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RELATING THE FIVE-FACTOR MODEL OF PERSONALITY TO A CIRCUMPLEX MODEL OF AFFECT

A Five-Language Study

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Abstract. This chapter examines the relation between the Five-Factor Model of personality and momentary affect in five languages, based on a pooled sample of 2070 (*Ns* = 535 for English, 233 for Spanish, 487 for Chinese, 450 for Japanese, 365 for Korean). Affect is described with a two-dimensional space that integrates major dimensional models in English and that replicates well in all five languages. Personality is systematically linked to affect similarly (although not identically) across languages, but not in a way consistent with the claim that Positive Activation and Negative Activation are more basic; indeed, Pleasant vs. Unpleasant and Activated vs. Deactivated came closer to the personality dimensions.

Keywords: Affect, circumplex models, personality correlates, cross-cultural comparisons

1. INTRODUCTION

In recent years, psychologists have witnessed the emergence of the Five-Factor Model (FFM) as a consensual descriptive map for assessing personality (Costa & McCrae, 1992; Digman, 1990; Goldberg, 1993; Wiggins & Trapnell, 1997). Much of what psychologists mean by "personality" can be succinctly summarized by the FFM. In a narrow sense, the FFM represents an umbrella of replicable factor structures resulting from hundreds of validation studies conducted in different cultures (McCrae & Costa, 1997) and with different measurement devices (McCrae & John, 1992). The FFM was regarded as "the Christmas tree on which findings of stability, heritability, consensual validation, cross-cultural invariance, and predictive utility are hung like ornaments"

(Costa & McCrae, 1993, p. 302). In a broader sense, psychologists are now moving beyond the descriptive structure of the FFM to the Five-Factor Theory (FFT) of personality (McCrae & Costa, 1996). This theory promises to serve as a stimulus to an integrated understanding of personality, to organize myriad empirical findings into a coherent story, and to establish connections between personality and all other aspects of the human condition.

The present chapter examines the link between the FFM and such momentary affective feelings as happiness, nervousness, and relaxation. One typically feels happy with good news, nervous before an interview, and relaxed on vacation: Affect obviously can be predicted from the immediate context. What is less obvious, one's affect can also be predicted from one's enduring personality traits (Diener, 1984; Larsen & Ketelaar, 1991; McCrae & Costa, 1991). It is this latter link on which we focus. The viability of the FFT relies partly on its ability to predict and explain affect (as well as behavior, cognition, and other psychological processes). Indeed, some personality dimensions might predict behavior via its associations with affect (Lucas & Fujita, 2000). Some writers believe that Extraversion and Neuroticism are fundamentally affective in nature (Lucas, Diener, Grob, & Suh, & Shao, 2000; Tellegen, 1985; Watson & Clark, 1997) and recent analyses point to the affective nature of the other dimensions of the Big Five as well (McCrae & Costa, 1991; Watson 2000).

The study of affect, too, is enhanced through establishing its links to personality. For instance, our understanding of the nature of affect will depend on the degree to which it is more context- or more personality-dependent, and it has been proposed that correlations between personality and affect can help locate the fundamental axes in the structure of affect.

1.1. A Circumplex Model of Affect

In this chapter, we use as a tool a structure of affect that integrates the traditional pleasure and arousal axes, the circular ordering of affect, Thayer's (1996) dimensions of activation, and the dimensions that Watson and Tellegen (1985) called Positive Affect and Negative Affect (changed by Watson, Wiese, Vaidya, & Tellegen [1999] to Positive Activation and Negative Activation).

As in the study of personality, the study of affect requires a comprehensive descriptive structure. It is also highly desirable to have the whole or part of such a structure be a common framework for describing affect across languages and cultural groups. If such a universal "etic" structure can be found, it would be a unifying tool allowing us to compare and contrast affective feelings in different groups. In that way, both universal and language/culture-specific aspects of affect could be delineated.

In the past decade, various dimensional models have been proposed to characterize the covariations of self-reported momentary affective feelings. Major models include Russell's (1980) circumplex, Thayer's (1996) energetic and tense arousal, Larsen and Diener's (1992) eight combinations of pleasantness and activation, and Watson and Tellegen's (1985) positive and negative affect. Each has achieved psychometric success and inspired a line of supportive research. Each is continuing to be improved through empirical research. And the four are converging on one another.

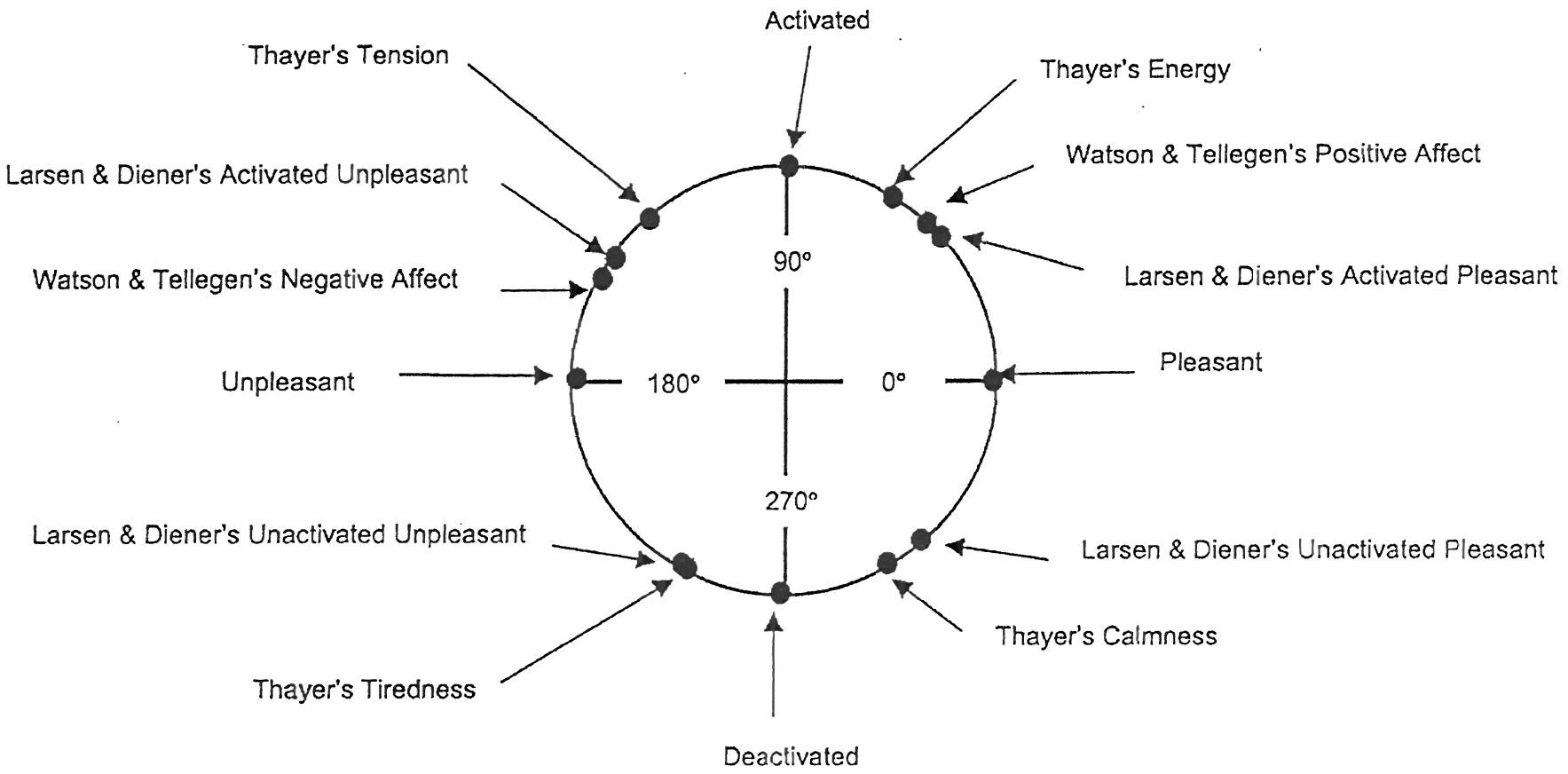

Figure 1. A Circumplex Model of Affect. 14 unipolar affect constructs empirically placed in an integrated two-dimensional space via CIRCUM (Browne, 1992). Results are obtained from a study of 535 English-speaking Canadians. Adopted from Russell, Yik, and Steiger (2002).

Recently, attempts have been made to integrate these four specific models. Results have shown that all four fit comfortably within the same two-dimensional affective space. Figure 1 shows an empirical example of one proposed integrated space (Russell, Yik, & Steiger, 2002), which is characterized by two bipolar axes of Pleasant versus Unpleasant and Activated versus Deactivated. On the right hand side are the pleasant states; on the left hand side are the unpleasant states. On the upper half are the activated states; on the lower half are the deactivated states. One can find any possible combination of different doses of Pleasant versus Unpleasant and Activated versus Deactivated affect. Affective states can thus fall at any angle throughout the integrated space of Figure 1. In this way, the model includes Thayer's, Larsen and Diener's, and Watson and Tellegen's constructs as specific vectors within the space. The model is thoroughly bipolar in that any state has a bipolar opposite 180° away. It is also a circumplex in which affective dimensions fall in a circular ordering along the perimeter rather than cluster at the axes. The circumplical nature of momentary affective states has received good empirical support (Remington, Fabrigar, & Visser, 2000). We do not assume that the structure of Figure 1 captures all of affect, but we do propose it as a means of representing affect at the most general level of description.

Various questions immediately arise: For instance, is this integrated structure of affect limited to English-speaking societies where it was developed? Or can it be generalized to those speaking other languages? Current evidence suggests similar dimensions of affect in different languages. Russell and his colleagues (1983; Russell, Lewicka, & Niit, 1989; Yik, Russell, & Ahn, 2002; Yik, Russell, Oceja, & Fernández Dols, 2000; Yik, Russell, & Suzuki, 2002) reported cross-cultural replications of their circumplex in Chinese, Croatian, Estonian, Greek, Gujarti, Japanese, Korean, Polish, and Spanish. Watson and Tellegen's (1985) Positive Affect and Negative Affect structure was replicated in Japanese (Watson, Clark, & Tellegen, 1984), Hebrew (Almagor & Ben-Porath, 1989), Castillian Spanish (Joiner, Sandín, Chorot, Lostao, & Marguina, 1997), and Tagalog (Church, Katigbak, Reyes, & Jensen, 1999).

Another question concerns the structure itself. Although there is widespread agreement on a two-dimensional structure of affect, the proper rotation of the two axes remains controversial. Pleasure and arousal are used as the horizontal (0°) and vertical axes (90°) in our model (Figure 1); this rotation is one of the viable alternatives, but any other pair of non-redundant axes explains the same amount of variance and defines the space equally well—mathematically. Some investigators have argued that the basic dimensions are at approximately 45° and at 135°. The diagonal at 45° (and, assuming bipolarity, its opposite number at 225°) is approximately what Watson and Tellegen (1985) defined as Positive Activation (i.e., Pleasant Activated versus Unpleasant Deactivated) and what Thayer defined at Energetic Arousal. The diagonal at 135° (and its opposite number at 315°) is independent of the first and is approximately what Watson and Tellegen defined as Negative Activation (i.e., Unpleasant Activated versus Pleasant Deactivated) and what Thayer defined as Tense Arousal. One argument for this latter rotation centers on the location of personality correlates of affect: Affect dimensions at 45° and 135° are basic, it is said, because they correlate with the personality dimensions of Extraversion and Neuroticism (Costa & McCrae, 1996; Meyer & Shack, 1989; Tellegen, 1985; Watson & Tellegen, 1985). The emergence of

the FFM indicates that it is essential to extend the discussion beyond simply Extraversion and Neuroticism to include the remaining three major personality dimensions. For example, Watson (2000) recently showed that Conscientiousness and Agreeableness too are related to affect. Furthermore, if the location of personality dimensions can locate the fundamental axes in a universal structure of affect, then that location should be the same in different societies. Here, we present data on this question gathered in five different societies speaking five different languages.

1.2. Predicting Affect from Personality

Various questions arise about the relation of affect to personality (e.g., Allik & Realo, 1997; Carver, Sutton, & Scheier, 2000; Fossum & Feldman Barrett, 2000; Gross, Sutton, & Ketelaar, 1998; Lucas & Fijita, 2000; Moskowitz, Brown, & Côté, 1997). Arguably, the first question is whether affect can be predicted from personality, and that is our topic.

The superfactors of Extraversion (E) and Neuroticism (N) have long been argued as temperamental traits that influence feelings and emotional behaviors (H. J. Eysenck, 1992; H. J. Eysenck & M. W. Eysenck, 1985; Tellegen, 1985). Much research has been reported to show that these two are related to affect (Costa & McCrae, 1980, 1984; Diener & Emmons, 1984; Izard, Libero, Putnam, & Haynes, 1993; Meyer & Shack, 1989; O'Malley & Gillett, 1984; McCrae & Costa, 1991; Thayer, Takahashi, & Pauli, 1988; Warr, Barter, & Brownbridge, 1983; Watson & Clark, 1992, 1997; Williams, 1981).

Fewer studies have been conducted on the predictive utility of Agreeableness (A), Conscientiousness (C), and Openness to Experience (O) on affect. Positive relations were reported between O and positive affective states (Costa & McCrae, 1984; McCrae & Costa, 1991; Watson & Clark, 1992). Both A and C were found to correlate positively with positive affective states and negatively with negative affective states (McCrae & Costa, 1991; Watson, 2000; Watson & Clark, 1992).

In short, both empirical and conceptual considerations indicate reliable and meaningful links between affect and all five basic dimensions of personality. However, the evidence available does not indicate clearly what the precise relation is between affect and each personality trait, how large that relation is, how best to represent those relations, or how these links can be used to determine the best rotation of the affective space. Here, we consider these questions. In addition, previous research has been focused mostly on English-speaking participants (see Lucas et al., 2000 for an exception). To advance our understanding of interlocking relations between personality and affect, research in non-English-speaking societies is much needed. Indeed, to our knowledge, we offer here the first empirical examination of the link between affect and personality with data from several different languages simultaneously.

2. FIVE LANGUAGE SAMPLES

The present chapter relies on previous studies conducted by our laboratory to examine the relations between the FFM and momentary affect in five different languages, each

belonging to a distinct language family. By sampling different languages, we test the limits of the generalizability of the nomological network of the FFM. Language families are groups of languages that share a common historical origin and similar grammar and syntax (Crystal, 1997). Spanish, like English, belongs to the Indo-European language family, although the former is under the Italic branch and the latter the Germanic branch. Chinese belongs to the Sino-Tibetan family. Although many Westerners might assume that Chinese, Japanese, and Korean are similar languages, they actually represent different language families. Japanese is actually a language family of its own and is very different from any other language. Korean is a member of the Altaic family (which includes Turkish and Mongolian).

Participants. Participants were undergraduate student volunteers. Test administration took place either during class time or in a laboratory. The English data came from 535 participants (241 men, 294 women) from the University of British Columbia (mean age = 19.61, SD = 3.22; Russell, Yik, & Steiger, 2002). The Spanish data came from 233 partici-pants (96 men, 137 women) from Universidad Autonoma de Madrid (mean age = 19.83, SD = 4.29; Yik, Russell, Oceja, & Fernández Dols, 2000). The Chinese data came from 487 participants (164 men, 323 women) from the Chinese University of Hong Kong and the City University of Hong Kong (mean age = 19.74, SD = 2.04; Yik & Russell, 2002). The Japanese data came from 450 participants (228 men, 222 women) from Doshisha University (mean age = 19.69, SD = 1.15; Yik, Russell, & Suzuki, 2002). Finally, the Korean data came from 365 participants (176 men, 189 women) from Pusan University (mean age = 21.16, SD = 4.28; Yik, Russell, & Ahn, 2002).

Personality scales. All five studies relied on the NEO FFI (Costa & McCrae, 1992), which is a 60-item questionnaire designed to measure the Five-Factor Model of personality. Each of the five factors is represented by 12 items. Responses are made on a 5-point rating scale ranging from *strongly disagree* through *neutral* to *strongly agree.* Data on reliability and other psychometric properties of the original English version are given by Costa and McCrae (1992). We used the Spanish translation developed by Sanz, Silva, and Avia (1999), the Chinese translation developed by Liu (1991) and revised by Ho (1994), the Japanese translation developed by Shimonaka, Nakazato, Gondo, & Takayama (1999), and the Korean translation developed by Ahn and Chae (1997). All versions of the scales show adequate psychometric properties.

Psychometric data for the NEO from our five samples are given in Table 1. Cronbach's alphas ranged from .62 to .83, indicating that the scales are internally consistent. The five dimensions showed the expected small but reliable correlations with each other. These psychometric properties resemble those found with the original English version (McCrae et al., 1998).

Remembered Moments Questionnaire. In much previous research, participants were asked to rate how they felt so far today, this week, this month, or "in general." All of these instructions rely on memory and have the disadvantage of covering a large span

Table 1. Psychometric Properties of the NEO-FFI in Five Different Languages.

NEO-FFI Scale	Correlation N	E	O	A	Mean	*SD*	α
			ENGLISH ($N = 535$)				
Neuroticism					22.80	8.40	.87
Extraversion	−.32*				29.76	8.40	.81
Openness	.02	.04			29.16	6.48	.74
Agreeableness	−.15*	.24*	.04		31.32	5.88	.74
Conscientiousness	−.26*	.15*	−.07	.12	30.60	6.84	.84
			SPANISH ($N = 233$)				
Neuroticism					25.20	8.64	.86
Extraversion	−.41*				28.08	6.48	.76
Openness	−.05	.03			32.16	5.40	.67
Agreeableness	−.20*	.35*	.10		31.08	5.64	.68
Conscientiousness	−.13*	.17*	−.05	.18*	27.84	7.20	.84
			CHINESE ($N = 487$)				
Neuroticism					26.16	7.32	.83
Extraversion	−.42*				25.92	5.76	.72
Openness	.04	.02			27.96	5.40	.64
Agreeableness	−.19*	.19*	−.07		27.12	4.92	.62
Conscientiousness	−.32*	.25*	.08	.11	28.20	6.12	.80
			JAPANESE ($N = 450$)				
Neuroticism					29.88	8.04	.85
Extraversion	−.26*				26.40	7.08	.81
Openness	.09	−.04			30.36	5.52	.63
Agreeableness	−.24*	.41*	.04		28.56	5.76	.69
Conscientiousness	−.24*	.26*	−.04	.21*	26.52	6.48	.76
			KOREAN ($N = 365$)				
Neuroticism					27.36	7.56	.84
Extraversion	−.45*				28.80	7.32	.85
Openness	−.07	.21*			27.60	5.76	.67
Agreeableness	−.22*	.29*	.19*		29.76	5.76	.72
Conscientiousness	−.32*	.27*	.08*	.03	29.52	6.96	.85

Note. Each scale score is the sum of 12 items, scored 0 to 4. Possible scores range from 0 to 48. *$p \leq .05$.

of time during which many different feelings might have occurred. One alternative is to ask respondents to rate how they feel "right now." This method too has its drawbacks. As participants proceed through a multi-item affect questionnaire, they can either try to remember how they felt when first asked (and thus rely on memory) or they can report

their affect at each moment as it shifts from item to item. Over the course of a long questionnaire, presumably some respondents get bored or annoyed or offended or become less tense; if so, we are no longer measuring "momentary affect" but a changing stream. In addition, if participants are in a classroom or laboratory completing a questionnaire, variance on affective dimensions is likely restricted because the immediate context is kept constant.

With these considerations in mind, we are exploring the complementary technique of asking respondents to describe a moment in the recent past that they remember well. On the front page of the affect questionnaire were general instructions under the title "Remembered Moments Questionnaire." Each participant was asked to return in memory to a well-remembered point during a specified time during the preceding day. There were six possible times: some time "before breakfast," "after breakfast," "before lunch," "after lunch," "before dinner," and "after dinner." Participants were randomly assigned to one of the six times. For instance, one-sixth of the participants were asked to search their memory to find one specific well-remembered moment yesterday "before breakfast." They were allowed to continue searching their memory until one clear, well-remembered moment came to mind. That moment was then defined as "the remembered moment" and all affect questionnaires were to be answered with respect to that specific moment. The five studies with this technique reported in this chapter all found basically the same structure of affect as found with "right now" instructions but had the advantage of greater range and variance on all the affective variables.[1]

Affect scales. In all five studies, affect was assessed with four questionnaires, each in a different format, in the following order: (a) Semantic differential scales; (b) Adjective format, which was an adjective list accompanied by a five-point Likert scale ranging from 1, *not at all,* to 5, *extremely*; (c) Agree-Disagree format, which was a list of statements with which participants were asked to indicate their degree of agreement, ranging from 1, *strongly disagree,* to 5, *strongly agree*, and (d) Describes Me format, which was a list of statements, for each of which participants were asked to indicate how well it described their feelings, ranging from 1, *not at all,* to 4, *very well.*

The semantic differential scales consisted of bipolar measures of Pleasure and Arousal translated directly from Mehrabian and Russell (1974). The remaining three questionnaires were unipolar in format and each questionnaire included translated items from (a) Feldman Barrett and Russell's (1998) Current Mood Questionnaire (CMQ) assessing Pleasant, Unpleasant, Activated, and Deactivated affect; (b) Larsen and Diener's (1992) Activated Unpleasant, Unactivated Unpleasant, Activated Pleasant, and Unactivated Pleasant affect; (c) Thayer's (1996) Energy, Tiredness, Tension, and Calmness; and (d) Watson, Clark, and Tellegen's (1988) Positive Affect and Negative Affect. Therefore, three scores (one from each format) could be estimated for these

[1]In the English sample, a total of 44 affect scales (14 constructs of Figure 1, each assessed in three different ways, plus two semantic differential scales) were administered to a sample of 535 participants. These 44 scales had also been administered by Yik, Russell, and Feldman Barrett (1999) to one or both samples of their article focusing on "current mood" measurements. Therefore we could examine our anticipation of greater variance in the present study relative to the variance observed by Yik et al. Our hypothesis was generally correct. In 39 of 44 comparisons, variance in the present study was greater than that reported by Yik et al.

various dimensions.

Original English versions of the affect scales were translated into the target language through a translation and back-translation procedure. In each language, the affect measures were first translated by a native speaker of the target language (one of the co-authors of this chapter). After the translation was completed, a second translator (blind to the original English version) back-translated the questionnaire into English. Discrepancies between the back-translated version and the original English version were reviewed and translations were revised on the basis of joint consultation of the translator, back-translator, and the first two authors. Translators were advised to maintain the affective meaning of the items even though that might require changes in the literal content.[2]

3. STRUCTURE OF AFFECT IN THE FIVE LANGUAGES

Affect data within each sample have been analyzed separately and reported in previous studies (Russell, Yik, & Steiger, 2002; Yik & Russell, 2002; Yik, Russell, & Ahn, 2002; Yik, Russell, Oceja, & Fernández Dols, 2000; Yik, Russell, & Suzuki, 2002). Even though the scales were created simply through translation and had not been refined through repeated revision, the hypothesized structure provided a reasonable fit to the data in every case. The affect scales themselves then underwent a conservative process of revisions. By "conservative," we mean that no item was allowed to move from one construct to another; the pleasure and displeasure scales were not changed, and no new items were added. In other words, the scales were changed simply by dropping items that weakened the psychometric properties of the scales.[3] Here we use data from these revised scales.

We report three additional analyses, all cross-language comparisons: (a) a measurement model for our proposed affective space integrated across the five languages; (b) an assessment of how well various affect constructs from different prior models can be integrated within that space; and (c) the linear prediction of affect from the FFM.

3.1. Horizontal and Vertical Axes

Our model rests on four cornerstone constructs—Pleasant, Unpleasant, Activated, and Deactivated. To obtain a single affective structure for data from all 5 samples, we conducted a multi-sample confirmatory factor analysis with these four as latent

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[2]Translation was guided by the theoretical assumptions of the Affect Circumplex, especially that all affect items are made up different degrees of the two axes: pleasure and arousal. In order to help in the translation, a handbook was created for the first translator defining each word or phrase used in the original English version in terms of pleasure and arousal. For each affect item, synonyms were provided where possible. For instance, *ecstatic* and *joyful* were given besides *elated*. Finally, translators were asked to provide different translations for different terms. Only one translation could be used for each term and that translation had to be adopted throughout the whole questionnaire.

[3]For the scales designed to measure CMQ, no items were dropped in English; five were dropped in Spanish; six in Chinese; 14 in Japanese; and 10 in Korean. For the scales designed to measure other affect dimensions, one item was dropped in Chinese and one was dropped in Japanese.

Table 2. Interfactor Correlations Among Pleasant, Unpleasant, Activated, and Deactivated in a Multi-sample Confirmatory Factor Analysis.

	Pleasant	Unpleasant	Activated
Unpleasant	−.88*		
Activated	.09	.09	
Deactivated	−.03	.00	−.69*

Note. Ns = 535 (English), 233 (Spanish), 487 (Chinese), 450 (Japanese), 365 (Korean). $*p \leq .001$.

constructs. Each construct was indicated by 3 unipolar scales (the semantic differential scales were omitted from this analysis). The interfactor correlations among the four constructs (given in Table 2) were constrained to be equal across the five languages. Factor loadings and error variances were estimated for each language separately, however. The hypothesized model fit the data well: χ^2 (174, Ns =535, 233, 487, 450, 365) = 805.12, and RMSEA = .09. Factor loadings between the manifest variables and their intended constructs (Pleasant, Unpleasant, Activated, and Deactivated) were all statistically significant in each language.

The reader may have noted that although our structural model of affect is thoroughly bipolar, the four constructs in the preceding analysis were unipolar and that all of the manifest variables were in a unipolar format. This makes our analysis quite conservative (Russell & Carroll, 1999). The unipolar format was adopted (a) so that unipolar constructs (such as Watson and Tellegen's Positive and Negative Activation) could be assessed (as shown in Figure 1) and (b) so that bipolarity could be tested empirically rather than simply presupposed in the rating scale. One simple test of bipolarity is provided by the interfactor correlation matrix from the multi-sample confirmatory factor analysis given in Table 2. Negative correlations of sizable magnitude were found between the hypothesized bipolar opposites: Pleasant and Unpleasant correlated −.88; Activated and Deactivated correlated −.69. All other correlations were expected to be near zero and were, in fact, below .10 in magnitude. These results are consistent with the variables being thoroughly bipolar. Russell and Carroll (1999) analyzed empirical tests of bipolarity and showed that the more strictly unipolar the actual response format, the further from −1.00 is the expected correlation between bipolar opposites. Thus, the linear correlations estimated here are unlikely to be −1.00, even in error-free data. (Russell, Yik, and Steiger [2002] described various ways of examining bipolarity. Analyses within each of the five data sets showed that these data passed these additional tests as well.) Based on these considerations, we then redefined the two axes as bipolar continua.

3.2. *Placing Other Affect Constructs within the Integrated Space*

The next question is how well other major affective dimensions fit within this integrated space. We used two ways to explore this question. One way was to use Pleasant versus Unpleasant and Activated versus Deactivated axes (now defined and assessed as bipolar) as exogenous variables to predict all other (unipolar) affect constructs. By treating all other constructs as endogenous variables, we could test the

Table 3. Variance Explained by the Pleasant versus Unpleasant and Activated versus Deactivated Axes: A Cross-Language Comparison.

	% Variance Explained					
Construct	English	Spanish	Chinese	Japanese	Korean	*Mean*
Activated Pleasant[a]	69 (2.5)	73 (3.5)	86 (1.8)	75 (2.8)	75 (3.1)	76
Positive Affect[b]	79 (1.9)	79 (3.0)	78 (2.2)	68 (3.4)	68 (3.3)	74
Energy[c]	81 (1.9)	82 (2.9)	77 (2.5)	76 (2.5)	83 (2.6)	80
Tension[c]	69 (2.3)	79 (2.9)	82 (1.8)	72 (2.8)	77 (2.7)	76
Activated Unpleasant[a]	77 (2.0)	83 (2.5)	86 (1.5)	80 (2.2)	88 (1.8)	83
Negative Affect[b]	78 (1.8)	84 (2.2)	83 (1.6)	74 (2.4)	86 (1.8)	81
Unactivated Unpleasant[a]	69 (2.5)	80 (3.1)	72 (2.5)	79 (2.4)	72 (3.1)	74
Tiredness[c]	60 (2.8)	63 (4.4)	64 (3.1)	74 (2.8)	60 (3.8)	64
Calmness[c]	83 (2.0)	77 (3.6)	86 (3.2)	81 (2.4)	75 (3.1)	80
Unactivated Pleasant[a]	78 (1.9)	78 (3.0)	86 (2.1)	83 (2.0)	86 (2.2)	82

Note. Figures in parentheses are the standard errors. RMSEAs for the 10 structural equation models ranged from .08 to .11 in English; .06 to .11 in Spanish; .07 to .11 in Chinese; .08 to .11 in Japanese; and .08 to .10 in Korean. CFIs for the 10 structural equation models ranged from .94 to .97 in English; .94 to .98 in Spanish; .94 to .97 in Chinese; .93 to .97 in Japanese; and .95 to .97 in Korean. [a]Larsen and Diener (1992). [b]Watson and Tellegen (1985). [c]Thayer (1996).

hypothesis that the two axes explain most of the reliable variance in them. For each language sample, we conducted a separate analysis for each of 10 unipolar affect constructs (four from Thayer, four from Larsen and Diener, and two from Watson and Tellegen) in each language. Hence, there were 50 analyses in all. The resulting variance explained is given in Table 3. The mean variance explained across five languages ranged from 64% to 83%, with a mean of 77%. The two bipolar axes in all five languages were able to explain most, although not all, the reliable variance in constructs from other structural models of affect.

To examine language differences in the variance explained by the Pleasant versus Unpleasant and Activated versus Deactivated axes, we conducted a one-way ANOVA with language as the between-group variable and variance explained as the dependent variable. The main effect of language was not statistically significant, $F(4, 45) = .90$, *n.s.* To examine whether there were differences in variance explained between affect variables, we conducted another ANOVA with affect as the between-group variable. The main effect was significant, $F(9, 40) = 6.21$, $p<.001$. Post-hoc tests indicated that Thayer's Tiredness (unpleasant deactivated affect) yielded significantly lower variance explained that did affective feelings in the remaining quadrants of the proposed integrated space.

Our second way of examining the structure of affect across languages focused on their representation as a circumplex. Within each separate data set, all 14 constructs had been modeled with a structural equation modeling program (CIRCUM) developed by Browne (1992). This program provides fit indices and angular position for each input

variable. In all five languages examined separately, results indicated that the 14 constructs conform approximately to a circumplex, which explained much of the common variance. Within each sample, results resembled those shown in Figure 1.

To provide a cross-cultural comparison of the circumplexity results, the 14 affect constructs were rank-ordered by their angular positions on the circumplex in each language. For instance, Pleasant was always designated as the reference variable and was given the rank of 1. Rank 2 was given to the construct that came closest to Pleasant in the anti-clockwise position. Spearman's rank order correlations were computed pairwise for the five samples. All correlations were above .97, indicating that the 14 constructs were arrayed in much the same order on the circumplex in each language. English, Spanish, and Chinese had identical positions for all 14 constructs. (A stricter test comes from Pearson correlations between the actual angles, which were even higher, ranging from .99 to 1.00)

3.3. *Core Affect and Beyond*

One of the vexing problems in the study of personality/affect connections has been the lack of a consensual descriptive map for affect. The Cartesian space in Figure 1 is a possible solution to this problem. Within this two-dimensional space occur differing doses of Pleasant versus Unpleasant and Activated versus Deactivated dimensions. Many different affect dimensions can therefore be found or placed within this space. Our data provided support for the viability of our proposed space as a means to integrate affect constructs, and this hypothesis was supported in all five samples.

We do not want to be misunderstood as claiming that all there is to affect is captured in our two-dimensional space. Rather, the two-dimensional space captures the *core* of affect (Russell, 2002). We find it convenient to describe that core in terms of Pleasantness versus Unpleasantness and Activation versus Deactivation. Other researchers have found it useful to define other dimensions within that space. Whatever the resolution of that debate (to which we return in Section 4), many researchers agree on the importance of some two-dimensional space. Our evidence here showed that the two-dimensional models of Thayer, Watson and Tellegen, Russell, and Larsen and Diener have all captured the same space; empirically, variables from different models are so highly interrelated that they cannot be treated as independent. These substantial interrelations cry out for a common space. Further, the space they have all captured can be demonstrated in different languages, indeed in all the languages we have so far tested.

Beyond this core of affect, other ingredients within emotions can be identified. For example, a prototypical emotional episode consists not only of changes in core affect, but also specific expressive and instrumental actions, specific accompanying central and peripheral physiological changes, cognitive process of attribution and appraisal, and subjective experiences of discrete categories of emotion. In proposing that the two-dimensional space (core affect) is universal, we do not assume that these other ingredients are necessarily universal. There might be, for example, discrete categories of prototypical emotional episodes that occur frequently within one culture but that are rare or nonexistent within another. This possibility is illustrated by the work on the Japanese concept of *amae* (Doi, 1973). To emphasize the distinction between what is

captured in Figure 1 and the remaining ingredients that make up emotional episodes, we shall now refer to the space of Figure 1 as *core affect.*

4. RELATING CORE AFFECT TO THE FFM

So far, we have offered or referred to evidence that the structure of personality as represented by the FFM and the structure of core affect as represented by our proposed integrated model both serve well across societies and languages. In this section, we can at last turn to questions on the relations of personality to affect: What is the magnitude of relations? What is the pattern of relations? And what is the implication of these relations for finding the proper reference axes in the structure of affect? Can these relations be modeled in a simple way?

To explore such questions, we report here two complementary sets of analyses. First, we created a series of structural equation models, each using the FFM dimensions as exogenous variables and one affect construct as endogenous. With 8 bipolar affect constructs (our two axes plus two each from Thayer, Larsen & Diener, and Watson & Tellegen) and 5 languages, there were 40 structural equation models in all, which are shown in Table 4. This analysis assumes a very simple way to model the personality/affect link, namely, that each affect dimension is a simple linear function of the five factors of the FFM.

Second, we used Browne's (1999) CIRCUM-Extension procedure, which builds on the circumplex model of affect described above. This analysis assumes an even simpler way to model the personality/affect link, namely, that each personality dimension can be represented as a single vector within the affect circumplex. This is equivalent to saying that the relation of that personality variable to any affect variable can be predicted from the affect variable's position on the circumplex. Browne's procedure provides a maximum likelihood estimate of the angular location of each personality variable within the affect circumplex. This is a new technique that, we believe, has large advantages over the common research practice of calculating a zero-order correlation between one affect dimension and one personality dimension. Browne's CIRCUM-Extension provides three figures for each personality dimension. An *angle* estimates the location within the entire circumplex for that personality variable. (In the affect space, Pleasant was fixed at 0° and degrees increase counter-clockwise.) The *zeta* estimates the correlation between the personality dimension and the affect vector at the angle specified. It corresponds to the maximal correlation of that personality trait with any affective dimension, whether or not the affective dimension was actually measured. Finally, the VAF estimates model fit for placing that personality variable within the circumplex model. With the exception of O in the Japanese sample, the VAF ranged from 43% to 99% and showed that the CIRCUM-Extension procedure generally provided a good fit to the data.

4.1. Magnitude of Relations

Both analyses showed that there is a significant relation between personality and momentary affect, modest in magnitude, and varying somewhat with affective dimen-

Table 4. Predicting Affect from FFM: A Cross-Language Examination.

	Regression Weight					
Language	**N**	**E**	**O**	**A**	**C**	*% Variance*
	Endogenous variable: Pleasant versus Unpleasant[a]					
English	–.32**	.04	.06	.06	.05	14 (2.8)
Spanish	–.23**	.18**	.02	–.04	.23**	19 (4.7)
Chinese	–.44**	.03	.00	.08	.02	23 (3.4)
Japanese	–.15**	.01	.02	.17**	.04	7 (2.5)
Korean	–.16**	.16**	–.06	.13*	.12*	14 (3.5)
Mean	**–.26**	**.08**	**.01**	**.08**	**.09**	**15.4**
	Endogenous variable: Activated Pleasant versus Unactivated Unpleasant[b]					
English	–.20**	.07	.10*	.01	.07	8 (2.3)
Spanish	–.07	.20**	.13*	–.07	.20**	12 (4.1)
Chinese	–.30**	.12*	.04	.03	.10*	18 (3.2)
Japanese	–.13**	.14**	.07	.05	.08	8 (2.5)
Korean	–.17**	.18**	.06	.07	.03	12 (3.3)
Mean	**–.17**	**.14**	**.08**	**.02**	**.10**	**11.6**
	Endogenous variable: High versus Low Positive Affect[c]					
English	–.21**	.06	.13**	.01	.12	10 (2.5)
Spanish	–.10	.18*	.15*	–.08	.22**	13 (4.2)
Chinese	–.31**	.09*	.06	.02	.14**	19 (3.3)
Japanese	–.13**	.13*	.08	.04	.08	7 (2.4)
Korean	–.18**	.16**	.04	.08	.06	13 (3.4)
Mean	**–.19**	**.12**	**.09**	**.01**	**.12**	**12.4**
	Endogenous variable: Energy versus Tiredness[d]					
English	–.17**	.04	.06	–.01	.07	5 (1.8)
Spanish	.01	.18*	.16*	–.10	.19**	9 (3.7)
Chinese	–.25**	.11*	.05	–.02	.11*	14 (3.0)
Japanese	–.12*	.14**	.05	.05	.11*	8 (2.5)
Korean	–.16**	.17**	–.02	.07	.05	11 (3.1)
Mean	**–.14**	**.13**	**.06**	**.00**	**.11**	**9.4**
	Endogenous variable: Activated versus Deactivated[a]					
English	.08	.18**	.05	–.03	.06	4 (1.6)
Spanish	.13	.10	.24**	–.09	.09	8 (3.6)
Chinese	.20**	.16**	.03	–.05	.12*	5 (2.2)
Japanese	.01	.20**	.05	–.03	.08	5 (2.3)
Korean	–.03	.09	.05	–.00	–.02	1 (1.3)
Mean	**.08**	**.15**	**.08**	**–.04**	**.07**	**4.6**
	Endogenous variable: Tension versus Calmness[d]					
English	.34**	.08	–.02	–.04	.04	10 (2.6)
Spanish	.27**	–.05	.18**	–.02	–.07	12 (4.2)
Chinese	.47**	.09	–.03	–.04	.04	19 (3.3)
Japanese	.15**	.08	–.03	–.12*	–.03	4 (1.9)
Korean	.16**	–.12*	.10	–.12*	–.08	11 (3.1)
Mean	**.28**	**.02**	**.04**	**–.07**	**–.02**	**11.2**

Table 4 (continued)

Language	Regression Weight N	E	O	A	C	% Variance
Endogenous variable: Activated Unpleasant versus Unactivated Pleasant[b]						
English	.38**	.07	−.05	−.04	.00	14 (2.8)
Spanish	.29**	−.09	.12*	.01	−.14*	16 (4.5)
Chinese	.46**	.04	−.02	−.06	.01	21 (3.4)
Japanese	.19**	.04	−.01	−.14**	.01	6 (2.2)
Korean	.17**	−.16**	.08	−.14**	−.07	13 (3.4)
Mean	**.30**	**−.02**	**.02**	**−.07**	**−.04**	**14.0**
Endogenous variable: High versus Low Negative Affect[c]						
English	.38**	.07	−.04	−.06	−.01	14 (2.8)
Spanish	.29**	−.10	.10	−.00	−.14*	16 (4.5)
Chinese	.46**	.05	−.02	−.07	−.01	21 (3.4)
Japanese	.19**	.04	−.03	−.14**	−.02	6 (2.3)
Korean	.17**	−.15*	.08	−.13*	−.08	13 (3.4)
Mean	**.30**	**−.03**	**.02**	**−.08**	**−.05**	**14.0**

Note. Ns = 535 (English), 233 (Spanish), 487 (Chinese), 450 (Japanese), 365 (Korean). N = Neuroticism, E = Extraversion, O = Openness to Experience, A = Agreeableness, C = Conscientiousness. [a]Yik et al. (1999). [b]Larsen and Diener (1992). [c]Watson and Tellegen (1985). [d]Thayer (1996). $*p \leq .05$. $**p \leq .01$.

sion, personality dimension, and language. The 40 structural equation models, summarized in Table 4, estimated the percentage of variance in each bipolar affect variable that was explained by the FFM dimensions taken together. These results showed that all affect dimensions are predictable from the FFM, but that some affect variables are more predictable than others. The horizontal Pleasant versus Unpleasant axis was generally the most predictable; the vertical Activation versus Deactivation axis least predictable, and diagonal dimensions intermediate. This pattern was obtained in each language. One interpretation of variation in predictability is that Activation versus Deactivation is more context dependent, whereas Pleasantness versus Unpleasantness more personality dependent, with the diagonal dimensions falling in between because they are a combination of the horizontal and vertical axes.

The structural equation models in Table 4 also showed that the magnitude of the personality/affect relation varied with language: Variance accounted for was 17.5% in Chinese, 13.1% in Spanish, 11.0% in Korean, 9.9% in English, and 6.4% in Japanese. Although one might anticipate the greatest variance explained to occur in English (simply because all scales were psychometrically developed in English), this was not the case. The zetas of the CIRCUM–Extension procedure led to a similar conclusion. Mean zeta calculated across personality dimensions was .29 in Spanish, .27 in Chinese, .27 in Korean, .22 in English, and .20 in Japanese.

Finally, the CIRCUM-extension results showed that the magnitude of relation varied with personality dimension. The zeta of Table 5 is the estimated maximum correlation of a specific personality variable with any one affective variable. Averaging across languages, the mean zeta was .43 for Neuroticism, .29 for Extraversion, .24 for Conscientiousness, .18 for Agreeableness, and .10 for Openness to Experience.

Table 5. Empirical Location of Personality Dimensions in the Two-Dimensional Affective Space via CIRCUM-Extension.

Personality Dimension	Language	Angle	Zeta	VAF
Neuroticism	English	176°	.47	98
	Spanish	159°	.42	97
	Chinese	174°	.54	99
	Japanese	176°	.31	97
	Korean	184°	.39	98
Extraversion	English	28°	.22	84
	Spanish	357°	.35	98
	Chinese	19°	.31	97
	Japanese	24°	.21	84
	Korean	7°	.38	97
Openness to Experience	English	32°	.10	86
	Spanish	83°	.20	95
	Chinese	65°	.05	66
	Japanese	63°	.07	0[a]
	Korean	68°	.09	43
Agreeableness	English	355°	.13	75
	Spanish	339°	.13	85
	Chinese	347°	.17	79
	Japanese	352°	.24	87
	Korean	357°	.25	85
Conscientiousness	English	18°	.17	84
	Spanish	0°	.33	97
	Chinese	19°	.27	94
	Japanese	15°	.18	90
	Korean	359°	.23	93

Note. Ns = 535 (English), 233 (Spanish), 487 (Chinese), 450 (Japanese), 365 (Korean). *Angle* refers to the estimated angular position of the personality dimension within the two-dimensional affective space. *Zeta* refers to the estimated communality index for the personality dimension and indicates the correlation between the personality dimension and the common score. Model fit for placing a personality dimension within the circumplex was assessed by the Variance Accounted For (VAF). [a]Since the VAF was computed as zero, the result for Openness to Experience in Japanese was discarded from further discussion.

Compared with past findings, the reported personality/affect connections in the present investigation might appear modest in size. We do not view them as small, or even smaller than past research indicates, for several reasons. First, previous research relied heavily on zero-order correlations.[4] Shared systematic (method) variance may

[4]For comparison purposes, we re-examined the personality/affect relations using the traditional multiple regressions in the English data. The Pleasant versus Unpleasant and Activated versus Deactivated affect variables served, respectively, as the dependent variable while the Big Five served as the independent variables. Three regression equations were computed for each bipolar affect variable, one for each scale (response format). Results resembled those in Table 4: The mean variance explained for Pleasant versus Unpleasant affect was 12%; Neuroticism yielded significant relations in all three scales (mean regression weight = –.31). The mean variance explained for Activated versus Deactivated was 2%; Extraversion yielded significant relations in all three scales (mean regression weight = .15).

have inflated past estimations of personality/affect relations (see Jaccard & Wan, 1985). For example, if both affect and personality are assessed with self-report questionnaires in a similar unipolar format, some of the overlap between personality and affect might stem from an acquiescent response style (see Tellegen, Watson, & Clark, 1999). In our analyses, relying on structural equation modeling, we allowed correlated errors. Thus, systematic variance was estimated and removed. The estimates of personality/affect correlations here are thus likely more conservative.

Second, the affective ratings collected in past research often stemmed from participants' describing how they "generally feel" (e.g., Watson & Clark, 1992) or felt in the last two weeks (e.g., McCrae & Costa, 1991). The personality/affect relations may be exaggerated by the shared trait rating instructions, as well as the scale content overlap between the two domains. In effect, the participant is asked to average across a series of moments to arrive at an average affect state—just as, in completing a personality questionnaire, the participant is asked to average across past times and situations to arrive at a characteristic average. Thus, both measures might rely on self schemas or memory biases. In contrast, our data concerned affect at a thin slice of time at a randomly chosen moment. In characterizing the affect of a given well-remembered moment, there is less room for the participant to rely on generalized schematic knowledge of the self. Thus artifacts due to shared rating instructions between personality and affect were minimized. Situational influence on the momentary affect is maximal. In light of these considerations, we are impressed that the FFM can predict a person's momentary affect at an arbitrarily chosen point in time with the variance explained ranging from 6.4% to 17.5%. (These figures correspond to correlations between .25 and .42.)

Third, although we used multiple measures of momentary affect, we relied here on a single measure of the FFM. When, in an earlier study, we had used multiple measures of the FFM, the magnitude of the relation between affect and personality was substantially larger (variance explained in affect by the FFM ranged from 17.8% to 38.5%). Multiple measures coupled with structural equation modeling allow better elimination of method variance and thus a purer measure of trait variance. In agreement with arguments made by other researchers (Green, Goldman, & Salovey, 1993; Lucas & Fujita, 2000), we suggest that the FFM is best operationalized with multiple and maximally distinct formats.

Finally, because the relation of FFM to momentary affect is uniformly reliable, we can invoke standard psychometric principles (as captured, for example, in Epstein's [1979] aggregation procedure or in the Spearman-Brown prophesy formulae) to interpret the magnitude. These principles predict that as one aggregates different instances of momentary affect (across multiples times and situations for the same individual), then the correlation of the FFM with that aggregate will rise. The more instances aggregated, the higher the correlation. (Conversely, the thinner the slice in time for affect, the lower the correlation.)

4.2. Pattern of Relations

The pattern of relations between affect and personality can be seen in the regression

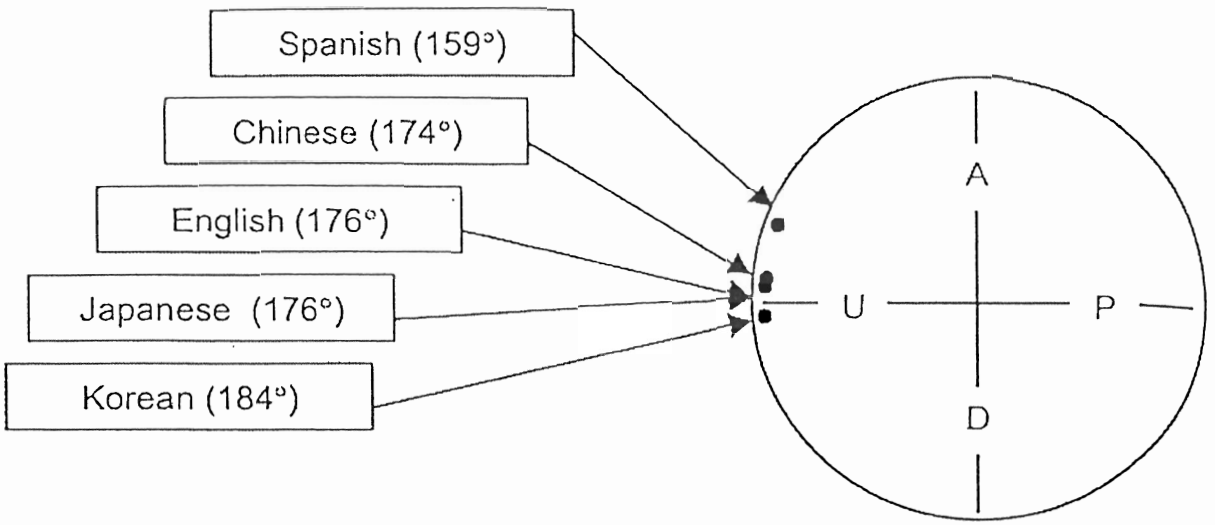

Figure 2. Locating Neuroticism within the Integrated Two-Dimensional Space Portrayed in Figure 1.

weights predicting momentary affect from the FFM (Table 4) and also in the angles estimated in CIRCUM-Extension procedure (*Angle* in Table 5). Both of these analyses tell a similar story and indeed, perhaps the most interesting story we have to offer. Here we focus on the angles from the CIRCUM-Extension procedure. Figures 2 to 6 display, for each language, the location of each personality variable in the integrated affective space.

For instance, consider Neuroticism. Figure 2 shows that those high in Neuroticism tend to experience unpleasant affect in all five samples. Yet there were subtle differences as well. In the Spanish sample, neurotics tended to experience unpleasant affect coupled with high activation. In all the other samples, especially Korean, however, neurotics were just as likely to experience low or medium as high activation. This pattern of results replicates an earlier finding with an English-speaking Canadian sample (Yik & Russell, 2001) and is important to the definition of Neuroticism. Much past research has reported a significant correlation between N and Watson and Tellegen's Negative Activation, and this result has been interpreted as showing that high Ns typically experience high and negative activation. By placing N within the entire affective space, this interpretation is challenged, at least in the majority of our samples.

The results in Figure 3 with E tell an equally fascinating story. In all five samples, extraverts tend to experience pleasant affect, as found in prior research (Lucas et al., 2000). Yet, again, we found subtle differences. In English, Japanese, and Chinese, that pleasant affect was coupled with high activation. This result is also consistent with our prior work (Yik & Russell, 2001) and with the general findings of others (Meyer & Shack, 1989; Watson & Clark, 1992). Yet, in Spanish and Korean, Extraversion was not associated with differences in activation. This result reminds us of Lucas et al.'s (2000) argument that the essence of Extraversion is simply positive affect.

Openness showed the greatest range of angles of any personality trait (Figure 4). In Japanese, the magnitude of the relation between O and affect was too low to justify

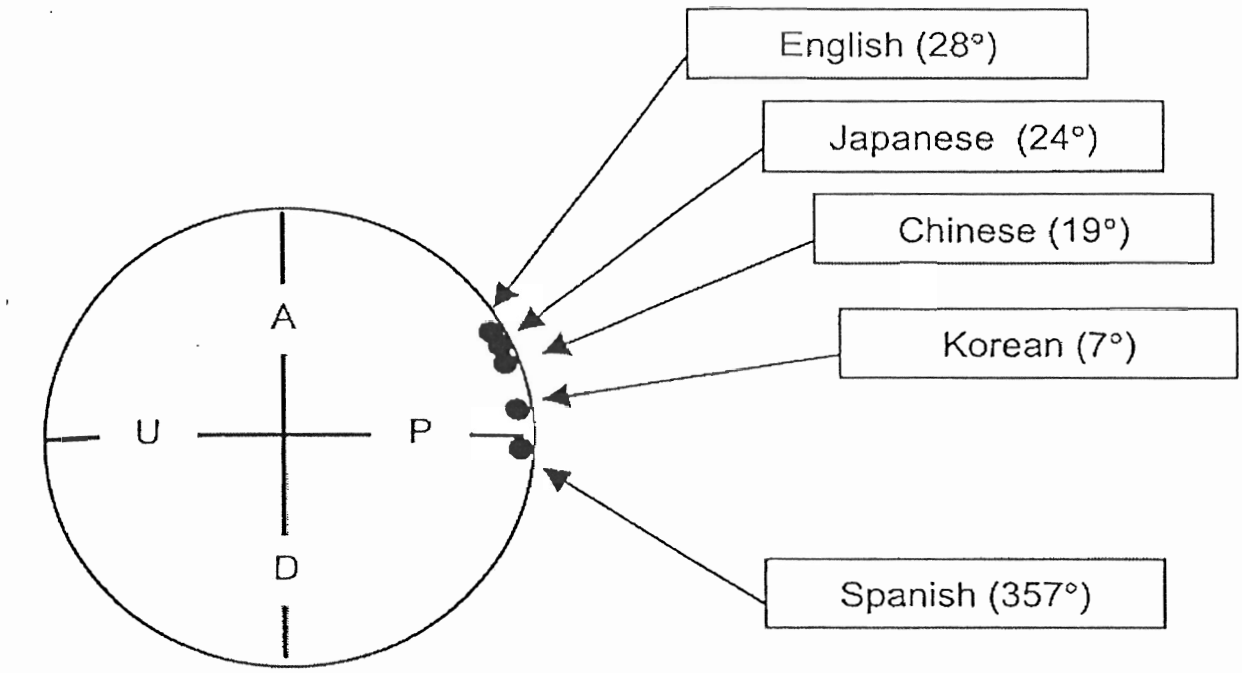

Figure 3. Locating Extraversion within the Integrated Two-Dimensional Space Portrayed in Figure 1.

calculating an angle. The remaining four languages showed that people high in Openness tend to experience pleasant and activated affect, but mainly activated in Spanish and mainly pleasant in English. Again, however, the low magnitude of the relations suggest caution in assuming the replicability of these results.

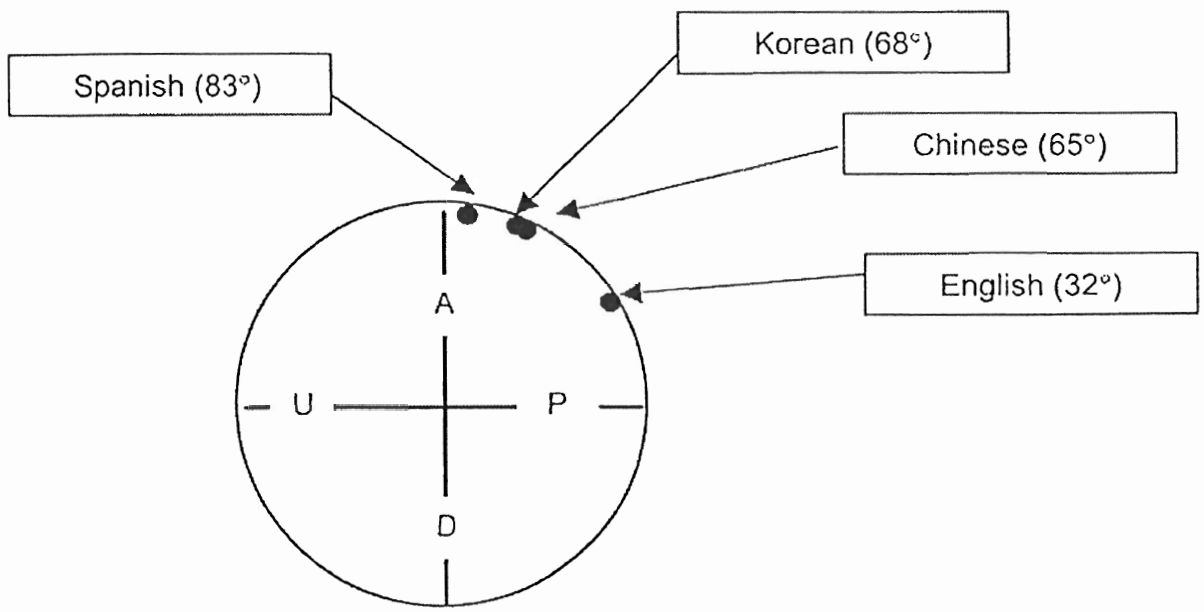

Figure 4. Locating Openness to Experience within the Integrated Two-Dimensional Space portrayed in Figure 1. Japanese data omitted.

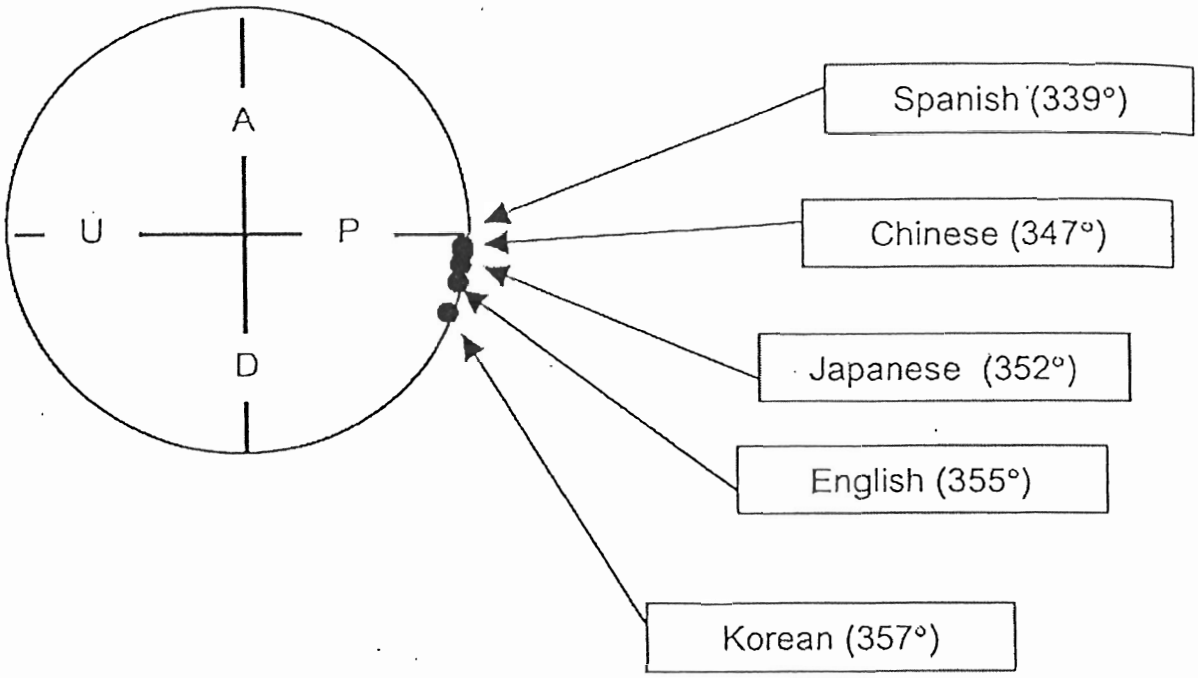

Figure 5. Locating Agreeableness within the Integrated Two-Dimensional Space Portrayed in Figure 1.

Finally, those high in A and C tend to experience positive affect. Both A and C showed similar angles across languages, suggesting a reliable pattern (see Figures 5 and 6). Both are principally related to Pleasant versus Unpleasant axis with only a slight difference in Activation.

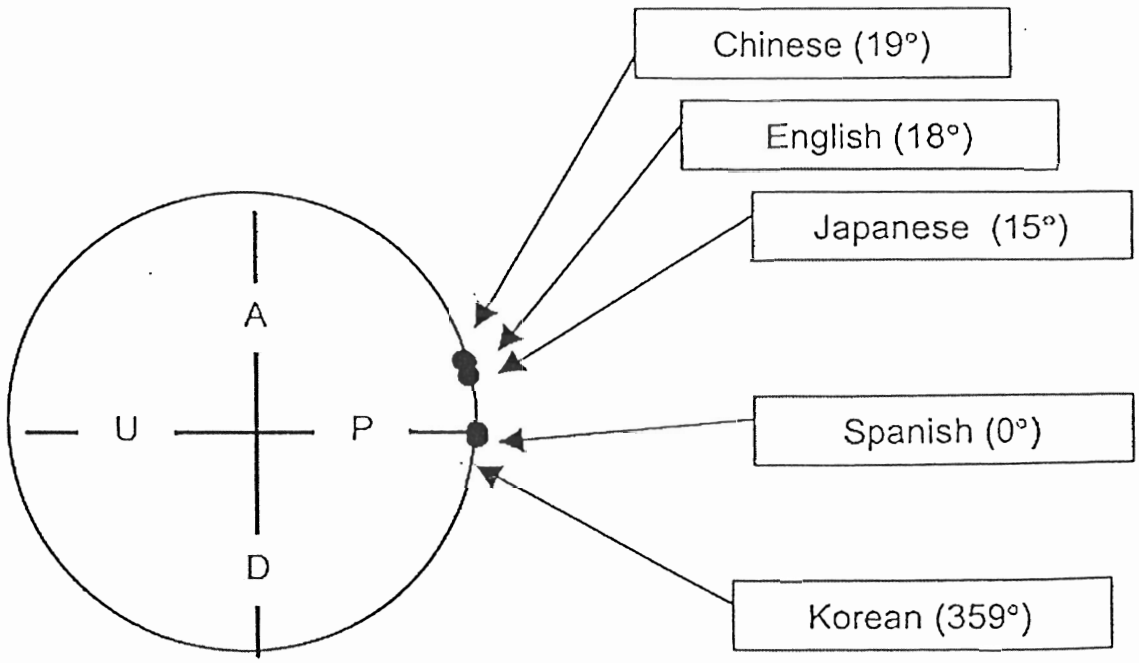

Figure 6. Locating Conscientiousness within the Integrated Two-Dimensional Space portrayed in Figure 1.

4.3. Proper Reference Axes within Affective Space

One of the vexing controversies even among those who agree on a two-dimensional structure of affect concerns the proper rotation of the axes. The two competing rotations are, on the one hand, the horizontal and vertical axes as shown in Figure 1 and, on the other, the diagonal axes, namely Pleasant Activated versus Unpleasant Deactivated and Unpleasant Activated versus Pleasant Deactivated. From a statistical point of view, any pair of non-redundant axes explains the same amount of variance as any other pair. Therefore, comparing the variance explained by the two competing rotations does not help decide which rotation is more "proper" or "basic" than the other.

Researchers therefore turned to external correlates for help. Meyer and Shack (1989) provided evidence in support of the basicness of the diagonal axes in their high correlations with Extraversion and Neuroticism. Larsen (1989) examined a broader range of personality dimensions and did not find them clustered at the 45° and 135° diagonals, but scattered in various places around the circumplex. A number of personality dimensions were found near the horizontal axis of Pleasant versus Unpleasant and the vertical axis of Activated versus Deactivated.

Our analysis assumes that all five dimensions of the FFM should be examined and is summarized in Table 5. Across the five languages, Neuroticism fell at the Unpleasant quadrant (range: 159° to 184°) on the circumference; Extraversion fell at Pleasant Activated/Activated quadrant (range: 357° to 28°); Openness fell at the Pleasant Activated quadrant (range: 32° to 83°); Agreeableness fell at the Pleasant Deactivated quadrant (range: 339° to 357°); and Conscientiousness fell at the Pleasant quadrant (range: 359° to 19°). Each FFM dimension was associated with a range of angles—the spread ranged from 51° for Openness to 17° for Neuroticism. Thus, the same personality dimension might fall at a different angle in different languages; if this result can be replicated, then it would speak loudly against using personality correlates to locate the fundamental axes of a universal affective space. Equally telling and contrary to what Tellegen (1985) and Meyer and Shack (1989) predicted, most personality dimensions do not point to 45° or 135° as fundamental. Although O did, neither E nor N pointed to these angles and, indeed, fell closer to the horizontal axis. In fact, four of the five personality dimensions included the horizontal pleasant-unpleasant axis (0° and 180°) within the range; whereas only O included 45° within its range. Earlier we showed that the horizontal axis was more predictable from the FFM than were the diagonal dimensions. Consistent with Larsen's (1989) findings, personality dimensions fall at different locations around affective space. In short, although a stronger case can be made for our rotation than the alternative 45°/135° rotation, we believe that personality correlates offer no clear guidance on just where the "basic" rotation lies in the two-dimensional space. Rather, the selection of the proper rotation has to be based on other criteria. Larsen and Diener (1992) and Reisenzein (1994) offered conceptual arguments in favor of the Pleasure and Arousal rotation.

5. CONCLUDING REMARKS

The present chapter examined the relations between brief affective states and the funda-

mental enduring characteristics of personality. We found the results exciting, pointing to the possibility of a simple pancultural description of at least one level of affect and of a simple, even elegant model of the links of affect so described with the FFM of personality. On the other hand, one might view our results with skepticism. The correlations were modest in magnitude. Different personality dimensions bore somewhat different relations to affect in different languages. We relied heavily on translations. For the affect measures, we adopted the expedient of translating scales developed in English into four languages. For personality, only one personality inventory—the NEO-FFI (Costa & McCrae, 1992)—was used. The four language versions available for the present study had been validated and found to have sound psychometric properties. However, psychometric properties do not guarantee complete accuracy of the translated measures. And accuracy of translation is a key factor in the interpretation of the personality/affect connections reported in the present chapter. The first author was involved in the Chinese translation of the NEO-PI-R, and this experience raised questions about simply equating scales in different languages. Similar concerns apply to our scales for affect, which similarly began in English. The present personality/affect connections are therefore best regarded as tentative. More research efforts are needed to extend and replicate the present results with different and improved personality and affect measures.

The present study adopted the "imposed-etic" approach (Berry, 1969; Church & Katigbak, 1989) in which translations of scales originating from the West were administered to participants speaking Spanish, Chinese, Japanese, and Korean. This approach emphasizes similarities across cultures and can be blind to indigenous constructs or processes. Given the richness of the emotion lexicon in each language (e.g., Russell & Yik, 1996), the possibility remains that additional affect dimensions or even different structural models would emerge with more indigenous items. Results obtained in the present study represent a first step towards studying affect and its external correlates in languages other than English. Expanding the current investigation to other languages is necessary to advance our understanding of cross-language similarities and differences. Here affect was studied at a broad general level high in the affect hierarchy, and further studies are much needed to examine more specific affective dimensions at a lower level in a hierarchy. We suspect that cultural differences will be more obvious the lower one goes in that hierarchy.

On the other hand, some of these limitations were self-imposed. Consider the seemingly small magnitude of the relations found. We deliberately obtained ratings of momentary affect rather than ratings of affect across large blocks of time for which participants would necessarily have had to aggregate their remembered feelings. Momentary affect can be influenced by diurnal variations in hormones, current situation, weather and very many other factors in addition to personality. In other words, our Remembered Moments technique maximized the contextual variance and minimized personality variance in affect. Had we held context constant or aggregated over contexts, we would have seen stronger correlations with personality (but at the cost of possibly introducing artifacts). Therefore, being able to predict small but reliable variance in momentary affect represents an important contribution of personality.

Progress has been made in the psychology of personality, moving from divided opinions on how the covariations of personality traits should be described to a near-

consensus on the Five-Factor Model as a comprehensive descriptive map. In parallel fashion, progress is being made in the psychology of affect. The present research adds to the existing literature by providing evidence on the viability of a two-dimensional affective space as a common denominator for studying affect across languages and its links to personality. It also provides a springboard to examine affect's connections to other variables. So, whether one views these results with excitement or skepticism, they point to areas of much needed research.

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