

The Role of Culture and Gender in the Relationship between Positive and Negative Affect

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An integrative explanation proposes that culture and gender interact to produce fundamentally different patterns of association between positive and negative emotions. People in independent-based cultures (e.g. the United States) experience emotions in oppositional (i.e. bipolar) ways, whereas people in interdependent-based cultures (e.g. China) experience emotions in dialectic ways. These patterns are stronger for women than men in both cultures. In support of the theory, Study 1 showed that positive and negative emotions are strongly correlated inversely for American women and weakly correlated inversely for American men, but strongly correlated positively for Chinese women and weakly correlated positively for Chinese men. In Study 2, findings for Koreans, although mixed, were closer to the results for Chinese.

INTRODUCTION

Are positive affect (PA) and negative affect (NA) independent or bipolar? Early research found evidence for both the former (e.g. Bradburn, 1969; Diener & Emmons, 1985) and the latter (e.g. Russell, 1980), with little resolution as to the nature of the discrepancies. Recently, Green, Goldman, and Salovey (1993) and Barrett and Russell (1998) proposed a methodological solution to the dispute, arguing that, once random and systematic errors are controlled for, PA and NA will be strongly bipolar. However, one should note that the evidence for bipolarity is virtually the same between

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random error and systematic error models in Green et al. (1993). Likewise, our reanalyses of the data in table 1 and table 5 in Barrett and Russell (1998) reveal that the evidence for bipolarity is essentially the same between their random error and systematic error models.¹

We also reanalysed data published in Lucas, Diener, and Suh (1996), where maximally different methods were used to measure PA and NA (i.e. self-reports taken at two points in time separated by approximately six months and key informant reports by friends or family members).² Lucas et al. (1996) performed a traditional correlational analysis, but we used structural equation models to be comparable to the analyses performed by Green et al. (1993) and Barrett and Russell (1998). Our results showed that the models taking into account errors in measures had to be rejected on the basis of the χ^2 -test, RMSEA, and NNFI. On the other hand, once systematic error was taken into account, the models fit well for the data in studies 1 and 2 in Lucas et al. (1996). Here, PA and NA were totally independent in study 1 (i.e. $\phi = -.15$, $t = -1.85$) and moderately correlated negatively in study 2 (i.e. $\phi = -.40$, $t = -3.65$). PA and NA in studies 1 and 2 were measured with the Positive Affect Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). In study 3, Lucas et al. (1996) again used the PANAS plus the Affect Balance Scale to measure PA and NA. Although the design does not permit application of structural equation models for representing systematic error, it was possible to examine correlations between PA and NA. Here PA and NA were again independent for the PANAS ($r = .03$, n.s.) and were highly correlated negatively for the Affect Balance Scale ($r = -.57$, $P < .001$).

It is interesting to note that the correlations corrected for measurement error between PA and NA under the PANAS were $-.57$ in Green et al. (1993) and $-.48$ in Barrett and Russell (1998).³ Further, in an analysis of love, joy, shame, anger, fear, and sadness, Diener, Smith, and Fujita (1995) modelled random and systematic error and found that PA and NA factors for these emotions were moderately correlated negatively ($\phi = -.44$, no significance reported). In sum, conflicting evidence for bipolarity and independence still exists, despite attempts to account for the discrepancies by controlling for random and systematic errors.

In the most comprehensive analysis to date of the literature on bipolarity, Russell and Carroll (1999, p. 25) found "little or no substance to the psychometric challenge to bipolarity" and concluded that "for the routine

¹ The results are available from the authors on request.

² The results are available from the authors on request.

³ A drawback with the PANAS for purposes of examining bipolarity is that the "negative set includes none of the semantic opposites for the positive set", and the PANAS should yield a theoretic correlation of $-.423$ (Russell & Carroll, 1999, p. 11).

assessment of affective feelings, bipolar response formats are justified". We believe that this conclusion is premature and that it is essential to use unipolar scales in certain circumstances. Indeed, we propose that bipolarity and independence are governed not so much by methodological issues as by substantive concerns. We suggest that theoretical arguments can be developed in support of: (a) a dialectic pattern between positive and negative affect, such that *positive* covariation is expected, (b) a bipolar pattern of *negative* covariation, and (c) a pattern of independence, depending on the interaction between differences in culture-specific heuristics and gender-specific knowledge found for people.

A considerable body of research has emerged in recent years investigating cultural differences and similarities in affect. This research has done much to establish the universality of basic categories of affect with but a few differences found across cultures (e.g. Ekman, 1984; Mauro, Sato, & Tucker, 1992; Mesquita & Frijda, 1992; Russell, 1991; Scherer & Wallbott, 1994; Wierzbicka, 1992). Much of this research, however, has focused on *mean levels* of affective categories, and little effort has been devoted to study of the *relationships* between the categories of affect. When relationships between categories of affect have been investigated, this has tended to be by use of multidimensional scaling techniques (e.g. Russell, Lewicka, & Nii, 1989). Three drawbacks with this latter research may limit its validity. First, the usual sorting procedure—where subjects are asked to indicate the degree of similarity between pairs of feelings by sorting the pairs into categories—may force people to create differences, including bipolarity, that do not naturally occur among the affective categories. Second, the findings may be more indicative of how people semantically categorise terms as objects than how they subjectively feel and express affect. Third, multidimensional scaling maps are frequently far from being clear and definitive, and in any case do not yield diagnostics measuring the degree of association between PA and NA in the same way that structural equation models with latent variables do.

Another limitation we address in the controversy on bipolarity concerns the nature of PA and NA. As Russell and Carroll (1999, p. 6) note: "Bipolarity has not been challenged at the level of such specific items as happy and sad or guilty and innocent but rather at a more abstract level: factors or scales named positive and negative". The closest that researchers have come to investigating concrete as opposed to abstract, general dimensions of PA and NA are the studies by Green et al. (1993), Diener et al. (1995), and Barrett and Russell (1998). Green et al. (1993) looked at happiness and sadness but did not examine separately other positive and negative emotions. Diener et al. (1995) examined the correlation between a PA factor measured by love and joy and a NA factor indicated by shame, anger, sadness, and fear. Barrett and Russell (1998) focused only on

combinations of pleasant/unpleasant and activated/deactivated factors. In contrast, we investigate multiple measures each of love, joy, anger, sadness, fear, and guilt/shame and perform analyses based on these concrete dimensions, as well as examining abstract aggregations of PA and NA. We turn now to our rationales for how culture and gender combine to influence the relationship between concrete and abstract dimensions of PA and NA.

CULTURE

God does not rejoice at the death of sinners. On seeing the destruction of the Egyptians the angels wanted to break forth in song. But God silenced them saying: "The work of My hands is drowning in the sea, and you desire to sing songs!" (Talmud [34])

When a person feels happiest, he or she will inevitably feel sad at the same time. (Confucius)

As these quotations seem to imply, people in independent- and interdependent-based cultures (Markus & Kitayama, 1991) experience PA and NA in different ways. We argue that people in independent-based cultures conceive of affect in characteristic oppositional modes, whereas people in interdependent-based cultures conceive of affect in characteristic dialectic ways. People in the two cultures also differ in the motivation for controlling the experience and expression of one's own affect.

Independent Cultural Construals

People in independent-based cultures, especially those found in the West, conceive of affect in a manner rooted in a particular philosophical, linguistic, and social tradition. Hansen (1995) identifies a number of aspects of Western thought that he believes have shaped how affect is experienced.

Two broad aspects of Western thought in particular have evolved to influence the linguistic and conceptual foundations for the experience of affect. The first is the Greek concept of reason, especially as reflected in axioms and definitions. Axioms and definitions are used to express terms in sentences, and sentences are combined as valid arguments in theorems to generate truth ("the conclusion"). Thus, "truth is the property of sentences that conclusions inherit from the premises in proofs", such that meanings have an "*a priori*, self-evident" character to them (Hansen, 1995, p. 184) Hansen notes that there is a basic "blending of the logical and the real" not only in formal logic but throughout common speech, such as found in usage of the words "cause" and "reason", which overlap conceptually.

Definitions are “not merely an account of linguistic usage but an understanding of the real nature of the thing—its essence” (Hansen, 1995, p. 185). Emphasis on the subject-predicate structure of sentential truths, wide application of generalised proof to thought, and employment of syllogistic forms in rhetoric, and everyday discourse contribute to a system of knowledge influenced heavily by proof structures. Indeed, Aristotle treated logic as “laws of thought” with the result that people in the West are “led by *reason* to *true* beliefs about things in general” (Hansen, 1995, p. 185).

The second broad aspect of Western thought, shaping how affect is experienced, is the conversion of the Greek concept of reason into principles guiding action. Hansen (1995) attributes Socrates’ application of the proof model for the analysis of life, Plato’s treatment of ethics, and Aristotle’s use of the practical syllogism (wherein at least one premise is a desire and the conclusion is an action) as examples of how reason became such a dominant force in how people think about themselves, the world around them, and the basis for action. Oatley (1992, p. 71) recently showed how the practical syllogism can be used to incorporate emotion as an explanation of action in a way that is consistent with Western folk psychologies (see also Clark, 1987).

Summing up, a net result of the Greek philosophical heritage and its evolution in the West has been a world view characterised by stress on “inner subjectivity or a conception of a mental/intellectual world populated by mental/intellectual objects set off against an external world of physical objects or matter” (Hansen, 1995, p. 183). Awareness of one’s own subjective, internal emotional states is an important aspect of this world view for everyday behaviour.

The Greek tradition of reasoning and its role in consideration of how to analyse and guide one’s life forms a substrate for recent insights into affective behaviour provided by psychologists and anthropologists. We can identify at least two ways in which affect functions distinctively in Western cultures: as a medium for self-focus and expression and as a mechanism for creating and managing social relationships (e.g. Heelas, 1996; Markus & Kitayama, 1991; Potter, 1988).

Western cultures place considerable importance on self-knowledge of one’s attributes and inner psychological processes in general, and affective experience in particular. One’s own emotions become objects for reflection, analysis, and rational assessment. They help explain actions and are essential bases for the self-concept and are used to differentiate oneself from others and create a cultural ideal of uniqueness and individuality. At the same time, normative imperatives push one to display his/her feelings either to express pride or to avoid negative consequences to one’s health (e.g. to “let one’s anger come out”).

Emotions also perform a larger social role in Western cultures. One's personal emotions are seen as a means for initiating, maintaining, or ending social relationships. They are standards or reasons for authenticating, validating, and justifying social action. In the commercial world and in everyday life, emotions are tools also for influencing the behaviours of others (e.g. Goffman, 1971; Hochschild, 1983). Much emphasis is placed on feeling appropriate in social situations, with unique implications for people in Western cultures: "The great importance attached to individual emotional experience, and its significant social consequences, has resulted in a system in which individuals must modify and distort their own experiences if these experiences are not to endanger their social relationships . . . there is . . . enactment of a social world that is experienced as having no inherent basis for continuity since the social order must be continuously reinvented and reaffirmed from within myriad individuals" (Potter, 1988, p. 184).

A number of implications of the Western concept and experience of emotion can be identified. Through explicit, often intense, focus on one's own emotional states and the frequent need to interpret the emotional reactions of others and to manage one's own emotional responses in return, Westerners develop clear and numerous categories for affect and the conditions under which they are generated and appropriately expressed.

Emotions thus become objectified and defined in explicit terms. They are objects to be evaluated and controlled. Analogous to dichotomies embodied in Western philosophical traditions (e.g. mind/body, subjective/objective, self/other, cause/effect, individual/society, passion/intellect), emotions are self-defined in distinct categories and are seen in either/or terms in folk psychologies and the experience of everyday life. That is, PA and NA are conceived as oppositional categories. One is either happy or sad but not both. Crediting Aristotle as an early promoter of the dichotomous view, Frijda (1986, p. 243) points out that the experience of pleasure and pain are independent: "Simultaneous hedonic experiences are kept distinct because the relationship between an event and its concomitant pleasure or displeasure is an intrinsic one".⁴ The polarisation of emotion is as much rooted in expectations and the logical dichotomy of a world view as it is in the fundamental nature of emotion *per se*.

⁴ It is important to note that Aristotle believed emotion is accompanied by pleasure or pain: "The emotions are all those feelings that so change men as to affect their judgements, and that are also attended by pain or pleasure" (*Rhetoric*, 1378^a 21–2), taken from Barnes (1984). Note also that pleasure and pain had broader meanings in Greek than in English. For example, the Greek word *hedone* encompasses both "enjoyment" and "pleasure" (Kenny, 1963, pp. 148–149).

Interdependent Cultural Construals

One way in which interdependent-based cultures, particularly those in China, Korea, and Japan, differ from Western cultures is in the importance placed on things outside the individual, especially as relevant to the conceptualisation of the person as a social being. Early Chinese philosophers stressed the idea that the social roles one performs and the relationships one has with others are what it means to be a person (e.g. Bockover, 1995). The notion of the self rooted in subjective experience, which was so characteristic of ancient Greek and later Western philosophical traditions, did not play a central role in Chinese thinking: "The metaphor of an inner psychic life, in all its ramifications so familiar to [Westerners], simply isn't present in [Confucius'] *Analecets*, not even as a rejected possibility" (Fingarette, 1972, p. 45). Instead, strong emphasis in Chinese philosophy was placed on how people should live and act in everyday life (Bockover, 1995).

Likewise, instead of the Greek notion of *logos*, where the logical and the real are combined and language is used strongly to define, describe, and represent things, the Chinese conception of a *dao* arose, where stress was placed on ritual-like behaviour (i.e. right conduct), and language was more a vehicle for guiding action (Hansen, 1992). Of particular interest is the English translation of the Chinese term for emotions, *qing*, which has two seemingly incongruous meanings:

The first is "affections, the feelings, desired"; translations of character compounds under this meaning include *love, desire, emotion, and sentiment*. The second definition is "Circumstances; facts of a case"; examples of compounds under this meaning include *truth, situation, reason, origin, real facts*. (Hansen, 1995, p. 182).

Thus, the meaning of emotion encompasses a fusion of context and feeling in Chinese.

The *qing* provide what Hansen (1995, p. 196) describes as reality-induced discriminations or distinction-making reactions used to guide the application of a *dao* (i.e. instructions of how to behave in particular situations). But unlike presumptions in Western philosophies and folk psychology, where emotions can be either part of the basis for volition, such as in the belief-desire model (e.g. de Sousa, 1987) or are inherently linked to action tendencies (e.g. Frijda, 1987), *qing* serve to name appropriate terms in a *dao* and constitute feedback when executing a *dao*. This provides one way that the social becomes central and emotions as causes of social action are downplayed:

The key to mastering a *dao* is learning its names and being able to apply them. Learning a name consists in learning to make a socially appropriate

distinction with that name and having the socially appropriate pattern of desires . . .

Drilling the conventions into us instills desires for . . . goals. Different traditions instill different patterns of desires. We are, that is, conditioned to have the tastes of our parents, older siblings, teachers, and peers. (Hansen, 1995, p. 192).

In contrast to Western emotional experience where emotional terms are intentional and have a strong contextual character in three senses—"as being caused by events, as capable of affecting our behaviour, and as capable of being direct at people" (Oatley, 1992, p. 82)—emotions in Confucian-based cultures tend to be limited to responses to events and influence individual, but not social, action. Likewise, emotions are not used by Chinese people to influence others to the same extent that they are in the West.

Recent research with Chinese subjects suggests a role for affect in everyday life quite different than that present in the West (e.g. Chu, 1985; Potter, 1988). With respect to social life, Potter (1988) found that emotional experience had no formal social consequences and was irrelevant to the creation or perpetuation of social institutions. Moreover, "(b)ecause the Chinese assume the existence of a continuous social order that requires no affirmation in inner emotional response, but only in behaviour, there is no need for them to treat emotions as inherently important [in social life]" (Potter, 1988, p. 185). Potter points out that, for the Chinese, when emotions are related to social experience, they are "concomitant phenomena", "not fundamental", and "logically secondary". When Potter asked Chinese informants about emotional experience, a frequent response was, "How I feel doesn't matter" (see also Kleinman, 1980, p. 141).

Social meaning is not linked to emotions or private experience but rather stems from one's social context. Unlike people in the West, who place much importance on feeling appropriately in social situations, the Chinese exhibit behaviour where "(a)ttention is directed away from the psychological processes of individuals, especially their feelings, and toward the appropriate expression of shared intersubjective agreement about moral values and the social world. Rather than trying to feel appropriately, people are supposed to bring their understanding into congruence with what is defined as valid" (Potter, 1988, pp. 190–191; see also Russell & Yik, 1996).

We hypothesise that the relationship between culture and emotions has implications for the way that PA and NA are represented in memory. We predict that PA and NA will be *negatively* associated in Western or independent-based cultures and *positively* associated in Confucian- or interdependent-based cultures.

The predicted associations rest on how emotions are conceived, how the self-concept is formed, and how emotions relate to social life. In independent-based cultures, emotions are represented through a linguistic heritage wherein emotions become objectified as things that help to categorise and characterise people and come to explain one's own actions and the actions of others. The self is defined through one's personal attributes in independent-based cultures. Emotions are used to differentiate oneself from others and to influence one's own outcomes (e.g. by being used to motivate oneself in competitive situations) or to influence other people (e.g. to attract attention, make oneself desirable, or get people to do things one wants them to do; Hochschild, 1983). The tendency to conceive of persons, and perceive their attributes, in discrete categories, coupled with motivation to differentiate the self from others, reinforces the representation of emotion in oppositional terms: happy/sad, love/hate, and so on. In sum, the polar sense of self (individual vs. group) and the polarisation of affect (positive vs. negative) combine to give Western cultures a distinctive character.

People in Confucian-based cultures, by contrast, are expected to respond to questions of affective intensity in a manner producing *positive* correlations between felt PA and NA. Emotion is used by people in these cultures neither to differentiate oneself from others nor as a basis for social action. Rather than seeing emotions as distinct and oppositional categories to be maintained, people in these cultures follow a general life goal of dissolving dualities, and this presses for a particular integration of emotional life. A value system and normative imperative for balance or harmony⁵ thus motivate a representation of PA and NA in a dialectic pattern.

We expect the oppositional and dialectical ways of representing affect to be strongest in working as opposed to long-term memory and for the experience of emotional intensity as opposed to felt frequency of emotions. These predictions provide the basis for tests of convergent and discriminant validity. The rationale for the difference between working and long-term memory (termed "present intensity" and "past intensity", respectively, see later) is based on straightforward effects of time on memory. The representation of PA and NA should not only be subject to more error in retrieval but should show greater heterogeneity in the origins of affect for long versus short-term memory. The rationale for differences between experienced intensity and frequency of emotions rests on their distinctive natures and the way the activation of affect spreads in memory

⁵ Balance is the great schema of the cosmos; Harmony is the universal path of life as a whole. (Adapted from *Chuang Tzu*)

An orientation of harmony also functions to protect one from the conflict that might ensue if emotions were to become oppositional and serve as a basis for both differentiation of self and others and a mechanism for influencing others.

from one emotional component to another. The intensity of emotional experience can be thought to consist of two components: arousal and self-control (Frijda, 1994, p. 120), whereas the remembrance of the frequency of emotional experience tends to reflect subjective accounting of how often emotions occurred. Any activation and spreading of self-awareness in a semantic network (Bower, 1981) would be expected to be stronger for immediate felt intensity than remembered frequency of emotions, which should lead to stronger associations among the former than the latter.

The effects of culture as developed in the foregoing are general tendencies. An important contingency that moderates the effect of culture on the representation of PA and NA is gender.

GENDER

We hypothesise that the tendency to experience one's own emotions in oppositional terms, as in the West, or in terms of balance, as in the East, will be greater for women than for men. Briefly, the basis for this prediction rests on the greater knowledge of, and skill in dealing with, emotions for both self and others by women in comparison to men. These, in turn, result primarily from differences in gender roles, but secondarily as well, from differences in the use of language.

A growing body of research with people in independent-based cultures shows that clear gender differences exist in the experience and expression of emotion with respect to stereotypes, felt emotional intensity, and the self-concept (e.g. Brody & Hall, 1993). Consider first research on stereotypes. In her interviews with American men and women, Lutz (1996) found that people believe that women are more emotional than men. These beliefs find support in the tendency to classify "emotional" as feminine (Spence, Helmreich, & Stapp, 1975) and in judgements that the typical female displays emotions more extremely than the typical male (Johnson & Shulman, 1988). Significantly, these stereotypes are visible in parents (Birnbaum & Croll, 1984) as well as in children aged 3–5 years (Birnbaum, 1983). The observed gender differences in stereotypes tend to be greater for intensity (Johnson & Shulman, 1988) than frequency (Fabes & Martin, 1991) ratings.

Perhaps the strongest evidence for gender differences can be seen in research on gender roles. The argument is that "gender differences in emotions are adaptive for the differing roles that males and females play in this culture" (Brody & Hall, 1993, p. 452). "Enactment of caretaker roles by women is likely to involve sensitivity to the needs of others, and emotional expression, whereas men's roles are less likely to emphasize emotional responsiveness" (Grossman & Wood, 1993, p. 1011). Gender differences may be exaggerated as well, because women are "more tied to

the biological processes that produce emotion", especially those having to do with birth, menstruation, and certain hormones (Lutz, 1996, p. 159; see also Brooks-Gunn & Warren, 1989).

The evidence for gender role differences can be found especially in work on socialisation. Research shows that women are socialised to be more expressive of their feelings and to show this to a greater extent in facial expressions and gestures, as well as by verbal means (e.g. Haviland & Walker-Andrews, 1992). Socialisation occurs through parental practices (where mothers and fathers have both been found to express affect and use emotional words more towards girls than boys; e.g. Dunn, Bretherton, & Munn, 1987; Malatesta, Culver, Tesman, & Shepard, 1989; Schell & Gleason, 1989), teacher and other authority and role-model interactions (e.g. Botkin & Twardosz, 1988), and peer relations (where girls are encouraged to avoid conflict, cooperate, and, in general, function in small, intimate groups; whereas boys are rewarded for competing and for performing in hierarchical, status-oriented groups, e.g. Hall, 1987; Maltz & Borker, 1982). All these forms of socialisation are, of course, reinforced by social norms, the media, and cultural forces to one degree or another.

Finally, gender differences in the experience and expression of emotions are reinforced by one's emotional self-identity (e.g. Cross & Madson, 1997; Eagly, 1987) and by distinctive use of language. Lutz (1996, p. 154), for example, found that "women talked about the control of emotion more than twice as often as did men" and "this rhetoric can be seen as a reproduction, primarily on the part of women, of the view of themselves as more emotional, of emotion as dangerous, and hence of themselves as in need of control". Different self-construals and use of language between men and women are reinforced by distinct social orientations. Baumeister and Sommer (1997) argue, for example, that men's social orientation is toward larger, impersonal status groups, whereas women's social orientation is toward dyadic close relationships.

To the extent that women are more emotionally knowledgeable, sensitive, and skilled than men, we hypothesise that the association between PA and NA in memory should be stronger. Thus, the cultural patterns described earlier should be more evident for women than men.

No research directly supporting our hypotheses could be found for gender differences in interdependent-based cultures. But some suggestive research can be mentioned. Ho (1986, p. 4) notes that women provide the predominance of care for Chinese infants and young children:

The mother seems to assume almost total responsibility for their physical well-being, making sure that they are well fed, fully clothed, and protected from hazards. And if a mother is temporarily absent, there are other women available to take care of young children.

Thus gender role relations for Chinese are qualitatively similar to those for Americans with respect to child rearing. Sometime after children reach the age of 4 or so, Chinese mothers tend to engage in greater efforts to control the behaviour of their children than American mothers, and "(f)ather-child affectional distance is greater than that between mother and child" in Chinese families, possibly because the father assumes the role of the harsh disciplinarian (Ho, 1986, p. 36). This pattern could produce gender differentials in the experience and expression of emotion similar to Americans to the extent that women develop greater emotional knowledge and sensitivity and greater skill in the management of emotions. If so, Chinese women should show higher levels of correlations between PA and NA than Chinese men.

STUDY 1

Method

Subjects. A total of 111 men and 162 women undergraduate students at the University of Michigan and 132 men and 78 women undergraduate students at the University of Beijing participated in the study. Students received credit for participation.

Procedure. Subjects participated in groups of approximately 50. They individually completed questionnaires assessing their own emotional feelings under three different contexts: felt intensity "right now (i.e. at the present moment)", felt intensity "in general (i.e. on the average over a long period of time)", and frequency of occurrence "in general (i.e. on the average over a long period of time)". Subjects were then debriefed, thanked, and dismissed.

Measures. For each of the three contexts noted earlier, subjects responded to 72 PA and NA items. The intensity items were recorded on 5-point scales with the following scale steps: "very slightly or not at all", "a little bit", "moderately", "quite a bit", and "very much".⁶ The frequency

⁶ Russell and Carroll (1999, p. 8) characterise this response format as "ambiguous-likely unipolar" and assert that it "Fails to specify where a neutral feeling should be placed but does imply that it would receive the lowest score". Nevertheless, they acknowledge that such "ambiguous formats allow a legitimate test of bipolarity" (Russell & Carroll, 1999, p. 9). They further claim that the "theoretic" correlation with so-called ambiguous formats fall somewhere between $-.467$ and -1.000 (p. 11). Russell and Carroll (1999) recommend what they term a "strictly unipolar" scale where a respondent is first asked to indicate by yes or no whether they feel a particular emotion and then if yes, stipulate how much on a slightly-

items were also recorded on 5-point items by use of the following scale steps: "never", "very infrequently", "some of the time", "a good part of the time", and "most of the time".

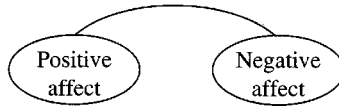
The 72 items in each case were drawn from the following established scales and supplemented by items to sufficiently cover the five fundamental categories of PA and NA found by Shaver, Schwartz, Kirson, and O'Connor (1987), (i.e. love, joy, anger, sadness, and fear). Twenty items from the PANAS scale were used (e.g. Watson et al., 1988): 10 positive (attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong, active) and 10 negative (distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous, jittery). Thirty-eight items were chosen to cover each of the five categories noted above plus guilt and shame, which are important for Americans and Chinese yet show cultural differences (e.g. Wallbott & Scherer, 1995). The 38 items were taken from scales proposed by Diener and Emmons (1985); Diener, Larsen, Levine, and Emmons (1985), and the subordinate category instances shown in Shaver et al. (1987). These included, for each category, love (love, liking, affection, caring), joy (joyful, happy, pleasant, enjoyment, delighted, content, glad, pleased), anger (angry, hostile, irritable, frustrated, annoyed, hateful, disliking), sad (sad, depressed, upset, distressed, gloomy, unhappy), fear (fearful, anxious, worried, nervous, jittery, scared, afraid), and guilt/shame (guilt, ashamed, blameworthy, remorseful, regretful, embarrassed). Finally, 14 items not pertinent to the study at hand were included.

Each item on the questionnaire made explicit the context under scrutiny. For example, the present intensity items read, "Right now at the present moment I feel happy", "Right now at the present moment I feel anxious", and so on. Similar explicit designations of context were used for past intensity and past frequency items of affect. The Chinese version of the questionnaire was double (back) translated with decentring (Brislin, 1980; Werner & Campbell, 1970).

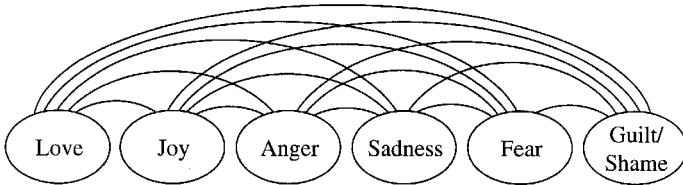
Models. Figure 1 shows three confirmatory factor analysis (CFA) models used to test hypotheses in Study 1. The two-factor model in the top panel is similar to the CFA models examined by Green et al. (1993) and permits us to test the relationship between PA and NA, wherein each is represented as a single factor. Green et al. (1993) examined primarily a happy-sad model and a positive-negative model with items derived from the PANAS. In both cases, four indicators were used to measure each of the

extremely continuum they experience the emotion. We doubt whether such a scale would measurably differ from our scale, which asks people to indicate their felt intensity of feeling on a very slightly or not at all to very much continuum.

Two-factor model:



Six-factor model:



Three-factor model:

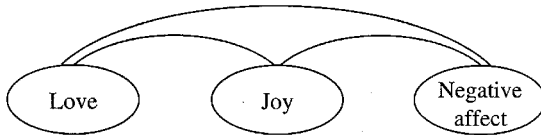


FIG. 1. Three confirmatory factor analysis models for representing positive and negative affect.

two factors, such that each indicator consisted of the sum of responses to items which were aggregated to form the respective indicators. We employed a similar approach, but instead of only happy-sad items and the 10 PANAS items used by Green et al. (1993), we used multiple items each for love, joy, anger, sadness, fear, and guilt/shame (see earlier) and the 20-item PANAS.

Specifically, we examined the two-factor model shown in the top panel of Fig. 1 and did so for three separate replications: once using the items from Diener and Emmons' (1985) scale (see Table 1), once using the items from Diener et al. (1985), and once using the 20 PANAS items. In each case, three indicators were employed for the PA factor and three for the NA factor by aggregating items. We followed the procedure for forming such "partial disaggregation" CFA models as described by Bagozzi and

Heatherton (1994). For each replication, items were assigned to the indicators of PA randomly from the appropriate list of items, and indicators for NA were formed based on the assignment of items to the categories of anger, sadness, fear, and guilt/shame. Exploratory factor analyses confirmed that a two-factor solution captured the structure with the appropriate items loadings on the PA and NA. The indicators used in tests of hypotheses were for PA: PA1 (happy, joyful), PA2 (pleased, enjoyment), and PA3 (glad, delighted, content); and for NA: NA1 (angry, fearful, anxious), NA2 (frustrated, depressed, annoyed), and NA3 (sad, gloomy).

For the six-factor CFA model shown in the centre panel in Fig. 1, the indicators were formed by use of the items listed in Table 2. The indicators were for love: LOVE1 (loving, affectionate) and LOVE2 (liking, caring); for joy: JOY1 (joyful, pleasant, delighted, glad) and JOY2 (happy, enjoying, content, pleased); for anger: ANGER1 (angry, hostile, irritable) and ANGER2 (frustrated, annoyed, hateful, disliking); for sadness: SAD1 (sad, depressed, upset) and SAD2 (distressed, gloomy, unhappy); for fear: FEAR1 (fearful, anxious, worried) and FEAR2 (nervous, jittery, scared, afraid); and for guilt/shame: G/S1 (guilty, ashamed, blame-worthy) and G/S2 (remorseful, regretful, embarrassed).

Investigation of the two-factor model allows us to test hypotheses analogous to those examined by Green et al. (1993) but extending the analysis to broader categories of PA and NA. As displayed in the centre panel of Fig. 1, we desire also to test the organisation of PA and NA in a more refined way that explicitly represents the basic categories of emotions found by Shaver et al. (1987), plus guilt/shame given its salience across cultures (e.g. Wallbott & Scherer, 1995); in this way we can examine six discrete, but intercorrelated, emotions. The scales developed by Diener and

TABLE 1
Measures of Positive and Negative Affect for
Tests of the Two-factor Model

Positive Affect	Negative Affect
happy	angry
joyful	fear
pleased	anxious
enjoyment	frustrated
glad	depressed
delighted	annoyed
content	sad
	gloomy

Source: After Diener and Emmons (1985).

TABLE 2
Measures of Positive and Negative Affect for
Tests of Six-factor and Three-factor models

<i>Positive Affect</i>	<i>Negative Affect</i>	
<i>Love</i>	<i>Anger</i>	<i>Fear</i>
loving	angry	fearful
affection	hostile	anxious
liking	irritable	worried
caring	frustrated	nervous
	annoyed	jittery
<i>Joy</i>	hateful	scared
happy	disliking	afraid
joyful		
pleased	<i>Sadness</i>	<i>Guilt/Shame</i>
enjoyment	sad	guilty
pleasant	depressed	ashamed
glad	upset	blameworthy
delighted	distressed	remorseful
content	gloomy	regretful
	unhappy	embarrassed

Emmons (1985) and Diener et al. (1985) do not contain items for the categories of love and guilt/shame, and the PANAS does not have items for the categories of love and sadness. Thus, our tests are more comprehensive than previous investigations.

The six-factor model permits a fine-grained analysis of the associations between discrete PA and NA reactions. As presented under Results, it turns out that the NA components are very highly correlated and can be treated as indicators of a single factor for tests of certain hypotheses. Thus the, three-factor model illustrated in the bottom panel of Figure 1 was also used to test hypotheses (see later).

The LISREL8 program was used to run the CFAs (Jöreskog & Sörbom, 1993). In addition to use of the χ^2 -test as an overall measure of goodness-of-fit, the CFI (Bentler, 1990; McDonald & Marsh, 1990) and the NNFI (Tucker & Lewis, 1973) were used. Values of 0.90 or greater for the CFI and NNFI are generally considered satisfactory. Marsh, Balla, and Hau (1996) showed that the CFI and NNFI performed the best of seven incremental fit indices examined in their simulations. Both were relatively unrelated to sample size, the CFI "had mean values of approximately 1.0 for true approximating models and appropriately reflected systematic variation in model misspecification", and the NNFI "appropriately penalized model complexity, appropriately rewarded model parsimony, and systematically reflected differences in model misspecification" (Marsh et al., 1996, pp. 346-7).

RESULTS

Factor Correlations

Table 3 summarises the findings for the two-factor, PA-NA CFA model (see top panel in Fig. 1) for present affective intensity. The goodness-of-fit measures in the top panel in Table 3 show that the models fit well with the exception of Chinese men, where the results are mixed. Although the NNFI = .80 for Chinese men, the CFI = .90. The centre panel in Table 3 indicates that all factor loadings of measures on PA and NA are relatively high.

The bottom panel in Table 3 presents the focal correlations for the test of hypotheses on correlations between PA and NA. As hypothesised, PA and NA were *negatively* correlated for Americans ($\phi = -.48$) and *positively* correlated for Chinese ($\phi = .19$). Importantly, as anticipated, the magnitude of the correlation between PA and NA was greater for women than men within each culture: for American men, $\phi = -.27$, whereas for American women $\phi = -.61$; for Chinese men, $\phi = -.12$, ns, whereas for Chinese women, $\phi = .53$.

TABLE 3
Results for Tests of Hypotheses on Factor Correlations: Two-Factor Model (Present Intensity): Study 1

	Americans						Chinese					
	Total sample		Men		Women		Total sample		Men		Women	
<i>Goodness-of-fit Tests</i>												
χ^2	20.13		20.74		17.84		35.67		35.97		7.54	
(df,N)	(8,273)		(8,111)		(8,162)		(8,210)		(8,132)		(8,78)	
P	.01		.01		.02		.00		.00		.48	
CFI	.99		.96		.99		.94		.90		1.00	
NNFI	.98		.92		.97		.89		.80		1.00	
<i>Factor Loadings</i>												
	P	N	P	N	P	N	P	N	P	N	P	N
	.81	.83	.79	.77	.83	.86	.77	.81	.74	.76	.77	.86
	.83	.94	.70	.93	.89	.95	.78	.74	.73	.76	.88	.72
	.89	.76	.88	.75	.91	.77	.73	.82	.72	.82	.81	.87
Correlation between Positive and Negative Factors	-.48(.05)		-.27(.10)		-.61(.06)		.19(.08)		-.12(.11)		.53(.10)	

Note: CFI, comparative fit index; NNFI, non-normed fit index; P, positive affect factor; N, negative affect factor.

Standard errors in parentheses.

Table 4 displays the findings for the six-factor CFA model of affect (see centre panel in Fig. 1) for present affective intensity. As can be seen in the goodness-of-fit tests shown in the bottom panel, all models fit well except for Chinese men, where the findings are mixed. Before we examine the focal correlations, it is interesting to inspect the correlations between the dimensions of PA and among the dimensions of NA. Love and joy correlate positively and highly and the four negative emotions (anger, sadness, fear, guilt/shame) also correlate positively and highly among themselves for all samples. The high, positive within-dimension correlations are consistent with predictions from appraisal theories where goal congruence (Lazarus, 1991) or motive consistency (Roseman, 1991) leads to positive emotions, and goal incongruence or motive inconsistency leads to negative emotions (see also Smith & Ellsworth's, 1985, notion of pleasantness, and Frijda's, 1987, concept of valence). Roseman (1991) found, for example, that the appraisal of positive outcomes increased the intensity of all positive emotions, and the appraisal of negative outcomes increased the intensity of all negative emotions.

The focal correlations that address relationships between PA and NA are shown in bold in Table 4. Notice first that the correlations between joy and anger, sadness, fear, and guilt/shame generally confirm hypotheses. As predicted, joy was *negatively* correlated with anger ($\phi = -.20$), sadness ($\phi = -.36$), fear ($\phi = -.13$), and guilt/shame ($\phi = -.20$), respectively, for American men; for American women, joy was also *negatively* correlated with anger ($\phi = -.51$), sadness ($\phi = -.53$), fear ($\phi = -.33$), and guilt/shame ($\phi = -.33$), respectively. Furthermore, the correlations were higher for American women than men, as predicted. Contrary to expectations, joy was not significantly correlated with any of the negative emotions for Chinese men. However, as hypothesised for Chinese women, joy was positively correlated with anger ($\phi = .54$), sadness ($\phi = .43$), fear ($\phi = .44$), and guilt/shame ($\phi = .55$). Also, the correlations are higher for women than men, as predicted.

We turn now to the correlations between love and the negative emotions, where it was hypothesised and generally found that the pattern across culture and gender paralleled that between joy and negative affect. Table 4 shows that love and the negative emotions were largely uncorrelated for American men, but love was negatively correlated with anger ($\phi = -.23$) and sadness ($\phi = -.24$) for American women. Hypotheses were more clearly confirmed for Chinese: love was correlated positively with anger ($\phi = .39$), fear ($\phi = .24$), and guilt/shame ($\phi = .42$) for men, whereas for women love was correlated positively with anger ($\phi = .59$), sadness ($\phi = .63$), fear ($\phi = .60$), and guilt/shame ($\phi = .61$), respectively. As predicted, the correlations were higher for women than men.

The findings for PA and NA presented in Table 3 were based on items drawn from the Diener and Emmons (1985) scale. Very similar results

TABLE 4
Results for Tests of Hypotheses on Factor Correlations: Six-Factor Model (Present Intensity): Study 1

	Love	Joy	Anger	Sadness	Fear	Guilt/Shame	Love	Joy	Anger	Sadness	Fear	Guilt/Shame
<i>American Men (N = 111)^a</i>												
Love	1.00											
Joy	.53(.07)	1.00										
Anger	.18(.10)	-.20(.09)	1.00									
Sadness	.13(.11)	-.36(.09)	.72(.06)	1.00								
Fear	.22(.11)	-.13(.10)	.74(.06)	.78(.06)	1.00							
Guilt/Shame	.13(.10)	-.20(.09)	.49(.08)	.65(.07)	.73(.06)	1.00						
<i>American Women (N = 162)^c</i>												
Love	1.00											
Joy	.69(.05)	1.00										
Anger	-.23(.08)	-.51(.06)	1.00									
Sadness	-.24(.08)	-.53(.06)	.91(.02)	1.00								
Fear	-.03(.09)	-.33(.07)	.78(.04)	.76(.04)	1.00							
Guilt/Shame	-.09(.09)	-.33(.07)	.78(.04)	.77(.04)	.88(.03)	1.00						
<i>Chinese Men (N = 132)^b</i>												
Love	1.00											
Joy	.78(.06)	1.00										
Anger	.39(.10)	.05(.11)	1.00									
Sadness	.17(.11)	-.18(.10)	.92(.05)	1.00								
Fear	.24(.11)	-.02(.10)	1.00(.05)	.94(.04)	1.00							
Guilt/Shame	.42(.10)	.06(.11)	1.00(.06)	.91(.06)	1.00(.05)	1.00						
<i>Chinese Women (N = 78)^d</i>												
Love	1.00											
Joy	.71(.08)	1.00										
Anger	.59(.10)	.54(.10)	1.00									
Sadness	.63(.10)	.43(.11)	1.00(.05)	1.00								
Fear	.60(.11)	.44(.12)	.94(.08)	.86(.08)	1.00							
Guilt/Shame	.61(.11)	.55(.11)	1.00(.07)	.92(.07)	1.00(.08)	1.00						
^a $\chi^2(39) = 36.15$ $P \cong .60$ CFI = 1.00 NNFI = 1.01												
^b $\chi^2(39) = 61.47$ $P \cong .012$ CFI = .97 NNFI = .95												
^c $\chi^2(39) = 91.97$ $P \cong .00$ CFI = .97 NNFI = .95												
^d $\chi^2(39) = 98.81$ $P \cong .00$ CFI = .90 NNFI = .83												

Notes: CFI, comparative fit index; NNFI, non-normed fit index.

^a = American men; ^b = Chinese men; ^c = American women; ^d = Chinese women.

Standard errors in parentheses.

occurred for the Diener et al. (1985) scale. In particular, the correlations between PA and NA were $\phi = -.41$, $\phi = -.22$, and $\phi = -.53$ for the total, men, and women American samples, respectively, and $\phi = .26$, $\phi = -.01$, and $\phi = .61$ for the respective Chinese samples. Likewise, similar findings but with slightly lower correlations arose when the PANAS was used: for Americans the respective correlations were $\phi = -.18$, $\phi = .07$, and $\phi = -.37$; for the Chinese the correlations were $\phi = .26$, $\phi = .15$, and $\phi = .34$. (In the interest of brevity, we will not present findings for the Diener et al. (1985) and PANAS for tests of hypotheses presented later, as these generally parallel those for the items shown in Tables 1 and 2.)

Tables 3 and 4 reveal that culture and gender influence the association between PA and NA, as hypothesised, for the most part. We now wish to test formally the differences in correlations by use of χ^2 -difference tests. We do this for both cross-cultural and cross-gender comparisons. In addition, we perform the tests not only on felt present intensity of affect but also on felt past intensity and past frequency of affect. To facilitate the tests and simplify the presentation, the negative emotion factors are combined into one factor, and the model in the bottom panel of Fig. 1 is used. We expect that differences across culture and gender will be stronger for present than past intensity of emotion. This prediction is based on the expected effects of time on the memory for emotion experienced as intensity. However, little or no differences are expected between present and past frequency of emotion. This is based on differences expected for activation of emotion in semantic memory and on the premise that considerable heterogeneity exists across people as to the origins of emotions and no necessary or contingent relation exists between the frequency of experienced PA and NA.

Statistical Tests of Differences

Table 5 presents the key correlations between love and NA and between joy and NA for American and Chinese men and women. The results for present intensity, past intensity, and past frequency are shown in the top, centre, and bottom panels, respectively.

Inspection of Table 5 allows us to test formally gender and cultural differences between key correlations.⁷ Present intensity in the top panel provides the context for the central cultural hypotheses (i.e. PA and NA in opposition for Americans and in balance of Chinese) and the central

⁷ The differences between correlations were tested with χ^2 -difference tests on covariances between the appropriate groups. Note also that before these tests were performed, unstandardised factor loadings were tested for invariance across groups and were found to be equal. A covariance matrix was used for all analyses.

TABLE 5
 Cross-cultural and Cross-gender Comparisons of Correlations
 between Love and Negative Affect and between Joy and
 Negative Affect: Three-Factor Model (Present and Past Intensity
 and Frequency): Study 1

	<i>Men</i>	<i>Women</i>
<i>A. Present Intensity</i>		
Americans	$\phi_{\text{Love, Neg}} = .18^a$ $\phi_{\text{Joy, Neg}} = -.28^{*a}$	$\phi_{\text{Love, Neg}} = -.17^{*b}$ $\phi_{\text{Joy, Neg}} = -.47^{*b}$
Chinese	$\phi_{\text{Love, Neg}} = .27^{*a}$ $\phi_{\text{Joy, Neg}} = -.11^a$	$\phi_{\text{Love, Neg}} = .56^{*a}$ $\phi_{\text{Joy, Neg}} = .52^{*c}$
<i>B. Past Intensity</i>		
Americans	$\phi_{\text{Love, Neg}} = -.07^a$ $\phi_{\text{Joy, Neg}} = -.36^{*a}$	$\phi_{\text{Love, Neg}} = -.21^{*a}$ $\phi_{\text{Joy, Neg}} = -.14^a$
Chinese	$\phi_{\text{Love, Neg}} = .01^a$ $\phi_{\text{Joy, Neg}} = -.18^a$	$\phi_{\text{Love, Neg}} = .06^a$ $\phi_{\text{Joy, Neg}} = -.26^{*a}$
<i>C. Frequency</i>		
Americans	$\phi_{\text{Love, Neg}} = .01^a$ $\phi_{\text{Joy, Neg}} = -.06^a$	$\phi_{\text{Love, Neg}} = -.13^a$ $\phi_{\text{Joy, Neg}} = -.16^{*a}$
Chinese	$\phi_{\text{Love, Neg}} = -.08^a$ $\phi_{\text{Joy, Neg}} = -.38^{*b}$	$\phi_{\text{Love, Neg}} = .20^a$ $\phi_{\text{Joy, Neg}} = .16^c$

Note: Comparisons of cross-cultural and cross-gender correlations with different superscripts are statistically significant at $P < .05$ level or better. $N = 111$ American men, $N = 162$ American women, $N = 132$ Chinese men, and $N = 78$ Chinese women.

* $P < .05$ or better.

gender hypotheses (i.e. stronger associations for women in comparison to men). Notice first that joy and NA are indeed negatively correlated for American men ($\phi = -.28$) and women ($\phi = -.47$) and positively correlated for Chinese women ($\phi = .52$), but are not significantly correlated for Chinese men ($\phi = -.11$, n.s.). These findings are similar to the results presented earlier for the two-factor and six-factor CFA models. Notice second that the across-gender, within-culture comparisons of the correlation between joy and NA confirm that women experience significantly higher correlations than men, for both Americans and Chinese. Next, the within-gender, across-culture comparisons reveal that the correlation between joy and NA does not differ between American and Chinese men but does differ between American and Chinese women. For the correlations between love and NA, two significant differences arose: American men and women significantly differed, but the correlations were relatively low, and Chinese women had a significantly greater correlation than American women.

STUDY 2: REPLICATION WITH KOREAN MEN AND WOMEN

To test the generalisability of the finding of a positive association between PA and NA for Confucian-based cultures, we replicated a portion of Study 1 using a sample of Korean undergraduate students at Seoul National University. The procedure for administration of the questionnaire was the same as carried out in Study 1. Of 111 men and 117 women in three classes, 106 men and 111 women completed the questionnaire.

Table 6 summarises the results for the six-factor CFA model shown in the middle panel of Fig. 1. The findings for the goodness-of-fit measures show that the data fit the model well for Korean men [$\chi^2(22, N = 106) = 42.55, P \cong .01, CFI = .98, NNFI = .95$], and show mixed results for Korean women [$\chi^2(22, N = 111) = 113.25, P \cong .00, CFI = .87, NNFI = .73$]. Before we examine the focal correlations (shown in bold) across PA and NA, it is interesting to inspect the correlations between the dimensions of PA and among the dimensions of NA. Love and joy correlated positively and moderately high, and the four negative emotions (anger, sadness, fear,

TABLE 6
Interfactor Correlations and Goodness-of-fit Measures for Six-factor Model
(Present Intensity): Study 2

	<i>Love</i>	<i>Joy</i>	<i>Anger</i>	<i>Sadness</i>	<i>Fear</i>	<i>Guilt/Shame</i>
<i>Korean Men (N = 106)</i>						
Love	1.00					
Joy	.41(.08)	1.00				
Anger	.30 (.09)	-.24 (.09)	1.00			
Sadness	.29 (.09)	-.29 (.09)	.89(.03)	1.00		
Fear	.41 (.09)	-.16 (.10)	.76(.05)	.81(.04)	1.00	
Guilt/shame	.34 (.09)	-.18 (.10)	.74(.06)	.83(.05)	.90(.04)	1.00
<i>Korean Women (N = 111)</i>						
Love	1.00					
Joy	.49(.07)	1.00				
Anger	.26 (.10)	.18 (.10)	1.00			
Sadness	.33 (.09)	.09 (.10)	.78(.05)	1.00		
Fear	.51 (.09)	.19 (.10)	.67(.08)	.94(.05)	1.00	
Guilt/Shame	.24 (.09)	.23 (.09)	.78(.06)	.53(.08)	.52(.09)	1.00
<i>Goodness-of-fit of Models:</i>						
	<i>Korean Men</i>			<i>Korean Women</i>		
	$\chi^2(22) = 42.55$			$\chi^2(22) = 113.25$		
	$P \cong .01$			$P \cong .00$		
	CFI = .98			CFI = .87		
	NNFI = .95			NNFI = .73		

Standard errors in parentheses.

guilt/shame) correlated positively and highly among themselves for both Korean men and women; these findings are consistent with predictions made under appraisal theories.

Inspection of the focal correlations shown in Table 6 allows us to test the cultural hypotheses developed above. As found for Chinese subjects, and in contrast to Americans, love was positively correlated with the negative emotions. For Korean men, love was positively correlated with anger ($\phi = .30$), sadness ($\phi = .29$), fear ($\phi = .41$), and guilt/shame ($\phi = .34$); for Korean women, love was positively correlated with anger ($\phi = .26$), sadness ($\phi = .33$), fear ($\phi = .51$) and guilt/shame ($\phi = .24$). As the correlations between pairs of emotions are approximately equal, no pattern can be discerned across gender.

The results in Table 6 for the correlations between joy and negative emotions are also similar to those found for Chinese subjects, except that the magnitudes of correlations are somewhat lower for Korean women. For Korean men, Joy was negatively correlated with anger ($\phi = -.24$), sadness ($\phi = -.29$), fear ($\phi = -.16$, n.s.), and guilt/shame ($\phi = -.18$, n.s.). These are opposite to predictions, but the low magnitudes reveal near independence between joy and the negative emotions. Recall from Table 4 that the same correlations for Chinese men were in each case nonsignificant and for American men ranged from $-.13$ (n.s.) to $-.36$. For Korean women, joy was positively correlated with anger ($\phi = .18$, n.s.), sadness ($\phi = .09$, n.s.), fear ($\phi = .19$, n.s.), and guilt/shame ($\phi = .23$, n.s.). The pattern of correlations is similar to that found for Chinese women but shows lower magnitudes (ϕ ranged from $.43$ to $.55$ for Chinese women; see Table 4) and contrasts with the moderately negative correlations found for American women, where ϕ ranged from $-.33$ to $-.53$ (see Table 4).

DISCUSSION

One explanation for differences found in correlations between PA and NA appears to be cultural. Building on the qualitative insights emerging from recent philosophical, anthropological, and psychological research (e.g. Bockover, 1995; Hansen, 1992, 1995; Heelas, 1996; Markus & Kitayama, 1991; Potter, 1988), we hypothesised that PA and NA can be positively related under certain circumstances, a prediction that is opposite to long-standing points of view in the West.

We hypothesised and found that culture can explain the seemingly counter-intuitive differences between people in independent-based and interdependent-based cultures. Americans exhibited the classic bipolar pattern, but Chinese, and to a lesser extent Koreans, showed a dialectic pattern between a wide range of positive and negative measures of emotions.

These perhaps surprising differences can be explained by fundamental dissimilarities in the conceptualisation, experience, and use of emotions across independent-based and interdependent-based cultures. People in independent-based cultures devote considerable time and energy to the analysis of their own and other people's emotions; emotions are frequently represented linguistically and conceptually in oppositional modes; emotions are central concepts for explaining one's own and others' actions; emotions are used to differentiate oneself from others and promote individuality; emotions are the subject of considerable self-control within social situations; and emotions are regarded as tools for initiating, influencing, and dissolving social relations. These many aspects of emotions for people in independent-based cultures press for the representation of PA and NA in oppositional terms.

People in interdependent-based cultures do not devote much intrapsychic energy to the analysis of their own or other people's emotions; emotions tend to be represented linguistically and conceptually in harmonious ways; emotions are not used to explain one's own or others' actions but rather are seen as concomitants or secondary reactions; emotions are not used to differentiate oneself from others—indeed the norm is to fit in with others, avoid conflict, and express solidarity or commitment to a group; emotions are not the focus of as much efforts at self-control, so as to make one feel appropriately, as they are in the West; and indeed emotions are not regarded as tools for controlling or influencing others in social situations. These properties of emotions for people in interdependent-based cultures work either to balance the representation of PA and NA or at least not to inhibit cultural imperatives pushing for the resolution of dualities and achievement of harmony in everyday life.

A good example of the function of cultural precepts can be found in the classic saying attributed to Lao-tzu (Taoteching [2], e.g. “. . . all the world knows good, but if that becomes good, this becomes bad . . .”). The Taoteching epitomises the dialectic and circular view in Chinese culture, which can be found in the tendency to compensate for or contrast emotional experience felt at one moment with the anticipation or rationalisation of its opposite. When strongly pleasing events happen, there is an inclination to not overly celebrate the good fortune but rather to acknowledge that things can turn bad next time; likewise, when strongly negative things befall one, the despair is frequently counterbalanced by the self-instruction that things can turn out well the next time around. Thus, PA and NA are brought into alignment even under fatalistic outlooks and exhibit a dialectic relation. It should be noted that the tendency to compensate PA and NA with their opposites happens not in response to a particular emotion-eliciting event but in response to how one feels overall at the moment or as one comes to reflect on the past. In contrast, Westerners

tend to gravitate to either optimistic or pessimistic orientations (e.g. Norem & Cantor, 1986; Scheier & Carver, 1987) and hence reflect classic dualistic or oppositional modes of behaviour (see also research on positive/negative affectivity, e.g. Clark & Watson, 1991).

Turning to linguistic traditions in East and West, we again find long-standing, basic differences that parallel the dialectic and dualistic ways of experiencing the world. Hansen (1995, p. 183) points out that the Chinese do not make faculty and functional distinctions between cognitive and affective states: "A single faculty/organ, the *xin*^{heart-mind}, guides action rather than separate faculties of heart and mind" so characteristic of Western ways of thinking. Again, we see that culture in the form of linguistic representations reveals a balance versus oppositional frame of reference peculiar to interdependent-based versus independent-based social systems, respectively. Many other examples can be given of how "the emotion words of a culture exert a powerful influence on the actual experience of emotion" (Malatesta & Haviland, 1985, p. 110; see also Heelas, 1996).

Culture, of course, constitutes only part of the reasons for differences in correlations between PA and NA. An important moderator is gender, which serves to intensify the within-culture pattern for women and to weaken the within-culture pattern for men. The presumed mechanism was said to reside in the greater knowledge, and skill in the use, of emotions by women than men. Research suggests that these distinctions stem from gender role socialisation, discriminative use of language, and differences in the self-concept and experiences in small group and interpersonal relations that occur from early ages on (e.g. Brody & Hall, 1993; Eagly, 1987; Grossman & Wood, 1993; Hochschild, 1983; Lutz, 1996).

Our findings suggest that the relationship between PA and NA shows three distinct patterns. Women in an independent-based culture exhibit bipolarity (i.e. PA and NA in opposition), women in an interdependent-based culture demonstrate a dialectic relation (i.e. PA and NA in harmony), and men in both cultures show largely isolation (i.e. near independence of PA and NA). Culture and gender thus provide one explanation for the inconsistency found in recent years and support a counter-intuitive interpretation of the organisation of PA and NA in reflexive arrangements for Eastern subjects, especially women in Confucian cultures.

Feldman's (1995) findings on individual difference in the structure of affective experience also suggest differences in the way PA and NA are experienced across cultures and gender. In looking at the semantic structure from self-report mood experiences, different structures can result, depending on an individual's propensity to focus on either the valence or arousal components. Degree of valence focus is defined as individual differences in the tendency to attend to and report the pleasant

or unpleasant aspects of emotional experience, whereas degree of arousal focus is defined as the tendency to attend to and report the physiological arousal associated with affective states. According to Russell (1991), hedonic quality is a universal aspect of affective experience; however, cultures differ in the extent to which cooperation, competition, or individualism are emphasised (Mead, 1967). Hedonic value gratifies the internal private self more than the social, relational self. No matter how closely P identifies and empathises with O, when O eats a piece of chocolate he/she tastes it in a way that P does not. People from independent-based cultures tend to emphasise the importance of the internal self and also stress the importance of hedonic experience. Feldman found strong negative correlations between PA and NA among individuals who focused on the valence dimension, whereas positive correlations were found among those who focused on the arousal dimension. From a comparative standpoint, Americans should show more negative associations than Chinese, whereas women should show stronger associations than men. The first hypothesis is supported in Table 3 which shows that correlations between the PA and NA factors are negative and significant for Americans, whereas these are positive for the Chinese. According to Kashima et al. (1995, p. 926), one of the most consistent gender differences found across cultures is the relational dimension in self-construal, where women are more relational than men: "Specifically, the relational dimension characterizes gender differences in self-construal, whereas the individualistic and collective dimensions describe cross-cultural differences". Bond (1988) also found large gender effects on the dimensions that reflect relational aspects of the self, such as competence versus security and personal morality versus success. To the extent that our relational self influences the levels of emotional intensity that we experience, we might hypothesise that women are more focused on the arousal dimension of affect structure than men. This tendency is supported in Table 4 where both American and Chinese women show significantly stronger associations between the joy factor (high arousal item) and the negative emotions than men. However, the direction of the correlations are reversed between American and Chinese women, due to the interaction effect between culture and gender. In other words, the direction of the association is influenced by culture, whereas the magnitude is further influenced by gender.

We acknowledge that some of our arguments concerning how culture functions to influence the experience of affect rest in part on philosophical and anecdotal evidence. Nevertheless, it is possible to speculate on core psychological processes underlying our arguments. Consider first the rationale for polarisation that is characteristic for people in independent-based cultures. To reduce cognitive dissonance (Festinger & Carlsmith, 1959), people may actively change their beliefs to accentuate differences

between emotion terms that seem incompatible (e.g. Zanna & Sande, 1987). It can be argued as well that a presupposition in the very use of language in independent-based cultures is that positive and negative feelings are logically opposite (Zautra, Potter, & Reich, 1997). Built into the folk psychology of many Western languages is the tendency to make differentiations between terms and categories. "Positive" and "negative" are not only antonyms in these languages but are contradictions in a strong sense. People in independent-based cultures thus tend to polarise contradictions in everyday situations.

By contrast, people in interdependent-based cultures seemingly accept contradictions as part of the natural order. Peng (1997) suggests that Chinese, in particular, follow a naïve dialecticism and consciously deal with contradictions by applying heuristics. This is believed to occur "among people of East Asian cultures across all levels of cognitive ability" through a process termed "compromising" whereby contradictions are averaged or reconciled to produce tolerance (Peng, 1997, p. 3).⁸ Three heuristics can be identified: the principle of change, the principle of contradiction, and the principle of holism. The principle of change maintains that reality, in general, is a process and concepts, in particular, are defined mutually through discourse with the result that boundaries and categories are flexible and change from discussion to discussion. The principle of contradiction asserts that reality is inherently imprecise and "the two sides of any contradiction exist in an active harmony which is mutually opposed, but mutually connected and mutually controlling" (Peng, 1997, p. 16). The principle of holism claims that everything is relational and connected, not isolated and independent, and it is through knowledge of relationships that we come to know anything fully. Peng (1997) proposes that these principles form a "folk wisdom of Chinese culture" and constitute the essence of dialectical thinking therein. Peng (1997) found evidence in a series of experiments for naïve dialecticism among Chinese undergraduates in terms of their everyday conversations and verbal reports, as well as specific reasoning and judgement processes. It seems reasonable to believe that the expression and experience of affect by Chinese would be similarly influenced by naïve dialecticism.

The findings in the current study for Koreans were mixed (see Table 6). On the one hand, the correlations between love and negative emotions were positive and generally moderate, as hypothesised, for both men and women. But on the other hand, the correlations between joy and the

⁸ Peng (1997, p. 3) asserts that the "cognitive elite" of Western cultures, but not the general public, use a form of dialecticism to resolve contradictions termed "integration", whereby synthesis or transcendence is accomplished (e.g. Besseches, 1984).

negative emotions were low and frequently nonsignificant for men and women.

Because Korea has been a Confucian-based culture throughout much of its history, we predicted a pattern of relationships between PA and NA for Koreans similar to that hypothesised for Chinese. What could account for the mixed findings for Koreans? Two possibilities can be identified: one of recent origin, the other of long-standing influence. Until very recently, China has not been exposed much to Western religious influences and cultural values. Confucian traditions have been the central cultural influences. Korea, by contrast, has undergone considerable change over the past two generations and many people have converted to Christian faiths, which of course stress a world view in terms of inner psychic experience and emotional reflection and reactivity rooted in Western thinking. The percentage of the Korean population practising Christianity is estimated to be 49% (*World Almanac and Book of Facts 1997*, p. 790). Likewise, 47% of the Korean population is said to practise Buddhism (*World Almanac*). Hansen (1992, p. 14) notes: "Buddhism came from a philosophical culture with extensive historical contact with ancient Greek and Middle Eastern civilizations. The conceptual structure of its theory of language and mind closely resembles that of our own Western folk psychology". Yet because of two thousand years of Confucian influence in Korea, we might expect the experience and representation of affect to reflect a pattern neither exclusively Eastern nor Western. This explanation is admittedly speculative and points to the need for specification of explicit social psychological processes that underlie the cultural and gender interpretations put forth in this paper.

Barrett and Russell (1998, p. 981) claim that the controversial issue between bipolar and independent construals of affect "is a matter of naming rather than discovering new facts". By "naming", they refer to the labels *researchers* give to dimensions and scales (Barrett & Russell, 1998, pp. 979–981). We, too, believe that naming is important but especially so on the part of the *persons* subjectively experiencing and expressing their affect. The present study shows that culture and gender fundamentally shape how people express their affect. We argued that the differences observed reside in different linguistic and world views between independent- and interdependent-based cultures, as modulated by gender differences in emotion knowledge and practical skills in emotion management. The findings seem to suggest that affect is a way of fulfilling or expressing one's identity. This is consistent with: (a) Wittgenstein's (1953) notion of cognition and emotion as a language game, where people conform to standards of correctness or propriety, (b) Harré's idea of emotions as expressions of judgement (Harré, 1995), and (c) Parkinson's (1995) construal of the function of emotions as conveying identity claims. Not only is

naming important to people experiencing and expressing affect, but it is vital to how PA and NA *relate* to each other in individual and cultural senses.

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