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SOCIOCULTURAL FACTORS PREDICTING SUBJECTIVE EXPERIENCE OF EMOTION: A COLLECTIVE LEVEL ANALYSIS¹

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A research synthesis was conducted with six studies which correlated self-ratings of emotion (affect balance or pleasantness-unpleasantness and emotional intensity) with the nations' socio-economic, ecological and cultural characteristics (Individualism, Masculinity, Uncertainty Avoidance and Power Distance national scores in Hofstede's dimensions). The meta-analysis shows that power distance and uncertainty avoidance has a homogenous significant and medium effect size with unpleasantness of emotional experience. Cultural masculinity shows a medium-low homogeneous effect size on emotional unpleasantness. Individualism shows a non homogenous positive association with emotional pleasantness. Multivariate analyses show that power distance was related to lower social desirability and intensity of positive and negative emotions. Results support the assumption that high power distance cultures de-emphasize emotional experience by normative means. Uncertainty avoidance shows a positive association with emotional intensity. Hume's assumption that climatic effects on the subjective experience of emotions disappear when social and cultural factors are taken into account was supported.

Key words: emotions, culture, masculinity, individualism, uncertainty avoidance, power distance, collective level analysis.

A research synthesis was conducted in relation to studies that correlated self-ratings of emotion with the nations' socio-economic and cultural characteristics. In spite of the complexities and difficulties involved in differentiating culture from social structure, we will try to test the competing effects of social structure (i.e. socio-economic development) and culture (i.e. value's syndrome) on emotional experience. The value of predicting cross-national differences in emotional experience from socioeconomic factors and from Hofstede's dimensions of national culture will be examined using data collected in six studies (in 26, 27, 26, 33, 42 and 29 nations). Nations will be treated as units and national mean scores on the subjective experience of emotion will be correlated with sociocultural variables. Following the holocultural tradition, cultures will be treated as units, and the collective scores of the variables are related to one another (Bond, 1991; Schlegel, 1994).

Factors predicting the subjective experience of emotion

Cross-cultural differences in the experience and expression of emotion are an important topic in current social psychology, but also in classic and modern philosophy. This

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article examines various ideas concerning the differences between nations in emotion from the perspective of current empirical research.

Between nations differences in emotional life were analyzed in the past as an aspect of "national character". Classic and Enlightenment philosophers frequently derived "national character" from climate. Climate includes a range of what is currently termed ecological factors (Jahoda, 1992). Contemporary authors have argued for climatic influences in culture. Following Robbins, de Walt and Peltó, very hot climates tend toward loose cultures and colder climates press toward tight ones (Triandis, 1995, p.53). Montesquieu posits a similar climate theory of emotional experience which crystallizes the metaphorical opposition between the North/cold/tense/tight/rational and the South/hot/relaxed/loose/emotional (Bourdieu, 1980). Moreover, in the tradition running from Montesquieu to the Romantic authors, recent "mediterranean" anthropology sees southwestern europeans as living in a culture of passion and violence, flamboyant virility complexes, shame and honor syndrome, endemic mistrust (misery-amoral familism), and corrupt patron-client relationships (Pina-Cabral, 1989; Gilmore, 1990, Fernandez, 1987, Llobera, 1987). Nevertheless, reversed claims about North-South differences can also be found during the first century BC in Poseidonos' writings. This author contrasted the Norse (Germanic or Celtic tribes living in a cold climate), characterized by an excess of thymos or emotionality, with the Mediterraneans or southerners (living in a moderate climate), governed by logos or emotional control and reflection. Poseidonos attributed the differences to climatic and other environmental factors. He proposed that if northerners migrated southwards, they could learn to control their emotional impulses (Jahoda, 1992, pp. 11-12). In the XVIIIth century, Montesquieu argued that climate molded the national character: warmer climates made southerners more sensitive to emotion. In spite of strong criticism towards Montesquieu's climate theory as an example of rethoric of scientificity which presents a set of ideological stereotypes in another form (Bourdieu, 1980), Pennebaker, Rimé and Blankenship (1996) found partial confirmation for Montesquieu's hypothesis on a within country level. In the "Old World" and the Northern Hemisphere, northerners are viewed as less emotional than southerners. People living in the south reported being more emotionally expressive than those living in more northern regions - suggesting that there is a "kernel of truth" regarding the southerners' highly emotional stereotype. At the same time, classic and enlightenment philosophers pointed out towards the weaknessness of purely climatic interpretations. Factors such as social institutions were combined with climatic determinism. Hume thought that ecological causes, including climate, were relatively unimportant when explaining differences in national character: he attributed differences in emotional experience to "moral" causes, what Jahoda would term social and economic factors (Jahoda, 1977). Current cross-cultural social psychology also combines ecological, social and cultural determinism (Jahoda, 1992).

Culture and emotion

Culture is conceived of as a set of denotative (what is or beliefs), connotative (what should be or attitudes, norms and values) and pragmatic (how things are done or procedural rules) knowledge, shared by a group of individuals who have a common history and participate in a social structure. Shared values play key roles in the individuals' psychological functioning in emotional experience. Core cultural values are reflected in key collective texts and in collective behavior - cultural plots or scripts (Inkeless and Levinson, 1969; Schooler, 1996; Triandis, 1995; Fiske, Kitayama & Heiman, 1995). Inkeless and Levinson (1969) concluded that there are a series of basic problems that all cultures have to deal with: a) the relation with authority; b) concept of the self or person, which includes, b.i) the relationship

between the person and society; b.ii) the person's concept of masculinity and femininity, and c) conflicts and their resolution (expression versus inhibition of emotions, including the control of aggression). Hofstede (1991) conducted a seminal survey on work values and empirically identified, by means of collective factor analysis using nations as units and means as scores, a four dimension solution which fits with Inkeles and Levinson's basic social problems. Using survey data from IBM employees in 53 nations and regions collected in the nineteen seventies he derived four dimensions along which dominant values in the different nations could be expressed. Hofstede labelled these dimensions Power Distance, Individualism-Collectivism, Masculinity-Femininity and Uncertainty Avoidance - following Inkeles and Levinson's social tasks model. Power distance refers to the extent to which the less powerful group members accept power inequalities. Low power distance countries were Denmark and New Zealand. High Power distance ones were Malaysia and Guatemala. The Individualism-Collectivism dimension refers to the priority given to the person or to the group or collective (often the extended family). Collectivistic countries were Guatemala, Indonesia and Taiwan. Individualistic countries were the USA and western Europe. The Masculinity-Femininity dimension refers to the extent in which cultures strive for maximum distinction between men and women. Masculine cultures stress stereotypical gender behavior, and dominant values are success, money, competition and assertiveness. Feminine cultures do not emphasize gender role differences, are not competitive and value cooperation and concern for the weak. Masculine countries were Japan, Austria and Mexico. Feminine countries were the Scandinavian countries, The Netherlands, Chile and Costa Rica. Uncertainty avoidance defines the extent to which people feel threatened by an ambiguous situation, which they try to avoid by means of strict codes and beliefs. High uncertainty avoidance nations like Greece and Portugal are emotional, security seeking and intolerant. Nations with low uncertainty avoidance cultures, like Jamaica and Denmark, are more relaxed, accept more risks and are more tolerant. In spite of the fact that the survey was conducted more than 20 years ago, Hofstede's scores show high concurrent validity with current cross-cultural research (Miller-Loesi, 1995; Bond & Smith, 1996; Fernandez, Carlson, Stepina & Nicholson, 1997). Moreover, the chapter on cross-cultural topics from the 4th edition of the Handbook of Social Psychology concludes that individualism and power distance stands out as two important cultural dimensions affecting psychological processes (Fiske, Markus, Kitayama & Nisbett, 1998). Other authors have empirically found that cultural femininity (Arrindell, Hatzichristou, Wensink, et al., 1997; Paez & Vergara, 1995) and uncertainty avoidance are two dimensions which strongly affect emotionality (Lynn & Martin, 1995).

We will briefly examine theory and data concerning the relationships between cultural factors and two basic dimensions in emotion: pleasantness-unpleasantness and intensity. Cultural individualism encourages an independent social representation of the person. Collectivistic cultures emphasize relatedness, conformity and harmony in thought, feeling and action (Hofstede, 1991; Smith, 1995; Markus, Kitayama & Heimain, 1996; Kagitcibasi, 1994; Fiske, Markus, Kitayama & Nisbett, 1998). Individualistic cultures promote introspection and focus attention on inner experience. In contrast, collectivistic cultures do not encourage focusing attention on the inner self. Most salient features of emotional experience are external and interactional (i.e. how one's actions affect others). Evidence suggests that emotional experience is perceived and expressed more intensely in individualistic rather than in collectivistic cultures (Markus & Kitayama, 1991; Scherer, Matsumoto, Wallbott & Kudoh, 1988; Matsumoto, 1991). High intensity ego-focused negative emotion, particularly anger, may threaten social harmony in collectivistic cultures, and a series of norms restrain the inner feeling and overt expression of negative emotions in

close relationships (Markus & Kitayama, 1991). Stephan, White and Cabezas (1996) found that people from an individualistic culture (USA) feel more comfortable expressing negative emotions than people from a collectivistic culture (Costa Rica). At a collective level, cultural individualism correlated with subjective well-being when high income, human rights and equality were controlled (Diener, Diener & Diener, 1995). The subjective well-being's affective component is related to the relative pleasantness/unpleasantness experienced in emotions. By this token, previous research suggests that individualism is related to lower levels of negative emotions or at least to high levels of positive emotions.

Cultural femininity-masculinity refers to the relative emphasis in interpersonal harmony and communion as opposed to individual achievement and agency, a fact which characterizes gender differences. Dominant values in feminine cultures are caring for others and equality. Social gender roles tend to overlap: warm relationships are important, both men and women are allowed to be emotional and focused on interpersonal relationships (i.e. tender and modest). A masculine culture emphasizes performance and material success. Gender roles are clearly distinct: men are supposed to be assertive, tough and non-emotional, and simultaneously aggressive. Women are supposed to be emotional, tender and nurturant. Cultural masculinity correlates with gender segregation in higher education in developed countries (Hofstede, 1991; Smith & Bond, 1993). One important potential consequence of the cultural values of femininity is the perceived obligation to provide emotional support and the affordance of social sharing of emotion. A cross-cultural study comparing American (Mexico and Chile) and European (Belgium and Spain) countries confirms that the cultural masculinity-femininity dimension was more important than individualism-collectivism in order to account for the variance in emotional experience. Feminine countries (Chile and Spain) had higher internal reactions (physiological symptoms and mental reactions), higher expressive and behavioral reactions, and social sharing of emotions, than masculine countries (Belgium and Mexico) (Paez & Vergara, 1995). Arrindell, Hatzichristou, Wensink, et al. (1997) found that more affluent feminine cultures show higher subjective well-being or pleasantness of emotional experience.

Power distance refers to the extent in which national cultures expect and accept that power is distributed unequally in society. In high power distance societies an important emotional distance separates subordinates from authorities. Respect and formal deference for higher status people (i.e. parents, elders, etc.) is valued. An ideal boss is a paternal or benevolent autocrat (i.e. the godfather). In small power distance cultures relationships with other people are less dependent on the other's status. Formal deference and respect are seldom shown (Hofstede, 1991). In cultures with high power distance, subjects may be less emotional expressive because in such cultures the social expression of anger, distress and excessive joy means lack of deference. Previous studies suggest that those living in high power distance cultures (i.e. Mexico) score lower on internal reactions to negative emotions, suggesting a low emotional profile and a more enduring emotional culture (Paez & Vergara, 1995). Matsumoto (1989) reported that subjects from high power distance cultures gave lower intensity ratings to the negative emotion (anger, fear or sadness) displayed by an individual in a photograph, in comparison to subjects from lower power distance cultures. People who live in small power distance countries feel free to display negative emotions to social superiors without fear of retaliation. The importance of suppressing status-threatening emotions is minimized because status differences are small (Matsumoto, 1991). Arrindell, Hatzichristou, Wensink, et al. (1997) found, at a collective level, that power distance was associated to lower subjective well-being or unpleasantness of emotional experience.

Finally, Uncertainty Avoidance refers to the extent in which members of a culture feel threatened by unknown situations. Strong uncertainty avoidance cultures stress formal rules

and social control. High need for predictability and anxiety characterizes high uncertainty avoidance cultures. Usually, these cultures (i.e. Greece) tend to be more anxious and expressive: it is socially acceptable to raise one's voice and express emotions non verbally. Emotions are externalized. In weak uncertainty cultures anxiety is relatively low - subjects do not need to worry about predicted behavior or to avoid ambiguities. Aggression and emotions in general are not supposed to be expressed. Emotions are internalized (i.e. Great Britain). Previous studies confirm that uncertainty avoidance was related to high anxiety and to lower well-being or unpleasantness of emotional experience (Arrindell, Hatzichristou, Wensink, et al., 1997; Hofstede, 1991).

Ecological and economic factors of cultural dimensions and their influence in emotions

Cultural dimensions are partly associated to ecological and economic factors. For instance, geographical latitude predicts 43% of the differences on cultural power distance in Hofstede's study. Higher latitude (i.e. cold climate) contributes to smaller power distance, along with high purchase power. Individualism is both strongly related to economic development and higher geographic latitude (i.e. countries with moderate and cold climates tend to be individualistic cultures, while countries with hot climates tend towards collectivistic cultures). Hofstede's data suggests that increasing economic development causes individualism. When a country's wealth increases, people have access to resources which allow them to higher privacy and individual choices, reinforcing individualism. On the other hand, Hofstede speculates that in the past, in moderate and cold climates, because of scarce resources and lower population density, people's survival depended more on personal initiative, which supports individualistic cultures (Hofstede, 1991). It is important to note that both cultural dimensions predict a lower intensity of negative emotions for subjects living in warm climates - the opposite of Montesquieu's prediction. Unlike individualism and power distance, cultural femininity- masculinity and uncertainty avoidance are both unrelated to a country's level of economic development and geographic latitude. Cultural Femininity is independent of latitude: we find hot (i.e. Costa Rica), moderate (Chile) and cold climate (The Netherlands) feminine countries. This means that cultural femininity and uncertainty avoidance's influence on emotional knowledge and experience is relatively independent of ecological and economic factors (Hofstede, 1991).

With respect to the influence of socio-economic development and the subjective experience of emotions, Wallbott and Scherer (1988) found that lower income was related to higher intensity of emotional experience. Two collective level studies show that high income was related to subjective well-being or pleasantness of emotional experience, when other sociocultural factors were taken into account (Diener, Diener & Diener, 1995; Arrindell, Hatzichristou, Wensink, et al., 1997). As Scherer and Wallbott (1988), suggest more intense, longer-lasting emotional reactions to events, and more attribution to less controllable causes, are features of subjects from poorer countries. In less developed countries social life is more uncontrollable and social stress is stronger, which is linked to the more intense emotional reactions, and at the same time to lower pleasantness of the emotional experience.

In summary, available data and a theoretical analysis of cultural dimensions support the assumption that pleasantness and intensity of emotional experience are stronger in individualistic, low power distance and feminine cultures. Both theory and available data suggest that uncertainty avoidance is associated to unpleasantness and higher intensity of emotional experience.

Some evidence suggests that intensity and unpleasantness of emotional experience could be higher in poor and hot or southern countries. It is important to notice that

individualistic and low power distance countries are cold and developed. This means that cultural and socioeconomic predictions are contradictory. Our first aim was to test the hypothesis that, controlling for climatic and socio-economic characteristics, individualistic, lower power distance and feminine nations' collective scores were associated to higher self-reported emotionality, particularly positive emotions. High uncertainty avoidance cultures should also be associated to high emotionality, particularly negative emotions. A second aim was to test Hume's idea which states that the climatic effects disappear when controlling for social and cultural dimensions.

Method

Procedure and Measures

Predictor Variables

Socio-economic factors. Human Development Index: HDI measures national well-being and trends by combining three basic components of human development: longevity (mean life expectancy in the nation) knowledge (rate of literacy and school population) and standard of living (Gross National Product per person). HDI is the best known measure of development. It is better than the limited purchase power and per capita measures (Codelier & Didiot, 1997). Human Development scores for each nation were obtained from the United Nations-Program for Development (UNDP). Human Rights and high income correlated at the collective level with subjective well-being in the Diener et al. study.

Climatic factors. Absolute latitude provided in Pennebaker et al.'s study was used. Lower absolute latitude means hot-warm climates. Confirming the validity of absolute latitude as an index of climate, a cross-cultural research found a first factor of climate variables which was a direct reflection of a country's distance from the equator. Countries with high scores on this factor have short days, high overall temperatures and massive rainfall during a short period (Scherer, 1997). These results suggest that distance from the equator (absolute latitude) is a good climatic index. Warm climate was related in previous within country analyses to a higher self-report of emotion (Pennebaker, Rimé & Blankenship, 1996).

Historic and geographic factors. Old World versus New World as depicted in Pennebaker et al.'s study. In the previous study, the Old World was associated to higher self-report of emotion. Old World includes Eurasia and Africa, and the New World consists of America, Oceania and South Africa.

Cultural factors. Hofstede (1991) reports Individualism-Collectivism, Masculinity-Femininity, Power Distance and Uncertainty Avoidance scores for 53 nations and regions. These ratings are based on questionnaires answered by IBM employees throughout the world in the 1970's. In spite of the fact that the survey was performed more than 20 years ago, and that some nations have changed their rank on these dimensions (for instance, Chile has changed its score on individuality), Hofstede's scores show high convergent validity with current surveys of values and with current cross-cultural studies (Schwartz, 1995; Smith & Bond, 1993). For example, Hofstede's scores and the Triandis rating of Individualism correlated with each other (.83) [The Triandis rating was obtained in 1995, described in Diener et al., 1995]. (Miller-Loesi, 1995; Bond & Smith, 1996; Fernandez, Carlson, Stepina

& Nicholson, 1997). A conceptual replication of Hofstede's research by Fernandez, Carlson, Stepina and Nicholson (1997) provides standardized scores for Russia and China that were included in the data. High scores means high Individualism, Masculinity, Uncertainty Avoidance and Power Distance (see table 1 for the nations' social, ecological and cultural scores).

 Table 1 about here

Dependent Measures, Countries and Participants

Self-ratings of negative and positive affect. This study re-analyzed the results of an extensive cross-cultural questionnaire study. Participants rated themselves on the degree in which they were anxious (related to Negative Affect), and emotional energetic (Positive Affect). See Pennebaker, Rimé and Blankenship (1996) for a more detailed description of the questionnaire and methodology used in this research. In spite of the limitations of single-item inventory scores, evidence confirms that the national means single scores correlate well with societal and cultural measures - see Lynn and Martin (1995) for valid results with Hofstede's single scores on anxiety. The 26 nations studied were those included in Pennebaker et al.'s study for which we were able to find cultural and socio-economic information (see table 1 and 2). The final sample comprised n=2.955 students (70% female) with a mean age of 22.56 (SD=5.73 years).

 Table 2 about here

Extraversion and Neuroticism. This study re-analyzed the results of a study on national differences in extraversion and neuroticism. Neuroticism and extraversion are clearly emotional dimensions and can be conceived of, in part, as an index of positive and negative affect. In fact, correlational and experimental research consistently has found that extraversion is associated with high positive affect and neuroticism with high negative affect (Diener & Larsen, 1993). From this perspective, high scores on neuroticism and extraversion represent high affect. Some authors criticize Eysenck's studies because of the type of factor analysis performed to test the structural similarity of the different EPQ's versions (van de Vijver & Leung, 1997). However, some studies have used these scores to test the relationships between social correlates, "national character", wellbeing and mental health, confirming the construct validity of the cross-cultural EPQ's scores at a collective level (Arrindell, Hatzichristou, Wensink, et al, 1997; Lynn & Martin, 1995). National means of extraversion and neuroticism measured by the EPQ were used. The national versions of the EPQ had a different numbers of items and this problem was overcome by prorating all scales up to 30 items. The general methodology used in this research was provided by Lynn and Martin (1995). Lynn and Martin compiled the means from 37 nations on extraversion and neuroticism as measured by the Eysenck Personality Questionnaire (EPQ). Samples range from N=430 to N=1476. The 27 nations studied are those included in Lynn and Martin's study for which we were able to find cultural and socio-economic information (see table 3). The final sample comprised 24.396 subjects.

 Table 3 about here

Bradburn's positive and negative affect scale. This study re-analyzed the results of the World Values Study Group on Positive and Negative Affect. National means measured by Bradburn's affect balance scale were used. The general methodology used in this research was provided by Macintosh (1998). Data was collected in 38 nations, using large random samples (range from 303 in Ireland to 4000 in Spain). Five items measured Positive Affect and another five Negative Affect. Average inter-item correlation was .46 for Positive Affect and .53 for Negative Affect, showing moderate reliability. Using the non significance of Π^2 test at .01 as criteria, confirmatory factor analysis confirms the structural validity of the Negative Affect scale in 74% of the 38 samples. Results were worse for the Positive Scale (Macintosh, 1998). The 26 nations studied are those included in Macintosh's study for which we were able to find cultural and socio-economic information. The final sample comprised 40.287 subjects (see table 4).

Table 4 about here

Subjective well-being. Diener, Diener and Diener's (1995) study provides subjective well-being scores (SWB) for 43 nations on the basis of random samples and student samples. SWB scores refer to the mean standardized value of four surveys: three national surveys plus one student survey. One of these was the last national survey reported by Veenhoven (quoted in Diener et al., 1995). Thus the measures of SWB examined by Diener included two types of samples (national and college student) and different years. Diener et al. included surveys of both happiness (related to the presence of positive affect and the absence of negative affect) and life satisfaction (more cognitive measures emphasizing judgments of life domains). Happiness scores correlated .43 with income and .40 with individualism, satisfaction scores correlated .57 with income and .59 with individualism, and SWB correlated .65 with income and .58 with individualism, suggesting that SWB overestimated the relationship between socioeconomic and cultural factors with affect. The 42 nations studied are those included in Diener et al.'s study for which we were able to find cultural and socio-economic information. The final sample comprised 67.439 subjects (samples ranged from 91 in Colombia to 9961 in the Philippines).

Table 5 about here

Inglehart's subjective well-being. Inglehart's study analyzed the results of the World Values Study Group from 1990-91 and provides subjective well-being scores (SWB) for 43 nations on the basis of random samples. Inglehart's subjective well-being was the average of two different indexes. The first index comprised the percentage of very happy people minus the percentage of those unhappy. A second index was composed by the percentage of people with high life satisfaction minus the percentage of people reporting low life satisfaction (Inglehart, 1998, p. 471). The 29 nations studied here are those included in Inglehart's study for which we were able to find cultural and socioeconomic variables. The final sample comprised 41.392 participants (samples ranged from 588 in Finland to 2792 in Belgium).

Self-ratings of desirability, frequency and intensity of positive and negative emotions. Self-rating of the emotion's social desirability, intensity and frequency of four negative emotions (anger, fear, sadness and guilt) and four positive emotions (pride, joy, contentment and affection) were used. Frequency ratings are supposed to reflect common practices in a culture or society or descriptive norms. Participants first rated the frequency in which they experienced the emotions and feelings (During the past month, how much time have you felt each emotion?) scoring from 1=never to 7=always. The Alpha coefficient on a collective level for the four items assessing the frequency of emotion was .87 for negative emotions and .83 for positive emotions. Emotional intensity ratings are supposed to operationalize psychological attunement with respect to some emotional states. The second group of questions asked subjects to rate the intensity in which they experienced the eight emotions and feelings (When you experience this emotion, no matter how rarely, typically how intense is your emotional experience?) ranging from 1=none, 2=extremely mild to 7=extremely intense. The alpha coefficients for the four items assessing intensity of emotion was .80 for negative emotions and .91 for positive emotions. Social desirability ratings are supposed to reflect connotative meaning (what ought to be done) or a society's expectations and social sanctions of an individual's emotional behavior. Finally, subjects rated the degree in which they thought that emotions were socially desirable (indicate how appropriate or desirable it is to experience certain emotions), range 1=extremely undesirable and inappropriate to 7=extremely desirable and appropriate. Alpha coefficients for the four items assessing the appropriateness of emotion was .86 for negative emotions and .91 for positive emotions. The general methodology used in this study was provided by Suh, Diener, Oishi and Triandis (1998). The 33 nations studied are those which were included in the Diener et al. study and of which we were able to find cultural and socio-economic information (see table 5). Final sample comprised $n=6019$ students (70% female) with a mean age of 21.26 ($SD= 6.3$ years).

 Table 6 about here

Results

Concurrent validity of the subjective emotional scores at a collective level. To check the construct validity of the collective scores, a series of correlations were performed between the standardized scores of the six studies. Affect balance reflects the difference between positive and negative emotion (Andrews & Robinson, 1991) and was created by subtracting anxiety scores from the emotional energy scores, neuroticism from extraversion, frequency of negative emotions from frequency of positive emotions, and Bradburn's Negative Affect score from the Positive Affect score. Standardized scores of subjective well-being (SWB) provided in Diener, Diener and Diener's (1995) and Inglehart's (1998) studies for a sample of countries were also used as an index of convergent validity in the present study. SWB correlates as expected, and significantly, with Inglehart's well-being score ($r(30)=.86$, $p#.01$), Bradburn's affect balance score ($r(27)=.63$, $p#.01$), Diener's study affect balance ($r(28)=.42$, $p#.02$) and Pennebaker's study affect balance ($r(22)=.39$, $p#.04$). Correlations was positive as expected, but not significant, with EPQ's affect balance ($r(28)=.18$, $p#.18$). Bradburn's affect balance score correlates positively and significantly with Inglehart's well-being ($r(27)=.57$, $p#.01$), with Diener's study affect balance ($r(18)=.40$, $p#.05$), EPQ's affect balance ($r(20)=.41$, $p#.04$) and not significantly with Pennebaker's study affect balance ($r(16)=.08$, $p#.40$). Diener's study affect balance correlates significantly with EPQ's affect balance ($r(21)=.60$,

p#.01), with Pennebaker's study affect balance ($r(13)=.56$, p#.03) and with Inglehart's well-being ($r(19)=.53$, p#.01). Finally, EPQ's affect balance and Pennebaker's study affect balance also shows a significant correlation ($r(14)=.60$, p#.01) and non significant correlations with Inglehart's score ($r(17)=.03$, p#.44 with Pennebaker's score and $r(20)=.13$, p#.28 with EPQ's score. General mean correlation was .43, 80% of correlations were significant and all were positive, showing the convergent validity of the collective scores. Mean unweighted correlation was .41 for Bradburn, .49 for SWB, .30 for Pennebaker's, .38 for EPQ's, .50 for Diener's and .42 for Inglehart's score. This results confirms the validity of the nation's affect means in spite of lower degrees of freedom and probably higher error measurement in the one item measure (Pennebaker et al's. study) and in studies using lower size convenience sample (Diener et al. and Pennebaker et al.).

Social development, cultural dimensions and affect balance: collective level analysis. Second, the relationship between predictor factors and emotion measures at the collective level were examined. Using the country score on HDI and Hofstede's scores, a series of Pearson correlations at the collective level were performed in order to contrast relationships between human development index, cultural dimensions and national differences in affect balance. Using nations as units of analysis and means as scores, correlations between sociocultural factors and affect balance standardized scores were performed.

Individualism was significantly related with SWB ($r(42)=.64$, p#.01), Inglehart's well-being ($r(29)=.77$, p#.01), Bradburn's affect balance ($r(26)=.49$, p#.01), was marginally related with Diener's affect balance ($r(33)=.23$, p#.19) and positively but not significantly with EPQ's affect balance ($r(27)=.19$, p#.32). Individualism also showed an unexpected negative correlation with Pennebaker's affect balance ($r(26)=-.14$, p#.49). Unweighted r mean was $r(183)=.36$, p#.001. To integrate results a meta-analysis was performed with the main measures. To assess the statistical heterogeneity of the six size estimates, we computed the associated Fisher z_r and weighted mean effect size. Effect size were weighted by degrees of freedom or $N-3$, where N was the number of nations on which each r was based. To take into account the high variance or error estimation in lower sample size studies, effect size was also weighted by the total sample size of each study (Rosenthal,1991). The statistical significance of the heterogeneity of the r 's was obtained using the following formula: $\frac{3}{3} \left(\frac{N_i - 3}{N_i - 3} \right) (Z_{r_i} - \text{mean } Z_r)^2$ distributed as Π^2 with number of studies minus 1 as degrees of freedom. The results of the six studies differ significantly ($\Pi^2(5)=23,31$, p#.001), because of the Pennebaker's et al. study lower negative correlation and because of the highest correlation in Inglehart's study ($r(29)=.77$, p#.01). Excluding Pennebaker's and Inglehart 's studies, ($\Pi^2(3)=7,07$, p#.10), effect size was $r(128)=.40$, p#.001. Pennebaker's study deviant result can be explained because of lower reliability of one item measure and lower sample size. Inglehart's result can be explained, on the other hand, due to the homogeneity of sampling and instrument procedures.

Power distance was significantly and negatively related with SWB ($r(42)=-.59$, p#.01), Inglehart's well-being ($r(29)=-.77$, p#.001), Bradburn's affect balance ($r(26)=-.57$, p#.01), Diener's affect balance ($r(33)=-.41$, p#.02) and EPQ's affect balance ($r(27)=-.36$, p#.06). Power distance also showed a lower negative correlation with Pennebaker's affect balance ($r(26)=-.03$, p#.88). Unweighted r mean was $r(183)=-.45$, p#.001. The results from the six studies differ significantly ($\Pi^2(5)=13,9$, p#.05), because of the highest correlation in Inglehart's study ($r(29)=-.77$, p#.001). Excluding Inglehart 's study, the results of the five

studies did not differ significantly ($\Pi^2(4)=7,09$, $p\#.20$), and weighted r mean for power distance was $r(154)=-.40$, $p\#.001$.

Cultural Masculinity was significantly and negatively related with Diener's affect balance ($r(33)=-.56$, $p\#.001$), marginally significantly related with Inglehart's well-being ($r(29)=-.29$, $p\#.11$), Bradburn's affect balance ($r(26)=-.30$, $p\#.14$), negatively but not significantly related with SWB ($r(42)=-.20$, $p\#.19$), EPQ's affect balance ($r(27)=-.25$, $p\#.20$) and Pennebaker's affect balance ($r(26)=-.12$, $p\#.54$). Unweighted r mean for cultural masculinity was $r(183)=-.29$, $p\#.01$. The results of the studies were not heterogenous ($\Pi^2(5)=4,46$, $p\#.50$). Weighted r mean for cultural masculinity was $r(183)=-.29$, $p\#.01$.

Uncertainty avoidance was associated with SWB ($r(42)=-.53$, $p\#.001$), Inglehart's well-being ($r(29)=-.47$, $p\#.01$), Bradburn's affect balance ($r(26)=-.61$, $p\#.001$), EPQ's affect balance ($r(27)=-.32$, $p\#.05$). Power distance also showed a negative correlation with Pennebaker's affect balance ($r(26)=-.22$, $p\#.26$) and a lower association with Diener's affect balance ($r(33)=-.05$, $p\#.76$). Unweighted mean was $r(183)=-.36$, $p\#.001$. The heterogeneity contrast was not significant ($\Pi^2(5)=8,40$, $p\#.20$). Weighted r mean for uncertainty avoidance was $r(183)=-.38$, $p\#.001$.

Human Development Index was related to SWB ($r(42)=.56$, $p\#.001$) and to Inglehart's well-being ($r(29)=.69$, $p\#.001$), positively but not significantly related with Bradburn's affect balance ($r(26)=.20$, $p\#.33$) and with Diener's affect balance ($r(32)=.13$, $p\#.47$). Human Development Index also showed an unexpected and non significant negative correlation with EPQ's affect balance ($r(27)=-.26$, $p\#.19$) and with Pennebaker's affect balance ($r(26)=-.06$, $p\#.77$). Unweighted r mean was $r(182)=.21$, $p\#.05$. The heterogeneity contrast was significant ($\Pi^2(5)=24,35$, $p\#.001$).

A close look at the correlations of Human Development Index with energy, anxiety, extraversion, and neuroticism shows that it was related significantly to introversion ($r(32)=-.34$, $p\#.06$) and not associated significantly with the other measures. First, extraversion is correlated only partially with positive affect or happiness ($r=.20$ in a meta-analysis of 41 studies mentioned by DeNeve & Cooper, 1998). Secondly, extraversion has two aspects: impulsivity versus calmness and sociability versus privacy. Probably Human Development is associated positively with the privacy aspect of the EPQ's extraversion dimension.

Excluding EPQ's and Pennebaker's results, heterogeneity contrast was significant ($\Pi^2(3)=9,71$, $p\#.05$). SWB's and Inglehart's scores show medium-high correlations, but Bradburn's and Diener's studies show non significant and low correlations. In summary, results of the SWB and Inglehart's studies were homogenous ($\Pi^2(1)=0,71$, $p<.30$), with a weighted r mean $r(71)=.63$, $p\#.001$. The other two studies (Bradburn's and Diener's studies) show a non significant weighted r mean ($r(58)=.17$, $p>.10$).

Absolute Latitude -Climate Index- was related to Inglehart's well-being ($r(29)=.54$, $p\#.01$), positively but not significantly related with SWB ($r(42)=.25$, $p\#.10$) and Bradburn's affect balance ($r(26)=.29$, $p\#.15$) and shows a lower correlation with Diener's affect balance ($r(33)=.07$, $p\#.67$). The climate index showed a non significant and negative correlation with EPQ's affect balance ($r(27)=-.32$, $p\#.10$) and with Pennebaker's affect balance ($r(26)=-.28$, $p\#.16$). Unweighted r mean was $r(183)=.09$, $p>.10$. The heterogeneity contrast was significant ($\Pi^2(5)=16,74$, $p\#.01$). Excluding results from the EPQ and Pennebaker, the heterogeneity contrast was not significant ($\Pi^2(3)=4,06$, $p\#.20$), effect size was ($r(130)=.30$, $p\#.01$) for the four studies.

Discussion

Power distance (five studies) and uncertainty avoidance (six studies) show an homogenous significant and medium effect size with unpleasantness of emotional experience. Cultural masculinity shows a medium-low homogeneous effect size: it was related to unpleasantness of emotional experience. Results are congruent with the positive emotional climate of feminine cultures and negative well-being of high power distance and uncertainty avoidance cultures. Individualism appears related to pleasantness of affect (in four studies with a medium effect size and in one study with a high effect size). In Pennebaker's study the correlation was not significant probably because of limitations in this study. Individualism was also unrelated to extraversion. An individualistic culture such as the USA has a high score on extraversion, however, this is not the general case. Holocultural analyses disconfirm that individualism is related to extraversion and collectivism to introversion.

High socioeconomic development was related to positive affect in two out of the six studies. Results support only partially the more positive well-being of developed societies. However associations were very heterogeneous and suggest that social development was more related to life satisfaction (SWB and Inglehart's indexes, $r=.63$) than to affect balance scores (Bradburn and Diener's index, $r=.17$). Evidence also suggests that affluent countries show a more internalized emotional life - high socioeconomic development was related to introversion. This probably was because of the association between socioeconomic development and privatization of life, a result congruent with the association between affluence, protestant work ethic and self-control.

Cold climate was related to more well-being and pleasantness of affect, in four studies with a medium effect size.

Some questions emerge at this point of our article: What are the relationships of pleasantness and intensity of emotional experience with cultural dimensions? For instance, with regard to the lower neuroticism and high emotional energy of feminine cultures: does this mean that pleasantness prevails over unpleasantness on emotional experience?, or that the intensity of emotional experience is higher?, or that intensity is higher for positive emotions and lower for negative emotions?. In other words: How can we explain the positive emotional climate of feminine, low power distance and low uncertainty avoidance cultures?. From a sociocultural point of view, situational availability of emotional experiences and emotional norms or evaluation of affect experience and expression are the two mechanisms by which culture influences emotional experience. The re-analysis of Diener et al's study allows us to understand how cultural dimensions are related to the social desirability, frequency and intensity of emotions.

Culture's influence on emotional experience: norms, frequency and intensity

From a sociocultural point of view, core cultural values are embedded in cultural scripts and knowledge. Particularly by means of norms and practices, culture shapes psychological reality. Usually, in cross-cultural research, cultural and socio-structural explanations are differentiated. A cultural explanation sees patterns of emotional experience as emanating from shared norms and values. A socio-structural approach explains patterns of social behavior by means of contemporary situational contingencies and constraints which produce the emotional experience (i.e. actual frequency of emotional situations, economic structure, ecological environment) (Miller-Loesi, 1995; Schooler, 1996; Triandis, 1995; Fiske, Kitayama & Heiman, 1995). In other terms, patterns of emotional experience reflect both the normative influence of values and structural or situational constraints - partially

autonomous with respect to cultural values (Bierbrauer, Meyer & Wolfradt, 1994; Schooler, 1996). However, cultural values influence an subjects' emotional life through affording specific collective scripts in which members of the cultural group are socialized to feel in a specific psychological way (Kitayama, Markus & Lieberman, 1995). For instance, Kitayama, Markus and Lieberman (1995) found that USA positive scripts were more prone than japanese situations to reinforce self-esteem, and that japanese subjects were less prone than american subjects to self-enhancement. High subjective emotional intensity could reflect both internalization of the emotional culture (emotions which are favoured in a culture) and the accessibility or cultural affordance of emotional scripts (likelihood of positive or negative scripts; prevalence of public or private emotional scripts, etc).

The goal of our last analysis was to contrast the relationships between cultural dimensions, intensity and prevalence of positive and negative emotions. Diener et al's study would also allow us to test a normative/situational explanation of cultural influences on emotionality (see Figures 1 and 2). It will provide scores on self-reported intensity, perceived frequency and social desirability of positive and negative emotions. Social desirability ratings are supposed to express the normative components of cultural values - what is desirable or positively evaluated. Frequency ratings are an index of the prevalence or perceived situational availability of these emotions. Our hypothesis was that high intensity of emotions should be related to higher social desirability and also to situational affordances: high desirability and frequency should be related to higher intensity of emotions. As proximal causes, normative and situational process should account for the influence of cultural dimensions in self-reported emotionality, and cultural dimensions should be related, congruently, to intensity, social desirability and frequency of emotions.

 Figures 1 and 2 about here

Social development, cultural dimensions, social desirability, frequency and intensity of emotions

Cold climate or latitude was associated with high social desirability and intensity of positive and negative emotions ($r=.50$, $p#.01$ and $r=.32$, $p#.06$ for desirability, and $r=.42$, $p#.01$ and $r=.45$, $p#.01$ for intensity). Results partially confirm the "Poseidonos" hypothesis: people living in cold climates report being more emotional. Nevertheless, we hypothesize that climate effects will disappear when socio-economic and cultural dimensions effects are taken into account. New World was associated to high desirability of positive emotions ($r=.30$, $p#.09$), low desirability of negative emotions ($r=-.35$, $p#.05$) and marginally associated to higher intensity of emotions. Nations belonging to the New World show an emotional and more positive profile.

The Human Development Index shows a positive association with the intensity of positive and negative emotions ($r=.47$, $p#.01$ and $r=.53$, $p#.01$ respectively). Human Development Index was also related to the social desirability of positive emotions ($r=.61$, $p#.01$). Results support partially the more positive well-being of developed societies and suggest that rich countries show a more intense emotional experience - and probably a more internalized one - in previous results high socioeconomic development was related to introversion.

Individualism was related to higher social desirability of both negative and positive emotions ($r=.29$, $p#.10$ and $r=.43$, $p#.01$ respectively). Emotion intensity was higher in individualistic cultures for negative and positive emotions ($r=.34$, $p#.05$ and $r=.40$, $p#.02$). Bivariate results strongly support, at the collective level, the higher emotional intensity of individualistic cultures - and not only of normative emotions, confirming the disinhibited profile of individualistic cultures. However, the frequency of emotions was not associated to individualistic cultures - as they were to feminine cultures. Individualism facilitates higher affect by means of a positive evaluation of emotions but not by a higher situational induction of emotional states.

Power distance was associated to lower social desirability of positive emotions and negative emotions ($r=-.54$, $p#.01$ and $r=-.36$, $p#.05$). Power distance was associated negatively to the intensity of positive and negative emotions ($r=-.52$, $p#.01$ and $r=-.56$, $p#.01$). However high power distance shows a high frequency of negative emotions ($r=.40$, $p#.02$). Congruently with a normative explanation, high power distance societies show both lower social desirability and intensity of positive (joy, pride, satisfaction) and negative emotions (fear, sadness and anger).

Cultural femininity was unrelated to the emotions' social desirability and intensity. However, cultural masculinity-femininity was strongly related to emotions' frequency, confirming the positive prone emotional climate of feminine cultures. Cultural femininity was associated to higher frequency of positive emotions and to lower frequency of negative emotions ($r=-.42$, $p#.01$ and $r=.34$, $p#.05$ respectively). A normative and dispositional explanation of the positive emotional climate in feminine cultures was disconfirmed.

Uncertainty avoidance was associated with lower social desirability of negative emotions ($r=-.26$, $p#.15$), higher social desirability of positive emotions ($r=.34$, $p#.05$), and higher intensity of both positive ($r=.36$, $p#.05$) and negative emotions ($r=.29$, $p#.10$).

Table 7 about here

Table 8 about here

Table 9 about here

Multiple regression analyses were performed to test the specific association between social, ecological and cultural factors with frequency, social desirability and intensity of emotions (see tables 7, 8, 9).

In order to test the Hume versus climatic hypotheses, another set of hierarchical regressions were performed using frequency of positive and negative emotions as predicted variables. In the first model, climatic factors entered first. In the second model social index was presented first. In the third model cultural factors were included first. The final model included all predictive factors. An increase of change from the first step to the final model is an index of the importance of alternative explanations.

For frequency of negative emotions R^2 was weak ($R^2=.03$) in the first model of climatic factors, $F=n.s.$) $R^2=.48$ for the general model ($p\#.01$). R^2 was .001 for the social or second model, $F=n.s.$) R^2 was .50 for the general model ($p\#.01$). R^2 was .44 for the third or cultural model, $F=5.15$, $p\#.01$.) R^2 was .07 for the general model, $p\#.05$. These results confirm that cultural factors are the most important predictors of negative emotionality.

Regression coefficients (see tables 7-8-9) confirm that cultural masculinity and power distance were related to negative affect. Regression coefficients show that cultural masculinity was specifically related to the frequency of negative emotions ($\beta=.32$, $p\#.10$). These coefficients also show that power distance was associated with high frequency of negative emotions ($\beta=.37$, $p\#.05$). Power distance was related to lower desirability of negative emotions ($\beta=-.40$, $p\#.01$).

For the frequency of positive emotions the R^2 was weak ($R^2=.002$) for the climatic model, $F=n.s.$) R^2 was .458 for the general model ($p\#.01$). R^2 was .001 for the social or second model, $F=n.s.$) $R^2=.459$ for the general model ($p\#.01$). R^2 was .26 for the cultural model, $F=2.33$, $p\#.08$.) R^2 was .20 for the general model, $p\#.05$.

Regression coefficients (see tables 7-8-9) confirm that cultural masculinity was specifically related to lower frequency of positive emotions ($\beta=-.56$, $p\#.01$). Positive emotionality was also predicted, but to a lower extent than negative affect, mainly by cultural factors.

The New World shows a significant association with the high desirability of positive emotions ($\beta=.37$, $p\#.01$).

Power distance shows the strong association with emotion measures: beta coefficients show that it was associated with high frequency of negative emotions, lower desirability of negative emotions and lower intensity of both positive and negative emotions (see table 7, 8, 9).

Relative effects of norms, frequency and sociocultural factors on emotion intensity. A multiple regression attempted to separate the effects of norms, frequency, cultural dimensions (power distance, individualism, masculinity and uncertainty avoidance), socio-economic, climate and geographical factors in predicting emotional intensity. A two step multiple regression was performed. First, cultural dimensions were entered as distal predictors, second, social desirability and frequency were added.

Low power distance scores and high uncertainty avoidance were related to intensity of positive emotions ($\beta=-.55$, $p\#.01$ and $\beta=.41$, $p\#.05$ respectively). Second step regression coefficients confirm that only social desirability and perceived frequency were related to higher intensity of positive emotions ($\beta=.67$, $p\#.01$ and $\beta=.40$, $p\#.01$ respectively). With respect to positive emotions, controlling for norms and frequency, the specific relationship of lower power distance with positive intensity disappears. High power distance was associated both to lower frequency and social desirability of positive emotions. Situational induction and norms account for the intensity of positive emotions.

High uncertainty avoidance was positively related to high negative emotion intensity in the first multiple regression ($\beta=.34$, $p\#.05$). Power distance was negatively related to negative emotion intensity in the first and second multiple regressions ($\beta=-.59$, $p\#.01$ and $\beta=-.56$, $p\#.01$).

Discussion

Results confirm that cultural factors are the most important predictors of frequency and social desirability of negative emotions. Positive emotions were also predicted, but to a lower extent than negative affect, mainly by cultural factors. Evidence supports Hume's assumption that climatic effects on the subjective experience of emotions disappear when social and cultural factors are taken into account.

However, perceived frequency and social desirability predicts specifically only the intensity of positive emotions. Normative and situational explanations of emotion intensity were supported only for positive emotions. Multiple regression confirms the influence of power distance on lower social desirability, frequency and intensity of positive emotions (e.g. joy). Low desirability and low frequency of positive emotions were related to power distance, and social desirability and frequency scores account for the influence of power distance in lower positive emotion intensity. However, even when controlling for norms and frequency, lower power distance appears as related to lower negative emotion intensity.

Conclusions and general discussion

This research analysis allows us to answer some "classic" questions: What are the relationships of pleasantness and intensity of emotional experience with cultural dimensions, social development and climate? The reviewed studies allows us to understand how cultural dimensions are related to the frequency of positive and negative affect. In the last study the relative influence of sociocultural factors on the intensity and social desirability of emotions was also examined.

Cultural femininity and emotion

Cultural masculinity shows an homogeneous and low-medium negative association with emotional pleasantness ($r=-.29$ for six studies) and was unrelated to emotional social desirability and intensity. Results obtained in the six studies suggest that feminine cultures are more positive prone emotional societies, with a general dominance of positive emotion experience. Previous studies also confirm, partially, that subjective well-being was higher in feminine cultures (Arrindell, Hatzichristou, Wensink, et al, 1997). In feminine cultures emotional energy is more common than in masculine cultures. In the Lynn and Martin study cultural femininity was related to lower neuroticism, and in the Diener's study it was associated with a higher frequency of positive emotions such as joy, and to a lower frequency of negative emotions such as anger and sadness.

It is reasonable to believe that masculine cultures could be more normative and inhibited or repressive cultures. Sex was associated to emotional inhibition: males show a higher score on constraint than females, (Pennebaker, Rimé & Blankenship, 1996). However masculine cultures were not more normative than feminine ones: no relationship was found between masculinity and lower social desirability of negative emotions. As we can see, results are incoherent with a normative explanation of the positive emotional climate of feminine cultures: the emotions' social desirability is unrelated to cultural femininity. Emotion intensity was also unrelated to cultural femininity, suggesting that what is important in order to explain the positive emotional climate of feminine societies is the actual level of positive events, which affords a high frequency of positive emotions and a low frequency of

negative emotions. Lower well-being in masculine cultures can be explained because of the high frequency of negative emotions and not because of normative inhibition. Social support is probably higher in feminine cultures and renders the individual a strong network in times of distress. Probably when there are no problems feminine cultures offer subjects more shared opportunities. These results are convergent with Hofstede's conception: feminine cultures are welfare societies, not competitive societies, which accentuate interpersonal relationships, sympathy and concern for the weak (Hofstede, 1991).

Uncertainty avoidance and emotion

Uncertainty avoidance shows an homogeneous medium size positive association with emotional unpleasantness ($r=-.38$ for the six studies) and a positive association with positive and negative emotional intensity. Uncertainty avoidance cultures tend to experience higher levels of anxiety, neuroticism and negative emotions. High uncertainty avoidance predicts high anxiety or low subjective well-being in this and other studies (Arrindell, Hatzichristou, Wensink, et al., 1997). Being aggressive, compulsive and probably a stressing society, a high uncertainty avoidance culture reinforces the frequency of anger, fear and sadness, and in this way provokes low well-being. Data is congruent with Hofstede's statement that cultures with strong avoidance uncertainty (i.e. Greece) are active and emotional, and cultures with weak uncertainty avoidance (i.e. Denmark) are less emotional and relaxed (Hofstede, 1986 quoted in Arrindell, Hatzichristou, Wensink, et al., 1997).

High uncertainty avoidance cultures also stress emotional normativeness: Uncertainty avoidance was associated to more social desirability of positive emotions and lower social desirability of negative emotions. Moreover, it is important to notice that data suggests that high uncertainty avoidance are more emotional societies in general than low uncertainty avoidance, including positive emotion. Uncertainty avoidance was associated to high intensity of negative emotions, but also to positive emotions (high intensity of positive emotions).

Individualism and emotion

Individualism shows an heterogeneous medium size positive association with emotional unpleasantness ($r=.40$ for four homogeneous studies) and a positive association with positive and negative emotional intensity and social desirability. Previous studies suggest that individualism was associated to high intensity of at least ego-focused emotions and to positive subjective well-being (Diener, Diener & Diener 1995; Arrindell, Hatzichristou, Wensink, et al., 1997). With respect to affect balance, results confirm that in individualistic cultures well-being is better. This fact probably reflects the personal freedom and higher relevance attributed to individual well-being that contributes to higher levels of positive affect. Although individualistic cultures afford freedom to pursue individual goals and feel satisfaction, absence of an association between individualism, intensity and frequency of positive emotions, suggests that individualistic cultures do not facilitate situations which elicit positive emotions. The fact that negative emotions' frequency was unrelated to individualism, suggests that these societies do not offer special protection against difficult events (Bellah, Madsen, Sullivan, Swidler & Tipton, 1985; Seligman, 1988; Triandis, 1995). Data obtained in these studies partially support the high intensity and public acceptance of emotion in individualistic cultures. Individualism was associated to higher intensity of negative and positive emotions. In the Diener's study positive and negative emotions' social desirability was strong in more individualistic societies.

Power distance and emotion

Meta-analysis found an heterogeneous medium size negative association of power distance with emotional unpleasantness ($r=-.40$ for five homogeneous studies) and a negative association with positive and negative emotional intensity and social desirability. However, effect sizes were heterogeneous because of a higher similar sign correlation of power distance with Inglehart's index of well-being (including this study association was $r=-.45$). Arrindell, Hatzichristou, Wensink, et al. (1997) found that high power distance emerged as an independent predictor of unpleasantness of emotional experience or low subjective well-being of nations, when controlling for other cultural dimensions and social factors. High power distance cultures were associated to higher levels of frequency of negative emotional feelings (such as anger and sadness). In the different studies, power distance was associated to anxiety, to neuroticism or to high frequency of negative emotions. Strong social differences typical of high power distance societies (i.e. Guatemala and Malaysia) probably cause an important measure of stress and negative emotional situations. Results also partially support that high power distance cultures, because of respect and deference, de-emphasize emotional feeling and expression. It was negatively related to social desirability and to intensity of both negative and positive emotions. Norms of lower feeling and emotional expression are functional in societies with high inequalities which are considered as normal and legitimate. Lower social desirability and high frequency of negative emotions such as anger and sadness in high power distance societies suggest a conflict between norms and actual social life. All these results confirm that in cultures with high power distance, subjects may be less emotional expressive because in such cultures the social expression of negative emotions is non-normative. High intensity of a negative emotion such as anger means lack of deference in these cultures. Probably both experience and normative influences socialize people in high power distance cultures so that they may regulate negative emotional situations (i.e. by minimizing antecedents of negative emotions and not focusing attention on the internal reactions produced by negative emotions). Power distance cultures show a low emotional profile and a more "suffering" emotional culture, combining frequent experience, high rejection and lower intensity of negative emotions. Multivariate results suggest that power distance was one of the most important correlates of emotion intensity. Previous research compares collectivistic and high power distance societies with low power distance and individualistic societies. Usually, low power distance and individualism was associated, but in fact it is power distance which appears as more relevant than individualism in order to explain differences in emotional experience.

Ecological, socioeconomic factors and emotion

Cold climate was related to more well-being and pleasantness of affect, with an heterogeneous low-medium effect size ($r=.30$ for four homogeneous studies), and to high intensity and desirability of both positive and negative emotion. This profile is congruent with Poseidonos' assumption.

Results support only partially the more positive well-being of developed societies. Results also suggest that rich countries show a more intense emotional experience and probably a more internalized one. Socio-economic development was related to the intensity of both positive and negative emotions, and at the same time, to introversion. Cold climate and high socioeconomic development were associated to a higher intensity of emotional life. These results indicate that warm climate and poor socio-economic development were

associated to extraversion or gregariousness, lower emotional intensity and high unpleasantness on the one hand, and that cold climate and socio-economic development were related to a more intense and positive but internalized emotional life on the other.

However, cultural dimensions also show similar associations, and when collective scores obtained in these dimensions were included in the multiple regression analyses, usually ecological and some times socio-economic effects were eliminated, supporting the sociocultural assumption derived from Hume's position.

Culture-level analysis of self-reports: limitations and possibilities

Results reported in this article are based on self-reports, and analysis were performed at a collective level, not on the basis of individual level relationships. Individual level analysis does not produce the same relationships, and empirical analyses using collective scores as contextual variables and individual measures of culture are needed to confirm our results at the psychological level. Some studies (e.g. Diener et al, 1995 and Pennebaker et al, 1996) used non representative samples and this is a methodological weakness. However, non representative samples being atypical (e.g. student's sample) can represent the position of the cultural group relative to a similar (e.g. another student sample) atypical sample found in other groups (Bond, 1991). On the other hand, student sample means of affect (subjective well-being) correlate well with means based on representative samples (Diener, Diener & Diener, 1995).

Construct validity across cultures is a more serious criticism - however some convergent construct validity has been found in this and other studies for the measures used (see Lynn & Martin, 1995 and Arrindell, Hatzichristou, Wensink, et al., 1997 for EPQ and Suh, Diener, Oishi & Triandis, 1988 for Diener's measures). In spite of methodological limitations, some results were triangulated by means of six independent series of studies. Multivariate analyses were also performed in order to disentangle interrelationships between predictor factors.

Another criticism with respect to our data is that pertaining to the historical evolution of countries. Hofstede's scores were collected in the 1970's. Available data suggests that some countries (e.g. Chile) have increased their level of individualism (Fernandez et al., 1997). However, the trend towards high individualism is a general one. On the other hand, subjective emotional data, of young and adult samples, were collected in the 1980's and 1990's (see Lynn & Martin, 1995). This means that these people were socialized in the years in which Hofstede's scores were collected. Moreover, these scores show convergent validity with current surveys of values and with current cross-cultural studies (Schwartz, 1995; Smith & Bond, 1993). For example, Hofstede's scores and the Triandis rating of Individualism correlated with each other (.83) (the Triandis rating was conducted in 1995, and described in Diener, Diener & Diener, 1995).

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Table 1.- Ecological, Social and Hofstede's cultural dimensions

Country	New World	Latitude	HDI	Power Distance	Uncertainty Avoidance	Masculinity	Individualism
Argentina	2	-34	.885	49	86	56	46
Australia	2	-22	.929	36	51	61	90
Austria	1	48	.928	11	70	79	55
Bahrein	1	26	.866	80	68	53	38
Belgium	1	51	.929	65	94	54	75
Brazil	2	-22	.796	69	76	49	38
Canada	2	55	.951	39	48	52	80
Chile	2	-34	.882	63	86	28	23
China	1	39	.609	82	72	90	17
Colombia	2	4	.840	67	80	64	13
Croatia	1	46	.760	76	88	21	27
Cuba	2	21	.726	81	76	73	12
Denmark	1	55	.924	18	23	16	74
Egypt	1	30	.611	80	68	53	38
Finland	1	60	.935	33	59	26	63
France	1	47	.935	68	86	43	71
Germany	1	50	.920	35	65	66	67
Ghana	1	5	.467	77	54	46	20
Greece	1	38	.909	60	112	57	35
Hong Kong	1	22	.909	68	29	57	25
India	1	17	.436	77	40	56	48
Indonesia	1	-3	.641	78	48	46	14
Iran	1	35	.754	58	59	43	41
Ireland	1	53	.919	28	35	68	70
Israel	1	31	.908	13	81	47	54
Italy	1	42	.914	50	75	70	76
Japan	1	32	.938	54	92	95	46
Korea S.	1	37	.886	60	85	39	18
Malaysia	1	3	.826	104	36	50	26
Mexico	2	24	.845	81	82	69	30
Netherlands	1	52	.938	38	53	14	80
New Zealand	2	-41	.927	22	49	58	79
Nigeria	1	9	.400	77	54	46	77
Norway	1	59	.937	31	50	8	69
Pakistan	1	33	.442	55	70	50	14
Panama	2	8	.859	95	86	44	11
Peru	2	-12	.694	64	87	42	16
Philippines	1	14	.665	94	44	64	32
Portugal	1	39	.878	63	104	31	27
Russia	1	55	.804	105	112	53	3
Singapore	1	11	.881	74	8	48	20
South Africa	2	-33	.649	49	49	63	65
Spain	1	37	.933	57	86	42	51
Sweden	1	59	.933	31	29	5	71
Switzerland	1	47	.926	34	58	70	68
Taiwan	1	25		58	69	45	17
Tanzania	1	-6	.364	64	52	41	27
Thailand	1	13	.832	64	64	34	20
Tunisia	1	36	.727	80	68	53	38
Turkey	1	37	.711	66	85	45	37
United Kingdom	1	54	.924	35	35	66	89
USA	2	38	.940	40	46	62	91
Yugoslavia	1	44	.857	76	88	21	27
Zimbabwe	2	-17	.534	49	49	63	65

Data= Hofstede (1991). (Cuba-Venezuela, Tunisia and Bahrein= Arab-countries, Tanzania= East Africa, Nigeria and Ghana= West Africa), n= 49 countries.
 NW: New World-residence: 1= Old World (Eurasia+Africa) 2= New World (America+Oceania+South Africa). LAT: Mean latitude refers to the North-South midpoint of the country; positive scores refer to degrees above the equator, negative scores refer to degrees below the equator. HDI= Human Development Index.

Table 2.- Means Values by Countries: Emotional Variables

Country	n=2955	Anxiety	Energy
USA	417	3.83	5.22
Canada	161	4.08	5.01
Mexico	46	3.98	5.54
Germany	170	3.74	5.11
Belgium	57	4.77	4.86
Switzerland	99	4.25	4.92
France	260	4.79	5.12
Portugal	108	4.46	4.94
Spain	147	4.51	5.15
Italy	225	4.52	5.21
Yugoslavia	49	4.06	4.76
Croatia	50	3.74	4.74
Japan	87	3.98	3.52
Tunisia	120	4.51	5.18
England	46	4.09	4.39
Scotland	38	3.55	4.50
India	49	4.16	4.65
Cuba	40	4.00	5.40
Turkey	24	4.45	5.55
Indonesia	32	4.00	5.16
Colombia	30	4.23	5.27
Chile	96	4.23	5.29
New Zealand	192	3.57	4.98
Brazil	56	4.02	5.27
Australia	315	3.68	4.94
South Africa	41	4.20	4.76

a) Self-report: higher score means higher anxiety and energy.

DATA: Pennebaker et al. (1996).

b) n= 26 countries.

Table 3.- Means Values by Countries: Extraversion and Neuroticism

Country	n=27139	Extraversion	Neuroticism
Australia	654	19.3	15.5
Brazil	1396	17.6	14.8
Canada	1257	18.0	12.7
China	1000	13.7	14.4
Egypt	1330	18.5	17.3
Finland	949	16.2	14.6
France	811	17.7	15.1
Germany	1336	18.4	13.6
Greece	1301	20.2	18.3
Hong Kong	732	16.7	14.6
India	981	22.7	15.2
Iran	624	16.5	13.2
Israel	1050	22.6	8.5
Italy	802	18.4	16.6
Japan	1318	16.5	16.7
Korea	1200	16.5	15.3
Mexico	988	20.6	14.1
Netherlands	876	17.4	11.5
Nigeria	430	24.4	9.4
Norway	802	18.6	10.3
Portugal	1163	18.9	15.7
Russia	1067	16.1	18.0
Singapore	994	17.4	13.0
Spain	1030	17.1	16.2
United Kingdom	1198	18.0	14.9
USA	879	21.7	15.0
Yugoslavia	971	17.3	14.4

a) Data = Lynn and Martin (1995). Higher score indicate higher extraversion and neuroticism.

b) Collective level analysis (27 countries).

Table 4.- Means Values by Countries for the Bradburn's Affect Balance Scale

Country	n=40287	Positive	Negative
Argentina	1002	2.45	1.18
Austria	1339	2.92	1.14
Belgium	2721	2.46	0.98
Brazil	1769	2.82	1.67
Britain	1451	2.84	1.25
Canada	1730	3.46	1.14
Chile	1500	2.78	1.75
China	955	2.42	0.94
Denmark	1003	2.84	0.92
Finland	584	2.34	1.15
France	1002	2.34	1.01
India	2468	1.92	1.21
Ireland	988	2.10	0.86
Italy	1984	1.11	0.71
Japan	982	2.00	1.07
Mexico	1531	2.16	1.44
Netherlands	996	2.99	1.42
Nigeria	1001	2.72	1.02
Portugal	1166	2.26	0.94
Russia	1961	1.75	1.42
S.Africa	2223	2.33	0.80
Spain	4003	1.65	0.88
Sweden	1047	3.63	0.72
Turkey	972	3.15	2.53
USA	1839	3.45	1.22
W.Germany	2070	3.25	1.80

a) Self-report: higher score means higher positive and negative affect. DATA: World Values Study Group 1994 quoted in Macintosh (1998).

b) n= 26 countries.

Table 5.- Subjective well-being

Country	N ^a =67439	SWB ^a	N ^b =41392	SWB ^b
Argentina			1001	59
Australia	2208	1.02		
Austria	1584	0.15	1460	59
Bahrein	(275)	0.36		
Belgium	1000	0.51	2792	77
Brazil	1000	0.57	1782	55
Canada	1254	0.97	1730	69
Chile	(256)	0.13	1500	53
China	(149)	-1.92	1000	42
Colombia	(91)	0.82		
S. Korea	1500	-1.15	1251	51
Cuba	992	0.00		
Denmark	1000	1.00	1030	85
Egypt	499	-0.78		
Finland	1003	0.74	1002	76
France	1000	-0.38	1002	67
Germany	1000	0.18	2201	70
Greece	1000	-0.89		
India	1000	-1.13	702	28
Ireland	1000	0.57	1000	80
Israel	354	-0.18		
Italy	1000	-0.44	2010	66
Japan		-0.86	1011	54
Malaysia	502	0.08		
Mexico	2204	-0.28	1531	51
Netherlands	1000	0.68	1017	85
New Zealand	(314)	0.82		
Nigeria	1200	-1.31	939	33
Norway	1233	0.77	1239	81
Panama	642	-1.31		
Philippines	9961	0.10		
Portugal	1000	-0.41	1185	51
Russia	(116)	-1.70	1961	-1
Singapore	1006	0.43		
S.Africa	5587	-0.63	2736	30
Spain	1000	-0.41	1510	65
Sweden	1039	1.03	1047	86
Switzerland	998	0.94	1400	86
Thailand	500	-0.62		
Turkey	(287)	-1.02	1030	47
United Kingdom	1300	0.69	1484	75
USA	1562	0.91	1839	77
Yugoslavia	1523	-0.81		

a) SWB^a refers to the mean standardized value of four surveys (three national surveys plus student survey). N's refers to national probability sample, except they refer to college student sample where no national samples were available (shown in parentheses). N=67.439 participants and 42 countries; Diener, Diener & Diener (1995, p.856)

b) SWB^b Inglehart's well-being from last national survey (1990-91). 29 countries, N^b= 41.392 participants; Inglehart (1998).

Table 6.- Means Values by Countries: Emotions collective level

Country	n=6019	Desirability		Frequency		Intensity	
		-	+	-	+	-	+
Argentina	90	3.74	6.10	2.84	4.12	3.78	4.59
Australia	292	4.30	6.25	2.63	3.92	4.05	4.51
Austria	164	4.30	5.91	2.51	3.96	4.18	4.77
Bahrein	124	4.43	5.67	3.24	4.04	3.88	4.27
Brazil	112	3.51	5.92	2.79	4.20	3.86	4.57
China	558	4.07	4.47	2.39	2.56	2.89	3.15
Colombia	100	3.43	6.30	3.08	4.62	4.45	5.12
Denmark	91	4.52	6.05	2.53	3.91	4.20	4.64
Egypt	120	3.46	5.25	2.82	3.98	3.21	3.95
Finland	91	4.46	6.19	2.52	4.07	4.52	5.14
Germany	108	4.28	6.06	2.80	3.95	4.48	4.75
Ghana	118	3.50	5.12	2.74	3.78	3.20	4.01
Greece	129	4.05	6.38	2.95	3.88	5.04	4.80
Hong Kong	142	3.64	4.98	2.79	3.19	3.39	3.66
India	93	4.02	5.37	2.91	3.70	3.22	3.81
Indonesia	90	4.61	5.93	2.64	3.78	3.45	4.35
Italy	289	4.14	5.98	3.24	4.15	4.41	4.96
Japan	200	4.53	6.10	2.84	3.61	4.27	4.47
Korea S.	277	4.46	5.90	2.86	3.77	3.56	4.02
Netherland	37	4.26	5.96	2.30	4.44	3.59	4.81
Nigeria	244	3.86	5.50	2.45	4.24	3.27	4.33
Norway	99	4.01	6.11	2.37	3.97	4.06	4.55
Pakistan	155	3.97	5.67	2.86	4.01	3.67	4.28
Peru	129	3.67	5.95	2.81	4.48	3.73	4.82
Portugal	139	3.66	6.09	2.80	4.04	3.82	4.66
Singapore	131	4.06	5.83	2.61	3.75	3.69	4.22
S.Africa	373	4.03	5.92	3.01	3.91	3.83	4.32
Spain	327	3.75	5.95	2.76	4.01	3.93	4.71
Taiwan	533	4.14	5.60	2.50	3.82	3.35	4.30
Thailand	92	3.81	5.43	2.93	4.30	3.31	4.01
Turkey	100	4.50	6.04	3.43	4.18	3.56	4.18
USA	443	4.16	6.15	2.79	4.10	3.95	4.59
Zimbabwe	109	4.04	5.76	2.60	3.84	4.13	4.15

a) Data= Diener et al. (1998): Higher score indicates higher social desirability, intensity and frequency of negative (-) and positive (+) emotions. Positive emotions=joy + affection + pride + contentment. Negative emotions=anger + fear + sadness + guilt.

b) Collective level analysis (n=33 countries).

Table 7.-Collective Emotions Desirability on Ecological-Social-Cultural Dimensions: Multiple Regression Analysis

	Desirability Positive Emotions		Desirability Negative Emotions	
	r	Beta	r	Beta
Latitude	.50**	.34*	.32&	
New World	.30&	.37**	-.35*	-.39*
HDI	.61**	.37*	.18	
Individualism	.43**		.29&	
Masculinity	.04		-.01	
Uncertainty Avoidance	.34*		-.26	
Power Distance	-.54**		-.36*	-.40**
A R ²			A R ²	
Step 1=HDI		.40	Step 1=PD	.10
Step 2=HDI+N.W.		.43	Step 2=PD+N.W.	.23
Step 3=HDI+N.W.+Lat.		.49		

- a) Variables are coded such that high values indicate more desirability of emotions. Saved factorial scores for desirability of positive and negative emotions respectively (Principal components analysis and rotation varimax).
- b) Latitude: mean latitude (absolute score) refers to the North-South midpoint of the country. New World: New World-residence (2) Old World-residence (1). High values indicate: high HDI (Human Development Index), more individualisms (Ind), masculinity (Mas), power distance (PD), uncertainty avoidance (UA) (Hofstede, 1991).
- c) n=31 countries; DATA=Diener et al. (1998)+ Hofstede (1991).
- d) Method= Stepwise
- e) r Pearson coefficient; **p#.01; *p#.05; & .05

#.10; standarized beta coefficients

Table 8.- Collective Emotions Frequency on Ecological-Social-Cultural Dimensions: Multiple Regression Analysis

	Frequency Positive Emotions		Frequency Negative Emotions	
	r	Beta	r	Beta
Latitude	.03		-.28	
New World	.21	.35*	.06	
HDI	-.06		-.19	
Individualism	.03		-.25	
Masculinity	-.42**	-.56**	.34*	.32&
Uncertainty Avoidance	.17	.27&	.33&	
Power Distance	-.15		.40*	.37*
A R ²			A R ²	
Step 1=Mas.		.15	Step 1=PD	.13
Step 2=Mas.+N.W.		.23	Step 2=PD+Mas	.21
Step 3=Mas.+N.W.+UA		.28		

- a) Variables are coded such that high values indicate more frequency of emotions. Saved factorial scores for frequency of positive and negative emotions respectively (Principal components analysis and rotation varimax).
- b) Latitude: mean latitude (absolute score) refers to the North-South midpoint of the country. New World: New World-residence (2) Old World-residence (1). High values indicate: high HDI (Human Development Index), more individualisms (Ind), masculinity (Mas), power distance (PD), uncertainty avoidance (UA) (Hofstede, 1991).
- c) n=31 countries; DATA=Diener et al. (1998)+ Hofstede (1991).
- d) Method= Stepwise
- e) r Pearson coefficient; **p#.01; *p#.05; & .05≥p#.10; standarized beta coefficients

Table 9.- Collective Emotions Intensity on Ecological-Social-Cultural Dimensions: Multiple Regression Analysis

	Intensity Positive Emotions		Intensity Negative Emotions	
	r	Beta	r	Beta
Latitude	.42*		.45*	
New World	.21		.14	
HDI	.47**		.53**	
Individualism	.34*		.40*	
Masculinity	-.05		.24	
Uncertainty Avoidance	.36*	.41**	.29&	.34*
Power Distance	-.52**	-.55**	-.56**	-.59**
R ²		.40	R ²	.39

- a) Variables are coded such that high values indicate more desirability, frequency, intensity of emotions. Saved factorial scores for desirability, frequency and intensity of positive and negative emotions respectively (Principal components analysis and rotation varimax).
- b) Latitude: mean latitude (absolute score) refers to the North-South midpoint of the country. New World: New World-residence (2) Old World-residence (1). High values indicate: high HDI (Human Development Index), more individualims (Ind), masculinity (Mas), power distance (PD), uncertainty avoidance (UA) (Hofstede, 1991).
- c) n=31 countries; DATA=Diener et al. (1998)+ Hofstede (1991).
- d) Method= Stepwise
- e) r Pearson coefficient; **p#.01; *p#.05; & .05≤p#.10; standarized beta coefficients

Figure 1.- Social Desirability, Frequency and Intensity of Positive Emotions

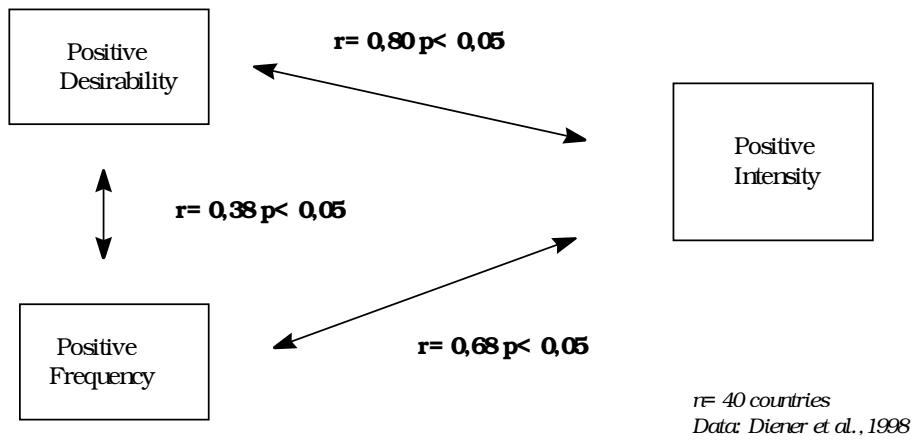


Figure 2- Social Desirability, Frequency and Intensity of Negative Emotions

