

## **Idiocentric and allocentric differences in emotional expression, experience, and the coherence between expression and experience**

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This study examined differences in emotional expression, experience, and the coherence between expression and experience in idiocentric and allocentric individuals, who participated in a study similar to Ekman (1972) and Friesen's (1972) original display rule study. Encoders, classified as idiocentric or allocentric based on a measure of psychological culture, were unobtrusively videotaped as they viewed positive and negative films in two contexts – alone, and then a second time either alone or with an experimenter present. Subjective emotional responding was assessed following each of the film viewing sessions and, using the encoders' videotaped data, their emotional expressions were judged by a separate sample of decoders. Emotional expression and coherence differed as a function of encoder culture and viewing condition; experience did not. These findings replicate and extend the only other cross-cultural experiment of spontaneous emotional expressions in adults conducted over thirty years ago (Ekman, 1972; Friesen, 1972), and speak to the influence of culture as a socio-psychological construct, given that all participants were European American females.

Cross-cultural research on emotional expressions has a long history in the study of emotion, and a profound influence on psychology in general (see, e.g., Birdwhistell, 1970; Charlesworth & Kreutzer, 1973; Darwin, 1872; Eibl-Eibesfeldt, 1970; Ekman, 1972, 1973, 1992, 1994; Ekman & Friesen, 1971, 1986; Ekman *et al.*, 1987; Ekman, Friesen, & Ellsworth, 1972; Ekman & Heider, 1988; Ekman, Sorenson, & Friesen, 1969; Geen, 1992; Hauser, 1993; Izard, 1994; Matsumoto, 1992; Mead, 1975; Romney, Boyd, Moore, Batchelder, & Brazill, 1996; Romney, Moore, & Rusch, 1997; Russell, 1994; Tomkins, 1962; Wierzbicka, 1995). Despite its importance, however, there are only a handful of studies that have examined spontaneously occurring facial expressions of emotion across cultures. Waxer (1985) examined American–Canadian differences in facial displays by contestants on game shows, while Camras and her colleagues examined spontaneously occurring infant expressions (Camras *et al.*, 1998). Yet, only one cross-cultural study to date has compared spontaneous emotional behaviors in adults using a standard emotion-elicitation for all participants.<sup>1</sup>

In that study (Ekman, 1972; Friesen, 1972), American and Japanese male university students watched stressful films while videotaped unbeknownst to them. They first watched the films alone, and then a second time in the presence of an experimenter. The videorecords indicated that the Americans and Japanese showed basically the same negative faces when alone; when with the experimenter, however, there was a substantial difference in their displays. Although Americans continued to show their negative expressions, many Japanese masked their feelings by smiling. Ekman and Friesen accounted for these differences with the concept of *cultural display rules* (Ekman & Friesen, 1969), suggesting that people in Japan learn not to express negative feelings in the presence of others, whereas there is less of such a tendency in the USA.<sup>2</sup>

That emotions involve patterns of responses implies coherence among behavioral, physiological, and subjective components (Ekman, 1992; Levenson, 1988; Plutchik, 1962; Tomkins, 1962); and the available research that speaks to this point supports this notion (e.g., Ekman, Friesen, & Ancoli, 1980; Rosenberg & Ekman, 1994; however, see also Buck, 1977; Fernandez-Dols, Sanchez, Carrera, & Ruiz-Belda, 1997). The existence of display rules, however, suggests that the coherence between feelings and display may vary according to the degree that cultural display rules are operative. In the above example, we would assume that the coherence between feeling and behavior was higher for the Americans than for the Japanese; that is, that there would have been a positive correlation between how one felt and what one displayed for Americans, but not necessarily for the Japanese, because the latter tended not to show what they presumably felt. For the Japanese, such correlations may be non-existent, or even negative; that is, indicating high degrees of felt emotion with low degrees of their display. Previous studies documenting American–Japanese cultural differences in self-reported emotion lend some credence to this suggestion (e.g., Matsumoto, Kudoh, Scherer, & Wallbott, 1988).

One limitation to the Friesen study, however, was that self-reported experience was not assessed. Thus, questions concerning cultural differences in experience, or in American–Japanese differences in the coherence between experience and expression, could not be addressed. By measuring both, this study improves considerably on that design, while at the same time addressing cultural differences in experienced and expressed emotion, and the coherence between them. Furthermore, this study improves on our knowledge of the mechanisms of cultural influences on expression and experience by differentiating two cultural groups according to psychological, not national, culture.

## Redefining and measuring culture

While cross-national comparisons (such as in Friesen, 1972) have been and continue to be the primary method of operationalizing culture in cross-cultural research, theorists define culture as an organized system of rules for living, shared by a group of people and communicated from one generation to the next (see review in Matsumoto, 2000). This psychological definition focuses more closely on culture's functional dynamics, rather than on race, ethnicity, or nationality. As such, cross-national comparisons are being replaced by more strictly cross-cultural comparisons based on definition and measurement of psychologically relevant cultural constructs.<sup>3</sup>

Focus on the subjective elements of culture has led many scholars to consider meaningful dimensions that differentiate cultures, the most important of which to date is arguably individualism v. collectivism (IC) (Hofstede, 1980). Individualistic cultures foster

the needs, wishes, and desires of individuals over groups; as such, they encourage autonomy, separateness, individuality, and uniqueness. Collectivistic cultures foster the needs, wishes, and desires of ingroups over individuals; these cultures foster values such as harmony, cohesion, cooperation, and conformity.

In fact, differences in IC were used to explain the findings from Friesen's (1972) original study. Ekman and Friesen surmised that the Japanese display rule of masking negative emotions had evolved in order to avoid offending the experimenter. Such a display rule would help to foster harmony, cooperation, or cohesion in the relationship between experimenter and participant. If the Japanese participant had directly expressed his negative feelings, it may have signaled a detriment in the relationship between the experimenter and the participant, which would be contrary to the prevailing Japanese cultural norms. This is clearly an argument based on the presumed collectivistic nature of the Japanese culture. The USA, however, being a more individualistic culture, would tolerate and even foster negative expressions, because there is much less of a need to maintain the appearance of a harmonious relationship between the participant and the experimenter. This is clearly an argument based on the presumed individualistic nature of the American culture.

Researchers have used the IC construct to explain differences in other cross-national differences in emotion as well, including emotion antecedents (Matsumoto *et al.*, 1988), emotional experiences (Matsumoto, Kasri, & Kookan, 1999b), and judgments of emotion (Matsumoto, 1989; Matsumoto *et al.*, 1999a). In fact, IC has been used to explain cross-national differences in a wide variety of psychological phenomena in addition to emotion (Triandis, 1994, 1995).

In the past decade, researchers have made considerable strides in ways of measuring IC validly and reliably, mostly led by Triandis and his colleagues. On the individual level, IC tendencies are referred to as idiocentrism and allocentrism, respectively (Triandis, Leung, Villareal, & Clack, 1985). Triandis (1995) views IC as a syndrome, cutting across attitudes, values, beliefs, norms, opinions, and the like. Consequently, his multi-method assessment technique measures IC tendencies across these constructs.

Using Triandis' method as a platform, others have developed similar techniques to measure idiocentrism and allocentrism. Yamaguchi (1994), for example, employed a multi-domain measurement of collectivism, while Matsumoto and his colleagues developed an individual level measure specific to social interaction (Matsumoto, Weissman, Preston, Brown, & Kupperbusch, 1997). Hui (1988; Hui & Triandis, 1986) developed a context-specific measure of collectivism called the INDCOL, which was used in this study. It measures an individual's IC tendencies in relation to seven collectivities (spouse, parents, siblings, strangers, relatives, neighbors, and friends). Respondents indicate their agreement with key IC concepts (e.g., borrowing, sharing, sacrificing favorite things, etc.) in relation to each collective. Ratings are made on a 5-point scale, anchored 1 "never", to 5 "all the time". Scores are summed across items within each collective, and then across collectives to generate a General Collectivism Index (GCI) (higher scores indicate more collectivistic tendencies).<sup>4</sup>

The development of valid and reliable measures of IC represents a major advancement in cross-cultural research, because previous interpretations concerning IC as a mediating construct can be tested by actually measuring IC in the participants of a study. By reducing the reliance on nationality, race, or ethnicity, researchers can directly assess the degree to which constructs such as IC account for differences, instead of assuming its existence in interpreting differences when they occur. This is exactly what this study does.

## Overview of this study

In fact, the most conservative way to test for IC differences is to use a sample that is relatively homogeneous with respect to characteristics typically used to operationalize culture. We did exactly that by including only European American females as participants. Each participant completed Hui's INDCOL described above, and, based on their GCI scores, we created two groups of participants and labeled them idiocentrics and allocentrics. The basic design of this study was essentially the same as Ekman (1972) and Friesen's (1972) original display rules study, in which participants viewed emotion-eliciting films in two conditions. We made improvements, however, by including:

- Both positive and negative films. Ekman and Friesen's study included only negative films.
- A control group who saw the films a second time alone. There was no control group in Ekman and Friesen's study.
- Self-report ratings of emotional experience. Self-report was not assessed in Ekman and Friesen's study.

On the basis of these changes, we tested the following hypotheses:

*Hypothesis 1:* Idiocentrics and allocentrics will differ in their emotional expressions as a function of condition.

*Hypothesis 2:* Idiocentrics and allocentrics will differ in their emotional experience as a function of condition.

*Hypothesis 3:* The coherence between emotional expression and experience will differ for idiocentrics and allocentrics as a function of condition.

## Method

### Encoders

Fifty-seven university undergraduates participated as encoders. All were European American females and US citizens, most having been born and raised in the USA. Forty of the original fifty-seven were selected (see below) as encoders in this study. Their mean age was 28.8 years ( $sd = 1.8$ ); 78% of them were born in the USA, and 95% of them were raised in the USA. All of them spoke English as their primary language; only one spoke another language other than English as well.

### Materials and apparatus

*Questionnaires.* The encoders completed Hui's (1988) INDCOL, Snyder's (1974) Self-Monitoring Scale (SMS), and two scales of the Eysenck Personality Inventory – Neuroticism and Introversion–Extroversion (EPI – Eysenck & Eysenck, 1968). As described earlier, the INDCOL (Hui, 1988; Hui & Triandis, 1986) measures an individual's IC tendencies in relation to seven collectivities. A median split was performed on the participants' GCI scores, creating groups labeled *idiocentrics* and *allocentrics*. The SMS and the EPI were included to examine whether these personality dimensions confounded the differences between idiocentrics and allocentrics. INDCOL GCI was not significantly correlated with either the SMS, Extraversion, or Neuroticism,  $r(39) = .21, = .12, \text{ and } -.15$ , respectively,

however; thus, the results presented below were not confounded by differences on SMS or EPI.

*Self-report emotional experience ratings.* Encoders assessed their subjective experience of seven emotions: anger, contempt, disgust, fear, happiness, sadness, and surprise, by rating the intensity of their experience using a 9-point scale labeled 1 “not at all”, 5 “a moderate amount”, and 9 “a lot” at various points during the experiment.

*Film stimuli.* Two sets (one positive, one negative) of four film clips each were used to elicit emotions. The positive clips included scenes of flowers, waves, monkeys in a zoo, and a puppy playing with a flower. The negative clips included an amputation, treatment of a burn victim, an industrial accident, and a scene from a popular horror movie. Each set lasted approximately thirteen minutes, and was preceded by a minute of blank screen. A thirty-second blank screen appeared between each clip within each set. These film clips reliably elicit emotions in the laboratory (Gross & Levenson, 1995).

### **Encoding procedures**

The encoders completed the INDCOL, SMS, EPI, and a brief demographic questionnaire prior to coming to the laboratory. Upon arrival for the experimental session, the instruments were collected. They were told that they would be participating in a study of their physiological reactions to emotion-eliciting films. They were escorted into a separate room, and seated in front of a color television monitor. Two Galvanic Skin Response (GSR) electrodes and one Heart Rate (HR) electrode were attached to the non-dominant hand. The wires led out of the room; no recordings were made. Subjects were told that they may find some of the film clips disturbing and that, if necessary, they could look away or stop participating at any time.

After ensuring that the encoders understood the instructions, they were asked to relax for four minutes. The experimenter then administered a self-report emotional experience rating form to assess baseline experience. When completed, the experimenter left the room, and the subjects viewed the positive film segment. An audio prompt signaled the end of the clip, at which point the experimenter returned and administered a second self-report rating. When completed, the experimenter again left the room, and the encoders viewed the negative film clip, after which the experimenter returned and administered the third self-report rating, indicating the end of the first session.

The encoders were then randomly assigned to one of two conditions for the second session. The control group repeated the procedures described above. The experimental group did the same except that they watched the films the second time while the “professor in charge of the research” sat in the room across from them next to the television monitor. All encoders were informed that the researchers wanted to ask some questions about their experiences, and were asked if they would mind viewing the films again a second time. No encoder refused.

*Videotaping.* The entire experiment was recorded by a videocamera placed in an adjacent room directly behind the wall where the monitor was located. Head-and-shoulder shots of the encoders were recorded. The ruse regarding the physiological measures was necessary to direct focus away from their own behaviors while viewing the stimuli. A second consent form was obtained from the subjects on completion of the experiment after the true purpose

and procedures were explained, and the encoders were debriefed thoroughly. No one refused the use of their videorecords or other data.

### **Creation of stimuli**

Four stimulus tapes were created, using encoders' expressions during four *critical moments* (CM). A CM from each of the positive and negative films was selected according to the following criteria. First, all eight films were shown to twelve reviewers who chose the Dog with Flower (DOF) clip as the most positive of the positive film clips, and the Amputation (AMP) clip as the most negative of the negative film clips. These selections were supported by findings reported by Gross and Levenson (1995) using these same clips. We then reviewed both clips to isolate the time during which there was the greatest amount of emotional impact. For DOF, this was when the puppy is first seen; for AMP, this was at the moment when the amputation begins. Four 15 s CMs beginning at these times were extracted for each encoder from both sessions. The final group of encoders used in this study was selected such that: (1) all four CMs were usable, (2) the encoder's upper body and face were visible during the entire 15 s interval, and (3) lighting was sufficient for the encoder to be seen. A research assistant blind to the research hypotheses rated the clips as either usable or not based on these criteria.

This resulted in the selection of forty encoders in the final study, ten idiocentric and allocentric encoders each in the experimental and control conditions. The CMs were recorded onto four stimulus tapes in a randomized order with the following conditions: (1) each encoder appeared only once on each tape, and (2) both sessions, conditions (i.e., experimental and control), and film types (i.e., positive or negative) appeared an equal number of times on each tape. Each of the four final stimulus tapes included forty CMs, each from a different encoder, with no audio.

### **Decoders<sup>5</sup>**

The decoders comprised 183 students (58 males, 125 females) enrolled in various undergraduate and graduate psychology classes at San Francisco State University. Participants' ages ranged from 17 to 51 with a mean of 21.8. Their ethnicities were as follows: 27.3% Caucasian or European Americans, 2.7% African-Americans, 32.8% Asians, 10.9% Laotian or Pacific Islanders, 12.6 % Hispanic or Latinos, 1.1% Native Americans, 1.1% Indians, and 1.1% Middle Easterners; 10.4% of the participants were unclassifiable.

### **Instruments**

Decoders used the same emotion report forms used by encoders. Each form was numbered from 1 to 40, and was accompanied by a sheet of definitions of the seven emotions taken from *Webster's New World Dictionary* for the seven emotion terms. Decoders also completed the same INDCOL as the encoders, and were classified as either idiocentrics or allocentrics based on a median split of their GCI scores.

### **Decoding procedure**

To insure proper viewing of the stimuli, the judgment data were collected in groups of eight or fewer decoders, who sat within six feet of the monitor and at an angle of no more than 45

degrees to the left or right of the direct line of vision. They were told that they would be viewing video clips of women and judging their nonverbal expressions of emotion. After obtaining informed consent, the experimenter read the following instructions:

You will be watching 40 short video clips of women's faces on the TV screen. The women that you will be viewing were all participants in a previous study conducted here at the lab. They were videotaped while watching film clips designed to elicit positive and negative emotions. Your task is to judge what emotions you think that woman is expressing.

Following the viewing of each of the video clips, you will record your judgments on an emotional report form. Rate each clip for the degree of ANGER, HAPPINESS, SADNESS, DISGUST, FEAR, SURPRISE, and CONTEMPT that you think she expresses. Please use any and all nonverbal information that you see, including her facial expressions, body posture, and movements.

You will see a different woman in each clip. Please complete an emotional report form for each of the 40 clips. They should be completed by circling a number next to each of the emotions listed on the form. The numbers refer to the intensity of the different emotions. If you circle **1**, that means that she is not feeling that emotion at all. If you circle **9**, that means that she is feeling that emotion a lot. You should circle a number for every one of the emotions listed on the emotional report form regardless of how much or how little you think she is expressing that emotion. Each emotional report form should have 7 numbers circled (one for each emotion word) when completed.

The decoders completed a practice rating involving an encoder who was not part of the forty encoders in the main study. Once the decoders understood the task, the experiment began. Decoders viewed one of the four stimulus tapes based on a random selection, and made emotion ratings for each of the CMs.

## Results

### ***Hypothesis 1: Do idiocentric and allocentric encoders differ in their emotional expressions?***

*Main analyses.* A seven-way Analysis of Variance (ANOVA) was computed on the decoders' ratings, using Emotion Scale (7), Encoder Culture (2), Session (2), Condition (2), Film Type (2), Decoder Culture (2), and Decoder Gender (2) as the independent variables. Decoder culture and decoder gender were treated as between-subject variables; all other factors were within-subject.<sup>6,7</sup>

The interaction of Encoder Culture  $\times$  Emotion Scale  $\times$  Film Type  $\times$  Session  $\times$  Condition was significant,  $F(6, 1086) = 27.47, p < .001$ . We thus computed twenty-eight simple interactions of Session  $\times$  Condition at each level of encoder culture (2) by film type (2) by emotion (7), and followed each significant interaction with simple effects analyses of session (using the error term that tested this interaction in the overall analysis). See Table 1 for descriptive statistics separately for idiocentric and allocentric encoders, and Table 2 for the results of the simple effects analyses.

When viewing negative films in the experimental condition, allocentric encoders showed more smiles and less of all negative emotions than they did in the first session. This finding suggests that allocentric encoders masked their true feelings when in the presence of the experimenter, and is entirely congruent with Friesen's (1972) findings with Japanese encoders. (Note that allocentric encoders viewing negative films in the control condition

**Table 1** Means and standard deviations -- emotion scale scores separately for idiocentric and allocentric encoders

		Idiocentric encoders				Allocentric encoders			
		Positive film		Negative film		Positive film		Negative film	
		session one	session two	session one	session two	session one	session two	session one	session two
Anger	exp M	2.00	2.59	2.39	2.75	2.00	2.34	2.50	1.92
	(SD)	(1.64)	(1.17)	(1.50)	(1.78)	(1.35)	(1.68)	(1.52)	(1.34)
	control	2.25	3.17	3.05	3.07	2.72	2.22	2.55	3.29
		(1.66)	(2.11)	(1.35)	(1.97)	(1.62)	(1.40)	(1.16)	(1.84)
Contempt	exp	2.35	2.86	2.73	2.51	2.45	2.38	2.61	2.30
	(SD)	(1.89)	(1.48)	(1.84)	(1.77)	(1.87)	(1.79)	(1.74)	(1.70)
	control	2.32	2.97	3.00	2.96	2.70	2.40	2.41	3.02
		(1.63)	(1.90)	(1.61)	(1.87)	(1.69)	(1.62)	(1.21)	(1.83)
Disgust	exp	2.55	2.79	3.17	2.80	2.36	2.51	3.27	2.33
	(SD)	(2.02)	(1.33)	(1.95)	(1.83)	(1.58)	(1.67)	(1.88)	(1.56)
	control	2.69	3.16	3.44	3.84	2.76	2.39	2.75	3.58
		(1.75)	(1.93)	(1.59)	(2.00)	(1.80)	(1.56)	(1.21)	(1.94)
Fear	exp	1.84	2.02	2.36	2.35	1.86	2.09	2.27	1.80
	(SD)	(1.41)	(1.18)	(1.67)	(1.52)	(1.27)	(1.53)	(1.52)	(1.19)
	control	2.31	2.02	2.41	2.09	2.06	1.86	2.17	2.34
		(1.73)	(1.48)	(1.42)	(1.42)	(1.37)	(1.33)	(1.10)	(1.56)
Happiness	exp	3.84	2.74	1.55	1.74	2.71	2.43	2.11	3.66
	(SD)	(3.04)	(.74)	(.93)	(1.02)	(1.25)	(1.62)	(1.46)	(2.54)
	control	2.48	2.21	2.05	1.31	1.72	3.10	2.46	1.51
		(1.65)	(1.22)	(.95)	(.69)	(.96)	(2.09)	(.90)	(1.03)
Sadness	exp	2.53	3.16	3.61	3.54	2.93	3.56	4.42	2.67
	(SD)	(1.81)	(1.30)	(1.89)	(2.07)	(1.68)	(2.00)	(1.98)	(1.64)
	control	3.55	3.30	3.62	3.54	3.53	3.16	3.15	3.93
		(2.18)	(1.98)	(1.55)	(2.09)	(1.95)	(2.12)	(1.26)	(1.95)
Surprise	exp	2.42	2.34	1.98	2.06	1.83	1.62	2.17	2.34
	(SD)	(2.05)	(1.39)	(1.50)	(1.43)	(1.29)	(1.17)	(1.66)	(1.73)
	control	2.23	1.55	2.20	2.22	1.51	1.73	2.25	1.70
		(1.50)	(.98)	(1.32)	(1.51)	(.98)	(1.22)	(1.09)	(1.20)

**Table 2** Simple effects analyses of session at each level of encoder culture, condition, emotion, and film type

Film	Emotion	Interaction $F^a$	Sig	Allocentric encoders				Idiocentric encoders					
				Simple $F^a$ for exp	Sig	Simple $F^a$ for control	Sig	Interaction $F^a$	Sig	Simple $F^a$ for exp	Sig	Simple $F^a$ for control	Sig
Negative	Anger	50.88	.000	24.96↓	.000	34.23↑	.000	3.03	ns				
	Contempt	19.30	.000	4.92↓	.028	26.38↑	.000	.93	ns				
	Disgust	87.25	.000	55.96↓	.000	46.00↑	.000	16.65	.000	7.25↓	.008	8.93↑	.003
	Fear	14.38	.000	15.50↓	.000	2.64	ns	4.39	.038	.01	ns	11.31↓	.001
	Happiness	85.60	.000	48.79↑	.000	108.06↓	.000	63.71	.000	5.04↑	.026	108.94↓	.000
	Sadness	124.06	.000	106.55↓	.000	33.90↑	.000	.00	ns				
	Surprise	16.11	.000	1.33	ns	34.85↓	.000	.17	ns				
Positive	Anger	25.25	.000	9.90↑	.002	15.60↓	.000	2.03	ns				
	Contempt	1.44	ns					.43	ns				
	Disgust	10.30	.002	1.76	ns	9.68↓	.002	1.03	ns				
	Fear	11.51	.001	5.97↑	.016	5.35↓	.022	7.07	.009	2.39	ns	5.67↓	.018
	Happiness	65.89	.000	4.76↓	.030	62.67↑	.000	5.48	.020	22.40↓	.000	2.58	ns
	Sadness	20.83	.000	20.92↑	.000	5.12↓	.025	12.02	.001	18.34↑	.000	1.95	ns
	Surprise	8.70	.004	4.30↓	.040	6.65↑	.011	6.67	.011	.18	ns	37.68↓	.000

Notes:

Session 1 > Session 2 ↓

Session 1 < Session 2 ↑

ns = not significant

<sup>a</sup> All  $F$ s with 1,182 df

showed more negative emotions and less happiness, congruent with the valence of the films.) Idiocentric encoders viewing negative films in this condition showed the same tendency but to a lesser degree, displaying more smiles and less of one negative emotion. (Note once again that in the control condition, they showed less happiness and more disgust, congruent with the valence of the films.)

When viewing the positive films, allocentric encoders in the experimental condition displayed more negative emotions and less happiness and surprise, again suggestive of a masking effect. (Note that in the control condition they showed more happiness.) Idiocentric encoders viewing positive films in this condition again showed the same tendency but to a lesser degree, displaying less happiness and more sadness. (In the control condition, they showed less fear and surprise.)

*Additional analyses.* To bolster the interpretation of the encoder culture differences in expression in the experimental condition as matters of degree, we computed two-way ANOVAs on encoder culture and session, separately for each emotion and film type in the experimental condition only. As shown in Table 3, most of the differences in the pattern of emotional expression observed between idiocentrics' and allocentrics' expressions in this condition and reported in this section are associated with statistically significant two-way interactions.

We also correlated the encoders' INDCOL GCI scores with change in intensity of expression from Session 1 to Session 2. We first computed fourteen change scores separately for each film and emotion scale, and then computed correlations of these change scores with GCI separately by conditions. For encoders in the experimental condition viewing the negative films, GCI was positively correlated with change in contempt,  $r(20) = .45, p < .05$ , and disgust,  $r(20) = .41, p < .05$ ; the more allocentric an encoder, the greater the decrease in

**Table 3** Two-way ANOVAs between session and encoder culture, separately for each emotion and film type, experimental condition only

Film	Emotion	Interaction $F^a$ Session X encoder culture	Sig
Positive	Anger	2.80	ns
	Contempt	8.95	.003
	Disgust	.29	ns
	Fear	.16	ns
	Happiness	20.17	.000
	Sadness	.00	ns
	Surprise	.65	ns
Negative	Anger	27.48	.000
	Contempt	.18	ns
	Disgust	10.33	.002
	Fear	8.18	.005
	Happiness	42.19	.000
	Sadness	55.59	.000
	Surprise	.25	ns

Note: <sup>a</sup> All  $F$ s with 1,182 df

the expression of these emotions from the first to second session. For encoders in the control condition, changes in surprise when viewing the positive film,  $r(20) = -.42$ ,  $p < .05$ , and fear when viewing the negative film,  $r(20) = -.67$ ,  $p = .001$ , were significantly negatively correlated with GCI. These findings lend further support to the expression differences reported above.

### ***Hypothesis 2: Do idiocentrics and allocentrics differ in their emotional experiences?***

We computed a two-way ANOVA on the self-reported emotional experience data at baseline, using Encoder Culture (2) and Emotion Scale (7; repeated measure) as independent variables. Neither the main effect of encoder culture nor the interaction was significant,  $F(1, 37) = .18$ , ns; and  $F(6, 222) = .18$ , ns, respectively. Thus, idiocentrics and allocentrics did not differ in their emotional states prior to the experiment; we therefore focused the remaining analyses in this section on the data obtained during the experiment proper.

We computed a five-way ANOVA on the self-report data, using Encoder Culture (2) and Condition (2) as between-subject variables, and Session (2), Film Type (2), and Emotion Scale (7) as within-subject variables. No effect involving encoder culture was statistically significant; we thus concluded that there were no differences between idiocentrics and allocentrics in their emotional experiences. Further, no effect involving condition was significant; thus, the presence or absence of the experimenter did not affect their experiences.

The analyses did, however, indicate that the encoders felt considerable emotion, and in the manner intended. A significant session by film type by emotion interaction,  $F(6, 150) = 2.68$ ,  $p < .02$ , justified a simple effects analysis of film type, separately for emotion and session (using the error term that tested this interaction in the overall analysis).

**Table 4** Simple effects of film type separately for each emotion and session

	Positive film	Negative film	$F^a$	P
Session 1				
Anger	1.079	1.816	21.72	<.001
Happiness	6.000	4.538	87.69	<.001
Sadness	1.975	2.550	13.92	<.001
Disgust	1.028	4.750	525.03	<.001
Fear	1.513	3.077	100.43	<.001
Surprise	1.553	3.868	214.52	<.001
Contempt	1.514	2.622	47.82	<.001
Session 2				
Anger	1.359	1.974	15.55	<.001
Happiness	5.395	4.395	40.00	<.001
Sadness	2.100	2.750	17.79	<.001
Disgust	1.727	4.697	306.35	<.001
Fear	1.615	2.538	34.98	<.001
Surprise	1.718	2.154	7.80	<.05
Contempt	1.700	2.675	40.03	<.001

Note: <sup>a</sup> All  $F$ s with 1,150 df

The encoders felt more anger, disgust, sadness, contempt, fear, and surprise when viewing the negative films (Table 4); in particular, they reported especially strong feelings of disgust. They also reported experiencing more happiness when viewing the positive films. The two-way interaction between film type and emotion was also significant,  $F(6, 150) = 21.55, p < .001$ , but these analyses indicated that the differences in self-reported emotions between sessions were a matter of degree and not direction.

That there were no differences between idiocentrics and allocentrics in their experiences while they differed in their emotional displays leads to questions about the coherence between displays and experiences, and differences between idiocentrics and allocentrics on degree of this coherence.

### ***Hypothesis 3: Do idiocentrics and allocentrics differ in the coherence between their emotional displays and self-reported experiences?***

We computed correlations between the expression data generated from the decoders and the self-report ratings produced by the encoders. To minimize the number of correlations, we limited the self-reported emotions to happiness and disgust, as these were the emotions most affected by the films. Both Pearson and Spearman correlations were computed because of the small sample sizes in Session 2 analyses. The results from both methods corroborated each other; thus, for parsimony, we report Spearman's only.

In Session 1, no distinction was made for encoder culture or condition, as there was no difference in treatment for all encoders. The results indicated positive correlations between felt happiness and displayed happiness and surprise on both positive and negative films; the more happiness felt when viewing the films, the more happiness and surprise shown. There was also a negative correlation between happiness felt and sadness shown on positive films, and a negative correlation between happiness felt and contempt shown on negative films. These analyses indicate that in Session 1, encoders basically displayed what they subjectively felt (Table 5).

The analyses for Session 2 suggested a differential effect of condition on the coherence between expression and experience for idiocentrics and allocentrics. For allocentrics viewing the negative films in the experimental condition, there was a negative correlation between happiness felt and happiness shown – even though felt happiness decreased, displayed happiness increased. There were also positive correlations between happiness felt and anger, sadness, and fear shown – the less positive they felt, the less they showed negative emotions. Thus, allocentrics' expression and experience when viewing negative films in the experimental condition were not coherent.

This interpretation is bolstered by the correlations for allocentrics viewing negative films in the control condition, where there was a positive correlation between happiness felt and happiness shown, and negative correlations between happiness felt and anger, fear, and contempt shown. Here, allocentrics' expression and experience were coherent.

For idiocentrics viewing the positive films in the experimental condition, there were positive correlations between happiness felt with happiness and surprise shown; negative correlations between happiness felt with anger, sadness, fear, and contempt shown; positive correlations between disgust felt and anger, disgust, and contempt shown; and negative correlations between disgust felt and happiness and surprise shown. These findings suggest that these encoders' expression and experience were coherent with each other. Negative correlations between happiness felt and anger, sadness, disgust, and fear shown when viewing positive films in the control condition also indicated coherence in this condition.

**Table 5** Correlations between self-report and expression

Session 1, all encoders <sup>a</sup>	Film type	Expression						
		Anger	Happiness	Sadness	Disgust	Fear	Surprise	Contempt
Self-reported emotion								
Happiness	Positive	-.259	.315*	-.351*	-.170	-.092	.420**	-.120
	Negative	-.251	.304*	-.111	-.210	.101	.409**	-.344*
Disgust	Positive	-.125	.113	-.112	-.151	-.125	-.074	-.102
	Negative	-.054	-.007	.048	.113	.128	.028	.054
Session 2, Idiocentrics, control condition <sup>b</sup>								
Happiness	Positive	-.542+	.400	-.673*	-.568*	-.621*	-.122	-.315
	Negative	-.346	.350	-.179	-.265	.333	.130	-.368
Disgust	Positive	-.180	-.101	.337	.045	.202	-.247	-.157
	Negative	-.282	-.012	.086	.012	.110	-.148	-.123
Idiocentrics, experimental condition <sup>b</sup>								
Happiness	Positive	-.689*	.694*	-.689*	-.455	-.529*	.726**	-.511*
	Negative	-.138	.056	-.350	-.169	-.363	.009	-.206
Disgust	Positive	.674*	-.780*	.000	.674*	.270	-.539*	.787**
	Negative	-.247	.323	-.009	.085	.255	.272	-.034
Session 2, Allocentrics, control condition <sup>b</sup>								
Happiness	Positive	.048	.050	-.358	-.031	-.415	-.253	.284
	Negative	-.483+	.588*	-.124	-.012	-.680**	-.180	-.557*
Disgust	Positive	.498+	.524+	-.068	.362	-.092	.321	-.655*
	Negative	.289	.135	.233	-.196	.204	-.282	.258
Session 2, Allocentrics, experimental condition <sup>b</sup>								
Happiness	Positive	.096	-.035	.113	.139	.174	.235	.165
	Negative	.631*	-.810**	.583*	-.117	.687*	-.209	-.012
Disgust	Positive	.507+	-.404	.432	.343	.178	-.548*	.288
	Negative	-.576+	.361	-.217	-.157	.229	.193	-.410

Notes: +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$

<sup>a</sup> N for all correlations = 40      <sup>b</sup> N for all correlations = 10

To test further the differences between idiocentrics' and allocentrics' coherence between experience and expression, we computed *z*-tests on their correlations reported in Table 5 in the experimental condition. When viewing the positive films, the correlations between self-reported happiness and displayed anger, happiness, and sadness were significantly different between idiocentrics and allocentrics,  $z = 1.76, p < .05$ ;  $z = 1.67, p < .05$ ; and  $z = 1.80, p < .05$ , respectively. When viewing the negative films, the correlations between self-reported happiness and displayed anger, happiness, sadness, and fear also were significantly different between idiocentrics and allocentrics,  $z = 1.65, p < .05$ ;  $z = 2.21, p < .01$ ;  $z = 1.93, p < .05$ ; and  $z = 2.29, p < .01$ , respectively. None of the *z*-test comparisons for self-reported disgust were statistically significant. Collectively, these findings provide moderate support for the notion that coherence between emotional experience and expression differs as a function of psychological culture.

## Discussion

The results of this study highlight a number of interesting and provocative ways in which idiocentric and allocentric individuals are similar and different in their emotional expressions and experiences. That allocentrics viewing the negative films in the experimental condition showed less negative and more positive emotions is congruent with Ekman (1972) and Friesen's (1972) original findings involving Japanese males. This is in contrast to allocentrics in the control condition, who continued to show their negative feelings (Ekman and Friesen's study did not include a control group). The present finding, however, is remarkable because the participants were all European American females categorized solely by their scores on the INDCOL. That similar findings would be obtained on the basis of this type of classification speaks to the power of psychological dimensions of culture to provide a platform for understanding meaningful differences in behaviors.

Allocentric participants viewing positive films in the experimental condition tended to show negative emotions, contrary to the valence of the films. In contrast, allocentrics in the control condition showed more positive and less negative emotions. This suggests that allocentrics may learn to mask both positive and negative emotions in the presence of others. If true, it raises questions about the nature and function of masking. Ekman (1972) and Friesen (1972) originally suggested that the masking by the Japanese occurred because they did not want to offend the experimenter, and/or wanted to maintain the appearance of interpersonal harmony. The masking of positive emotions with negative expressions, however, argues against this interpretation, because the expression of negative feelings when viewing a positive film would not function to maintain interpersonal harmony. Future research will need to investigate the basis for this masking, and the social meaning of this behavior.

That idiocentric participants masked their feelings in relation to both the positive and negative films suggests a similarity between them and allocentrics in the social attenuation of expression in the experimental condition. This social attenuation, however, was weaker for the idiocentrics than for the allocentrics. We believe that this is commensurate with notions of idiocentrism and individualism, which would argue for cross-context consistency in behavior. In short, the presence of the experimenter had some effect on the idiocentrics, but less than on the allocentrics.

The self-report data were also interesting. That there were no differences in self-reported emotions as a function of encoder culture and condition indicated that the idiocentrics and

allocentrics experienced emotions in the same way in relation to the films. In addition, all participants felt the intended emotions, with the positive films creating substantial and statistically significant increases in self-reported happiness, while the negative films created increases in disgust. The finding that idiocentrics and allocentrics report the same intensity of emotions despite obviously expressing emotions differently creates a potential for intercultural misunderstanding. Individuals who have internalized the idiocentric rules for expression may, when viewing others, infer that emotion is actually felt at a level commensurate with the expression. Allocentrics, however, may infer that an encoder is actually feeling emotions more intensely, compensating for the display rule to mask or conceal their true feelings. Recent American–Japanese comparisons of emotion judgments have reported findings in agreement with this notion, with Japanese participants inferring more intense subjective experience in encoders than do Americans, both on strong and weak expressions (see Matsumoto *et al.*, 1999a, 1999b).

The findings on the coherence between emotional expression and experience further bolster these ideas. In Session 1, coherence was moderately high for all encoders. This is expected because the encoders were alone, with no other expectations that they were in a social situation. These findings are entirely consistent with the first session in Ekman and Friesen's original study, and extend them to positive emotions as well. In Session 2, however, allocentrics' expressions and experience were not coherent when viewing negative films in the experimental condition; when viewing negative films in the control condition, their experience and expressions were somewhat more coherent. Expressions and experience of idiocentric encoders viewing positive films in the experimental condition were also coherent.

These findings suggest that allocentrics learn to decouple their expressions from their feelings in some social situations, whereas this may not be as true for idiocentrics. If so, notions of the decoupling for some individuals more than others opens the door to a wide range of empirical and theoretical work that can further our understanding of culture and emotion. At what age does decoupling start, and with what developmental milestones is it correlated? What role and function does decoupling serve in culture and society? Are there health risks or benefits associated with decoupling, and are these different for different cultures? Are some personality dimensions associated with coupling and decoupling? Future research will be able to expand on these, and other, questions.

This study was not conducted without limitation, including the relatively small number of encoders in the encoder culture by condition cells in Session 2. Larger sample sizes are needed to ascertain the reliability of the findings reported here. Actual measurement of facial behaviors, rather than relying on decoders to judge expressions, would contribute different information about expression. Continuous self-report data may lead to a different understanding of the experiences of idiocentrics and allocentrics, and the coherence between experience and expression. Finally, the lack of findings in the coherence analyses for allocentric encoders viewing positive films, and for idiocentric encoders viewing negative films, is problematic, and limits interpretations based on coherence for all contexts and emotions.

Nevertheless, the findings in this study demonstrate the existence of idiocentric and allocentric differences in emotional expression and suggest that psychological culture may also impact the coherence of emotional expression and experience in social contexts. The study makes several improvements over Ekman and Friesen's original study, and the findings are even more impressive given that the encoders were all European American females, categorized solely on the basis of their scores on a measure of psychological

culture. These findings highlight the importance of psychological culture in defining and creating differences in behavior that transcend race, ethnicity, and nationality; and, they raise new questions about the nature, function, and role of emotional experience and expression in culture and society.

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## Notes

1. Moreover, this study (Ekman, 1972; Friesen, 1972) was not published in a peer-review journal.
2. To be sure, cultural display rules have been examined in a small number of other studies (e.g., Edelmann *et al.*, 1987; Matsumoto, 1990, 1993; Matsumoto, Takeuchi, Andayani, Kouznetsova, & Krupp, 1998). None of these, however, measure spontaneously occurring facial expressions of emotion.
3. The importance of developing methods to replace the global concept of “culture”, especially as defined by country, with specific, measurable psychological variables that are thought to account for differences in behaviors is a thrust of many writers dealing with cross-cultural methodology (see, e.g., Bond & Tedeschi, in press; Poortinga, van de Vijver, Joe, & van de Koppel, 1987; Van de Vijver & Leung, 1997).
4. Prior to this process, three items are reverse keyed.
5. Researchers have two choices when measuring facial behavior, one involving direct facial measurement, the other involving observer judgments (for a more detailed discussion, see Matsumoto, Ekman, & Fridlund, 1991). Direct facial measurement involves either the use of a small number of coders trained in a system to measure facial actions (e.g., Ekman & Friesen’s (1978) Facial action coding system – FACS) or the use of facial electromyographic recording techniques. Observer judgments involve the use of large numbers of lay judges who provide either open-ended or structured inferences concerning a poser’s expressions. While inter-rater reliability is assessed in direct facial measurement, it is not with observer judgments; the latter are treated as scalar-dependent variables. Both techniques have advantages and disadvantages. While the advantage to direct facial measurement is its ability to assess actual facial actions, it is not clear whether the facial actions have any communicative value as defined by observations by others. The advantage to observer judgments is that what is assessed has direct communicative values, as expressions are decoded by others; the disadvantage is that one cannot be sure what facial actions actually occurred. In this study, we opted to use observer judgments with structured inferences (emotion rating scales), as we deemed the communicative value of the expressions as more relevant to a study of cultural differences in display and display rules.
6. We opted to include judge culture as a factor in the overall analysis for three reasons. First, it would allow us to examine all the possible influences of this factor in the experiment; second, it would allow for the best estimate of sources of error, which would then be used in follow-up comparisons; third, if there were no effects of judge culture, the remaining effects in the overall ANOVA could be simply interpreted as if judge culture did not exist. Indeed, of the sixty-four

- effects involving the judge culture factor, only two were significant, neither of which involved the target five-way interaction described immediately below. We interpret this as fairly strong evidence that judge culture had little or no effect on the judgments of the encoders' expressions.
7. We also recomputed the seven-way overall ANOVA, replacing judge ethnicity for judge culture. Only two levels of judge ethnicity were used (European Americans and Asian Americans); all other ethnicities were associated with insufficient sample sizes for this comparison. Once again, of the sixty-four effects involving this factor, only two were statistically significant, neither of which involved the target five-way interaction described immediately below (both effects were different from the two significant effects described in n. 6). We interpreted this as fairly strong evidence that judge ethnicity had little or no effect on the judgments of the encoders' expressions.

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