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Social Axioms: The Search for Universal Dimensions of General Beliefs about How the World Functions

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What is This?

To broaden our conceptual framework for understanding cultural differences, the present article reports two studies that examined whether pancultural dimensions based on general beliefs, or social axioms, can be identified in persons from five cultures. A Social Axioms Survey was constructed, based on both previous psychological research primarily in Europe and North America on beliefs and qualitative research conducted in Hong Kong and Venezuela. Factor analyses of these beliefs from student as well as adult samples revealed a pancultural, five-factor structure, with dimensions labeled as: cynicism, social complexity, reward for application, spirituality, and fate control. In the second study, this five-factor structure, with the possible exception of fate control, was replicated with college students from Japan, the United States, and Germany. The potential implications of a universal, five-factor structure of individual social beliefs were discussed, along with the relation of this structure to indigenous belief systems and to culture-level analyses.

SOCIAL AXIOMS
The Search for Universal Dimensions of
General Beliefs About How the World Functions

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Culture has long been a fuzzy concept, and numerous attempts have been made to define and measure it (e.g., Kroeber & Kluckhohn, 1952; Rohner, 1984). The now-classic work of Hofstede (1980) on work-related values represented a major step forward in classifying cultures. For instance, individualism-collectivism, one of his cultural dimensions, has been used to account for a wide range of cross-cultural similarities and differences among nations (e.g., Triandis, 1995). Subsequently, several major projects have adopted a similar approach in the search of cultural dimensions. Using values salient to the Chinese people, the Chinese Culture Connection (1987) identified one additional dimension that Hofstede (1980) did not capture, Confucian work dynamism, or short-term versus long-term orientation (Hofstede, 1991). Schwartz (1994) has established a more psychologically grounded mapping of cultures with seven cultural-level value dimensions. Finally, Smith, Dugan, and Trompenaars

(1996) identified three major value dimensions at the cultural level. Smith and Bond (1998, chap. 3) concluded that these different surveys produced converging results despite differences in instrumentation, subject populations, and time periods during which the data were collected.

The value-based approaches to culture described above have all been pitched at the national level. However, both Schwartz (1992) and Bond (1988) have provided value-based approaches to cultural differences pitched at the individual level of analysis. That is, the domains or dimensions along which people from different nations may be compared in their studies were derived by analyzing the data in ways that adduce individual-level constructs, thereby enabling researchers to compare people rather than nations (Leung & Bond, 1989).

LOOKING BEYOND VALUES: GENERAL BELIEFS

The above review makes it clear that value dimensions have been the dominant construct used to guide cross-cultural research. This monolithic focus has led to important progress, but it is also clear that we need to search for additional constructs to conceptualize cultural dimensions and to explain cultural differences. These new constructs will serve at least two purposes: They may yield information about cultural variations that cannot be detected by the value perspective and/or they may provide needed triangulation for well-known results based on values.

An obvious choice for a complementary framework is beliefs, which are known to relate to a variety of social behaviors (Fraser & Gaskell, 1990; Furnham, 1988). For instance, locus of control, a general belief about the causes of events that happen to oneself, has been shown to be related to a wide variety of behaviors (e.g., Spector, 1982). Parental beliefs about child rearing are found to be related to parenting behaviors (Sigel, McGillicuddy-Delisi, & Goodnow, 1992), and general beliefs about human nature, such as trustworthiness, are related to various interpersonal behaviors (Wrightsman, 1992). Furthermore, beliefs are sometimes more useful than values in explaining cross-cultural differences in specific, individual behaviors (Leung, Bond, & Schwartz, 1995).

The primary objective of the present research is to explore whether a common set of beliefs can serve as a basis for understanding individuals in all cultures and understanding cross-cultural differences in behavior. As the first step in this new research direction, we report two studies that explored the factor structure of a diverse set of beliefs in five cultures. Unlike Hofstede's (1980) work, but similar to Schwartz's (1992) analysis of value types, our two studies were pitched at the individual level and examined whether a stable factor structure of beliefs can be identified among individuals in each of these cultural groups.

SOCIAL AXIOMS

Unlike values, beliefs vary widely along the continuum of specificity (Hahn, 1973). Some beliefs are very specific and are defined by the actors involved, the setting, and even the time period. For instance, we may develop specific beliefs about a restaurant we often visit (e.g., the lobster soup is freshest on Mondays), or people we know (e.g., Ming is often irritable just after waking up). Beliefs of this type are numerous and are only applicable to a narrow range of situations and actors. To understand the beliefs that are tied to a specific context, research is needed to uncover the salient beliefs in those contexts, as is often the case in the use of attitudinal models to predict specific behaviors (Fishbein & Ajzen, 1975).

In contrast, some beliefs are very general and may be viewed as "generalized expectancies," a concept introduced by Rotter (1966) to characterize locus of control. These general beliefs are pitched at a high level of abstraction and hence are likely to relate to social behaviors across a variety of contexts, actors, targets, and time periods. We label such general beliefs as *social axioms* in the sense that, like axioms in mathematics, these beliefs are basic premises that people endorse and use to guide their behavior in different situations. These beliefs are axiomatic because they are often assumed to be true as a result of personal experiences and socialization but not as a result of scientific validation.

Following the functionalist approach in the study of attitudes, we regard social axioms as important for human survival and functioning (Katz, 1960; Kruglanski, 1989). Social axioms also serve the following four major functions of attitudes: They facilitate the attainment of important goals (instrumental), help people protect their self-worth (ego-defensive), serve as a manifestation of people's values (value-expressive), and help people understand the world (knowledge). In sum, we argue that social axioms play a central and organizing role in people's belief systems, and that their major function is to enhance the survival and functioning of people in their social and physical environments.

Such a functionalist argument was also adopted by Schwartz (1992) in his cross-cultural project on values. Because of the universal problems that humans have to tackle for survival and effective functioning, Schwartz (1992) argued that people from diverse cultural backgrounds should develop a common scheme of value types to guide their actions and choices. Specific cultural contexts would then shape the relative strength of each cultural group's endorsement of these value types. Consistent with this argument, his multinational study demonstrated the universality of 10 value types across very diverse cultural groups. As mentioned before, Schwartz's (1992) work was pitched at the individual level because his unit of analysis was the individual and his theoretical analysis psychological rather than societal. Following the functionalist argument in these research traditions, we propose that social axioms, similar to values, are also instrumental to survival and effective functioning and hence should be pancultural. In other words, because people in every culture have to deal with similar problems for effective functioning, this commonality should lead to the emergence of similar types of social axioms across individuals from diverse cultural backgrounds. Obviously, the fact that these social axioms are recognizable by people of diverse cultural origins does not mean that they endorse them to the same extent. The extent to which a given dimension of social axioms is endorsed by people in a given culture represents the solution of that cultural group to that fundamental issue.

A FORMAL DEFINITION OF SOCIAL AXIOMS

Beliefs have been defined in many different ways, and the following three definitions are representative.

> A description and perception of an object, its characteristics, and its relationship with other objects. (Katz, 1960)

> If a man perceives some relationship between two things or between something and a characteristic of it, he is said to hold a belief. (Bem, 1970)

> A proposition to which a person attributes at least a minimal degree of confidence. A proposition, as a statement about an object(s) or relations between objects and/or attributes, can be of any content. (Bar-Tal, 1990)

The above definitions suggest that typically, a belief refers to a perceived relationship between two objects or concepts, and that the perceived strength of the relationship may vary across individuals. We propose the following formal definition of social axioms:

> 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.

Following this definition, a typical social axiom has the structure—A is related to B. A and B can be any entities, and the relationship can be causal or correlational. The perceived strength of the relationship may vary across individuals. For instance, "good things will happen to good people" is a typical example of an axiom, and people may endorse this belief to a different degree. Social axioms are different from values, which assume the form "A is good/ desirable/important." Conceptually, it is possible to further distinguish between attitudes (A is good/desirable) and values (A is important). Many researchers actually regard a value or an attitude as an evaluative belief. In our conceptualization, when the desirability pole of an evaluative belief becomes specific, it turns into a social axiom. For instance, "Good health is important" and "Wars are bad" are evaluative beliefs, and we would classify them as a value or an attitude rather than as an axiom. On the other hand, "Wars will lead to the destruction of civilization" and "Good health leads to success in work" are regarded as social axioms because each statement spells out the relationship between two concrete entities.

Social axioms are also different from normative beliefs, which are prescriptive statements that do not address the relationship of two entities. "We should help the poor" is a normative belief but not a social axiom. A major difference between these two types of beliefs is that a normative belief represents what is regarded as a proper course of action, whereas an axiomatic belief represents one's view about how the world functions. It should be noted that virtually all scales on beliefs contain a congeries of social axioms, values, attitudes, as well as normative beliefs (e.g., see the belief scales included in Robinson, Shaver, & Wrightsman, 1991). Even the famous locus of control belief scale by Rotter (1966) has a combination of axiomatic and normative statements. For instance, the statement, "One should always be willing to admit mistakes" is a normative statement. Normative statements, such as "Do you believe that parents should allow children to make most of their own decisions?" can also be found in the Nowicki-Strickland Internal-External Locus of Control scale (Nowicki & Duke, 1983). Thus, the present study is also unique in that it is the first systematic effort at developing a scale that is entirely based on belief statements.

STUDY 1

Because previous research on beliefs is extensive in Europe and North America, we began identifying social axioms by reviewing the Euro-American literature on beliefs. To provide a cultural balance to the axioms included, we also included cultural input from one Asian group (Hong Kong Chinese) and one South American group (Venezuelans). Social axioms were extracted from interviews with research participants as well as from everyday cultural products from these two cultures. The social axioms identified were then combined with the axioms culled from the Western psychological literature to develop the Social Axioms Survey (SAS). This survey was administered to students and adults in these two societies, and factor analysis was used to identify culture-general dimensions of social axioms.

METHOD

Identification of Social Axioms

A variety of approaches were adopted to identify social axioms for inclusion in the SAS.

*Literature review.*The psychological literature in English on beliefs was gathered from three volumes of survey instruments, which contain a total of more than 300 scales (Miller, 1991; Robinson et al., 1991; Stewart, Hetherington, & Smith, 1984). Items were screened in if they are consistent with our definition of social axioms.

Interviews. Participants were interviewed in Hong Kong and in Venezuela. They were asked to respond to three sets of questions: (a) the beliefs and principles that guide their inter-actions with others, and their beliefs about everyday matters, (b) beliefs with regard to the self, other people, social relations, social groups, the environment, and the supernatural, and (c) beliefs with regard to issues on health, love, marriage, society, politics, religion, entertainment/recreation, work, family, sports, and life in general.

In Hong Kong, 265 (125 females and 140 males) citizens were approached at random in public places and interviewed. They were asked to provide answers to one of the above three sets of questions, with the interviews lasting for 10 to 15 minutes. In addition, 12 introductory psychology students (6 males and 6 females) were interviewed and were asked to respond to all three sets of questions.

In Venezuela, a total of 42 adults (22 men and 20 women) were invited to participate in an in-depth interview with regard to all three sets of questions. Each interview lasted for about 60 minutes. Twenty-six respondents were from cities, and the remaining 16 were from rural areas.

Content analysis. Content analyses were made of samples from Chinese newspapers, magazines, popular songs, primary and secondary textbooks, and compilations of proverbs for the possible extraction of social axioms. Newspapers, magazines, popular songs, anthologies of Venezuelan literature and poetry, sociolinguistic studies of Venezuelan Spanish, and Venezuelan folklore were also reviewed. A book of 1,115 popular Venezuelan sayings (Martinez & Landaeta, 1973) provided a good source for many of the axioms extracted.

Developing the SAS

In identifying social axioms from the materials collected, we extracted statements that fit our definition of social axioms. In Hong Kong, we identified almost 2,000 such statements, and in Venezuela, more than 1,100 were culled from various sources. More than 1,000 items were drawn from the psychological literature. In condensing this voluminous collection, similar statements were eliminated, and many statements were rewritten to render them context free and/or less idiomatic or metaphorical. To check the scope of the beliefs collected, statements about similar topics and issues were grouped into the following four broad categories.

- Psychological attributes: Axioms concerning characteristics of individuals
- Orientation toward the social world: Axioms about the social characteristics of groups, organizations, and societies

- Social interaction: Axioms about how people interact with each other
- Environment: Axioms about aspects of the environment that have implications for social behavior

To check the coverage of the items and their completeness, a conceptual approach was adopted at this point. Based on the meaning of the items, 33 subcategories were formed, each with a few items. For subcategories that did not have sufficient items, new items were generated based on our understanding of the nature of the category.

The final version of the SAS contained 182 items, all phrased in a simple language. A 5-point scale was used for the items, with labels ranging from *strongly believe*, *believe*, *no opinion* to *disbelieve*, and *strongly disbelieve*. Three language versions were developed—Chinese, English, and Spanish, with the English version as the standard. The method of back-translation was used to check the quality of the translation, and changes made where inaccuracies had been revealed through the process.

Participants in the Survey

The SAS was administered to 128 introductory psychology students and to 230 citizens in Hong Kong, with a total sample of 358. Citizens were randomly approached in public areas and asked to complete the questionnaire, with an acceptance rate of about 70%. They were presented with a gift afterward for their assistance. In the sample, there were 163 males and 195 females. With regard to age distribution, 38.3% were in the "20 or below" group, 31.0% in the "21 to 30" group, 10.9% in the "31 to 40" group, 11.2% in the "41 to 50" group, 6.7% in the "51 to 60" group, and 2.0% in the "60 or over" group.

In Venezuela, the survey was administered to 100 students from three universities and to 122 adults from metropolitan areas. A total of 19 questionnaires were rejected due to substantial missing data, resulting in a usable sample of 203 participants (95 students and 108 adults; 93 males and 110 females). Their participation in the study was voluntary. With regard to age distribution, 32.0% were in the "20 or below" group, 27.6% in the "21 to 30" group, 17.3% in the "31 to 40" group, 13.9% in the "41 to 50" group, 7.4% in the "51 to 60" group, and 1.5% in the "60 or over" group.

RESULTS

Cluster analysis was first conducted in each culture to look for major clusters among the items, so that the interpretation of factors in the subsequent factor analysis would be made easier (Gorsuch, 1983, p. 211). Factor analysis was then conducted to identify the factors underlying the items. Conventional wisdom suggests that the number of respondents should be 5 to 10 times the number of items in a factor analysis. However, Guadagnoli and Velicer (1988) and Goldberg and Digman (1994) have argued that in contrast to conventional wisdom, the range of the sampling variation of the correlation coefficients under study is more important than the item-respondent ratio in a factor analysis. Thus, the fact that the survey contains 182 items should not be a problem because both samples were quite large, resulting in adequate estimates of the population correlations. The Venezuelan sample is smaller ($n =$ 203), but it exceeds the minimum of 100 participants required (Kline, 1994, p. 73).

Three to nine factor solutions were examined for each culture, using both varimax and oblique rotations. Shape of the scree plots and interpretability of factors were used as criteria to determine the optimal number of factors. For both cultures, both criteria pointed to a five-factor solution as optimal. Furthermore, an inspection of the items constituting the factors

indicates that the five factors showed considerable overlap in its content across the cultures. We preferred the orthogonal solution because it is similar to the oblique solution and it is easier to interpret.

A factor analysis, based on a combined sample of the two groups of respondents, was then conducted. To avoid the effects of cultural differences in the means of variables, we follow the procedure recommended by Becker (1996) for the meta-analysis of factor structures. The correlation matrix of each cultural group was transformed by the Fisher transformation and averaged to generate a combined matrix, which was then transformed back to a correlation matrix for factor analysis. This procedure weights each culture's correlation matrix equally and assumes that each cultural group's sample provides the best approximation available of correlations in its population.

The method for extraction was based on principal components analysis, and varimax rotation with Kaiser normalization was used. All the items with a relatively high loading (absolute size > .25) were examined, and items were screened in terms of their consistency with the rest of the items in their factor. Some items that showed a relatively high loading but seemed inconsistent with the meaning of the factor were discarded.[1] This procedure is necessary because a diverse pool of items were included in the analysis. An item may load on a factor not because it represents the construct measured by the factor but because of random error or because it represents a different construct that shows a correlation with the factor. Using these considerations, 60 items were selected to define the five factors. A new factor analysis based on the combined sample with these 60 items was conducted, and Table 1 presents the loadings of the items that define each factor.

Factor 1 is labeled *cynicism* because the items represent a negative view of human nature, a biased view against some groups of people, a mistrust of social institutions, and a disregard of ethical means for achieving an end. The second factor is labeled *social complexity* because the items in this factor suggest that there are no rigid rules but rather multiple ways of achieving a given outcome and that inconsistency in human behavior is common. The third factor is labeled *reward for application* because the items represent a general belief that effort, knowledge, and careful planning will lead to positive results. The fourth factor is labeled *spirituality* as the items refer to the existence of supernatural forces and the functions of religious belief. The fifth factor is labeled *fate control* as the items represent a belief that life events are predetermined and that there are some ways for people to influence these outcomes. The variances accounted for by these five factors are: 8.89%, 7.94%, 5.22%, 4.09%, and 3.28%, respectively.

To check whether this five-factor solution provides a good fit for each country, we performed a Procrustes rotation to check how closely the factor structure of each cultural group resembles the common structure (See van de Vijver & Leung, 1997, chap. 4). For each country, the five-factor model was obtained by rotating the factor structure toward the common factor structure. Congruence coefficients were calculated to evaluate the fit between the resultant factor structure and the common structure. For Hong Kong, the coefficients ranged from .88 to .98. For Venezuela, they ranged from .90 to .97. Although these numbers do not suggest a perfect fit for some of the factors, we conclude that the common factor structure provides an adequate model for each of the cultural groups.

Discussion

The five factors identified seem to be coherent and meaningful. Cynicism is reminiscent of Machiavellianism (Christie & Geis, 1970), the belief that being manipulative is an

TABLE 1
Five-Factor Solution for the Combined Sample

Item	Factor 1 Cynicism	Factor 2 Social Complexity	Factor 3 Reward for Application	Factor 4 Spirituality	Factor 5 Fate Control
Powerful people tend to exploit others	0.593				
Power and status make people arrogant	0.544				
Kind-hearted people are easily bullied	0.501	0.306			
Significant achievement requires one to show no concern for the means needed for that achievement	0.478				0.275
Kind-hearted people usually suffer losses	0.477				
Old people are usually stubborn and biased	0.475				
Young people are impulsive and unreliable	0.466				
It is easier to succeed if one knows how to take shortcuts	0.441				
Females need a better appearance than males	0.440				
It is rare to see a happy ending in real life	0.432				
People will stop working hard after they secure a comfortable life	0.423				
People deeply in love are usually blind	0.408				
To care about societal affairs only brings trouble for yourself	0.401	−0.302			
Most people hope to be repaid after they help others	0.368				
Harsh laws can make people obey	0.357				
Old people are a heavy burden on society	0.353	−0.317			
The various social institutions in society are biased toward the rich	0.341				
Humility is dishonesty	0.251	−0.311			
One's behaviors may be contrary to his or her true feelings		0.578			
People may have opposite behaviors on different occasions		0.572			
One has to deal with matters according to the specific circumstances		0.536			
There is usually only one way to solve a problem		0.494			−0.259
Human behavior changes with the social context		0.452			
There are phenomena in the world that cannot be explained by science		0.447		0.353	
Current losses are not necessarily bad for one's long-term future		0.416			
To deal with things in a flexible way leads to success		0.410			
To plan for possible mistakes will result in fewer obstacles		0.389			
To experience various lifestyles is a way to enjoy life		0.350			
Individual effort makes little difference in the outcome		0.260			−0.324

(continued)

TABLE 1   Continued

Item	Factor 1 Cynicism	Factor 2 Social Complexity	Factor 3 Reward for Application	Factor 4 Spirituality	Factor 5 Fate Control
One's appearance does not reflect one's character		0.144			−0.254
One will succeed if he/she really tries			0.602		
Adversity can be overcome by effort		0.288	0.596		
Every problem has a solution			0.514		
Good deeds will be rewarded, and bad deeds will be punished			0.505		0.324
Hard-working people will achieve more in the end			0.505		
One who does not know how to plan his or her future will eventually fail			0.504		
Knowledge is necessary for success			0.501		
The just will eventually defeat the wicked			0.484		0.258
Competition brings about progress		0.309	0.451		
Social justice can be maintained if everyone cares about politics			0.366		
Failure is the beginning of success		0.281	0.338		
A modest person can make a good impression on people			0.315		
Caution helps avoid mistakes			0.297		
Mutual tolerance can lead to satisfactory human relationships		0.455	0.291		
Belief in a religion helps one understand the meaning of life				0.691	
Belief in a religion makes people good citizens				0.651	
Religious faith contributes to good mental health				0.634	
There is a supreme being controlling the universe		0.264		0.625	
Religious people are more likely to maintain moral standards				0.525	
Religion makes people escape from reality	−0.328			0.525	
Ghosts or spirits are people's fantasy		0.254	−0.260	0.472	
Religious beliefs lead to unscientific thinking	−0.301			0.440	
Individual characteristics, such as appearance and birthday, affect one's fate					0.655
Good luck follows if one survives a disaster					0.552
Fate determines one's successes and failures					0.551
There are certain ways to help us improve our luck and avoid unlucky things					0.535
There are many ways for people to predict what will happen in the future					0.432
All things in the universe have been determined					0.417
A person's talents are inborn					0.416
Most disasters can be predicted					0.242

NOTE: Some items are recoded so that all primary loadings are positive regardless of the actual wording. Hong Kong sample: $N = 358$; Venezuela sample: $N = 203$, equally weighted.

effective general strategy for getting ahead of others. However, cynicism is broader in scope because it includes a negative view of people, a mistrust of social institutions, as well as negative stereotypes about certain groups (e.g., old people are usually stubborn and biased). We may even speculate that this factor may correspond to the well-known evaluative dimension in person perception (Norman, 1963) and in general meaning (Osgood, Suci, & Tannenbaum, 1957). It seems sensible that an evaluative dimension is salient in people's perception of the social world (it is a benevolent vs. dog-eat-dog world) and functions to guide their general expectations for emerging events.

The belief dimension of social complexity seems distinct and does not resemble any previous scales. This scale measures whether the social world is complex, whether there are no general rules that will always work, and whether social behavior may be contradictory across different contexts. This dimension is important because one needs to know whether one can always rely on methods that worked before, or should one guide one's behavior based on situational changes? This dimension shows some resemblance to self-monitoring (Snyder, 1974), but it focuses on all aspects of the outside world rather than only on others' reactions to one's behavior as in self-monitoring. This dimension suggests that some people are intuitive social psychologists who are sensitive to situational variability on behavior.

Reward for application is reminiscent of the Protestant work ethic, which emphasizes the benefits of effort and hard work. Reward for application is broader, however, in that it includes the theme of a just world: Effort will lead to pay-offs for the effort-making person. The importance of this dimension is obvious because people need to know whether trying hard is useful in their social environment; coping strategies are immensely different, depending on whether outcomes from one's social environment are judged to be contingent or noncontingent on effort.

Spirituality refers to the belief in the existence of supernatural factors and in the impact of religion on people's lives. Religious beliefs are prominent in all cultures, and the belief in spirituality and its consequences should influence a variety of behaviors, such as career choices and choice of leisure time activities and associates.

Fate control seems to relate to locus of control, which is concerned with the belief whether one can control the events happening to oneself. Fate control is, however, a broader construct because it includes the additional theme that events are both predetermined and predictable. It is well known that locus of control is related to a wide variety of behaviors. Fate control, which combines locus of control, predictability, and fatedness, has obvious behavioral implications for taking action to influence those fated outcomes. In contrast, reward for application probably then concerns behavioral domains that are not fated.

STUDY 2

These five factors identified in Study 1 seem to have clear implications for behavior and are consistent with a functionalist approach to social axioms. Before we accept these five factors as universal dimensions for understanding cultural differences and similarities, however, they need to be replicated in other cultural settings. The second study was designed to assess these social axiom dimensions in three more cultural groups: the United States, Japan, and Germany. The United States and Germany, being individualistic cultures according to Hofstede (1980), provide a good contrast to the two generally collectivistic groups included in Study 1. Furthermore, the United States and Germany also extend the coverage of religions as they are both primarily Protestant, whereas Venezuela is primarily Catholic, and

Hong Kong has a Buddhist tradition. Finally, like Hong Kong, Japan is generally collectivistic and Buddhist, but Japan is much higher in uncertainty avoidance and masculinity than is Hong Kong (Hofstede, 1980). If the same five dimensions of social axioms can be identified in these three cultural groups, their probable status as universal dimensions will be enhanced.

METHOD

Participants and Procedure

University students in the United States (25 males and 89 females), Germany (45 males and 54 females), and Japan (93 males and 118 females from two universities) participated in the study, completing the SAS in small groups. The U.S. and German students received course credits for their participation, and the Japanese students were volunteers. The SAS was translated into Japanese and German from the English version, with accuracy checked by back-translation. This version only contained the 60 items identified in Study 1. Because of resource constraints, the German participants only responded to 33 items randomly selected from the 60 items. There were 12 items from cynicism, 4 items from reward for application, 7 items from social complexity, 4 items from fate control, and 6 items from spirituality.

RESULTS

Given that five dimensions of social axioms had been identified in Study 1, confirmatory analysis (CFA) was used to evaluate their replicability in the three new cultural groups. CFA is preferable to an exploratory approach because it allows a precise estimate of the fit between the data and the theoretical model. Because the shorter instrument still contains as many as 60 items, the number of parameters to be estimated is large. We adopted a procedure to reduce the number of parameters by randomly combining a few items to form "parcels." The use of scales rather than individual items as indicators is common for estimating complex structural equations models (e.g., Hom & Griffeth, 1994; Leung, Su, & Morris, 2001). For instance, the big five model of personality is often tested at the facet level rather than at the individual item level and these facets function as parcels to reduce the number of parameters tested (e.g., McCrae, Yik, Trapnell, Bond, & Paulhus, 1998; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996).

In our analysis of the Japanese and U.S. data, two to four parcels were formed for each factor, with each parcel containing four to five items randomly grouped together. Because fewer items were used in the German data set, two to three parcels were used for each factor, with each parcel containing two to four items.

For the U.S. sample, the CFA results confirmed the five-factor model. The fit indexes all point to a good fit between the five-factor model and the data, with a goodness-of-fit index of .919. For the Japanese sample, the fit between the data and the five-factor belief model was adequate, with a goodness-of-fit index of .879. For the German data, the fit between the data and the five-factor belief model was very good, with a goodness-of-fit index of .950 (see Table 2 for other fit indexes). In short, the CFA results suggest that the five-factor model is identifiable in these three different cultural groups.

As in Study 1, Procrustes rotation, a more stringent test because it is done at the item level, was used to check the results of the CFA. Because the German data did not include all 60 items, only Japan and the United States were included in this analysis. The five-factor model

TABLE 2
Fit Indexes for the Confirmatory Factory Analysis

Country	χ^2	df	χ^2/df	GFI	CFI	RMR
United States	73.8*	67	1.10	.919	.969	.017
Japan	188.8	67	2.82	.879	.901	.030
Germany	32.9*	44	.75	.950	1.00	.032

NOTE: GFI = goodness-of-fit index. CFI = comparative fit index. RMR = root mean squared residue.
*$p < .01$.

was obtained in each nation by rotating the factor structure toward the common structure identified in Study 1. Congruence coefficients were then calculated between the corresponding factors (see Table 3 for results). The reliability coefficients for each factor for each cultural group are also provided in the last column of Table 3. We should note that for perfect congruence, a coefficient at .90 or .95 is expected, and the coefficients we obtained were below these values. However, for our present purposes, we are looking for a high degree of factor similarity rather than for perfect congruence. There is no hard and fast rule for deciding how much similarity is sufficient for the claim of universality, and we will not evaluate the results in terms of a cutoff value.

The results showed that for Japan, spirituality and fate control showed lower congruences (.69 and .68 respectively), whereas for the United States, social complexity (.70) and fate control (.52) showed lower congruences. Thus, fate control is relatively problematic for both groups, whereas other dimensions are reasonably congruent. For both groups, the diagonal entries are substantially larger than the off-diagonal entries, suggesting that there is a clear one-to-one correspondence between the factors. We may conclude that the five factors are distinct and identifiable in these two culture groups despite showing variable degrees of factor similarity.

DISCUSSION

The CFA results clearly support the five-factor model in the United States, Japan, and Germany, whereas the results based on Procrustes rotation show that that four factors seem to be fairly congruent, with the exception of fate control. In any event, this result is encouraging, as these three cultural groups are diverse and differ from the two cultural groups studied in the first study in significant ways. The substantial convergence of results across these two studies suggests that at least four factors identified have the potential to pancultural. At this point, it is too early to tell whether fate control is culture-specific, and the remaining four factors are culture-general. We need data from many more cultures to ascertain the probable truth of these two conjectures.

The use of parcels in the current study may be viewed by some statistical purists as suboptimal because this analytic strategy has not utilized all the available information carried by each individual item. However, the rationale for our use of this approach is based on three considerations. First, models with many parameters are highly likely to be rejected in a confirmatory factor analysis. Second, cross-cultural research involves many steps that are likely to generate random errors, such as translation and procedures followed in administering questionnaires (van de Vijver & Leung, 1997). The use of parcels may safeguard against some random biases because random errors associated with individual items are likely to be cancelled out when they are pooled to form a parcel. Third, our goal is to identify broad

TABLE 3
Results of Procrustes Rotation

Target	Cynicism	Social Complexity	Reward for Application	Spirituality	Fate Control	Reliability Coefficients
Hong Kong						
Cynicism	0.973	–0.006	0.065	–0.069	0.334	.796
Social complexity	–0.006	0.882	0.331	0.194	–0.127	.722
Reward for application	0.064	0.306	0.961	0.134	–0.007	.781
Spirituality	–0.066	0.176	0.133	0.977	–0.024	.806
Fate control	0.328	–0.118	–0.007	–0.024	0.948	.699
Venezuela						
Cynicism	0.967	–0.062	0.012	0.043	0.340	.734
Social complexity	–0.053	0.934	0.321	0.037	–0.249	.615
Reward for application	0.014	0.367	0.912	0.168	–0.086	.695
Spirituality	0.043	0.042	0.175	0.922	0.101	.614
Fate control	0.331	–0.274	–0.085	0.093	0.896	.607
Japan						
Cynicism	0.879	0.020	–0.038	–0.067	0.261	.789
Social complexity	0.023	0.801	0.363	0.059	–0.262	.593
Reward for application	–0.041	0.343	0.840	0.104	0.068	.708
Spirituality	–0.082	0.059	0.109	0.685	0.211	.562
Fate control	0.303	–0.257	0.070	0.210	0.679	.568
United States						
Cynicism	0.821	0.018	0.088	0.019	0.239	.637
Social complexity	0.020	0.698	0.252	–0.012	–0.170	.446
Reward for application	0.083	0.251	0.712	0.241	0.090	.582
Spirituality	0.015	–0.009	0.194	0.800	0.116	.792
Fate control	0.213	–0.159	0.085	0.137	0.521	.538

factors of social axioms across very diverse cultures, and the items selected are unlikely to be the best items for any given culture. Obviously, locally derived items, being sensitive to local issues, should show better reliability and validity than our pancultural items (Cheung & Leung, 1998). However, we argue that our pancultural items are adequate markers for the factors that we identify and that their adequacy is exactly what we have demonstrated in the two data sets reported.

A similar logic has been adopted by Schwartz (1992) in his search for universal value types. In assessing the usefulness of specific values as universal markers for value types across cultures, he found that 44 out of 46 markers were located in the correct value type in 70% or more of the samples. Although many of the mismatches are found in adjacent regions, this "good enough" logic is apparent in this operational definition of a universal marker. Another example comes from the Big Five model of personality mentioned before. Its cross-cultural validity is typically tested at the facet rather than the item level because it is impossible to confirm a factor model defined by 240 items with a confirmatory or Procrustes procedure!

GENERAL DISCUSSION

Despite the long history of research on beliefs in a variety of disciplines, Hahn (1973) concluded, "Yet rarely, if at all, are beliefs and belief systems systematically stated or

analyzed" (p. 207). Considerable progress has been made since Hahn drew this conclusion (e.g., Bar-Tal, 1990; Garfield, 1988; Kruglanski, 1989), although a systematic, comprehensive analysis of the nature of beliefs has yet to be done. The current project may provide an important first step in filling this gap. At least four of the belief factors identified are likely to be pancultural dimensions that may be used to classify individuals in any culture and to compare individuals within and across cultures. This possibility is exciting because as noted before, cultural dimensions using psychological constructs are currently based on values. The belief dimensions identified may eventually lead to the development of a new perspective on cultural differences and similarities.

The initial steps in developing a framework of social axioms are (a) to identify major social axioms that are likely to be pancultural, (b) to uncover the basic dimensions at the individual level that may be used to characterize these social axioms, and (c) to evaluate the generality of this dimensional structure across a large number of cultures. These steps sound simple but will require many studies to achieve acceptable results. The present article represents the first step in this research expedition and reports results from two studies on five cultural groups. We have taken a lenient approach in our inclusion of items and in our emphasis on factor similarity rather than factor congruence because we believe that as we include more studies from other cultures, the weaker items and factors will be forced out, even with the use of lenient criteria. The use of stringent criteria will run the danger of leaving very few items and factors as the data set becomes more multicultural.

A round-the-world study is now under way for evaluating the generality of these five dimensions in as many countries as possible. Maps of cultures and of typical individuals within these cultures will be derived from these dimensions, and the resulting mappings will be compared to previous cultural maps based on values. It will be interesting to see if the cultural map based on social axioms will reveal cultural differences that are unrelated to values. It should be mentioned that each collaborator in this multicultural project has been encouraged to add culturally specific beliefs to the core set of belief items that are being tested in every culture. This procedure allows the integration of emic and etic perspectives (Yang, 2000), and it will be possible to determine how indigenous items relate to the five belief dimensions already identified. Alternatively, local collaborators will be able to determine if distinctive, emic dimensions of belief are operative in their cultural contexts.

One may raise the question whether these five dimensions are comprehensive. We have tried to cover a wide range of materials in our search for social axioms, but it is possible that some dimensions of axioms may still have been missed. We do not want to claim that our five-factor model of beliefs is complete. In fact, in our German data collection, a number of new items were administered together with our core items, and an additional dimension on interpersonal relationships, which includes beliefs about the causes of interpersonal harmony and conflict, seems likely. It is premature at this point to conclude whether this dimension is unique to Germany or pancultural, and this possibility is being explored in our global study.

Finally, one function of these social axioms is to guide behavior, as we argued in the introduction. Thus, we would expect that they should relate to a variety of social behaviors in a differential way. For instance, cynicism may be related to altruistic and trusting behavior; reward for application may be related to academic and work performance; social complexity may be related to career choices; fate control may be related to investing in certain coping strategies; spirituality may be related to career choices and choice of discretionary activities. One productive avenue for future research is to examine how these social axioms may help

explain social behavior, alone or in conjunction with other psychological constructs, as in expectancy-value theory (Feather, 1982).

NOTE

1. Interested readers can write to us for the 182 items used in the study.

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