Perception of Mixed Emotion Across Cultures

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Abstract

Previous cross-cultural comparisons of experiencing mixed emotion have found that East Asians experience positive and negative emotions simultaneously more than European Americans. However, not much is known about differences across cultures in how people perceive mixed emotion from facial expressions. By presenting facial expressions varying in valence, race, and gender to participants, 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 believe 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 three studies consistently supported our hypothesis, showing that Japanese perceived more mixed emotions from facial expressions than European Americans.

**Introduction**

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 communication in negotiation settings, arguing that it is hard to read the intention of Japanese businessmens’ facial expressions, compared to American businessmen. In particular, negotiators from Western cultures see Japanese people’s expressions as ambiguous and contradictory.

Is this masked expression of Japanese businessmen only observed in negotiation settings, or is this a more general characteristic of East Asians’ expression patterns? This cultural anecdote suggests a set of intriguing questions about the authenticity of facial expressions across cultures, and why we see those cultural differences. Do East Asians more often express emotions that are incongruent with their true feelings? And do East Asians have different assumptions about the authenticity 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 in 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](http://en.wiktionary.org/wiki/%E6%9C%AC%E9%9F%B3) *honne*) and the behaviors and opinions one displays in public ([建前](http://en.wiktionary.org/wiki/%E5%BB%BA%E5%89%8D) *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 may feel certain emotions, but in the interest of group harmony, would not express them if they conflict 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 one of the components of event-related potentials called the parietal late positive potential (LPP) as an objective indicator of suppression of emotion. As predicted, East Asians showed a significant decrease of the LPP in the suppression condition, while the effect was completely absent for European Americans. This 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 current emotion expression literature argued that whereas East Asians are trained to attenuate the overt expressions of their feelings, European Americans are encouraged to express emotions fully (Rothbaum et al., 2000). 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).

However, there is some evidence suggesting that European Americans use different working strategies 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 as a regulation technique 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, a significant decrease of the LPP was found, which was absent during the suppression condition.

The above research raises an interesting question. Are East Asians culturally trained not to express emotions, while European Americans are culturally trained to fully express emotions? Evidence suggests that control of emotional expression by suppression (Matsumoto et al., 2008) is valued in East Asia. Also, all extreme emotions are discouraged; even positive emotions are thought to bring jealousy from others (Edwards, 1996). These cultural practices suggest that expression of one’s inner self, including one’s genuine feelings, is not valued in East Asian contexts (Kim and Markus, 1999). The East Asian practice of emotion suppression stands in stark contrast to European Americans’ approval of sincere emotional expression.

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

The research reported here focuses on 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 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 than following the valence of 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**

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, and there are three major experimental paradigms that investigate this question (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, 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.” a context story used in Goodenough and Tinker’s 1931 study). 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 was a car accident followed by a woman screaming. In the other clip, a child was riding a tricycle and again a woman was 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). Overall, contextual information contributed to emotion judgments just as much as facial expression. However, for incongruent conditions, contextual information tended to dominate over facial cues.

Thus, the results from these 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 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 separately and choose the better source or that both sources of information are combined before the final decision is reached.

***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. The research to date has studied only Western subjects. We hypothesized that culture would affect whether people rely primarily on the face or the situational information in inferring emotions.

Our hypothesis is that East Asians might follow the valence of the situation because they think the facial expression is not an authentic expression of genuine feelings, while European American follow the valence of the face and assume that the situation is perceived differently from what it seems. However, culture can play a role in emotion perception of facial expression in various ways. The data were collect to test how culture influence the perception of dialectical emotions and attribution style. As subsidy area hypotheses, we investigated these two research questions.

**Culture’s influence on dialecticism**

Past studies have demonstrated that East Asians tend to engage in dialectic thinking, embracing contradiction and change (Nisbett, Peng, Choi, & Norenzayan, 2001). In contrast, contradiction is something to be avoided in Western culture. Westerners’ analytic style of cognition is reflected in linear thinking (Ji et al., 2001), building simple and explicit causal models. These cognitive style differences can result in unique, culturally-based attribution patterns for how expression displays are read to determine *what* emotions are being expressed, and *why* those emotions are shown. East Asian may exhibit a dialectical emotional style. There are various ways in which dialecticism may play out in emotional style – for example, simultaneous experience of opposing-valence emotions. In the present work, we focus on the perception of dialectical emotion – that is, the co-occurrence of positive and negative emotions. Cross-cultural studies have shown that East Asians are more likely to show dialectical emotional style than European Americans (Bagozzi, Wont, & Yi, 1999). Also, while European Americans show strong negative correlations between positive and negative emotions, East Asians exhibit weaker negative or even positive correlations between opposite-valenced emotions (Kitayama, Markus, & Kurokawa, 2000; Schimmack, Oishi, & Diener, 2002). However, none of the previous studies examined the *perception* of dialectical emotion. Rather, they focused on the subjective experience of positive emotions and negative emotions, or the condition for the occurrence of dialectical emotions. We thus explored the relationship between cultural background and the perception of dialectical emotion by presenting combinations of facial expression and context information.

Specifically, we examined whether East Asians perceive more dialectical emotions in both the open-ended essay format and the closed-ended data. We predicted that, in the congruent condition (e.g., smiling face with positive situation, frowning face with negative situation), cultural differences between East Asians and European Americans would not emerge since the context matches the facial expression. However, in the incongruent condition (e.g., smiling face with negative situation, frowning face with positive situation), we predicted that East Asians would perceive more dialectical emotions than European Americans.

**Culture’s influence on attribution style**

Cultural differences in cognitive style (Nisbett, Peng, Choi, & Norenzayan, 2001) can also affect the type of attributions people make when perceiving other peoples’ emotion (Shweder & Bourne, 1984). East Asians tend to perceive complex interactions between internal and external factors, whereas European Americans often make an internal attribution and underestimate the influence of external factors (Norenzayan & Nisbett, 2000). Similarly, Morris and Peng (1994) showed that Chinese newspapers tended to explain murders in terms of the situation, whereas American newspapers were more likely to explain the murders in terms of internal dispositions of the murderers.

We reasoned that cultural differences in attribution style would emerge in people’s appraisal of others’ emotion. People consider why the other person is feeling happiness, anger, surprise, and the like. Any expressed emotions can be the result of an innate trait, such as personality (internal attribution), or they can be the result of external factors, such as outside circumstances or other people (external attribution). Similar to our hypothesis, Masuda and his colleagues (2008) found that Japanese were more likely to reference social context in determining the emotional expression of a target individual, compared with European Americans. Thus, we predicted that East Asians would explain the emotions using more situational and fewer dispositional attributions.

**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 ‘K.C 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 ‘K.C is alone in a gym practicing basketball. She has lost 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 form their response so as to 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. East Asians assume that the face is masking true emotion; European Americans see the person as expressing authentic emotion after interpreting situation differently from what it seems. A smiling face with negative situation condition is especially likely as a means of promoting harmony. Thus we predicted the strongest cultural differences in that condition.

The data we analyzed were collected for a different study with a different purpose and the vignette stimuli we used were not ideal for our main question. To investigate cultural difference in the genuine expression of feeling, it would be best to use social situations where people perceive pressure to control their emotion. The current vignette stimuli, however, were constructed so that the person was always alone. These vignettes were written for different research questions (cultural difference in the perception of dialecticism and attributional style), and it was important that poser’s expressions were not influenced by other people. We explore the data for the original purpose of this study as well. We predicted that East Asians would exhibit more dialectical emotional style – co-occurrence of positive and negative emotions – than European Americans. Lastly, we expected East Asians to make more external attributions, while European Americans make more internal attributions.

**Participants**

Participants were 185 (143 women) undergraduate students from the University of Washington 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. Each pair of vignettes depicted the same context, with different valence. The positive and negative situations used in this study are shown in Table 1.

*Table 1*

*The positive and negative vignettes used in the current study*

|  |  |  |
| --- | --- | --- |
|  | Positive vignette | Negative vignette |
| 1 | K.C. is alone in her car and driving  on an isolated stretch of road.  Her *favorite* song has just come on the radio. | K.C. is alone in her car and driving  on an isolated stretch of road.  Her *least favorite* song has just come on 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 *A grade* 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 *she failed* an important course she tried very hard in. |
| 4 | J.K. is alone in his room reading a book, which is *well written.* | J.K. is alone in his room reading a book, which is offensive and *poorly written*. |
| 5 | M.J. is alone in a gym practicing basketball.  She has *made all her shots.* | M.J. is alone in a gym practicing basketball.  She has *missed all her shots*. |
| 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 *received additional strength.* | T.J. is alone in his room playing a video game.  He has just failed a difficult level and his video game character has *lost additional strength.* |
| 7 | K.C. is alone in her yard preparing to sunbathe.  The sun has just appeared and it is now *warm and sunny.* | K.C. is alone in her yard preparing to sunbathe.  Clouds have just appeared and it is now *cold and rainy.* |
| 8 | A.J. is alone in her room working on an important project. *She has just finished and saved her work.* | A J. is alone in her room working on an important project. *She forgot to save and has lost her work.* |

**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, 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 internal or external 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 internal attribution items were as follow: ‘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 external 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, Asian American male, and 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 (a = .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 poser 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 coded 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 four 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 2 displays the 14 emotion groups that naturally came to mind to 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 four categories based on our research questions (e.g., not genuine, reappraisal, internal attribution, external attribution).

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 two appraisals in the ‘inferring facial expression’ category and the ‘reappraisal’ category. Table 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?”

*Table 2*

Open-Ended Emotion Groups for Emotion-based Coding.

|  |  |
| --- | --- |
| 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*

Categorization for Appraisal Based Coding

|  |  |  |
| --- | --- | --- |
| 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 (Social/Non-Social) | Does the subject mention a *specific* external situation/environment that can be observed by another person? (None social) | “She is angry to be stuck in traffic.” |
|  | Are other people mentioned (implicitly or explicitly)? If yes, is the relationship functional or professional? (Social) | “She is angry that her team mates 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.” |

**Data Analysis (The Authenticity 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 is 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).

We explored how our variables of interest were related to cultural orientation (independent vs. interdependent) of participants, which is measured by Singelis scale (Singelis, 1993). This research explores the general idea that emotional experiences are significant cultural artifacts (Markus & Kitayama, 1004; Shweder & LeVine, 1984). We aimed to investigate whether social orientation (independent self vs. interdependent self) is the most defining factor of emotion perception. By comparing subject’s ratings of the sincerity of facial expressions to the frequency of questioning the authenticity of the expressions, we tried to show the impact of culture on perceiving emotion expression.

To explore the association between the i*ndependent* and *interdependent* cultural self, we computed the average of 12 items assessing *independent* self-beliefs and the other half assessing *interdependent* self-beliefs.

**Results (The Authenticity of the 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 on which source of information (i.e., face or context) participants from each culture follow (H1 and H2).

Most importantly, if the main source of information for each cultural group has been identified, we would next want information about the reason why each source of information was more important. Accordingly, we calculated the percentage of the participants’ mentioning of each variable (i.e., not genuine, reappraisal) across eight combinations of face and context. We next observed whether East Asians would question the authenticity 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,

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, . 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 authenticity of the facial expression in the congruent condition. To examine how much participants think the facial expression was genuine, we focused on two scales related to the authenticity 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***

In order to test our hypothesis about the authenticity of the facial expressions, we performed 2 (participant culture) X 2 (poser culture) rANOVA for both smiling face - positive situation condition and frowning face – negative situation condition.For a scale which asks 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 [Euro 5.00 vs. East Asians 4.63, F (1, 320) = 6.18, P < .05, and the smiling face – positive conditions [Euro 5.43 vs. East Asians 5.09, F (1, 320) = 6.52, P <.05, . 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, = .016]. The participants perceived the European model’s expression as more sincere. Similarly, we found consistent race effects from a scale of asking how fake or forced the expression is (‘how much is this person’s expression fake or forced?’) [F (1, 320) = 18.662, P <.001, = .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 authenticity of the facial expression. There was a marginal effect of culture for the frowning face – negative situation condition with East Asian facial expression, but 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, there were no East Asians questioning the authenticity of facial expression.

**Incongruent conditions**

**General**

We expected to find cultural differences in information – source (face or situation) (H1 and H2) and perception of the authenticity of the facial expression in the incongruent condition. Again, we focused on the two scales related to the authenticity 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***

Overall, 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 smiling faces with negative situations (M = 3.76, S.E. = .076) [F (1, 320) = 18.57, P <.001, =.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, = .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 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, = .043] and a model’s culture by participant culture interaction effect [F (1, 320) = 6.80, P < .05, = .021]. Participants thought that 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. European Americans thought that the Caucasian faces looked more fake than East Asians (M Asian = 3.49, M Caucasian = 3.97), but East Asians did not show 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 authenticity of the facial expression. Also, we did not find a main effect of culture on perception that the person reappraised the situation differently from what it seemed.

To find which source of information (i.e., face or context) participants from each culture follow (H1 and H2), we calculated the percentage of following the valence of face, situation, and being dialectical across four incongruent combination of faces and situations. The result was opposite of what we predicted. The percentage of East Asians’ following the valence of the face was significantly higher than European Americans [F (1, 293) = 4.539, p < .05, = .015]. Also, the percentage of European Americans’ following the situation was significantly higher than East Asians [F (1, 293) = 7.431, p = .007, = .025], as shown by Table 4 and figure 1.

Table 4

Percentage of Following the Valence of Face, Situation, being dialectical, or Attributing Neutral Emotions

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |

Figure 1

Since participants responded differently in terms of what kinds of incongruent condition they were exposed to (smiling face-negative situation, frowning face-positive situation), we separately analyzed by the types of incongruent conditions.

***Frowning face – Positive situation***

**Closed-ended data.** For a scale which asks 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, Participants perceived the East Asians’ frowning face (M = 4.28, S.E = .1) 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 East Asian’s face (M= 3.31, S.E. = .093) [F (1, 320) = 21.07, P <. 001, . Lastly, there was a marginal main effect of culture [F (1, 320) = 2.36, P =.125, . European Americans perceived the expression more fake (M = 3.20, S.E. = .098) than the East Asians (M = 2.98, S.E. = .103).

**Open-ended data.** Similar to the congruent and general incongruent conditions, we did not find a significant cultural difference on how much each cultural group questioned the authenticity 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, . Surprisingly, European Americans perceived the expression more fake (M = 4.27.20, S.E. = .112) than East Asians (M = 4.00, S.E. = .118).

**Open-ended data**. 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 marginal cultural difference on mentioning emotion suppression, when the poser was Asian. While 6.7% of European Americans mentioned that the poser is suppressing emotions, 13% percent of East Asians made an appraisal related to emotion suppression,

**Relationship Between the Self-construal and the Authenticity 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,  = .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,  = .038]. We yielded 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 and the scales related with the authenticity 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).

After we analyzed the data related to the authenticity of expression, we examined the data regarding emotion perception, including the perception of dialectical emotions, and we also investigated attribution style difference between cultures.

**Dialectical Emotion**

We predicted that East Asians would perceive more dialectical emotion. To test our hypothesis about cultural differences in the perception of dialectical emotions in facial expressions, we created a variable that captured the difference between perceived positive emotions and perceived negative emotions. We calculated the mean intensity ratings of negative emotions (e.g., disgust, fear, contempt, sadness, and anger) and positive emotions (e.g., amusement, contentment, happiness, and pride). We then took the difference between these scores as an index of dialectical emotion; higher values indicate lower dialecticism whereas lower values indicate higher dialeticism..

**Results**

Using repeated measures ANOVA, we tested for the between-subject factor of cultural groups and the within-subject factor of model culture (European American, East Asia).

**Congruent condition**

We found a significant main effect of culture [F (1, 320) = 11.75, P <.001, . The difference score between positive emotions and negative emotions was significantly higher for European Americans (M = 4.74, SD = .080) than East Asians (M = 4.33, SD = .084). Thus, perception of dialectical emotions was greater for East Asians. We also found a significant effect by condition [F (1, 320) = 273.973, P <.001, =.461]. Participants responded differently in terms of what kinds of congruent condition they were exposed to (smiling face - positive situation, frowning face – negative situation). Participants were more dialectical when they saw smiling faces with positive situations (M = 5.28, S.E = .076) than frowning faces with negative situations (M = 3.79, S.E. = .072).

**Incongruent conditions**

Consistently, we found a marginal main effect of culture [F (1, 320) = 3.35, P =.068, . The difference score between positive emotions and negative emotions was greater for European Americans (M = 2.84, SD = .089) than East Asians (M = 2.60, SD = .093). Thus, perception of dialectical emotions was greater for East Asians. We also found an interesting significant model’s culture by condition interaction effect [F (1, 320) = 4.66, P <.05, =.014]. When the poser in the picture was East Asian, participants perceived more dialectical emotions in the smiling face – negative situation condition (M = 2.83, SD = .104) than in the frowning face – positive situation (M = 2.56, SD = .102). When the poser was Caucasian, however, participants perceived more dialectical emotions in the frowning face – positive situation condition (M = 2.81, SD = .105) than in the smiling face – negative situation condition (M = 2.70, SD = .102).

**Attribution Style Difference**

We predicted that East Asians would make more external attributions than European Americans, and European Americans would make more internal attributions than East Asians when reading facial expression. For the attribution style differences across cultures, we used *separate variance t tests* to evaluate whether there were significant cultural differences between the internal attribution scale (‘How much is this person's expression caused by his or her personality?) and the average of four external attribution scales (‘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?’).

**Results**

**Congruent**

For the frowning face – negative situation condition, we did not find any cultural difference on the internal attribution scale (‘how much is this person’s expression caused by his or her personality?’). However, we found a main effect of culture on the external attribution scale. There was a significant effect of culture [F (1, 320) = 8.645, P < .005,] with East Asians making more external attributions than European Americans (Euro 4.32 vs. East Asians 4.55). This finding is consisent with the results of two previous studies (Leu et al., in press). Similar to the frowning face – negative situation, we found no cultural difference on the internal attribution scale [F (1, 320) = 6.49, P < .05,. East Asians made more external attribution than European Americans (Euro 4.16 vs East Asians 4.37). We alo found significant model’s culture by participant’s culture interaction effect [F (1, 320) = 4.094, P < .05, = .013]. Participants tend to make more external attribution when the poser of the picture is from their own culture.

**Incongruent condition**

For frowning face – positive situation condition, we found a main effect of the model’s culture [F (1, 320) = 4.664, P = .032, ] and a main effect of participant culture [F (1, 320) = 5.648, P = .018, on the internal attribution scale. Participants made more internal attributions when the model was Caucasian (Caucasian model 4.40 vs. East Asian model 4.2). Surprisingly, East Asians made more internal attribution than European Americans (Euro 4.15 vs. East Asians 4.64). For external attribution, there was a significant effect of culture [F (1, 320) = 20.29, P <. 001, = .060]. East Asians were making more external attributions than European Americans (Euro 3.55 vs. East Asians 4.04).

When presented with smiling faces with negative situations, there was a significant effect of culture from the averaged external attribution scale [F (1, 320) = 17.557, P <.001, . East Asians made significantly more external attributions than European Americans (MCaucasian = 3.41, S.E.Caucasian = .076 vs. MAsian = 3.88, S.E.Asian = .08). We did not find the effect of culture or model’s race from internal attribution scale.

**Discussion**

We did not find 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 more sincere then European American frowning faces. Most importantly, in smiling face- negative situation condition, East Asians mentioned that the poser is suppressing emotions with greater frequency than European Americans. When perceiving emotions from the facial expressions, we found that East Asians perceived more dialectical emotions than European Americans, consistent with previous results (Leu et al., in press). Lastly, we found that cultural difference on attribution style is also significant in the realms of emotion perception. Across different conditions, East Asians made more external attribution than European Americans.

This research used both an open-ended and closed-ended format, which allowed the authors to explore various research questions while tying down important variables in different ways. However, there are major improvements that we might consider for the future studies.

We think the cultural difference on the belief about the authenticity of facial expression was not found because we used vignettes that had no other people around. In all 16 stories, the poser was alone in that situation because the current data were collected for different research questions that required the poser to be alone in non-social situation. These non-social situations, however, are the ones where we are 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.

However, some of the data showed patterns consistent with our main hypotheses. Although not many participants questioned the authenticity of facial expressions in congruent conditions, European Americans did perceive the facial expression to be more sincere than East Asians in the two congruent situations (smiling face – positive situation, frowning face – negative situation). European Americans might assume the facial expressions are sincere expression of genuine feelings more so then East Asians in ordinary situations. Also, East Asian frowning faces in negative situations were perceived more sincere then European American frowning faces in negative situations. For East Asians, who are hypothesized to selectively choose facial expressions, their negative emotions presented in positive settings might seem even more sincere, leading people to think that those negative emotions are too negative even for East Asians to control. The result from the emotion suppression appraisal data is consistent with this story. In smiling face- negative situation condition, East Asians mentioned that the poser is suppressing emotions with greater frequency than European Americans.

This research has demonstrated that when people perceive emotion expression in a non-social setting, there is no cultural difference in the pattern of interpretation. It is hoped that this makes the next questions a little clearer. Would we observe the cultural difference on the perception of authenticity of facial expression when we use social vignettes? This issue awaits further research.

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