A RE-INQUIRY OF HOFSTEDE'S CULTURAL DIMENSIONS: A CALL FOR 21st CENTURY CROSS-CULTURAL RESEARCH

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Given the impact of Hofstede's Cultural Dimensions over the past quarter of a century, many scholars and practitioners have utilized these dimensions. However, numerous researchers have questioned his methodology, while others misused the dimensions in terms of the original purpose. Yet surprisingly, very few studies have performed an exact replication. This study summarizes Hofstede's work and critiques his cross-cultural model. In order to test Hofstede's constructs on different populations, three quantitative analyses were performed using domestic U.S., Asian, and Australian samples. This study found serious problems with Hofstede's factor structure. Additionally, the study suggests the need for re-examining the cultural dimensions within the global information based context of the early 21st century. This is not meant to criticize Hofstede, but instead to pinpoint fallacies to enable researchers to build from his work in more appropriate directions.

INTRODUCTION

In 1980, Geert Hofstede published *Culture's Consequences*. This influential study soon became a major source of reference about value differences around the world. *Culture's Consequences* has been translated into numerous languages since its original publication and was fully revised in 2001. Additionally, *Culture's Consequences* has been cited more than any other book in social sciences (Yoo and Dunthu 2002). Hofstede has been cited over 5,000 times, with more than 3,000 of these citations being to *Culture's Consequences* (IACCP 2007). Hofstede's work has made it beyond higher-level research and has worked its way into everyday teachings. Many of his citations are in basic principles of marketing, international business, advertising, and consumer behavior textbooks.

Hofstede's work has inspired a multitude of international marketing research and has been the dominant research paradigm in cross-cultural studies of national attitudes for some time because of the simplicity of its theory and

applicability of its implications. Hofstede's work has inspired a great improvement in the discipline by specifying a theoretical model which serves to coordinate research efforts (Redding 1995). This theoretical model has served as the foundation for many other research efforts. In sum, Hofstede's initial four (later five) fundamental dimensions of culture still serve today as basic, fundamental criteria in most interdisciplinary, cross-culturally comparative research.

However, Hofstede's work has been misconstrued and misinterpreted in many subsequent studies. More importantly, surprisingly few exact replications, attempting to empirically examine Hofstede's factors, have been conducted. Furthermore, many subsequent studies have taken and utilized Hofstede's work with surprisingly little questioning of his results. Thus, due to the tremendous impact that Hofstede has had on the scientific community, an exact replication study is a necessary step. While replication studies may not hold the highest regard within academic research because they do not bring "anything new to the table," replication studies for works this important must be done. If not, as researchers, we will continue to utilize faulty theories and models. Thus, a replication study of Hofstede's

work is necessary in order to assess the appropriate content, as well as the reliability and validity of Hofstede's cultural dimensions.

Thus, the purpose of this study is to perform a very close replication of Hofstede's original study. To do this, first, a review of Hofstede's methodology is presented. This review was conducted because many researchers may not be fully aware of the almost haphazard manner in which the cultural dimensions were initially developed. The results of three studies designed to analyze face validity are preformed. Following these analyses, three re-inquiry studies are presented. Hofstede's instrument was obtained and reproduced with no alterations and administered with multiple international samples. The examination of the data in this study was conducted with more statistical rigor than any other replication study known to the authors. As we have progressed well into the new millennium, cross-cultural research is no doubt one of the most important subsections of marketing and international business research. It is imperative that we have a solid foundation and understanding from which to build future research.

BACKGROUND

As mentioned, Hofstde's famous study is widely recognized as a major break-through in cross-cultural social science studies. There are almost no publications, either from the disciplines of sociology, anthropology, history, law, economics or business administration, that do not refer to Hofstede's work and his five fundamental dimensions of culture when explaining correspondences and distinctions between cultures (IRIC online 2002). Geert Hofstede is among the 20 most cited Europeans in the 2000 Social Science Citation Index (Institute for Research on Intercultural Cooperation 2001), 57th in the world, with 416 articles referring to him. In fact, Hofstede's influence is becoming even more pronounced, with the number of citations increasing, not decreasing, each subsequent year. Simply put, Hofstede's dimensions are still utilized widely even as we have progressed well into the new

millennium. Thus, given the widespread acceptance of Hofstede's instrument, it was used for this research.

Hofstede's work is based on "mental programs." Due to the process of socialization, these mental programs are developed in the family in early childhood and reinforced in schools and organizations, and other areas throughout our lives, experiences, and upbringings. Thus, due to the shared common experiences of people living in the same country, these mental programs contain a component of national culture. They are most clearly expressed in the different values that predominate among people from different countries (Hofstede 1980).

From 1967 to 1972, Hofstede administered 117,000 questionnaires to employees of IBM in over 60 different countries (Hofstede 1980). His study resulted from the collaboration of researchers from five countries and his survey was pre-tested in ten countries (De Cieri and Dowling 1995). By 1980, he had developed his own cultural dimensions, Individualism-Collectivism, Power Distance, Uncertainty Avoidance, and Masculinity-Femininity.

Power distance is defined as the degree that unequal distributions of power are expected and accepted. Power distance "represents a nation's unique score on how to deal with social inequality. Inequality can occur in areas such as prestige, wealth, and power; different societies put different weights on status consistency among these areas" (Hofstede 1984, p. 65). Uncertainty avoidance is the extent to which people feel threatened by ambiguous situations and have created beliefs and institutions that try to avoid these (Hofstede and Bond 1984, p. 419-420). Individualism-Collectivism "describes the relationship between the individual and the collectivity which prevails in a given society," where "individualism is defined as a situation in which people are supposed to look after themselves" and "collectivism is defined as a situation in which people belong to in-groups or collectivities which are supposed to look after

them in exchange for loyalty" (Hofstede 1984, p. 148 and Hofstede and Bond, 1984, p. 419-420). Finally, masculinity-femininity "describes the division of social roles between women and men in a society." The predominant socialization pattern is for men to be more assertive and for women to be more nurturing. "Masculinity is defined as situation in which the dominant values in society are success, money, and things" and "femininity is defined as a situation in which the dominant values in society are caring for others and the quality of life" (Hofstede 1984, p. 176; Hofstede and Bond 1984, p. 419-420).

A group of researchers calling themselves the Chinese Culture Connection (1987) conducted further analysis of the Hofstede dimensions in Asian cultures and added a fifth dimension, Confucian Dynamism. In the 2001 edition of *Culture's Consequences*, Hofstede has included a chapter on this dimension and called it long-term versus short-term orientation. Confucian Dynamism conceptually incorporates many diverse elements of Confucian cultures. Empirically, however, Confucian Dynamism has consisted of two negatively correlated sets of items, described by the Chinese Culture Connection as a positive and a negative pole. More specifically, "there were four positively loaded values in this grouping, all reflecting Confucian work ethics." These four items were, ordering relationships, thrift, persistence, and a sense of shame – all represented by single items. "Counterpointed against this hierarchical dynamism were four negatively loaded values advocating checks and distraction at the personal, interpersonal, and social levels" (Chinese Cultural Connection 1987, p. 150). These items were, reciprocation, personal steadiness, protecting your face, and respect for tradition. Thus, Confucian Dynamism begins to address traditional eastern values.

HOFSTEDE'S METHODOLOGY

IBM had occasionally surveyed employees to judge attitudes toward job satisfaction prior to 1960. In 1967, a team of researchers was gathered together to standardize the surveys in order to permit longitudinal and cross-national investigation. The first instrument consisted of 180 items, which were chosen through existing surveys, pilot studies, and literature review (e.g., Baehr 1954; Herzberg et al. 1957; Hinrichs 1968; Vroom 1964; Wherry 1954). After the initial survey, individual site survey administrators were still customizing the surveys to their specific needs. Thus, most of the surveys at this point varied considerably from site to site. Therefore, a 1970 task force of researchers, including Hofstede, took over with a new approach. They wanted to derive an instrument that used the previous questions but had no more than 60 items. The criteria for these questions were:
The core questions should cover all the major area or dimensions of job attitudes (content validity);
- The areas of job attitudes covered should be meaningful in terms of theories of human motivation and organization;
- The questions should be *reasonably reliable*;
- Core questionnaire items should universally apply to all employees of the corporation;
- Questions should be translatable;
- The questions should be chosen from those used before, to permit longitudinal studies;
- Questions should be acceptable to the corporation's managers;
- All core questions should be useful information to managers; and
- The number should not exceed 60 items (Hofstede 1975).

In 1971, Hofstede and colleagues reduced the number of items from 180 to 120. His decision was to eliminate items that did not frequently appear in the literature. Hofstede next ran an exploratory factor analysis with a sample of 700 employees on all 120 items. After varimax rotation, he was left with 15 factors. The first three factors explained 77 percent of the variance. Therefore, he kept the items for those three factors and eliminated the other items. He was left with three dimensions: *management, satisfaction, and culture*. Hofstede and colleagues (1971) had 146 items at this point, including demographic variables. Next, he took

his new survey with 146 items and administered it to 5 separate populations, which follow.

- Technical experts, France, 1968, n = 436
- Technical experts, U.K., 1968, n = 436
- Head office clerks, secretaries and other nonprofessional employees, U.K., 1969, n = 535
- Unskilled direct manufacturing operators, Japan, 1970, n = 231
- Unskilled direct manufacturing operators, U.K., 1970, n = 296

To analyze the data, Hofstede preformed separate factor analyses with each population. Management questions explained 21-27 percent (depending on the sample) of the variance and the weakest factor, culture, explained 11-19 percent of the variance (see Tables 1 and 2). However, the three components that Hofstede derived, management, satisfaction, and culture, were not one-dimensional. In fact, the "culture" components contained thirteen constructs, some of which contained zero or only one item. In other words, even though there was no data or

quantitative evidence to refer to, Hofstede conceptually decided which components should be a part of each of the three factors.

From the previous analyses, Hofstede devised his new instrument. The final questionnaire encompassed 60 core questions: 58 from factor analysis and two new items. Subsequently, Hofstede administered the same work satisfaction survey in other countries and derived his "cultural" dimensions. The following paragraphs will describe how each of the Hofstede cultural dimensions, as we know them today, are derived through the use of theoretical reasoning and factor analysis.

Hofstede began administering the instrument in individual countries at this stage. Each factor analysis was preformed separately for each country and then standardized, normalized means were calculated to derive a factor score. Hofstede himself admits that factor structure does not hold across populations (Hofstede 1984, p. 43). In fact, as mentioned, he never intended his instrument to be used at the

TABLE 1
Hofstede et al. (1971) Factor Analysis

	Number of variables	Number of factors with eigen-values>1	% of total variance explained	% of variance explained by first factor
Satisfaction questions:				
1. T. E. France	54	15	62	17
2. T. E. U.K.	54	15	62	16
3. Clerks U.K.	52	15	63	20
4. Operators Japan	51	15	68	24
5. Operators U.K.	54	15	65	20
Management questions:				
1. T. E. France	50	14	62	22
2. T. E. U.K.	50	14	61	21
3. Clerks U.K.	50	13	63	24
4. Operators Japan	48	15	72	27
5. Operators U.K.	50	14	65	24
Culture questions:				
1. T. E. France	42	12	58	13
2. T. E. U.K.	42	14	61	11
3. Clerks U.K.	40	11	59	17
4. Operators Japan	40	13	63	16
5. Operators U.K.	42	11	59	19

TABLE 2
Hofstede's Factors

Satisfaction Factor	Number of Items	Management Factor	Number of Items	Culture Factor	Number of Items
S1	3	M1	5	C1	2
S2	1	M2	2	C 2	2
S3	3	M3	2	C 3	1
S3A	3	M4	2	C4	2
S4	3	M5	0	C4A	1
S4A	1	M6	0	C5	0
S5	1	M7	1	C6	2
S6	1	M8	1	C6A	1
S6A	1	M9	1	C7	3
S7	2			C8	1
S8	1			C9	0
S9	1			C10	0
S10	1			C11	0
				C12	0
				C13	1

individual level. Hofstede (1984, pp. 43 and 55) admits,

> "A between-cultures analysis had not been done at that time; first, because the main purpose of the survey operation was organization development – that is, use within parts of the organization – within made the within-analysis obvious, and second, I must confess that the difference between within- and between-culture analysis had not occurred to us at that time. If it had, we might have come to a very different selection of, in particular, the 'culture' survey items…From the earliest surveys onward, it had been clear that questions dealing with hierarchical relationships received systematically different answers in different countries."

From this point forward, while it is somewhat unclear in past writings, Hofstede derived his four separate cultural dimensions from the "culture" factor as he saw themes emerge. He derived these dimensions theoretically instead of empirically. In other words, he examined the "culture" factor and made educated guesses at which items should make up each of his four cultural dimensions.

The first dimension was power distance. Hofstede noticed that the question, "How frequently are employees afraid to express disagreement with their managers?" was receiving similar answers within cultures (but not between). He then decided to choose this one core question as his entire power distance dimension (Hofstede 1984). Two additional questions were added based on ecological correlations and this formed the Power Distance dimension.

Next, according to Hofstede (1984, p. 55), "the uncertainty avoidance index was developed in an analogous way. I had an earlier theoretical interest in the phenomenon of stress which was

measured by the question 'How often do you feel nervous or tense at work?'" Scores on this question differed greater by country than by occupation. Thus, Hofstede was able to deduce that a cultural dimension existed around people's differing reactions and exceptions to uncertainty and anxiety.

A potentially rich source of data was also available in the "work goal importance" questions (Hofstede 1984). After normalizing the data on these 14 questions, Hofstede realized that a structure emerged similar to Maslow's hierarchy of needs (Hofstede 1984). Through a review of the literature and a long process of analysis and deduction, Hofstede later decided that these 14 questions measured two constructs - Masculinity and Individualism. Subsequently, Hofstede subjected the above mentioned questions for all four factors, plus others that had shown a reasonable amount of stability over time to a factor analysis with orthogonal rotation. The final 32 items explained 49 percent of the variance and became his initial set of questions to measure his cultural dimensions.

Even though the masculinity and individualism constructs were derived from the same variables and even though the above factor loadings would empirically be three constructs, Hofstede took a different approach. For reasons which are not explained anywhere in the literature, according to Hofstede (1984, p. 62), "Factor one represents an Individualism-low Power Distance factor…I shall continue to treat them as two dimensions because they are conceptually distinct…Factor 2 is a masculinity factor… and factor three corresponds to uncertainty avoidance" (Hofstede 1984, p. 62). These items can be found in Table 3. As can be seen, some items are included in overlapping dimensions. The obvious confusion of this methodology, along with its limitations, is discussed in the following sections.

LIMITATIONS

Other than the obvious methodological problems which stem from the above described analyses, numerous other limitations exist with Hofstede's research. While the overall findings of Hofstede's research are extremely relevant to today's cross-cultural studies, and the rigor is possibly unmatched even today, major constraints exist with Hofstede's research. First, and through no fault of Hofstede, there is a question of time relevancy. Researchers have questioned whether the dimensions developed from data collected between 1966 and 1973 were artifacts of the period of analysis (e.g., Baumgartel and Hill 1982; Warner 1981). Hofstede investigated the correlations between his data and other variables like geographic, economic, demographic, and political national indicators. Over forty years have passed since the beginning of the study. Just a simple map of the world looks very different today than it did in 1966. While these correlations were beneficial, they are not only out dated, but the cultures themselves have changed.

Second, Hofstede's research may suffer from sampling problems. Several researchers have argued that the constraints derived from Hofstede's research population of IBM employees (e.g., Graves 1986; Merker 1982; Triandis 1982). The use of employees from one company allowed Hofstede to reduce the other sources of variance and concentrate on culture. However, several criticisms have come from this fact. First, IBM employed mostly males at the time of the survey. In the words of Milton Bennett (1996), "the differences between men and women is the greatest culture conflict of all." More differences exist between men and women than from country to country, especially when analyzing things like masculinity/femininity, power distance, and individualism/collectivism.

In lieu of the sampling issue, all the subjects in the survey were from the same corporate culture. Additionally, although Hofstede surveyed many countries, all subjects were employees of an American company. Additionally, most employees were from white-collar positions. Hofstede (1980) himself discusses the problems of ethnocentrism that exist in previous scales. As Hamden-Turner and

TABLE 3
Original Hofstede Items and Factor Groupings

Construct	Item Label in Present Stud	Hofstede Item
Individualism and Collectivism Items	ic1 ic10 ic11 ic12 ic13 ic14 ic15 ic2 ic3 ic4 ic5 ic6 ic7 ic8 ic9	Have good working conditions (good lighting, adequate work space, an attractive office, etc.)? I would not support my work group if I felt they were wrong. If the group is slowing me down, it is better to leave and work alone. It is better to work in a group than alone. Groups make better decisions than individuals. I prefer to be responsible for my own decisions. Contributing to the group is the most important aspect of work. Have considerable freedom to adopt your own approach to the job? Have a job that leaves sufficient time for your personal or family life? Fully use your skills and abilities on the job? Have a job on which there is a great deal of day-to-day learning? Competition among employees usually does more harm than good. Decisions made by individuals are usually of higher quality than decisions made by groups. It is important to stick with my work group, even through difficulties. My personal accomplishment is more important than group success.
Items were used to measure both Individualism and Masculinity (Because items had factor loadings above 0.5 on each construct)	icandmf1 icandmf2 icandmf3	Have challenging work to do; work from which you can get a personal sense of accomplishment. Having interesting work to do is just as important as having high earnings. Most employees want to make a real contribution to the success of their company.
Masculinity and femininity items	mf1 mf10 mf11 mf12 mf13 mf14 mf15 mf16 mf17 mf18 mf19 mf2 mf3 mf4 mf5 mf6 mf7 mf8 mf9	Live in an area desirable to you and your family? Have the security that you will not be transferred to a less desirable job? Work in a congenial and friendly atmosphere? A corporation should have a major responsibility for the health and welfare of its employees and their immediate families. A corporation should do as much as it can to help solve society's problems (poverty, discrimination, pollution, etc.). Most companies have a genuine interest in the welfare of their employees. The private life of an employee is properly a matter of direct concern to his company. It is important for me to have a job that provides opportunity for advancement. It is important that I outperform others in the company. It is important for me to have a job that provides an opportunity for high earnings. It is important for me to work in a prestigious or successful company. Have an opportunity for high earnings? Work with people who cooperate well with one another? Have the security that you will be able to work for your company as long as you want to? Have an opportunity for advancement to higher-level jobs? Have a good working relationship with your manager? Get the personal recognition you deserve when you do a good job? Have a job that allows you to make a real contribution to the success of your company? Work in a company that is regarded in your country as successful?
Power Distance items	pd1 pd10 pd11 pd12 pd13 pd14 pd15 pd16 pd17 pd2 pd3	Employees lose respect for a manager who asks them for their advice before he makes a final decision. For getting ahead in industry, knowing influential people is usually more important than ability. Even if an employee feels that he deserves a salary increase, he should not ask his manager for it. My superiors should make most decisions without consulting me. It is improper to disagree with one's supervisor. I would never argue with my supervisor. I believe that those superiors who ask opinions too often of subordinates are weak or incompetent. I believe that superiors are entitled to special privileges. *This question asks the respondent to circle his preferred manager type among three choices, from the most consultative to the least consultative.* Employees should participate in the decisions made by management. Company rules should not be broken; even when the employee thinks it is in the company's best interests.

TABLE 3
(*continued*)

Construct	Item Label in present study	Hofstede item
Power Distance Items *(continued)*	pd4	Employees should never express disagreement with their managers.
	pd5	Employees should always be told very clearly their duties and responsibilities, and how to perform their jobs.
	pd6	Most employees have an inherent dislike of work and will avoid it if they can.
	pd7	A good manager gives his employees detailed and complete instructions as to how they should do their jobs; he does not merely give general directions and depend on them to work out the details.
	pd8	In general, the better managers in a company are those who have been with the company the longest time.
	pd9	There are few qualities in a man more admirable than dedication and loyalty to his company.
Uncertainty Avoidance items	ua1	A good manager does not get too involved in the details of an employee's job; rather, these details are left to the employee.
	ua2	Staying with one company for a ling time is usually the best way to get ahead in business.
	ua3	A large corporation is generally a more desirable place to work than a small company.
	ua4	Companies should not change their policies and practices very often.
	ua5	It is important for me to work for a company that provides high employment stability.
	ua6	Clear and detailed rules/regulations are needed so workers know what is expected of them.
	ua7	It is better to work in a well-defined job where the requirements and procedures are clear.

Trompenaars (1997) noted, they doubt that American IBM managers serving in foreign countries are much different than American IBM managers in America.

Inclusive with the sampling issue is the matter of the original sample size. While the sample eventually grew to quite some size, the original constructs were derived from very few workers. According to Hair and colleagues (1998), the minimum sample size is five observations per variable to be analyzed. However, ten observations per variable are better, and some even recommend 20 per variable. Therefore, Hofstede's results were sample specific and they took advantage of random correlations. Some samples were as low as 231 for 146 items.

Hamden-Turner and Trompenaars (1997) bring up another important criticism of Hofstede's work. "Are cultural categories linear and exclusive?" Hamden-Turner and Trompenaars (1997) do not feel that if you are an individualist you cannot be a collectivist. Perhaps some people tend to be very individualistic at work, but family oriented and collectivistic at home.

Another criticism is that culture cannot be best expressed in a mathematical language, as Hofstede does. This point can be best summarized by a story given by Hamden-Turner and Trompenaars (1997). A learned researcher diced a piece of cheese with a kitchen gadget and then wrote a learned dissertation on the cubic nature of cheese. We get out of factor analysis what we put into it, nothing more, and nothing less. As the previous section described, Hofstede's determinations were haphazard at best.

Another problem with Hofstede's work is that the study did not begin as a cultural study. It initially began as a work satisfaction study. Hofstede was a brilliant researcher who noticed the dimensions as they developed. However, the original survey was not designed for its final purpose. The survey was refined and changed several times to make the necessary adjustments. Thus, the dimensions were derived empirically, rather than theoretically.

Finally, Hofstede (1980) specifically identified the ecological fallacy that exists with his work. The ecological fallacy can be defined as "confusion between within-system and

ecological correlations." Similarly, he readily admits that within-culture variations can be as great as if not greater than between-culture variations. This is an important observation to make. While it is helpful to understand that the majority of Chinese citizens tend to be very collective, marketers sell to the individual, mangers recruit, train and hire the individual, and psychologists, economists, and all social scientists are concerned with the individual and groups existing in their society.

The above mentioned limitations have been examined and identified in numerous replication studies over the last four decades. Søndergaard (1994) located 61 replications of Hofstede's research. Full confirmation of Hofstede's dimensions was found in only four studies (Hoppe 1990; Shackelton and Ali 1990). Partial confirmation was found in another fifteen studies (e.g., Ashkanini 1984; Chow et al. 1991; Forss 1989; Huo and Randall 1991; Lowe 1994; Maldonado 1983; Pooyan 1984; Westwood and Everett 1987; Yeh 1988). Lowe's (1994) study is particularly interesting because he used IBM employees from Hong Kong and the United Kingdom for his sample. Lowe was not able to find differences between the two countries for Hofstede's uncertainty avoidance dimension (Søndergaard 1994).

After Søndergaard's (1994) study, other authors have critiqued and replicated Hofstede's work and applied his dimensions to various contexts (e.g., Fernandez, Carlson, Stepina, and Nicholson 1997; Kelleher 2000; Marshall 1997; Naumov and Puffer 2000; Robertson and Hoffman 2000; Smith, Dugan, Peterson, and Leung 1998; Sopachitwattana 2000; Trompenaars 1993; Trompenaars 1997; Van Oudenhoven 2001; Van Oudenhoven, Mechelse, and de Dreu 1998; Verbeke 2000; Yeh and Lawrence 1995). Most of these studies have come to very similar conclusions as the ones prior to 1994. No known rigorous study using Hofstede's exact instrument has found complete confirmation to Hofstede's work. In fact, Trompenaars (1993) examined Hofstede's dimensions and arrived at his own dimensions, which, according to Trompenaars, overcome

the difficulties with Hofstede's research. Trompenaars' book (1993) has become a harsh debate between Hofstede and himself (for full details, see, Hamden-Turner and Trompenaars 1997; Hofstede 1996; Hofstede 1997).

THE METHODOLOGY OF THE RE-INQUIRY

Even with all the replication studies that exist in the literature, very few have been exact replications, using Hofstede's actual, original items. In fact, prior to 2001, Hofstede did not make these original items readily available. Thus, the purpose of this study was to produce a very similar replication study. A further aim of this study was to analyze the dimensions using multiple statistical techniques in order to examine the items and constructs as thoroughly as possible. In order to start this process, Hofstede's original instrument was obtained from *Culture's Consequences*. The survey was administered in two different forms. The first study was an attempt to assess face validity. In the second study, convergent and discriminant validity was assessed. Finally, the data is tested through confirmatory factor analysis utilizing structural equations modeling.

In order to ascertain the effects of the instrument on a non-homogeneous sample (e.g., samples from more than one company) a number of different samples were used. This was also done to increase the probability of variance from other sources, such as gender, while minimizing the confounding effects of such factors as occupational status (e.g., white collar) within one over-arching corporate culture environment.

Study One

In study one, Hofstede's instrument, with no modifications, was administered to two samples (refer to Table 3). The first sample included 123 undergraduate students and the second sample included 65 graduate students, and the third sample contained 13 marketing and management faculty. The undergraduate class took the survey after a whole class period

dedicated to teaching Hofstede's cultural dimensions. All samples were given the survey with thorough definitions of each of Hofstede's four cultural dimensions at the top of the instrument. The subjects were then instructed to ascertain which dimension each survey item was attempting to measure by circling IC (individualism/collectivism), MF (masculinity/femininity), UA (uncertainty avoidance), or PD (power distance) after each item.

As can be seen in Table 4, the task proved to be quite difficult. The graduate students performed better than the faculty, followed by the undergraduate students, ascertaining correctly 64.62 percent, 44.25 percent, and 32.25 percent of the time respectively. For a face validity assessment, the percentages should be much higher, whether the sample is common workers or especially trained researchers and academics such as those used in this study. The individualism items were easiest to identify while the masculinity items were the hardest to classify.

Study Two

In study two, Hofstede's exact survey with no modifications was given to three different samples. Two out of the three samples were in America. The first sample consisted of graduate students at a large mid-south university. Of the 161 respondents, 58 percent were America and 41.6 percent were Far Eastern. Respondents were required to have full time work experience in order to participate in the study. This criteria was added to the survey so that all respondents could identify with the work-related questions that appear on Hofstede's instrument. Respondents had work experience ranging from 1 to 40 years and were between 22 and 59 years of age. A second sample of non-student adults was taken in America (N = 233). Demographic characteristics of this sample were very similar to sample one, except 97.4 percent of the sample was American. Finally, a third sample was gathered from non-student adults in Australia (N = 210). Due to the widespread cultural differences that exist in Australia, this sample was extremely diverse. The sample contained people with varying nationalities representing a total of 21 countries.

Data were analyzed in many different ways in order to demonstrate that the factor structure does not hold in any circumstance. Reliabilities were assessed for each of the four factors with the three combined samples and with the samples separately. Likewise, factor analyzes were run with each sample separately and combined. Exploratory factor analyses were used to remain consistent to Hofstede's original methodology and many different techniques were utilized. Varimax and oblique rotations

TABLE 4
Face Validity Assessments: Average Number of Times
Ascertained Correctly Across Dimension

	Faculty sample	Graduate sample	Undergraduate sample	Average of all three samples
Masculinity items	28%	40.73%	15%	27.91%
Individualism items	55%	78.24%	46%	59.75%
Power Distance items	41%	60.94%	33%	44.98%
Uncertainty avoidance items	53%	78.57%	35%	55.52%
Average	44.25%	64.62%	32.25%	47.04%

were tried to remain true to Hofstede. Likewise, factors were extracted by examining eigenvalues greater than one and by "forcing" the solution to only four factors. Additionally, even though Hofstede did not use confirmatory factor analysis, this study attempts to do so. All analyses will be discussed subsequently.

Reliabilities

Reliabilities were examined subsequent to performing the factor analyses. The results are presented in Table 5. Some reliabilities were extremely low (.3405) and some are relatively high (.8131). Curiously, the data shows no consistent pattern across the samples. In other words, masculinity has the only adequate reliabilities in sample two, but is the second lowest in sample one, both of which were American samples.

Exploratory Factor Analyses

As mentioned, factor analyses were examined in many possible ways. Data are presented for each sample separately and then are presented by combined samples. As can be seen in Table 6, in all samples, when the number of components is not forced, the instrument explained around 70 percent of the variance. However, rotation could not account for coverage many times, and when it could, the number of factors ranged between 15 and 20. When the data were forced into four

components, explainable variance dropped to around 30 percent.

These statistics seem discouraging, but it is even more discouraging to analyze what items are loading with which construct. In all analyses, items had no pattern as to which construct they loaded with. This is the case for all samples separately and together, with varimax and oblique rotation, and with Eigen values greater than one or forced factors. Due to space constraints, all 32 factor structures cannot be presented. Explanation or classification of each component is not possible. The components' items have no pattern or similarities. There was absolutely no theoretical and empirical structure which emerged.

Confirmatory Factor Analysis

Next, structural equations modeling was used to analyze the data because of its ability to be used as a confirmatory technique, instead of as an exploratory technique, even though Hofstede did not originally employ this technique. Since the relationships and constructs had already been established by Hofstede, the model just needed to be analyzed to assess the adequacy of the model. The three previous mentioned samples were utilized to test the model.

The results of the model showed an *inadequate* fit. The chi-squared/df ratio was equal to 5.345

TABLE 5
Reliabilities (Study 2)

	Sample 1 (US graduate students)	Sample 2 (US non-student adults)	Sample 3 (Australian)	All samples together
Masculinity	.5254	.7593	.8131	.7574
Individualism	.4816	.3703	.6527	.4920
Power Distance	.6974	.3510	.7003	.7417
Uncertainty Avoidance	.6330	.3405	.6845	.5655

TABLE 6
Exploratory Factor Analyses (Study 2)

	Sample 1 (US graduate students)		Sample 2 (US non-student adults)		Sample 3 (Australian)		All samples together	
	Number of factors	Variance explained	Number of factors	Variance explained	Number of factors	Variance explained	Number of factors	Variance explained
Varimax rotation/ Eigen values greater than one	19	70%	Rotation could not converge in 100 iterations	69.6%	Rotation could not converge in 100 iterations	69.2%	15	60%
Oblique rotation/ Eigen values greater than one	Rotation could not converge in 100 iterations	70%	20	69.6%	Rotation could not converge in 100 iterations	69.2%	15	60%
Varimax rotation/ Four "forced" components	4	31.7%	4	30%	4	37%	4	36%
Oblique rotation/ Four "forced" components	4	30%	4	30%	4	37%	4	36%

(8493 with 1589 d.f.). Ratios under three indicate an acceptable fit (Carmines and McIver 1981). The Root Mean Square Error of approximation (RMSEA) by Browne and Cudeck (1993), which is a goodness of fit measure that accounts for model complexity, was 0.85. Browne and Cudeck (1993) state that RMSEA values of about .05 or less indicate a close fit of a model in relation to the degree of freedom. Likewise, the normed fit index (Bentler and Bonnett 1980) was 0.887, which should be above 0.90, which indicates and acceptable level of fit (Hair, Anderson, Tatham and Black 1998). Results of these analyses are presented in Tables 7 and 8.

The reliabilities and the variances explained by each of the latent contructs are presented in Table 8. The highest reliability was for the masculinity construct (α = 0.73), followed by power distance (α = 0.58), then by Uncertainty avoidance (α = 0.40), and then with individualism having the lowest reliability (α = 0.33). According to Hair et al. (1998), the indicator reliabilities should exceed .50, which roughly corresponds to a standardized loading of 0.70.

The results of the variance explained by each construct had even worse results. The highest variance extracted was for the uncertainty avoidance construct (16.54 percent), followed by power distance (10.33 percent), then by individualism (10.33 percent), and then by masculinity having the lowest total variance extracted (7.97 percent). According to Hair et al. (1998), guidelines suggest that the variance extracted value should exceed .50 for a construct. None of the constructs had value above this percentage.

In regards to factor loadings, some items have high factor loadings and are significant. However, a larger number have very low loadings and are not significant. Amazingly, not one single power distance item is significant. While masculinity, individualism, and uncertainty avoidance may be adequate constructs (by these criteria only) once a few unnecessary items are eliminated, power distance has clear empirical problems.

Additionally the correlations among latent constructs are provided in Table 9. The most striking correlation is that of masculinity and

TABLE 7
CFA Results

	Masculinity Reliability = 0.73 Variance Extracted = 7.97%	Individualism Reliability = 0.3 Variance Extracted = 9.15%	Power Distance Reliability = 0.58 Variance Extracted = 10.33%	Uncertainty Avoidance Reliability = 0.40 Variance Extracted = 16.54%	T-value
mf1_1	0.55				12.212***
mf2_1	0.50				10.099***
mf3_1	0.66				12.224***
mf4_1	0.64				11.968***
mf5_1	0.58				11.241***
mf6_1	0.66				12.190***
mf7_1	0.62				11.652***
mf8_1	0.64				11.998***
mf9_1	0.57				11.031***
mf10_1	0.66				12.216***
mf11_1	0.70				12.682***
mf12_1	-0.10				-2.282*
mf13_1	-0.02				-0.503
mf14_1	0.04				0.832
mf15_1	-0.08				-1.878
mf16_1	-0.04				-0.991
mf17_1	-0.15				-3.455***
mf18_1	-0.13				-2.97**
mf19_1	-0.05				-1.101
ic1_1		0.64			13.368***
ic2_1		0.55			11.858***
ic3_1		0.54			11.767***
ic4_1		0.63			13.366***
ic5_1		0.58			12.329***
ic6_1		0.08			1.825
ic7_1		-0.03			-0.757
ic8_1		-0.05			-1.262
ic9_1		0.05			1.150
ic10_1		0.02			0.418
ic11_1		-0.01			-0.245
ic12_1		-0.04			-0.906
ic13_1		-0.09			-2.043*
ic14_1		-0.07			-1.728
ic15_1		-0.22			-5.047***
pd1_1			0.05		0.545
pd2_1			-0.09		-0.998
pd3_1			0.30		1.12
pd4_1			0.75		1.136
pd5_1			0.19		1.101
pd6_1			0.52		1.133
pd7_1			-0.10		-1.013
pd8_1			0.33		1.126
pd9_1			0.17		1.091
pd10_1			-0.07		-0.909
pd11_1			0.29		1.121
pd12_1			0.55		1.133
pd13_1			0.46		1.132
pd14_1			0.79		1.136
pd15_1			0.32		1.125
pd16_1			0.62		1.134
pd17_1			-0.73		-1.135

TABLE 7
CFA Results (*continued*)

	Masculinity Reliability = 0.73 Variance Extracted = 7.97%	**Individualism** Reliability = 0.3 Variance Extracted = 9.15%	**Power Distance** Reliability = 0.58 Variance Extracted = 10.33%	**Uncertainty Avoidance** Reliability = 0.40 Variance Extracted = 16.54%	**T-value**
ua7_1				0.82	16.436***
ua6_1				0.11	2.493*
ua5_1				0.77	15.673***
ua4_1				0.45	10.032***
ua3_1				-0.15	-3.386***
ua2_1				-0.01	-0.105
ua1_1				-0.08	-1.862

*p < .05
**P < .01
***p < .001
Items listed in Table 4.

TABLE 8
CFA Results: Correlations Among Latent Constructs

	Masculinity	**Individualism**	**Power Distance**	**Uncertainty Avoidance**
Masculinity	1.000			
Individualism	0.987	1.000		
Power Distance	-0.218	-0.093	1.000	
Uncertainty Avoidance	-0.012	-0.059	-0.651	1.000

individualism (0.987). Perhaps this is because Hofstede used the same items to measure each construct. Hofstede states, "…reversing the sign of the scores (for the items for individualism), I have called this dimension 'Masculinity'" (Hofstede 1984, p 189). Items that load negatively on a construct are not a separate construct, just the opposite "pole" of that construct. Power distance and Uncertainty avoidance also have a high correlation between them (-0.651). Many of the power distance items relate to the supervisor's responsibility to establish clear rules and regulations (e.g., "Employees should always be told very clearly their duties and responsibilities, and how to perform their jobs" and "A good manager gives his employees detailed and complete instructions as to how they should do their jobs; he does not merely give general directions and depend on them to work out the details"). Conceptually, one can see how these items correlation with uncertainty avoidance. People

high in uncertainty avoidance want clear rules and regulations so that there is less uncertainty to deal with.

DISCUSSION

This study has attempted to empirically assess the validity of Hofstede's cultural dimensions. Substantial questions have arisen in this analysis as to the reliability and validity of Hofstede's methodology and instrumentation. In fact, the analysis discussed in this re-inquiry does seem to reify many of the limitations of Hofstede's work discussed earlier.

First, the samples used in this analysis were comprised of diverse individuals who were not part of an over-arching collectivity, namely IBM employees. Thus the impact of a corporate culture was not in play here. Not only does this minimize the corporate-wide

socialization effects as to how one should think and act within that corporate culture, it minimizes the possibility of socially desirable respondents by the respondents.

Second, limitations around the lack of the mutual exclusivity of the dimensions also surfaced in this re-inquiry. This analysis found significant overlap within and across many of the constructs. Thus, with the samples used herein, there were no clearly identifiable factors supporting the instrumentation and, to a large degree, the methodology in its current state.

Third, and probably most importantly, the analysis questions the relevance of the original dimensions and their meaning to 21st century businesses and individuals. What do the dimensions mean to individuals within and across different cultures? What about sub-cultural differences that exist in many countries and regions? Most importantly, what effect do traditional social institutions have on the dimensions defined by Hofstede? For example, strong religious dogma and practices in a culture will most likely strongly impact an individual's perception of individualism as well as culturally sanctioned definitions of masculine and feminine roles. Similarly, legal, economic, and educational institutions within the given social structure will dramatically influence how one responds to Hofstede's dimensions.

This analysis also tends to support a number of Hofstede's critics as to the applicability of the four (or five) dimensions. In general, the dimensions only attempt to measure cultural differences at the individual level and are therefore psychologically reductionistic. Cross-cultural analysis requires an understanding the impact of the socialization and other sociological factors that brought these about. As a matter of fact, Hofstede has long contended that an ecological fallacy is contained in the cultural dimensions. If anything, the current analysis suggests that a reverse ecological fallacy may be the case where individual characteristics are being

assigned to an entire group or in this case culture. This analysis discussed supports the need to understand differences at the societal level. Currently, this lack of understanding of the causality between the individual level and the socio-structural level precludes any clear indication of what is actually causing differences within and across Hofstede's dimensions.

Finally, the impact of the Internet and relatively seamless global communications on a society's cultural stance cannot be over-estimated in the early 21st century. Short of extreme governmental control, it is nearly impossible for individuals in any culture to not have access to and be influenced by information on other cultures, attitudes, and behaviors. Future research on Hofstede's cultural dimensions must investigate the impact of global communications on cultural dimensions and individual responses to them.

CONCLUSIONS

Hofstede's seminal work has been the benchmark for cultural analysis for the last three decades. However, it has been subject to criticism on both the theoretical and empirical levels. The intent of this investigation was to test Hofstede's constructs with a non-homogenous population (i.e., individuals that were not from one company only) in order to ascertain the validity and reliability of the measures. In order to do so a number of samples drawn from American, Far Eastern Asians, and Australians were used. Analyses were performed into the face validity, convergent, and discriminant validity of Hofstede's constructs. Likewise, Hofstede's factors were subjected to exploratory and confirmatory factor analysis where they performed poorly. This investigation has concluded that Hofstede's factors overlap significantly and do not share a common factor structure within or between cultures.

While it is outside the scope of this investigation, it appears that Hofstede's

theoretical constructs need to be thoroughly re-examined within the context of early 21st century cross-cultural attitudes and patterns of behavior. Cross-cultural relationships (positive and negative) have changed dramatically over the past quarter of a century, be they political, economic, or from a business perspective. Worldwide political systems, such as communism, have dramatically lost their influence since Hofstede first posited his cultural dimensions. Free market economies have taken a foothold (to varying degrees) in many cultures while businesses have become more global in their reach and influence.

At the same time, the changes mentioned above have exacerbated within society changes in many regions of the world. As political and economic systems decayed, long constrained cultural and sub-cultural differences have re-emerged, in a number of cases, to the point where the country has been divided into a number of smaller cultural or historically "tribal" based enclaves. With this in mind, Hofstede's original dimensions may be inaccurate, or at the least, outdated in defining contemporary cultural differences be they within or across different cultures.

With regard to research implications, empirical establishment of convergent, discriminant, and nomological validity for the cultural dimensions are of first importance. If the constructs are not defined empirically, then they cannot be measured. Likewise, if Hofstede's dimensions cannot be operationalized, then they cannot be correlated with other concepts or used in other studies to have practical significance. The study of cross-cultural values is simply too important in this time of globalization. Hofstede's dimensions are not reasonable empirically. Although there may be a conceptual gold mine underneath it all, a theory is worthless to investigators if it cannot be operationalized.

In conclusion, the purpose of this re-inquiry was to re-examine Hofstede's original methodology to test the validity with a number of diverse samples. While this study found both validity and reliability issues with the original constructs and instrumentation, it is not our intent to denigrate Hofstede's original conceptualization. Instead, we recommend that additional research be undertaken to build on Hofstede's cross-cultural dimensions to better adapt them to the 21st century global environment. As such, each construct should be thoroughly re-examined and both be theoretically and operationally redefined within contemporary cross-cultural and business environments.

Hofstede's work has contributed significantly to the foundations of cross-cultural analysis and understanding. But like any good model, it needs to constantly be re-examined, re-defined, and adapted to the current environment. Therefore, future studies should attempt to build on, strengthen, and adapt what has been learned from Hofstede's seminal work. Perhaps as we have moved well into this new millennium very different cross-cultural values, attitudes, and behaviors exist.

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