), and extra letters used for exaggerated expression of emotions (e.g., goooooood).

Participants

A total of thirty-seven European Americans (17 female, $M_{\text{age}} = 27.84$) and forty-four Asian Americans (17 female, $M_{\text{age}} = 27.99$) were recruited from Amazon.com's Mechanical Turk. Participants were paid 30 cents for their responses to 10 minutes online survey.

Results

Emoticons. In order to test our hypothesis about emoticon usage, we performed a 2 (participant culture) X 2 (the person affected by the news) X 2 (valence of situation) repeated measures ANOVA.

For between-group differences, we found a significant effect of culture [$F(1, 79) = 4.47$, $p = .038$, $\eta_p^2 = .054$]. As we hypothesized, the Asian/Asian American group used more emoticons than European Americans did ($M_{\text{Asian}} = .273$, $S.E._{\text{Asian}} = .041$ vs. $M_{\text{Euro}} = .145$, $S.E._{\text{Euro}} = .044$). We also observed a significant difference between male and female [$F(1, 79) = 8.26$, $p = .005$, $\eta_p^2 = .095$]. Consistent with the previous literature, females used more emoticons than males did ($M_{\text{female}} = .3$, $S.E._{\text{female}} = .042$ vs. $M_{\text{male}} = .13$, $S.E._{\text{male}} = .041$). When analyzing the data with gender as a covariate variable, we still found a significant cultural difference [$F(1, 78) = 4.09$, $p = .047$, $\eta_p^2 = .05$].

We also saw a marginal interaction effect for the self vs. other condition by culture [$F(1, 79) = 2.34$, $p = .13$, $\eta_p^2 = .029$]. While European Americans used more emoticons when they

were relaying news about themselves than when responding to an interlocutor's news ($M_{\text{self}} = .16$ vs. $M_{\text{others}} = .13$), East Asians used more emoticons when responding to an interlocutor's news than when texting about their own situations ($M_{\text{self}} = .24$ vs. $M_{\text{others}} = .3$).

Valence. We found a significant effect of valence from the total score of the four sub-scores of emotion expression (e.g., emoticons, special symbols, repeated letters, and verbal expression) [$F(1, 79) = 45.65, p < .001, \eta_p^2 = .366$]. Participants from both cultures were more expressive when responding to positive situations than to negative situations ($M_{\text{Positive}} = 2.06, S.E._{\text{Positive}} = .248$ VS. $M_{\text{Negative}} = .483, S.E._{\text{Negative}} = .072$). We did not find an interaction effect with valence of the situations and culture.

Specific Symbols. We found a significant gender effect [$F(1, 78) = 3.97, p < .05, \eta_p^2 = .048$], but no effect of culture ($F < 1$) in the use of special symbols, such as the exclamation point, to convey emotion. Females used more specific symbols than males did ($M_{\text{female}} = .70, S.E._{\text{female}} = .13, M_{\text{male}} = .34, S.E._{\text{male}} = .12$).

Repeated Letters. Similar to the usage of special symbols, we found an effect of gender on the use of repeated letters [$F(1, 78) = 4.70, p = .033, \eta_p^2 = .057$]. Females lengthened emotional words more than males did ($M_{\text{female}} = .37, S.E._{\text{female}} = .08$ vs. $M_{\text{male}} = .11, S.E._{\text{male}} = .08$).

Asian/Asian Americans elongated words more than European Americans did ($M_{\text{Asian}} = .32, S.E._{\text{Asian}} = .08$ vs. $M_{\text{Euro}} = .14, S.E._{\text{Euro}} = .09$), but the effect of culture was marginal [$F(1, 78) = 2.36, p = .13, \eta_p^2 = .029$].

Verbal Expression of Emotion. We also saw the effect of gender in this mode of emotional expression [$F(1, 78) = 13, p = .001, \eta_p^2 = .057$]. Females used verbal expression of emotions,

such as lol (laugh out loud), more than males did ($M_{\text{female}} = .30$, $S.E_{\text{female}} = .036$ vs. $M_{\text{male}} = .11$, $S.E_{\text{male}} = .036$).

Total Emotion Expression. We computed the total score of the four sub-scores of emotion expression (e.g., emoticons, special symbols, repeated letters, and verbal expression). A marginal cultural difference was found [$F(1, 78) = 2.36$, $p = .13$, $\eta_p^2 = .029$]. Consistent with previous results, we also saw the effect of gender [$F(1, 78) = 11.85$, $p = .001$, $\eta_p^2 = .132$]. In general, females were more expressive than males ($M_{\text{female}} = 1.76$, $S.E_{\text{female}} = .186$ vs. $M_{\text{male}} = .83$, $S.E_{\text{male}} = .186$).

Valence. We also found a strong main effect of valence from overall emotion expression [$F(1, 78) = 45.65$, $p < .001$, $\eta_p^2 = .366$]. Participants tend to be more expressive in positive situations than negative situations ($M_{\text{positive}} = 2.06$, $S.E_{\text{positive}} = .248$ vs. $M_{\text{negative}} = .48$, $S.E_{\text{negative}} = .072$).

Discussion

The goal of our research was to investigate emotion expression in online settings. We conducted two studies to explore whether a cultural difference in emotion expressivity exists and also investigated possible mechanisms to explain such cultural difference. We hypothesized that, when expressing emotions online, East Asians would be more expressive than European Americans due to reduced constraints to down regulate their emotion.

Our conclusion from Study 1 is that East Asians are more expressive than European Americans in their use of emoticons. This result was especially the case for the usage of text-based emoticons. By contrast, European Americans favored the use of unicode-based emoticons.

We speculated that East Asians may prefer text-based emoticons since they have greater social sensitivity than European Americans. East Asians might feel more comfortable when they can choose and display a range of symbols in ways that is most appropriate in each situation. This contradicts an assumption made in Lu et al., that text-based emoticons offer a limited range of expression. At a minimum, text-based emoticons need to be included in research in emotion expression online, and they appear to interact with cultural difference in an interesting way.

Study 2 replicated results of Study 1, and we also found a marginal effect that showed that the context of emotion expression matters. European Americans used more emoticons when they were relaying news about themselves than when responding to an interlocutor's news. By contrast, East Asians used more emoticons when responding to an interlocutor's news than when texting about their situations. This result is in line with previous research that shows that emotional activities are moderated by cultural values. We reasoned that while European American values such as independence encouraged open emotion expression in most situations, including the situation of relaying good news about themselves, Asian cultural values encourage suppression of emotion. However, when responding to other people's good news, expressing positive emotions is in line with their cultural norm of encouraging group harmony. Future research with a larger sample would be crucial in checking on the existence of this interaction effect of culture and the context of emotion expression.

We also found a strong effect of gender. Females were more expressive than males across different conditions. This data made us contemplate the relative effects of both gender and culture. In explaining both cultural and gender differences, the same self-construal concepts have

been used, such as independent vs. interdependent, agentic vs. communal self-construals. When Kashima et al. investigated a self-construal involving 5 cultures (Australia, the United States, Hawaii, Japan, and Korea), they found that differences between these cultures are captured mostly by the extent to which people see themselves as acting as independent agents, whereas gender differences are best explained by the extent to which people regard themselves as emotionally related to others. Perhaps in the usage of emoticons, being emotionally related to others is more important than being an independent agent.

The results and interpretation of the data support a caution that culture is not unitary. Previous research has also argued that some patterns of cultural differences are stronger for females than males. For example, Bagozzi et al. found that experience of positive and negative emotions were correlated inversely for Americans, whereas they were positively correlated for Chinese, and this pattern was stronger for women than men in both cultures. We also have to keep in mind that the effects of gender and culture are intertwined, since they simultaneously affect our subjects, as suggested by intersectionality researchers (Crenshaw, 1995). By looking at within-cultural differences, we will better understand the nature of the relationship between cultural difference and the expression of emotion, whether off or online.

We found that previous findings on culture and emotion from off-line situations are not directly translated into the online social context. Evidence from past research suggested that Asian cultures encourage suppression of emotion in an effort to preserve relationships. We believe that in certain contexts East Asians could be as expressive or more expressive of emotions than European Americans to serve the same goal of group harmony.

Our research suggests that examining the use of emoticons, superficial as they may sometimes seem, can be a useful resource for studying cultural difference in the expression of emotion.

Reference

Bagozzi, R. P., Wong, N., & Yi, Y. (1999). The role of culture and gender in the relationship between positive and negative affect. *Cognition & Emotion*, 13(6), 641-672.

Costa Jr, P., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: robust and surprising findings.

Cupchik, G. C, & Poulos, C. X. (1984). Judgments of emotional intensity in self and others: The effects of stimulus, context, sex, and expressivity. *Journal of Personality and Social Psychology*, 46, 431 - 439

Crenshaw, K. (1995). 2005. "Intersectionality and Identity Politics: Learning from Violence against Women of Color." *Feminist Theory: A Reader*, 533-42.

Ekman, P. (1973). Cross-cultural studies of facial expression. *Darwin and facial expression: A century of research in review*, 169222, 1.

Farver, J. A. M., Kim, Y. K., & Lee-Shin, Y. (2000). Within cultural differences: Examining individual differences in Korean American and European American preschoolers' social pretend play. *Journal of Cross-Cultural Psychology*, 31(5), 583-602.

Fridlund, A. J. (1990). Sociality of solitary smiling: Potentiation by an implicit audience. *Journal of Personality and Social Psychology*, 60, 229-240.

Gross, J. J., & John, O. P. (1995). Facets of emotional expressivity: Three self-report factors and their correlates. *Personality and Individual Differences*, 19, 555-568.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of international business studies*, 14(2), 75-89.

Huang, A. H., Yen, D. C., & Zhang, X. (2008). Exploring the potential effects of emoticons. *Information & Management*, 45(7), 466-473.

Kashima, Y., Yamaguchi, S., Kim, U., Choi, S. C., Gelfand, M. J., & Yuki, M. (1995). Culture, gender, and self: a perspective from individualism-collectivism research. *Journal of personality and social psychology*, 69(5), 925.

Kitayama, S., Markus, H. R., & Kurokawa, M. (2000). Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition & Emotion*, 14(1), 93-124.

Kring, A. M., Smith, D. A., & Neale, J. M. (1994). Individual differences in dispositional expressiveness: The development and validation of the Emotional Expressivity Scale. *Journal of*

Personality and Social Psychology, 66, 934-949.

Lang, P. J., Greenwald, M. K., Bradley, M. M., & Hamm, A. O. (1993). Looking at pictures: Affective, facial, visceral, and behavioral reactions. *Psychophysiology*, 30, 261-273.

Lowry, P. B., Zhang, D., Zhou, L., & Fu, X. (2010). Effects of culture, social presence, and group composition on trust in technology-supported decision-making groups. *Information Systems Journal*, 20(3), 297-315.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological review*, 98(2), 224.

Matsumoto, D., & Ekman, P. (1989). American-Japanese cultural differences in intensity ratings of facial expressions of emotion. *Motivation and Emotion*, 13(2), 143-157.

Matsumoto, D. (1990). Cultural similarities and differences in display rules. *Motivation and emotion*, 14(3), 195-214.

Mesquita, B. (2001). Culture and emotion: Different approaches to the question. In T. J. Mayne & G. A. Bonanno (Eds.), *Emotions and social behavior. Emotions: Current issues and future directions* (pp. 214-250). New York, NY, US: Guilford Press.

Mesquita, B., & Frijda, N. H. (1992). Cultural variations in emotions: a review. *Psychological bulletin*, 112(2), 179.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological bulletin*, 128(1), 3.

Park, J., Kitayama, S., Markus, H. R., Coe, C. L., Miyamoto, Y., Karasawa, M., ... & Ryff, C. D. (2013). Social status and anger expression: the cultural moderation hypothesis. *Emotion*, 13(6), 1122.

Tsai, J. L., & Levenson, R. W. (1997). Cultural influences on emotional responding: Chinese American and European American dating couples during interpersonal conflict. *Journal of Cross-Cultural Psychology*, 28(5), 600-625.

Wang, S. S. (2016). More than words? The effect of line character sticker use on intimacy in the mobile communication environment. *Social Science Computer Review*, 34(4), 456-478.

Wierzbicka, A. (1993). Reading human faces: Emotion components and universal semantics. *Pragmatics & Cognition*, 1(1), 1-23.

Scherer, K. R. (1997). The role of culture in emotion-antecedent appraisal. *Journal of personality and social psychology*, 73(5), 902.

Zuckerman, M., Hall, J. A., DeFrank, R. S., & Rosenthal, R. (1976). Encoding and decoding of spontaneous and posed facial expressions. *Journal of Personality and Social Psychology*, 34, 966-977.

Table 4.1

Chi-square Analysis (Culture x Presence of Emoticons) from Study 1

	North American	East Asian	Total
Tweets without emoticons	259509 (62.0 %)	241521 (56.9 %)	501030
Tweets with emoticons	159181 (38.0 %)	183040 (43.1 %)	342221
Total	418690	424561	843251

Table 4.2

Text Based Emoticons Used in Study 1

Positive			Surprise	Neutral		Negative		
:~)	=D	*^0^*	>:O	:|	·_;	>:[	:{	D:
:)	:~))	*^o^*	>:O	:~|	·;	:~(	;(	D8
:o)	^_~	^_~	:~O	(^^_	^^;	:(	:~||	D;
:]	(^_~)-☆	#^.^#	:O	^_~;	^_~;	:~c	:@	D=
:3	+_+	^_~	:~o	~_~;	^_~;	:~c	>:(	DX
:c)	+o+	^_~	:o	~_~;	(~_~)zzz	:c	:~(	v.v
:>	^_~	W(~o~	8~0	~_~;		:~<	:~(	D~!
=]	^O^	)/	O_o	:?;		:~c	:~)	>:\
8)	^^	W(^o^)	o~o			:<	:~)	>:/
=)	^o^	/	O_o			:~[	D:<	:~/
:}	*^_~^*	W(-	o_o			:[	:###	QQ
:^)	^!^	o~)/	o_o			:~.	..	e_e
:~D	>^_~^<	\(^.	O~O			:/~	~;	e_e
8~D	^<^	^)/				:~\	/_;	-
8D	^_~	*_*				=/~	T_T	. -
x~D	^_~	@_@				=\	:;	-
xD	^_~	\(o~o)/				:L	:O;	-
X~D	^_~	^v^				=L	ToT	-
XD	^_~							=_=-

=-D	^^ *^。 ^*	^u^				:S ?_? :###..	T▽ T Q.Q T.T	- "- ~_ ~x -- x - m - ST O OT Z OT L orz
-----	--------------	-----	--	--	--	---------------------	-----------------------	---

Table 4.3

Means of Emotion Expressions Online from Study 2

	Participant Ethnicity		p-value
	European American	Asian American	
Emoticon	M = .145, S.E.= .044	M = .273, S.E = .041	p = .038
Specific Symbols	M = .446, S.E.= .134	M = .577, S.E = .123	p = .474
Repeated Letters	M = .142, S.E.= .085	M = .142, S.E. = .078	p = .128
Verbal Expression of Emotion	M = .166, S.E. =.040	M = .239, S.E. = .037	p = .185

CHAPTER V

Discussion

Through the preceding three chapters, this dissertation illustrated the intricate relationship between culture and emotion perception and expression across three different domains.

Chapter Two examined the perception of mixed emotion across culture. Cultures vary in the extent and frequency of *experiencing* mixed emotion (Bagozzi, Won, & Yi, 1999; Miyamoto et al., 2010). The *perception* of mixed emotion across cultures, however, has not previously been explored. The present research hypothesized that Japanese may perceive more mixed emotion than Americans do, and the findings suggested support for this prediction. We also examined possible interactions between attribution and mixed emotion perception and found that cultural difference was mediated by the degree to which participants believed the expression of emotion was caused by the person's personality (internal attribution).

Whereas Chapter Two demonstrated the effect of culture on perceiving mixed emotion, Chapter Three sought to identify the effect of culture on the relative importance of context or facial expression in inferring others' emotions. Previous research has repeatedly showed that whereas European Americans tend to be encouraged culturally to express genuine emotions, East Asians are learn to control emotion through suppression. Due to this difference, the present research hypothesized that European Americans would rely primarily on facial expression while East Asians would depend on situational information in interpreting the emotions of others. By changing the context information from non-social vignettes (Study 1) to social vignettes (Study 2), we found that the presence of others in the vignettes changed the decision making for East

Asians, but European Americans were consistent when inferring emotions. However, we found no cultural difference in the reliance on the face or the situation.

Whereas Chapters Two and Three explored cultural difference in perception of others' emotion, Chapter Four explored cultural differences in the expression of emotion online, rather than in laboratory settings. As already mentioned, previous research has shown that European American culture tends to encourage emotion expression, while East Asian values such as interdependence encourage suppression of emotion (Markus & Kitayama, 1991; Tsai & Levenson, 1997). The emotion expression in online situations could resemble that of off-line situations, showing that European Americans are expressive of their emotions while East Asians are suppressing theirs. On the other hand, there might not be a cultural difference or East Asians might be even more expressive than European Americans. This reversal could occur because communicators in online settings are free from the pressure of having their facial expressions evaluated by others. Indeed, Study 1 showed that East Asians are more expressive than European Americans in their use of emoticons. From Study 2 we found a marginal interaction effect of culture and context. European Americans, while still less expressive than East Asians, used more emoticons when they were relaying news about themselves than when responding to an interlocutor's news. By contrast, East Asians used more when responding to an interlocutor's news than when texting about their situations.

All together, the present dissertation depicts cultural differences in how people perceive and express emotions from various sources, such as facial expression, contextual information, and online settings. These attempts to capture nuanced differences in varied contexts support the

preceding literature on culture and emotion (Miyamoto et al, 2010; Grossmann et al., 2015). Chapter Three showed that the reliance on contextual information is heavily influenced by the nature of the vignettes. Chapter Four also showed that the mode of expressing emotions (i.e., text-based emoticons vs unicode-based emoticons) and the context of using emoticons (i.e., which person is directly affected by the situation) matters.

At the same time, there are some questions yet to be answered. Some of the issues specific to each study were addressed in each chapter. From Chapter Two, we do not have explanations for the relationship between making internal attribution and perceiving mixed emotion. It would be interesting to look into the open-ended answers in Study 3 to find the reason behind this. Additionally, we do not have a clear explanation about what it means to perceive mixed emotions. It can mean that East Asians tend to be more hesitant to make a strong assumption based on facial expression. Since East Asians learned culture-specific display rules to govern their emotional expression (Ekman & Friesen, 1972), East Asians might have developed their decoding rules (Buck, 1984) to discount the extent of emotion they observe. This decoding rule (Buck, 1984) can be applied to different possibilities. Since East Asians are more dialectical in experiencing emotions (i.e., experiencing negative emotions in positive situations; Miyamoto et al., 2010), they might be more prone to perceive dialectical emotions from facial expression.

From Chapter Three, future studies need to locate the boundary conditions of the cultural differences in using facial expression as critical information by examining different intensities of context information. We learned that the existence of other people was critical in how people

infer others' emotion. It would be important to explore this question with a different intensity of the facial expressions or vignettes. Also, although we were limited to using context information that had been designed for different research questions (Study 1), this question could be explored with different set of stimuli than general negative or positive situations. European Americans are culturally encouraged to express experienced emotion fully, but numerous situations exist to mask their emotions. For example, people across cultures would additionally regulate their behavioral and emotional expression in front of a supervisor in work settings. However, additional situations in which East Asians would more likely to mask their negative emotions exist. Expressing one's attitude toward issues that are not relevant to their work could be more burdensome for East Asians than for European Americans. It would be interesting to pursue this question of perceived sincerity of facial expressions with context stimuli that are more appropriate for capturing this cultural phenomenon.

Another issue regards new contexts for studying emotion and culture in the online world. Although the present dissertation demonstrated that East Asians were more expressive on line compared to European Americans, some evidence suggested that the result could look different when investigating different channels of emotion expression. For example, European Americans were more expressive in using unicode-based emoticons. It would be fruitful to find the reason behind East Asians' preference for using text-based emoticons. Comparing how many text-based emoticons they can generate between cultures could reveal whether the size of one's emoticon vocabulary makes a difference. It would also be interesting to see how both cultural groups convey mixed emotions in an online setting. Verifying this existence of culture by context of

emotion expression interaction with a larger sample is also a critical issue to resolve with future studies. Investigating the modern channels of communications could help further identify mechanisms behind existing evidence of cultural similarities and differences in expressing and perceiving emotions.

While these issues await further examination, a picture has emerged from the three chapters presented here. East Asians are less spontaneous when it comes to perceiving and expressing emotions. They were less likely to infer clear emotion from facial expressions and made more effort to either suppress or express appropriate emotions. Although there is an accumulating body of data demonstrating cultural differences in emotion perception and expression (Bagozzi, Won, & Yi, 1999; Tsai & Levenson, 1997), there are still important components of emotion and new context of emotional world that need academic attention so that we can have a balanced view toward to cultural differences in emotions. This dissertation was an attempt to address at least a part those missing pieces, and I hope this work would be useful for more future endeavors to come.