

CULTURE-LEVEL DIMENSIONS OF SOCIAL AXIOMS AND THEIR CORRELATES ACROSS 41 CULTURES

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Leung and colleagues have revealed a five-dimensional structure of social axioms across individuals from five cultural groups. The present research was designed to reveal the culture level factor structure of social axioms and its correlates across 41 nations. An ecological factor analysis on the 60 items of the Social Axioms Survey extracted two factors: Dynamic Externality correlates with value measures tapping collectivism, hierarchy, and conservatism and with national indices indicative of lower social development. Societal Cynicism is less strongly and broadly correlated with previous values measures or other national indices and seems to define a novel cultural syndrome. Its national correlates suggest that it taps the cognitive component

of a cultural constellation labeled maleficence, a cultural syndrome associated with a general mistrust of social systems and other people. Discussion focused on the meaning of these national level factors of beliefs and on their relationships with individual level factors of belief derived from the same data set.

Keywords: social axioms; cultural dimensions; dynamic externality; societal cynicism

Rather, ecological variables are necessary to examine structural, contextual, and sociological effects on human behavior and disease development.

Schwartz, 1994 b, p. 823

Many attempts have been made to define (e.g., Rohner, 1984) and then to measure culture. Given the classic definition of culture provided by Kroeber and Kluckhohn (1952), this mapping has usually been made by using values. The most widely known value mapping is the work of Hofstede (1980), whose four value dimensions of Individualism-Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity-Femininity are used as organizing and explanatory constructs in many disciplines. Tapping values salient to Chinese people, the Chinese Culture Connection (1987) has identified one additional dimension to the Hofstede four: Confucian Work Dynamism, or short-term versus long-term orientation (Hofstede, 1991). All five dimensions of culture-level values have provided the conceptual impetus for numerous cross-cultural studies.

Several major cross-cultural projects have been conducted subsequent to Hofstede's (1980) groundbreaking work. With his theory-derived value survey, Schwartz (1994 a) has identified seven culture-level dimensions, namely, Conservatism, Intellectual Autonomy, Affective Autonomy, Hierarchy, Egalitarian Commitment, Mastery, and Harmony. Smith, Dugan, and Trompenaars (1996) have identified two reliable value dimensions at the cultural level from their analysis of managerial values: Egalitarian Commitment versus Conservatism, and Utilitarian Involvement versus Loyal Involvement. Smith and Bond (1998, Ch. 3) concluded that these different value surveys have produced convergent results, lending support to the validity of the cultural dimensions originally identified by Hofstede (1980).

Recently, House and his associates (2003) have orchestrated a major project to identify cultural dimensions across 62 countries. A distinctive feature of this multicultural project is that values associated with leadership were measured concurrently with ideal and actual leadership behaviors. The House team has identified nine culture-level dimensions: Performance Orientation, Assertiveness Orientation, Future Orientation, Humane Orientation, Institutional Collectivism, Family (now In-Group) Collectivism, Gender Egalitarianism, Power Distance, and Uncertainty Avoidance (Gupta & House, in press; House, Hanges, Javidan, Dorfman, & Gupta, 2003). Despite the inclusion of leadership behaviors, however, the results are consistent with those from the value surveys described before. Most of the cultural dimensions identified are related and correlated empirically to the value dimensions of Hofstede, as his original four dimensions are often used for validation purposes in many multicultural projects.

Assertiveness Orientation and Gender Egalitarianism are related to Hofstede's (1980) construct of Masculinity-Femininity; Institutional Collectivism and In-Group Collectivism are related to Hofstede's dimension of Individualism-Collectivism; Power Distance and Uncertainty Avoidance are directly related to the two Hofstede dimensions with the same labels; Future Orientation is related to Hofstede's (2001) Long-Term Orientation. Two dimensions are empirically independent of the Hofstede dimensions: Performance Orienta-

tion and Humane Orientation; however, Performance Orientation seems conceptually related to McClelland's (1961) concept of need for achievement, and Humane Orientation seems conceptually related to the Human Nature Is Good versus Bad dimension of Kluckhohn and Strodtbeck (1961).

The political scientist Inglehart has orchestrated the European/World Values Survey during three time periods, measuring the "attitudes, values, and beliefs" of representative samples from, now, 73 countries representing 80% of the world's population (Welzel, Inglehart, & Klingemann, 2003). In 1997, he identified two dimensions from his original cohort of 43 societies, namely, "traditional versus secular-rational orientations and survival versus self-expression values" (Inglehart & Baker, 2000, p. 23). These two dimensions have been used to locate countries and to demonstrate the importance not only of economic modernization but also of cultural history, thereby revising modernization theory (Inglehart & Baker, 2002). More recently, these two dimensions have been used by Welzel et al. (2003) as one of three components in a "coherent syndrome of social progress" (p. 341) to support their societal-level theory of human development.

The five items defining the Inglehart measure of traditional versus secular-rational values consist exclusively of values, but the five items measuring survival versus self-expressive "values" consist also of a self-description, a behavioral self-report, and a norm. Thus, the factor is conceptually scattered even though it clearly defines a powerful dimension by which societies differ. It should be noted in passing that the same conflation of item types characterized the Hofstede (1980) "value" survey, although to a lesser degree. Psychologists prefer to keep their measures of concepts pure because each type of concept may constitute a distinctive way to analyze personality, playing a separate and additional role in explaining individual behavior, e.g., in expectancy-value theory (e.g., Feather, 1982). Of course, when societies are the unit of analysis, this separation may break down and become irrelevant as values, attitudes, norms, behavioral intentions, and self-descriptions of a citizenry become integral, highly interrelated parts of a society's signature derived from psychological data (Berger, 1967). Conflation or distinction can only be assessed, however, if the constructs are kept separate and their correlations examined across conceptual domains. At present, only the values studied by the Chinese Culture Connection (1987) and by Schwartz (1994 a) are pure in this sense.

THE CONCEPT OF SOCIAL AXIOMS

As the above review indicates, values have been the dominant construct guiding cross-cultural research at the national level. For the field to progress, however, Leung et al. (2002) have argued for a broadening of the conceptual tools included in cross-cultural analysis and proposed the use of general beliefs, or *social axioms*, to augment value-based cultural dimensions. Social axioms are general beliefs and may be viewed as "generalized expectancies", a concept introduced by Rotter (1966) to characterize locus of control. These general beliefs are labeled social axioms in the sense that like axioms in mathematics, they are basic premises that people endorse and use to guide their behavior in daily living. However, unlike mathematical axioms, social axioms are likely to vary across individuals, reflecting the idiosyncratic experiences of individuals. Because of their general nature, social axioms are likely to relate to a wide range of social behaviors across different contexts.

Following Leung et al. (2002), a formal definition of social axioms is given below:

Social axioms are generalized beliefs about oneself, the social and physical environment, or the spiritual world, and are in the form of an assertion about the relationship between two entities or concepts. (p. 289)

A typical social axiom has the structure *A* is related to *B*, where *A* and *B* may be any entities, and the relationship between them may be causal or correlational. Social axioms differ from values, which assume the form, *A* is good/desirable/important. Social axioms are also different from normative beliefs or assertions, which are prescriptive in nature. "We should help the poor" is a normative assertion, not a social axiom.

Leung et al. (2002) have identified a large number of social axioms scattered throughout the psychological literature, most of which have been contributed by researchers from North America and Western Europe. To enhance the cultural representation of the axioms, qualitative research was conducted in Hong Kong and Venezuela to identify indigenous axioms salient in these two cultural contexts. A social axioms survey was created from these interview protocols, and factor analysis of responses to this survey unearthed a similar five-factor structure within each of five cultures: Hong Kong, Venezuela, the United States, Japan, and Germany. *Cynicism* refers to a negative view of human nature, a view that life produces unhappiness, that people exploit others, and a mistrust of social institutions. *Social Complexity* refers to the belief in multiple ways of achieving a given outcome and agreement that human behavior is variable across situations. *Reward for Application* refers to a general belief that effort, knowledge, and careful planning will lead to positive results. *Spirituality* (subsequently renamed *Religiosity* in Leung & Bond, 2004) refers to a belief in the reality of a supreme being and the positive functions of religious practice. Finally, *Fate Control* refers to a belief that life events are predetermined and that there are ways for people to influence these fated outcomes. These five, orthogonal dimensions of social axioms have been confirmed, and their constituent and defining items established in 41 national groups (Leung & Bond, 2004).

These defining items are etic in the sense that they cohere in defining each of the five dimensions in the same way in all 41 cultural groups. This universality in their definition led Leung and Bond (2004) to propose an evolutionary argument for the existence of these five dimensions. Briefly, they propose the universal need to develop competence in the social and instrumental domains (Keller, 1997). The dimension of Cynicism is a response to the variable human capacity for deception; Fate Control, a cognitive coping response to varying levels of negative outcomes; Reward for Application, an assessment of the anticipated returns for investing in one's physical and social environment; Social Complexity, a learned orientation toward adaptation problems typically faced in one's society and reinforced or not by the utility of solutions achieved through divergent thinking; and Religiosity, a response to the issue of cosmological order and individual meaning in the world (see Leung & Bond, 2004, for elaborations).

SOCIAL AXIOMS AS A BASIS FOR IDENTIFYING CULTURAL DIMENSIONS

These five dimensions of social axioms are derived from an individual level of analysis in which responses from separate individuals are analyzed for factors within each cultural group. The cornerstone dimensions of Hofstede (1980), however, were derived from a cultural level of analysis in which the averages of individuals' responses within each constituent nation were the inputs factor analyzed (Leung & Bond, 1989). There is, however, no neces-

sary or empirical connection between dimensions derived from an individual-level analysis and dimensions derived from a culture-level analysis (e.g., Leung, 1989; Robinson, 1950). For instance, Schwartz (1992) identified 10 value types at the individual level, which are robust across a diverse group of cultures. In contrast, seven dimensions were identified from the cultural-level analysis of these same data. These seven bear some, but not complete, resemblance to his individual level value types (Schwartz, 1994 a). Likewise, the five dimensions of social axioms identified at the individual level may not emerge again at the culture level where different dimensions may be found.

A major purpose of this article was to discover the dimensions of social axioms that are identifiable at the cultural-level and to compare these culture-level dimensions of social axioms with culture level dimensions of values to evaluate their degree of overlap. After completing a review of the available literature, Leung and Bond (2004) have concluded that at the individual level of analysis, there is only a modest overlap between the dimensions of values and axioms. In consequence, they have been able to use both values and beliefs as additive constructs in predicting individual behaviors. However, societies are different from individuals so it is possible that a society's values and beliefs are more interrelated, forming integrated conceptual clusters, enabling social scientists to distinguish national groupings and track trajectories of economic, political, and cultural growth (see e.g., Welzel et al., 2003). Alternatively, social axioms may provide a different way to measure and compare nations, thereby producing different groupings responsive to different social forces and requiring different theories to explain their origins.

To discover the nation-level dimensions of axioms, the social axioms survey was administered to a sample of college students in each of 41 cultural groups. Cultural means were calculated based on gender-balanced samples, and a factor analysis was then conducted on these cultural means for identifying cultural dimensions of social axioms.

MAPPING THE MEANING OF SOCIAL AXIOMS DIMENSIONS

One effective way to map out the meaning of social axioms dimensions is to correlate them with a wide variety of country-level indices. This approach has been adopted by Hofstede (1980, 1991) in his classic work, where his four, and subsequently five, cultural dimensions were correlated with many characteristics of nations. Meaningful patterns were found, which helped validate these cultural dimensions and flesh out their meaning. For instance, Hofstede (1980) reported that Individualism was associated with more wealth and larger organizational size across his sample of 40 countries. Confucian Work Dynamism was found to be positively correlated with the rate of national economic growth during a 25-year period (Chinese Culture Connection, 1987). Subsequently, Kashima and Kashima (1998) reported that cultural collectivism was associated with a higher likelihood of pronoun drop (the pronominal subject of a sentence is dropped) across a wide range of languages. Smith, Peterson, and Schwartz (2002) reported that low power distance was associated with a lower reliance on superiors and on formal rules and a higher reliance on self and subordinates for handling events in the workplace across 47 nations. Van de Vliert, Schwartz, Huismans, Hofstede, and Daan (1999) reported that cultural masculinity was positively related to the level of domestic political violence across 53 countries. These and other such relationships are building blocks for nomological networks that encapsulate meaning around these cultural dimensions.

We have also adopted this approach in the present article and propose to correlate the culture-level dimensions of social axioms identified with the following three types of country-level indices: (a) cultural dimensions derived from grouping averages of individual responses to value-type or behavior-oriented measures, including those of Hofstede (1991), Schwartz (1994 a), Smith et al. (1996), House et al. (2003), and Inglehart (1997); (b) indices based on an aggregation of ungrouped individual responses, such as citizen scores on life satisfaction, trust, and so forth; and (c) true country-level indices not derived from aggregating individual responses, such as level of democracy, rate of unemployment, and so forth. Correlation of the social axioms dimensions with well-known cultural dimensions derived from grouping averages of individual responses will establish their degree of conceptual distinctiveness, and correlations with other country-level indexes will help define the meaning of these dimensions.

METHOD

PARTICIPANTS

A total of 7,672 university students constituting gender-balanced samples from 41 cultural groups were included in the study, and their participation was for the fulfillment of a course requirement, on a voluntary basis, or as paid respondents. Gender balance for each cultural group was achieved by randomly discarding cases from the gender with the larger number of participants. Most participants fell into the groups of below 20 years old (56%) and between 21 and 30 years old (42%). The sample size varied, with a minimum of 64 in Venezuela and a maximum of 710 in India.

In addition, a total of 2,252 adults from 13 gender-balanced cultural groups (Argentina, Greece, Hong Kong, Hungary, India, Israel, Italy, Nigeria-Yoruba, Romania, Russia, Spain, United States-Caucasian, and Venezuela) were also included in the study, and their participation was voluntary. Their age distribution was below 20 (5%), between 21 and 30 years old (28%), between 31 and 40 years old (20%), between 41 and 50 years old (26%), between 51 and 60 years old (15%), and 60 or older (6%). The sample sizes varied from 52 in Italy to 680 in Greece.

INSTRUMENT AND PROCEDURE

The social axioms survey consisted of 60 items, each of which is phrased in simple language. A 5-point scale was used for the items, with the labels *strongly believe*, *believe*, *no opinion*, *disbelieve*, and *strongly disbelieve*. Many language versions were developed, and the local language of instruction was always used in administering the instrument in each of the cultural groups. The English version was used as the template for the translation and back-translation was used for checking the accuracy of the translation of most language versions. For versions that did not employ back-translation, a panel of judges was used to ensure the quality of the translation. For a list of these 60 items, see Leung et al. (2002).

Participants were asked to complete the social axioms survey anonymously in small groups. It usually took about 20 minutes to complete the survey.

RESULTS

ECOLOGICAL FACTOR ANALYSIS

The data were first screened, and cases with a high level of missing responses (more than 40% of responses missing) and irregular response patterns were discarded. Eighteen cases were dropped, resulting in a final sample of 7,654 participants. Item means were calculated for each country by averaging across the equal number of male and female respondents, and a matrix of 41 cases, each with 60 means, was obtained.

A factor analysis was conducted. A typical factor analysis is run with individual data, and the number of cases is usually quite large, surpassing the number of variables by at least a factor of five. In country level or ecological factor analysis, because the data are means and not individual responses, reliable factor structures can be obtained with a smaller sample size (Leung & Bond, 1989). In fact, the cross-cultural studies on cultural dimensions reviewed above are also based on relatively small sample sizes, and as noted before, their results show a high level of convergence. A small sample size is not a serious problem for ecological factor analysis, because the scores being factor analyzed are highly reliable averages, not individual scores.

A principal components analysis with varimax rotation was used, and the scree plot clearly suggested a two-factor solution, accounting for 41.9% of the matrix variance. Oblique rotation was also tried, but the results were very similar to those from the varimax rotation, so we will focus on results from this varimax rotation. We have also examined the three-factor solution, and it turned out that the second factor in the three-factor solution was very similar to the second factor in the two-factor solution and that the third factor contained only a small number of social axioms. Unsaturated factors are likely to be sample dependent and are more difficult to interpret (Guadagnoli & Velicer, 1988). Thus, we accepted the two-factor solution as optimal, and the items defining these two factors are given in Table 1.

Two social axioms dimensions were formed by averaging the constituent items that loaded greater than or equal to .45 on one factor and less than .30 on the other factor. Factor 1 is defined by 21 items and is labeled *Dynamic Externality* because it combines items from four of the factors previously identified across cultures at the individual level: Reward for Application (10 items), Religiosity (8 items), Fate Control (2 items), and Social Complexity (1 item). There are elements of religiosity and fate in this factor, which give rise to the label *Externality*, but the concomitant emphasis on effort and control gives a dynamic quality to this construct. Factor 2 is defined by 11 items and is labeled *Societal Cynicism* because with the exception of 1 item, all of them are from the individual level factor of cynicism. The exceptional item was dropped from subsequent analysis to maintain the conceptual coherence of this factor. The choice of these factor labels has also taken into account their correlates to be reported next. As constituted by these sets of 21 and 10 items, these two factors correlated with each other at a low level, $r(39) = .21, ns$.

To evaluate the robustness of this factor structure, an ecological factor analysis was conducted on the adult data. Because only 13 cultures were available, considerable sampling error is likely to be present, which should depress the congruence between the two structures based on adult and student data. A two-factor structure was first obtained, and congruence coefficients were then calculated after the structure was subjected to Procrustes rotation. They were .89 for dynamic externality and .73 for societal cynicism. Although the congruence coefficient for societal cynicism was only moderate, we can conclude that this factor is

TABLE 1
Factor Loadings of Social Axioms Dimensions

<i>Item</i>	<i>Dynamic Externality</i>	<i>Societal Cynicism</i>
Belief in a religion helps one understand the meaning of life.	.92	
Good deeds will be rewarded, and bad deeds will be punished.	.92	
Religious faith contributes to good mental health.	.90	
There is a supreme being controlling the universe.	.90	
All things in the universe have been determined.	.90	
Belief in a religion makes people good citizens.	.89	
The just will eventually defeat the wicked.	.82	
Religion makes people escape from reality.	-.82	
One will succeed if he/she really tries.	.81	
Hard-working people will achieve more in the end.	.74	
Every problem has a solution.	.72	
Religious people are more likely to maintain moral standards.	.71	
Religious beliefs lead to unscientific thinking.	-.70	
Knowledge is necessary for success.	.67	
Failure is the beginning of success.	.65	
There are many ways for people to predict what will happen in the future.	.62	
Ghosts or spirits are people's fantasy.	-.60	
Human behavior changes with the social context.	-.58	
Competition brings about progress.	.58	
Caution helps avoid mistakes.	.55	
Adversity can be overcome by effort.	.51	
To care about societal affairs only brings trouble for yourself.		.81
Kind-hearted people usually suffer losses.		.76
Old people are usually stubborn and biased.		.73
It is rare to see a happy ending in real life.		.69
People will stop working hard after they secure a comfortable life.		.63
Old people are a heavy burden on society.		.61
Kind-hearted people are easily bullied.		.55
People deeply in love are usually blind.		.54
Humility is dishonesty.		.53
Power and status make people arrogant.		.52
Powerful people tend to exploit others.		.46

NOTE: Only items with loadings larger than .45 are shown.

identifiable in the adult data. In sum, the factor structure of the adult data supports the robustness of the factor structure based on the student data.

CORRELATIONS WITH OTHER CULTURAL DIMENSIONS

These two dimensions were first correlated with cultural dimensions identified previously in several major studies (Hofstede, 2001; House et al., 2003; Inglehart & Baker, 2000; Schwartz, 1994 a; Smith et al., 1996). For Germany and Belgium, the two different groups in each country (East and West Germans and Dutch-speaking and French-speaking Belgians) were weighted according to their relative percentage in the population to arrive at a country score. The correlations are presented in Table 2.

TABLE 2
Correlations Between Social Axioms Dimensions and Other Cultural Dimensions

<i>Variable</i>	<i>Source</i>	<i>N</i>	<i>Dynamic Externality</i>	<i>Societal Cynicism</i>
Traditional authority vs. secular-rational values (higher scores denote higher emphasis on traditional authority values)	Inglehart and Baker (2000); country scores provided by the courtesy of Ronald Inglehart	35	.67*	
Survival vs. self-expression values (higher scores denote higher emphasis on survival values)	Inglehart and Baker (2000); country scores provided by the courtesy of Ronald Inglehart	35	.46*	.64*
Power distance	Hofstede (2001)	37	.50*	
Individualism-collectivism	Hofstede (2001), Ardichvili (2001)	38	-.62*	-.47*
Long- and short-term orientation	Hofstede (2001)	26		.40
Conservatism	Schwartz (1994)	21	.66*	
Intellectual autonomy	Schwartz (1994)	21	-.58*	
Egalitarian commitment	Schwartz (1994)	21	-.54	
Harmony	Schwartz (1994)	21	-.45	
Loyal vs. utilitarian involvement	Smith, Dugan, and Trompenaars (1996)	28	-.44	
Humane orientation-the degree to which a collective rewards individuals for being fair, altruistic, generous, and caring (societal culture practice-show societal culture is)	House, Hanges, Javidan, Dorfman, and Gupta (2003)	30	.64*	
In-group collectivism (societal culture practices-how societal culture is)	House et al. (2003)	30	.61*	
Uncertainty avoidance (societal culture values-how societal culture should be)	House et al. (2003)	30	.58*	.38
Future orientation (societal culture values-how societal culture should be)	House et al. (2003)	30	.54*	
Performance orientation (societal culture values-how societal culture should be)	House et al. (2003)	30		-.36
Gender egalitarianism (societal culture values-how societal culture should be)	House et al. (2003)	30	-.57*	-.36

SOURCE: See the appendix for full references of all the sources used for this table.

NOTE: All scales are scored in a way so that a higher score indicates a higher level of the concept represented by the label. All correlations are significant at the .05 level, and those marked with an asterisk (*) are significant at the .01 level.

Dynamic Externality. This dimension was correlated significantly with both dimensions of Inglehart and Baker (2000)—Traditional Orientation and Survival Values; two dimensions of Hofstede (1980)—Power Distance and Individualism (negatively); four dimensions of Schwartz (1994a)—Conservatism, Intellectual Autonomy (negatively), Egalitarian Commitment (negatively), and Harmony (negatively); one dimension of Smith et al. (1996)—Loyal Involvement; two dimensions of House et al. (2003) that describe the current status of a culture—Humane Orientation, and In-Group Collectivism; three dimensions of House et al. that describe the ideal state of a culture—Uncertainty Avoidance, Future Orientation, and Gender Egalitarianism (negatively).

These correlations suggest that dynamic externality is generally related to power distance, collectivism, and conservatism. It is interesting to note that cultural groups that are

high in dynamic externality are associated with high uncertainty avoidance, high future orientation, and low gender egalitarianism. As will be reported later, cultures high in dynamic externality are less developed in socioeconomic terms. Perhaps living in a difficult but less institutionally complex environment elicits general beliefs in predictability and in a promising future. The lower preference for gender egalitarianism in these cultures may reflect the continuous influence of conservatism.

Taken as a whole, dynamic externality is related to power distance, conservatism, and collectivism. Their correlations with dynamic externality are sizable, suggesting that dynamic externality is describing a cultural reality that has been substantially tapped by many culture-level dimensions of values. However, there are also some unique, novel features of this dimension that will be described in the Discussion section below.

Societal Cynicism. This dimension is only correlated with one dimension of Inglehart and Baker (2000)—Survival; with two Hofstede (2001) dimensions—Individualism (negatively) and Long- and Short-Term Orientation; and with three dimensions of House et al. (2003) that describe the ideal state of a culture—Uncertainty Avoidance, Performance Orientation (negatively), and Gender Egalitarianism (negatively). The tendency for cultures high in societal cynicism to idealize certainty may reflect the belief that certainty is a characteristic of a benign environment. Societal Cynicism relates to a lower emphasis on striving for high performance, a sensible outcome if there is a general suspicion of the social system, and a general expectation of negative outcomes.

These relationships are both fewer and weaker than those for Dynamic Externality, with the exception of the survival dimension of Inglehart and Baker (2000), a correlation that we will revisit in the Discussion section. We may conclude that Societal Cynicism is distinct from the major cultural dimensions of value identified previously and is identifying a feature of national culture less well tapped by the currently available, culture-level indices of value.

CORRELATIONS WITH SOCIOECONOMIC-POLITICAL-PSYCHOLOGICAL INDICES

These two dimensions of social axioms were also correlated with two other types of country-level indexes: socioeconomic-political and psychological. The socioeconomic-political indices are themselves interrelated as are the psychological indices, although in presently unknown patterns. The number of findings for both factors of social axioms must therefore be interpreted in light of these highly nested relationships.

It is well documented that affluence has wide-ranging effects on various aspects of a society, and one common strategy for disentangling the influence of affluence and cultural dimensions is to compute partial correlations, controlling for the influence of affluence. We have used a nation's per capita gross domestic product (GDP) to index its affluence, a common strategy in this line of research (e.g., Van de Vliert, 2003). The correlation of GDP per capita with dynamic externality was $-.65$, indicating a moderate, negative relationship with wealth; the correlation for societal cynicism was a weaker $-.40$. The partial correlations are presented in Table 3.

Dynamic Externality. Controlling for wealth, countries higher in dynamic externality are more likely to have higher daytime temperature, more males than females in the population, a higher age dependence ratio (a proportionally larger nonworking population because of being populated by younger or older citizens), a higher average number of people per room, a higher population growth rate, a lower life expectancy, a higher adult illiteracy rate, a lower

TABLE 3
Correlates of Social Axioms, Controlling for Wealth

<i>Variable</i>	<i>Source</i>	<i>N</i>	<i>Dynamic Externality</i>	<i>Societal Cynicism</i>
Gross domestic product per capita 2000 (PPP [Purchasing Power Parity] US\$)	United Nations Development Programme (UNDP; 2002); Central Intelligence Agency (CIA) (2002)	41	-.65*	-.40
Average daytime temperature	National Geographic Atlas of the World 1990, as cited in Van de Vliert, Schwartz, Huisman, Hofstede, and Daan (1999)	38	.47*	
Sex ratio 2001 (male to female)	United Nation (UN; 2002)	38	.56*	
Age dependency ratio 2001 dependents to working-age population	World Bank Group (2003)	40	.41*	
Average number of persons per room	UN (2002)	23	.65*	.47
Population growth rate 2000 to 2005	UN (2002)	37	.59*	
Life expectancy at birth	UNDP (2001)	40	-.44*	
Illiterate adult 2000-aged 15 or above	UN (2002)	24	.44	
Growth competitiveness index 2002	World Economic Forum (2002)	37		.36
Human development index 1999	UNDP (2001)	40	-.55*	
Human rights	Humana (1992)	36	-.54*	
Relative Status of Women	Population Crisis Committee (1988)	36	-.60*	
Political rights and civil liberties 1992/1993-2001/2002	Freedom House (2002)	40	-.52*	
Unemployment rate	UN (2002)	37	-.70*	
Employees' work hours per week	International Labor Organization (2002)	28	.60*	
Percentage of GDP on education	UNDP (2001)	40	-.32	
Percentage of GDP on health	UNDP (2001)	33	-.68*	
Alcohol consumption 1996 (liters per adult)	UNDP (2001)	37	-.50*	.38
Reducing human vulnerability (Environmental Sustainability Index subscale 3)-by means of human sustenance (food and water) and environmental health	World Economic Forum (2002)	33	-.42	
Social and institutional capacity (Environmental Sustainability Index subscale 4)-capacity to understand and respond to environmental dynamics for favorable long-run environmental conditions	World Economic Forum (2002)	33	-.42	
Voter turnout at latest elections	UNDP (2000)	32	-.38	-.36
Television receivers-number per 1,000 inhabitants	WDI Online, World Bank Group (2003)	37	-.37	
Percentage of population who have accessed the Internet during the past month	Taylor Nelson Sofres (2001)	29		.43
Job satisfaction	International Survey Research (1995), as cited in Van de Vliert and Janssen (2002)	22		-.53
Company satisfaction	International Survey Research (1995), as cited in Van de Vliert and Janssen (2002)	22		-.60*
Life satisfaction	World Value Survey 1990-1993, as cited in Diener and Suh (1999)	25		-.65*

TABLE 3 (Continued)

<i>Variable</i>	<i>Source</i>	<i>N</i>	<i>Dynamic Externality</i>	<i>Societal Cynicism</i>
Quality of Life Index	Diener (1995)	30	-.61*	
Hedonic balance to positive affect minus negative affect	World Value Survey 1990 to 1993, as cited in Diener and Suh (1999)	24	.42	-.49
Positive affect	World Value Survey 1990 to 1993, as cited in Diener and Suh (1999)	24	.53*	
Pace of life	Levine and Norenzayan (1999)	19		.79*
Helping index	Levine, Norenzayan, and Philbrick (2001)	15	-.72*	
Neuroticism	McCrae (2002)	25	-.44	
Agreeableness	McCrae (2002)	25	.63*	
Conscientiousness	McCrae (2002)	25		-.47
Mean score for length of emotions	Scherer, Wallbot, and Summerfield (1986); Wong and Bond (2002)	15	.68*	
Sources of guidance-vertical	Smith, Peterson, and Schwartz (2002)	32	.44	
Sources of guidance-beliefs widespread in my nation	Smith et al. (2002)	32	.38	
Mate preference-emphasizing mutual attraction; deemphasizing financial prospect, social status & ambition	Shackelford and Schmidt (2002)	25	-.52*	
View on leadership-charismatic/value based	Den Hartog, House, Hanges, and Ruiz-Quintanilla (1999)	29		-.70*
View on leadership-team-oriented	Den Hartog et al. (1999)	29		-.53*
View on leadership-self-protective	Den Hartog et al. (1999)	29		.39
View on leadership-humane	Den Hartog et al. (1999)	29	.55*	
View on leadership-autonomous	Den Hartog et al. (1999)	29		.49*
In-group disagreement	Smith, Dugan, Peterson, and Leung (1998)	19		.48
Other-referenced performance motive-compared with others performance	Lynn (1991), as cited in Van de Vliert and Janssen (2002)	23	.75*	
Percentage of mentioning "Work is like a business transaction. The more I get paid, the more I do; the less I get paid, the less I do."	Inglehart, Basaez, and Moreno (1998)	23		.51
Percentage of mentioning trust in own nationality	Inglehart et al. (1998)	24	.44	
Percentage of thinking scientific advances will help mankind	Inglehart et al. (1998)	23	.56*	
Percentage of adult population that attends church at least once a week	World Value Survey 1990 to 1993, as cited in Swanbrow (1997)	27	.46	-.49
Frequency of praying to God outside of religious services-% "often" or "sometimes"	Inglehart et al. (1998)	20	.52	
Importance of religion in your life-% of very important	Inglehart et al. (1998)	24	.62*	
Importance of God in your life-% of very important	Inglehart et al. (1998)	21	.52	
Gough's Achievement Via Conformity Scale	Lynn (1991)	23		-.47
Spence-Helmreich Competitiveness Scale	Lynn (1991)	23	.64*	

SOURCE: See the appendix for full references of all the sources used for this table.

NOTE: All scales are scored in a way so that a higher score indicates a higher level of the concept represented by the label. The correlations involving per capita GDP are simple correlations, and the rest are partial correlations with per capita GDP controlled for. All correlations are significant at the .05 level and those with an asterisk (*) are significant at the .01 level.

level of human development, lower human rights observance, lower relative status of woman, lower political rights and civil liberties, less unemployment, more work hours per week, a lower percentage of GDP spent on education and on health, lower alcohol consumption, a lower capacity for reducing human vulnerability by means of human sustenance and environmental health, a lower social and institutional capacity for environmental sustainability, a lower voter turnout rate, and fewer TV receivers per 1,000 inhabitants. This profile suggests that dynamic externality is generally related to less favorable educational, social, and political development, even after its already lower level of economic development has been controlled for.

With regard to citizen scores on indices that are more psychological in nature, after controlling for wealth, Dynamic Externality is related to a lower rated quality of life, a higher hedonic balance (positive minus negative affect), and more positive affect, less frequent helping behavior offered to strangers, lower neuroticism, higher agreeableness (a personality trait characterized by cooperation and accommodation of others), a longer duration of emotional experiences, a stronger reliance on superiors and widespread beliefs as sources of guidance at work, a preference for status compared to mutual attraction in selecting a mate, a stronger endorsement of a humane view of leadership, a stronger performance motive that takes into account the performance of other people, more trust in persons of one's own nationality, a stronger endorsement of the view that scientific advances will help mankind, higher church attendance, more frequent praying, a higher importance attached to religion and God, and a stronger competitive motive.

This profile suggests that Dynamic Externality is associated with the tendency of a citizenry to try to get along smoothly with others, to be status seeking, to be attentive and emotionally responsive to the social environment, and to engage in frequent religious activities but not to benefit strangers. However, Dynamic Externality is also associated with having a citizenry reporting a lower quality of life, a more competitive motivation, and more faith in scientific progress. Nations high in Dynamic Externality seem to have citizens whose psychological orientation toward others is mechanistic, engaged, and accommodating. This constellation of attributes would seem to reflect the less favorable economic-educational-social-political environment with which cultures of high Dynamic Externality are confronted. These are difficult cultural environments (Triandis, 1973).

Societal Cynicism. After controlling for economic development, Societal Cynicism is associated with a larger number of persons per room; higher growth competitiveness, which seems to corroborate the correlation with long-term orientation reported earlier; more alcohol consumption; less voter turnout; and more frequent access to the Internet.

With regard to indices that are more psychological in nature, after controlling for wealth, Societal Cynicism is related to lower job satisfaction, lower satisfaction with one's company, lower life satisfaction, a lower hedonic balance (positive affect minus negative affect), and a faster pace of life. Perhaps in cultures that are high in Societal Cynicism, a work-disengaged but instrumental approach is common, which explains the faster pace of life. Societal Cynicism is related to a lower level of conscientiousness (a factor in the Big-Five personality model that is concerned with competence, order, dutifulness, self-discipline, deliberation, and the will to achieve), a rejection of the view that leadership is based on charisma and values, and on team-orientation but an acceptance of self-protective leadership and of autonomous leadership. Societal Cynicism is related to more disagreement within in-groups, a stronger belief in exerting an amount of effort that is proportional to the pay received, lower church attendance, and lower achievement via conformity.

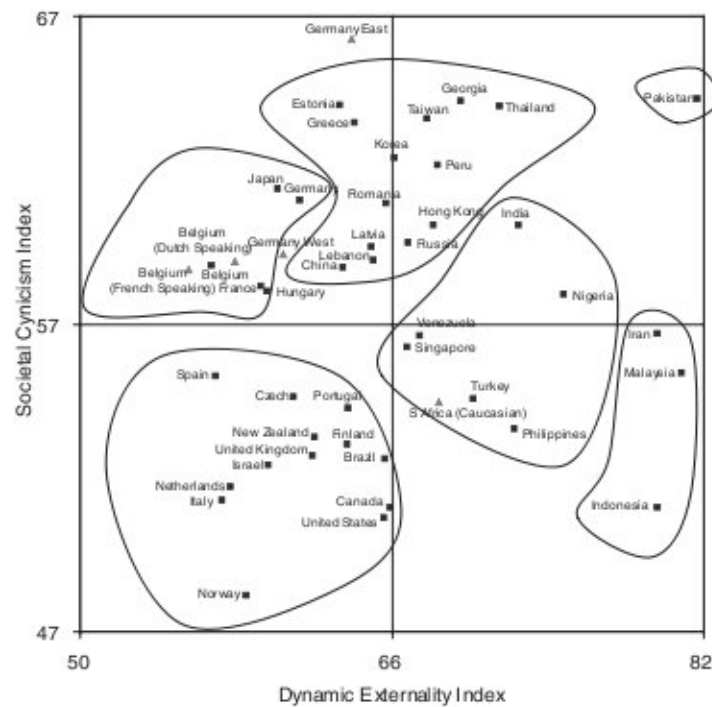


Figure 1: Scatter Plot of Nations as a Function of Their Dynamic Externality and Societal Cynicism

NOTE: Squares represents the 41 cultures included in the study, and triangles represent cultural subgroups included for reference. The South African data were not included in the factor analysis.

This profile is less extensive than that for Dynamic Externality. The significant correlates suggest that even after affluence is controlled, cynical nations are higher in economic competitiveness but have citizens lower in intrinsic work motivation and satisfaction. An autonomous, calculating, and less proactive and harmonious style of interaction characterizes citizens of cynical societies.

CLASSIFICATION OF CULTURES

In calculating the country means, index scores, which are the original scale scores multiplied by 20, were adopted for easier reference (see Table 4).

A scatter plot of the cultural groups based on their index scores for dynamic externality and societal cynicism is presented in Figure 1. To aid interpretation, a hierarchical cluster analysis of z scores on the two dimensions across the 41 cultural groups was conducted based on the method of average linkage. A six-cluster solution seems clearest; it is shown overlaid on Figure 1.

A few observations are noteworthy. Although cultures high in Dynamic Externality tend to be less economically developed, more collectivist, and hierarchical, these relationships are not strong. Anglo countries (the United States, Canada, the United Kingdom, and New Zealand), which are highly individualistic, are only moderate in Dynamic Externality and are actually more external than Japan and Spain, two collectivistic countries; Muslim nations tend to be the highest in Dynamic Externality; cultures high in societal cynicism are quite

TABLE 4
Cultural Means of Social Axioms Dimensions

<i>Dynamic Externality</i>				<i>Societal Cynicism</i>			
<i>Country</i>	<i>Index</i>	<i>Raw M</i>	<i>SD</i>	<i>Country</i>	<i>Index</i>	<i>Raw M</i>	<i>SD</i>
Pakistan	81.7	4.08	0.28	Pakistan	64.3	3.22	0.47
Malaysia	80.9	4.04	0.28	Georgia	64.3	3.21	0.46
Indonesia	79.6	3.98	0.31	Estonia	64.1	3.21	0.44
Iran	79.6	3.98	0.46	Thailand	64.1	3.20	0.42
Nigeria (Yoruba)	74.8	3.74	0.27	Taiwan	63.7	3.18	0.47
India	72.5	3.63	0.35	Greece	63.5	3.18	0.42
Philippines	72.3	3.61	0.38	Korea	62.4	3.12	0.43
Thailand	71.6	3.58	0.26	Peru	62.2	3.11	0.48
Turkey	70.2	3.51	0.50	Japan	61.4	3.07	0.46
Georgia	69.6	3.48	0.35	Germany	61.0	3.05	0.55
South Africa							
(Caucasian)	68.4	3.42	0.30	Germany (East)	66.3	3.31	0.48
Peru	68.4	3.42	0.35	Germany (West)	59.3	2.96	0.43
Hong Kong	68.1	3.41	0.33	Romania	60.9	3.05	0.50
Taiwan	67.8	3.39	0.33	India	60.2	3.01	0.56
Venezuela	67.4	3.37	0.35	Hong Kong	60.2	3.01	0.43
Russia	66.8	3.34	0.30	Russia	59.7	2.98	0.38
Singapore	66.8	3.34	0.41	Latvia	59.5	2.97	0.44
Korea	66.1	3.31	0.37	Lebanon	59.1	2.95	0.47
Canada	65.9	3.30	0.43	Belgium	58.9	2.95	0.46
Romania	65.7	3.29	0.38	Belgium (Dutch)	59.1	2.95	0.44
Brazil	65.6	3.28	0.49	Belgium (French)	58.8	2.94	0.46
United States							
(Caucasian)	65.6	3.28	0.41	China	58.8	2.94	0.46
Lebanon	65.0	3.25	0.47	France	58.2	2.91	0.51
Latvia	64.9	3.25	0.40	Hungary	58.1	2.90	0.47
Greece	64.1	3.20	0.42	Nigeria (Yoruba)	58.0	2.90	0.49
Portugal	63.7	3.19	0.39	Iran	56.7	2.83	0.57
Finland	63.7	3.18	0.38	Venezuela	56.6	2.83	0.50
China	63.5	3.17	0.33	Singapore	56.2	2.81	0.42
Estonia	63.3	3.17	0.35	Malaysia	55.4	2.77	0.43
New Zealand	62.0	3.10	0.34	Spain	55.3	2.76	0.46
United Kingdom	61.9	3.10	0.37	Czech Republic	54.6	2.73	0.45
Germany	61.3	3.06	0.34	Turkey	54.6	2.73	0.49
Germany (East)	63.9	3.20	0.47	South Africa			
				(Caucasian)	54.5	2.72	0.48
Germany (West)	60.4	3.02	0.33	Portugal	54.3	2.71	0.43
Czech Republic	60.9	3.05	0.35	Philippines	53.6	2.68	0.54
Japan	60.2	3.01	0.32	New Zealand	53.3	2.67	0.46
Israel	59.7	2.98	0.40	Finland	53.1	2.65	0.45
Hungary	59.6	2.98	0.41	United Kingdom	52.7	2.64	0.42
France	59.3	2.96	0.52	Brazil	52.6	2.63	0.46
Norway	58.5	2.93	0.45	Israel	52.4	2.62	0.54
Netherlands	57.7	2.89	0.37	Netherlands	51.7	2.59	0.47
Italy	57.3	2.86	0.46	Italy	51.3	2.56	0.53
Spain	56.9	2.85	0.40	Canada	51.0	2.55	0.54
Belgium	56.8	2.84	0.46	Indonesia	51.0	2.55	0.46
Belgium (Dutch)	57.9	2.90	0.35	United States			
				(Caucasian)	50.7	2.53	0.47
Belgium (French)	55.6	2.78	0.46	Norway	48.2	2.41	0.43

NOTE: The South African data were not included in the factor analysis.

diverse in their economic development, religious backgrounds, political histories, and geographic locations.

With regard to the clusters, unlike the results of previous research on grouping nations, there is no obvious way to label them in terms of physical proximity, cultural heritage, political and economic systems, and religions. If we use these two dimensions to form four quadrants, we can identify some prototypical cultures that represent each quadrant: cultures that are high in both dimensions: Pakistan and Thailand; cultures that are high in Dynamic Externality and low in Societal Cynicism: Indonesia and Malaysia; cultures that are low in Dynamic Externality and high in Societal Cynicism: Japan and Germany; cultures that are low in both dimensions: Norway and Italy.

DISCUSSION

This article has presented a culture-level analysis of social axioms, a cognitive construct akin to generalized expectancies, whereas previous culture-level analyses of psychological constructs have focused on motivational constructs, such as values, or on behavioral processes. In only two such projects (Bond, 1988; Schwartz, 1992), both on values, has a cross-cultural, individual-level analysis complemented the culture-level analysis. The current study on social axioms thus enables an assessment of how cognitive constructs fit with other constructs at the culture level and how the two levels of analysis relate to one another in their results.

The ecological factor analysis of the 60-item belief scale identified two factors of belief—Dynamic Externality and Societal Cynicism. Nation level correlates of these two factors support the suggestion that dynamic externality is close to, but not identical with, the cognitive component of social-system collectivism, a widely studied cultural complex assessed using other types of psychological constructs in other culture-level studies. Societal cynicism, however, appears to represent the cognitive component of a previously unrecognized cultural complex that might be labeled *maleficence*, reflecting the assessed hostility of the social system toward its members. We begin by discussing the two dimensions of social axioms and then proceed to consider the yield of this work for the levels-of-analysis issue in cross-cultural work.

INTERPRETATION OF THE TWO DIMENSIONS

Dynamic Externality is a congeries of items that constitute four distinct factors at the individual level (Leung et al., 2002) but at the culture level suggest proaction in the face of external constraints. There is an outward-oriented, simplistic grappling with external forces that are construed to include fate and a supreme being. These are engaged social systems, with citizens mobilized psychologically to confront environmental difficulties and expected to succeed.

Dynamic Externality is the culture-level reflection of the belief structures that form part of the psychological constellation conducive to such mobilization. There is a value profile at the culture level forming part of this constellation that has been identified in previous research, characterized as collectivism, hierarchy, and conservatism. Societal institutions and procedures, such as high employment, low freedom, low human rights observance, and a low percentage of GDP spent on health, all facilitate the keen application of citizens to the survival tasks of life. These nations are poorer, and aspirations for security, material

resources, and a longer life help unify the national system, crystallizing social activity and psychological orientations around generating material progress.

Societal Cynicism appears to be a new cultural dimension. It correlates only moderately with dimensions from previous culture-level studies of value and with fewer of these established dimensions. Given the deliberate comprehensiveness of these value measures (e.g., Schwartz, 1994 a), it may well be that this cultural constellation does not have as pronounced a motivational profile at the cultural level but represents a predominantly cognitive apprehension or assessment of the world confronting people. This world is believed to produce malignant outcomes for those living in nations high on Societal Cynicism. Citizens believe that they are surrounded by "a nature red in tooth and claw" and are suppressed by powerful others and subjected to the depredations of willful and selfish individuals, groups, and institutions.

After controlling for national wealth, the associations of this national belief structure include citizens who are, on average, distrustful, unhappy, and dissatisfied with life. They are withdrawn and unreliable. There is somewhat lower voter turnout and high growth competitiveness in these nations. Some of these correlates are, in fact, the very items that constitute Inglehart and Baker's (2000) dimension of Survival versus Self-Expression dimension, so it is no surprise that Societal Cynicism correlates most highly with their dimension, composed as it is of heterogeneous types of construct. We regard most of Inglehart and Baker's items as behavioral and personological consequences of the cognitive assessment of the world we have labeled Societal Cynicism.

Issues of distinctiveness aside, one wonders what other unmeasured features of these nations might be responsible for the psychological pall characterizing their citizenry? Could it be a history of civil and international warfare, of colonization by foreign powers, of major political conflicts, of frequent economic disasters? We are currently examining these possible precursors and supports for Societal Cynicism.

RELATIONSHIP BETWEEN INDIVIDUAL-LEVEL AND CULTURE-LEVEL FACTORS

Although we have collected individual measures of belief taken from persons in 41 nations, we have treated these data at the culture level in our analyses. Each nation was represented by an average score on an item, and these 60-item averages were then factor analyzed. Any subsequent results and interpretation drawn from these results thus concern nations, not individuals. A number of consequences follow from this shift of focus from the individual to the nation. First, there will be no necessary overlap or parallelism in the structure of the factors that emerge from these two levels of analysis, and only under certain conditions will such convergence be found (Leung & Bond, 1989). Such a conjunction appears to have occurred with the identification in the present study of Societal Cynicism. Although Societal Cynicism includes more items than does the pan-cultural individual-level factor of Social Cynicism, they obviously target the same content. As such, they constitute what Leung and Bond (1989) labeled a "strong etc." This outcome contrasts starkly with that for Dynamic Externality, which is a hodgepodge of items from four of the five factors of social axioms identified at the individual level of analysis (Leung & Bond, 2004). For this factor, there is no structural similarity across the individual and the cultural levels, yielding a clear disjunction in content.

Regardless of similarity or dissimilarity in factor composition across levels, a second consideration must be raised. Ecological-level and individual-level factors tap into constructs that function at different levels and must consequently be a part of different theoretical discourses (Leung, 1989). For this reason, the factors should always be labeled differently, with the content of the labels appropriate for the level of analysis to which they are applied. Culture-level factors characterize cultures and are part of our developing understanding of how cultures emerge, how they may be characterized, and how they manifest themselves in the domains of institutional process and citizen dynamics (Schwartz, 1994 a). Individual-level factors, on the other hand, are typically identified within only one cultural group, but more recently, they are being identified as constituted in metrically equivalent ways across many cultural groups (e.g., Schwartz, 1992, 10 domains of value). Regardless of their cultural range, these individual-level factors are part of a psychological discourse subject to routine disciplinary consideration with respect to their origins in genetics and socialization, their linkages within the nomological network of other personality constructs, and their consequences in social interactions and life outcomes. This network is currently being elaborated for social axioms (Leung & Bond, 2004).

DIRECTIONS FOR FUTURE RESEARCH

As mentioned above in considering societal cynicism, it is intriguing to speculate about what aspects of a nation's history and current institutional profile are related to variations on culture-level dimensions of social axioms. Just as Hofstede (1980) did before, we have linked these scores to many features of a nation's economic and political functioning. In this regard, all social scientists are limited by the type of national indicator currently available. Cognitive and motivational outcomes characterizing a nation's citizenry derive from more than current features of its economic and political institutions. More and different types of social indicators are needed, along with measures of change across both short and long periods in a nation's development. A cultural system, in both its objective and subjective manifestations, is responsive and adaptive (Berger & Luckman, 1966). Such subjective manifestations as beliefs will shift in response to changes in objective circumstances, both in terms of newly available resources and emerging constraints. Mapping of these subjective shifts will be potentiated by the availability of national indicators more likely to be connected to these subjective outcomes. We hope for the development of such indices by our colleagues in law, criminology, architecture, political science, anthropology, and sociology.

To this point, cross-culturalists have tended to focus on measures of psychological processes, such as self-esteem, values, even personality itself, when doing culture-level research. There are other ways to understand cultures scientifically (Bond, 2001). Even when approaching culture psychologically, a much more behavioral focus may be taken. Levine's work (Levine & Nozzenayan, 1999; Levine, Norenzayan, & Philbrick, 2001) is rare in its comparison of such behavioral outcomes as pace of life and helping across nations. As Berger and Luckman (1966) remind us, these behaviors are individual objectifications of the subjective, and when aggregated across a nation's population, they may act on the social system from which they emerge to shape that social fabric. Any scientific analysis of cultural functioning needs behavioral building blocks to help construct a complete picture of the cultural edifice. We hope for international collaboration from our colleagues in psychology to bring such behavioral comparisons across nations and cultures to the scientific light of day.

APPENDIX

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