CULTURE AS A CONSEQUENCE:
A MULTILEVEL MULTIVARIATE META-ANALYSIS OF THE EFFECTS OF
INDIVIDUAL AND COUNTRY CHARACTERISTICS ON WORK-RELATED
CULTURAL VALUES

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ABSTRACT

Following Hofstede’s “Culture’s Consequences”, the management field has studied cross-cultural issues intensely. However, this research has largely overlooked cultural variability within countries. The focus has been on national averages and one’s nationality has been frequently equated to one’s cultural values. This multilevel multivariate meta-analysis of 508 studies shifts the emphasis from culture’s consequences to culture as a consequence. It addresses the limitations of the mean-based approach by showing that individual and national cultures are shaped by a set of individual and country level factors, providing a basis for explaining the within and between country variations in culture.
INTRODUCTION

Over the last several decades, cross-cultural issues have received an explosion of interest from fields ranging from psychology and education to accounting and marketing. Justifying this interest, culture has been shown to affect virtually every aspect of social and organizational life including negotiation behavior (Graham, Mintu, & Rodgers, 1994), acceptance of new products (Yeniyurt & Townsend, 2003), whistle blowing (Sims & Keenan, 1999), reward allocation (Kim, Park, & Suzuki, 1990), conflict management (Swierczek & Onishi, 2003), ethical perception (Cohen, Pant, & Sharp, 1995; MacArthur, 1996), entrepreneurial potential and innovativeness (Mueller & Thomas, 2001), subjective well-being (Diener, Diener, & Diener, 1995), and expectation of service quality (Furrer & Sudharshan, 2001). In response, numerous models of culture-sensitive human resource management have been developed showing the need to use different practices when dealing with people from different countries (e.g. Cattaneo, 1992; Kirkman & Shapiro, 2001; Lam, Chen, & Schaubroeck, 2002; Tinsley & Brett, 2001).

The beginning of the cross-cultural era in social sciences can be traced back to Hofstede’s (1980) “Cultures Consequences.” Although other models of cultures had been offered earlier (e.g. England, 1967; Rokeach, 1973), Hofstede’s study was the first one to be conducted based on a large international sample and to employ relatively advanced, for its time, research designs and statistical analysis tools. The product of this effort was a concise set of quantitative indices for describing and ranking countries along several cultural dimensions. This provided a simple and easily comprehensible model of cultural differences as well as enabled a way to make direct cross-national cultural comparisons.

The popularity as well as need for such a model, with its quantitative cultural indices, is difficult to dispute. According to the Web of Science database, “Culture’s Consequences” has
been cited almost five thousand times, which has raised the work to the status of one of the most cited manuscripts in the social sciences. Interest in Hofstede’s model remains very high and continues to grow, even after thirty years. The various additions of the book were cited 301 times in 2003, 351 times in 2004, and 361 times in 2005.

Despite the widespread adoption of Hofstede’s national rankings, there are two major concerns regarding their use. First, the possibility of significant within-country variations in cultures has been virtually ignored. Second, the long-term stability of cultures has been assumed. Each of these issues is discussed in turn.

To begin with, substantial within-national cultural variability can lead to severe measurement problems. Equating group averages with individual scores is acceptable, if there is little variability within the group. On the other hand, if individuals tend to differ within groups, generalizing group averages to the individuals in the group can be equivalent to assigning height by sex, because on average women are shorter than men. This issue may be a very serious given that the practice of equating the group with the individual has become commonplace. Specifically, Schaffer and Riordan (2003) reviewed 210 cross-cultural studies published between 1995 and 2001, finding that for 79 percent of the cases nationality was used as a proxy for culture and another 52 percent used country as a proxy for Hofstede’s indices. When working on this meta-analysis, we also found numerous instances of the ecological fallacy, where one’s nationality is equated to one’s cultural values, represented by such phrases as: “cultural background was measured by the current citizenship (passport status) of each of the managers” (Offermann & Hellmann, 1997: 346); “individualism-collectivism was operationalized by the respondent’s native culture” (Trubisky, Ting-Toomey, & Lin, 1991: 73); “participants were divided into high and low power distance groups by county-of-origin” (Eylon & Au, 1999: 378);
“subjects were assigned to one of three groups based upon Hofstede’s national cultural rankings along the masculinity index” (Crots & Erdmann, 2000: 412); and “on the basis of their Hofstede country index, the subjects were divided into high and low PD and IND groups” (Bochner & Hesketh, 1994: 233).

The second problem is that cultures may be changing. Hofstede (1980) himself showed a strong relationship between individual and country characteristics and cultures. Unfortunately, this part of his work has been rarely cited and attended to, especially from the perspective that a change in those country characteristics would lead to a change in national cultures. For example, despite the fact that over the 35-year period since Hofstede collected his data most of the countries in his sample have witnessed dramatic changes in their economic and political systems, his original cultural indices and country rankings have been often assumed to remain unchanged. The literature review showed that Hofstede’s national averages have been taken for granted and used for further analysis about a thousand times, including a large number of cases even in the 21st century (e.g. Beekun, Stedham, & Yamamura, 2003; Lim, Leung, Sia, & Lee, 2004; Litvin & Kar, 2003; Newburry & Yakova, 2006; Pressey & Selassie, 2003).

Unfortunately, almost no research has been conducted to determine whether mean cultural values are sufficiently homogenous and stable to be generalized to individuals and across decades. Only a small number of authors directly or indirectly have quantitative addressed these issues, and then with a more constrained scope, such as considering differences across ethic groups (Coon & Kemmelmeier, 2001), occupations (Ardichvili, 2001; Kuchinke, 1999), sexes (Dolan, Diez-Pinol, Fernandez-Alles, Martin-Prius, & Martinez-Fierro, 2004) and regions within countries (Huo & Randall, 1991). Also, earlier studies on subcultures were qualitative and were
focusing mainly on such external attributes of cultures as customs, traditions, way of life, and religious differences (e.g. Garreau, 1981; Gastil, 1975).

The purpose of this meta-analysis is to establish as well as explain the within and between country variations in cultures. Based on the results of a multivariate multilevel meta-analysis, we show that personal cultural values and national cultures are shaped by a variety of individual and country level factors. We also show that the strength and the direction of some of the effects are moderated by country characteristics. Our findings highlight yet again the problem of assuming an unchanging nature of national cultures and the danger of making assumptions about individual people’s cultural values based on their country of origin.

**HOFSTEDE’S MODEL OF CULTURE**

This study utilized Hofstede’s (1980) model of culture. The model is based on five cultural dimensions that are defined as follows.

*Power Distance* is the extent to which [people] in a society accept inequality in power and consider it as normal (Hofstede, 1986: 307). Alternatively, it is the extent to which subordinates are not expected to express disagreement with their supervisors and the supervisors are not expected to consult with their subordinates in the decision making process (Hofstede, 1980, 2001).

*Individualism* is the degree to which people in a country prefer to act as individuals rather than as members of groups (Hofstede, 1994: 6). Individualist cultures assume that any person looks primarily after his/her own interest and the interest of his/her immediate family (husband, wife, and children). Collectivist cultures assume that any person through birth and possible later events belongs to one or more tight “in-groups,” from which he/she cannot detach him/herself.
The ingroup (whether extended family, clan, or organization) protects the interest of its members, but in turn expects their permanent loyalty (Hofstede, 1986:307).

*Masculinity* and its opposite *femininity* are defined as the degree to which masculine values such as advancement, earnings, training, up-to-dateness and such feminine values as friendly atmosphere, position security, physical conditions, [and] cooperation are valued (Hofstede, 2001: 281) and as the degree to which values like assertiveness, performance, success and competition […] prevail over values like the quality of life, maintaining warm personal relationships, service, care for the weak, and solidarity (Hofstede, 1994:6).

*Uncertainty Avoidance* defines the extent to which people are made nervous by situations which they perceive as unstructured, unclear, or unpredictable. These are situations that they try to avoid by maintaining strict codes of behavior and a belief in absolute truth (Hofstede, 1986:308). Uncertainty avoidance should not be confused with risk-avoidance (Hofstede 2001: 145). It does not describe one’s willingness to take or avoid risk, but rather is associated with preferences for clear rules and guidance (Hofstede, 2001:149).

*Confucian Dynamism*, a.k.a., Long vs. Short Term Orientation; a.k.a. Future versus Past Orientation, (compare Hofstede, 1980, 2001) was derived based on a separate sample and added to the model only several years later (Hofstede & Bond, 1988). It is the least popular cultural dimension and the most misunderstood. Hofstede’s definition of the construct is rather ambiguous and has varied among his own writings. The most common perception is that the dimension refers to the degree to which people prefer quick results despite possible negative consequences in the future. Albeit this would be a useful trait reflecting impulsiveness or temporal discounting, Hofstede has never defined the dimension this way. Rather, Confucian Dynamism somewhat reflects a progressive versus conservative duality. Its positive pole
indicates a dynamic, future-oriented mentality, whereas its negative pole suggests a more static, tradition-oriented mindset (Hofstede et al., 1988: 16). Accordingly, the original survey instrument items refer to the perceived importance of personal steadiness, stability, thrift, perseverance, and respect for tradition. As can be seen, Confucian Dynamism is only tangentially connected to a preference for quick gains in spite of possible future losses.

Although Hofstede’s (1980) IBM study has been criticized for its research design, sample and, recently, the age of the data (Goodstein, 1981; McSweeney, 2002; Yeh, 1988), the model has generally been well-validated by numerous subsequent studies. Furthermore, virtually all later models of culture (House, Hanges, Javidan, Dorfman, & Gupta, 2004; Maznevski & DiStefano, 1995; Schwartz, 1994; Trompenaars, 1993) contain constructs very similar to Hofstede’s dimensions of power distance, individualism, masculinity, and uncertainty avoidance. Because the construct of Confucian Dynamism found only weak support in the subsequent literature, we limit the scope of this study to the four dimensions originally described by Hofstede (1980) in his Culture’s Consequences.

THE MODEL AND HYPOTHESES

The key feature of our model of culture is its hierarchical structure (Figure 1). The model differentiates between individual cultural values and national cultures. Cultural values at both individual and country level are determined by a set of factors that also represent different levels. At the individual level, the factors are individual characteristics such as gender, age, generation, education level, and socio-economic status. At the country level, country characteristics such as GDP per capita, economic, political and civil freedom are hypothesized to affect cultural values.
The arrows on the diagram represent our general research hypotheses. A substantial variation in cultures within and between countries is a precondition for testing our hypotheses (H0). Our first two hypotheses state that individual cultural values are affected by one’s individual characteristics (H1) and by the characteristics of the environment (country) one resides in (H2). Also, national cultures are affected by the country characteristics (H3). Finally, it is hypothesized that the effect of personal characteristics on individual cultural values is moderated by country characteristics (H4). Below is the list our specific hypotheses for the effects of each of the level-1 and level-2 predictors. Of course, given the limited amount of previous research on culture as consequence, many of theses hypotheses are tentative.

**Hypothesized Effects of Individual Characteristics**

*Socio-economic status* is hypothesized to have an effect of cultural values along each of the four cultural dimensions. People holding higher positions in the organizational hierarchy are the ones who set the tone and define the rules. They are more likely to be involved in the decision-making process, have more opportunities to voice their opinions, and to be heard. Similarly, they are expected and accustomed to taking initiative, make tough and unpopular decisions on the regular basis, and because their everyday tasks go far beyond performing simple repetitive operations, they are more accustomed to ambiguity and uncertainty. On the other end, people in lower positions are likely to perform a limited number of functions. They are expected follow a set of strict rules and are more likely to be anxious about making a mistake. They can be more easily replaced in the organizational machine and have fewer opportunities to take an initiative and succeed. Finally, they often can exercise power only as a collective. Thus, we hypothesize that:

_Hypothesis 1a. Higher socio-economic status will be associated with lower power-distance and uncertainty avoidance as well as higher individualism and masculinity._
**Generation** is our next individual level predictor. As will be explained in detail later in the paper, the generation measure is conceptually different from age. It indicates when the respondent was growing up. For example, Baby Boomers (born between 1946 and 1964) will all have a similar score along the generation variable regardless of when the survey was conducted. Our hypotheses for the generation effects are based on the assumption that most of the societies have been deviating from traditional values emphasizing family, respect for authority and older people, and following customs and rituals developed over the ages. Also we took into account the findings from a longitudinal meta-analysis reported by (Taras & Steel, 2005) that showed a trend towards lower distance and higher individualism and masculinity in a number of countries.

*Hypothesis 1b. Compared to people representing earlier generations, those born in later years will display cultural values associated with lower power distance, higher individualism and masculinity and lower uncertainty avoidance.*

We do not theorize any direct effect of age on power distance, masculinity, and uncertainty avoidance. Because older people tend to assume higher positions in organizations and represent earlier generations, there may be some indirect association between age and cultural values via SES and generation effect, which is likely to become insignificant once the mediators are added to the regression. However, we hypothesize a direct link between age and individualism. After being closely overseen by their parents in their childhood and adolescence years, young people typically value independence and look forward to their autonomous lives. However, with years, as they settle down and have families of their own, being a part of a group of relatives or colleagues becomes desired.

*Hypothesis 1c. Age will be negatively related with individualism.*

**Hypothesized Effects of Country Characteristics**

When linking national cultures to country characteristics, Hofstede (1980, 2001) considered a number of factors such as wealth, geographic latitude and climate, population size
and density, and political system. However, an analysis of his assumptions shows that his reasoning mainly revolves around strong direct effects of wealth and freedom on cultural values, while the effects of the rest of the country characteristics are mediated by these two prime factors. Hence, we limit our focus to these two main variables. Unfortunately, the high correlation between freedom and wealth in our sample (0.91) is likely to cause multicollinearity, making interpretation of the results difficult. Therefore, each of our models will contain only one of these predictors, depending on which is the most theoretically relevant, although each of them is likely to show significant effect if added to the regression model.

Our hypotheses are based on the assumption that in the societies characterized by high economic, political and societal freedom, individuals are more likely to be encouraged and given an opportunity to voice their opinions on the issues important for their communities and countries. Freedom is associated with unhampered ability to question authorities and to actively participate in the decision making processes. It also encourages initiative and it makes individual success possible. Lastly, free societies tolerate deviance from mainstream traditions, practices and customs in business, culture and religion.

*Hypothesis 2a. In countries characterized by high freedom individuals will score low on power distance and uncertainty avoidance, and high on masculinity.*

*Hypothesis 3a. In countries characterized by high freedom national cultures will be characterized by low power distance, low uncertainty avoidance, and high masculinity.*

Although both predictors seem to be relevant, we believe that wealth rather than freedom is a more theoretically justifiable predictor for individualism. Our hypothesis is based on the assumption that wealth diminishes one’s dependence on the group for survival.

*Hypothesis 2b. Higher GDP per capita will be associated with individualism.*

*Hypothesis 3b. In national cultures of wealthy countries individualistic values will prevail.*
Importantly, we do not hypothesize a direct effect of national culture on individual cultural values. Even though it may seem interesting to explore whether national culture predicts individual cultural values, this would not make sense from the theoretical and empirical perspectives. According to our model, both national culture and individual cultural values are formed as an effect of country characteristics, such as wealth or freedom. Thus, even though there may be a statistical association between the national culture and individual cultural values scores, this relationship could easily be due to the effects of a third exogenous variable. From the mathematical perspective, the national cultural indices are derived by averaging individual scores within a country. Therefore, assuming causality is inappropriate.

**Moderation Hypotheses**

In his book, Hofstede (1980) analyzed the relationships between cultural values and gender and education. However, a closer look at his reasoning reveals that, similarly as with age, the relationships are actually mediated by the occupational status. Because in most of the societies, men and people with more education are likely to assume higher positions, they are likely to have cultural values similar to those of people with higher SES. We believe that once the effect of SES status will be controlled for, the effect of gender and education on cultural values will be minimal. Therefore, we do not hypothesize any general fixed effects for these variables. However, we believe that interactive effects may be present, that is their strength and direction will be moderated by country characteristics.

The moderation hypotheses are the same for each of the four dimensions. Specifically, we expect to find no significant differences in cultural values of men and women in countries characterized by high gender equality. On the contrary, we hypothesize that cultural values of
men will be significantly different from those of women’s in the countries where high gender inequality is present.

*Hypothesis 4a. The effect of gender on cultural values will be stronger in the societies characterized by high gender inequality and will be negligible in the societies characterized by high gender equality.*

Our hypothesis for education is based on the assumption that formal education seeks to promote knowledge and attitudes valued by the society. Therefore, we theorize that more years of formal education will be associated with stronger preference for cultural values typical for the society the individual belongs to. For example, we expect that in free societies that tend to promote low power distance orientation, individuals with more education are likely to be low power distance oriented. On the contrary, in countries characterized by low freedom more education will be associated with high power distance orientation, which is a typical cultural orientation for these countries.

*Hypothesis 4b. More years of formal education will be associated with stronger preference for the cultural values typical for the society the individual lives in.*

**METHOD**

**Literature Search for Data**

The hypotheses were tested using a meta-analytic sample. Studies that used Hofstede’s model and contained original data describing cultural values of their participants were included. All available sources were searched for relevant studies. First, a computer search was done through the EBSCO, PsycINFO, ERIC, ProQuest, and ProQuest Digital Dissertations electronic databases. Second, searches of all relevant journals for the 1980-2005 period (or since the journal was introduced) were conducted. Third, major books on cross-cultural studies (e.g. Hofstede, 2001; Hui, 1984; Kim, Triandis, Kagitebasi, Choi, & Yoon, 1994; Triandis, 1995) and reviews of the Hofstede’s work (e.g. Bond, 2002; Dorfman & Howell, 1988; Fernandez, Carlson,
Stepina, & Nicholson, 1997; Harvey, 1997; Sondergaard, 1994; Williamson, 2002; Yeh, 1988) were examined for links to studies containing data that could be used for the meta-analysis. Fourth, the reference sections of each article being coded were reviewed for links to publications potentially containing data for the meta-analysis. Fifth, requests for links to more studies have been sent out through mailing list servers of the Academy of International Business and the International Management Division of the Academy of Management.

Review of the papers revealed that some of the studies were based on survey instruments similar to that of Hofstede’s but no codable data was reported in the papers. Therefore, 58 authors of 47 papers were contacted and asked for additional data. Forty nine authors replied, though only 37 of them provided the requested data. Finally, all scholars who were authors or co-authors of three or more papers in our database were identified as leaders in the field and were contacted with a request for links to more published or unpublished studies. The pool included 33 researchers from all around the world, 28 of whom replied and provided additional references.

The final pool contained 508 empirical articles, masters and doctoral theses, conference proceedings and unpublished studies. A more detailed description of the sample will be later provided.

**Inclusion Criteria**

A common challenge in meta-analysis is that we rarely are summarizing identical papers. Studies are usually different in terms of sample, methodology, or metric. If the studies are substantively different, aggregation becomes questionable as it leads to results that, as Hunter and Schmidt (1990) put it, “are difficult or impossible to interpret” (481). This is known as the commensurability or “apples and oranges” problem (e.g., Sharpe, 1997), as differences in method may unduly account for any observed variation in the results (Kenny & Zaurtra, 2001).
At the same time, an exclusion of a study that is only slightly different from the original instrument is inappropriate. Minor modifications are unlikely to lead to a substantial alteration of the construct or its psychometric properties.

A meta-analysis of Hofstede’s does provide some challenges regarding commensurability, though relatively minor when compared to the analogous field of personality (Hogan, Hogan, & Roberts, 1996; Hurtz & Donovan, 2000). Hofstede’s Value Survey Module (VSM) has been routinely modified and several versions exist under a variety of names. In general, the versions of the VSM and the scales that were developed based on Hofstede’s original instrument are fairly similar in terms of their content and psychometric properties. However, certain differences exist between the instruments that include differences in scale length (e.g., 1 to 5 or 1 to 9), change in the sequence of the questions, as well as adding or dropping individual items.

To prevent an inclusion of studies that used survey instruments inconsistent with Hofstede’s framework and to make sure we were not excluding any relevant study, we conducted a thorough analysis of the items of every instrument that appeared relevant. Every instrument was compared against Hofstede’s original definitions of the cultural dimensions and the items in the VSM-82 and VSM-94 versions of his instrument.

More than fifty instruments have been considered for inclusion in the meta-analysis, but only some of them qualified. Some were excluded despite having identical nomenclature. For example, studies that measured individualism-collectivism with the instruments developed by Earley (1993; 1994) or by Wagner and Mock (1986) were excluded from the meta-analysis. An inspection of the items in the instruments revealed that they were designed to measure attitudes to and preferences for teamwork, which is not the same type on individualism that is measured
by Hofstede’s VSM. Similarly, items in the instrument developed by Chew (1996) were primarily dealing with willingness to take risk, not uncertainty avoidance in Hofstede’s sense and, therefore, studies that utilized the instrument were excluded from the meta-analysis.

On the other hand, some instruments were included even though they were nominally different, that is they measured very similar or identical constructs to those in Hofstede’s model but were named differently. For example, a review of the items in the measures of independent and interdependent self-construals developed by Singelis (1994) revealed that the they were closely related to Hofstede’s definition of individualism-collectivism provided above (e.g., Being able to take care of myself is a primary concern for me; I will sacrifice my self-interest for the benefit of the group I am in; If my brother or sister fails, I feel responsible). Also, it may appear that the measure of vertical collectivism in the instrument developed by Singelis et al. (1995) is related to Hofstede’s collectivism. However, an inspection of the items showed that actually their focus was on achievement orientation and attitudes to competition, which are salient elements in Hofstede’s construct of masculinity.

**Coding and Common Metric**

The key variables coded for the meta-analysis were the sample mean along with the four cultural dimensions, sample size, characteristics of the individuals comprising the samples and characteristics of the countries they represented. All studies were double coded and any inconsistencies were resolved through additional comparison with the original papers.

At the *individual* level, the sample average cultural score was the dependent variable. It is different from the conventional meta-analytic correlation-based effect-size, but it is virtually identical to the $d$-scores that are also popular in meta-analyses. The $d$-score represents standardized mean difference between sample $i$ and the control group $c$ [1].
In our case, however, we compare observed sample means not against a control group, but against zero. Also, since our means are already standardized, the standard deviation equals one, which leaves us with $d = \bar{X}_i$. This way, our effect size is the strength of preference for certain cultural values, with low numbers indicating low preference and high numbers indicating strong preference (for example, low power distance vs. high power distance).

To provide a foundation for the analysis, we converted all sample mean scores into a common metric. Due to inconsistencies between the scale formats of different survey instruments, the raw mean scores were transformed to 0-to-1 format. To further place different measures on a common metric, we standardized them to mean of zero and standard deviation of one and linearly equated scores (Angoff, 1971). Consequently, a zero score indicates a neutral position along Hofstede’s cultural dimension with the scores usually not exceeding minus two and two on the extremes. Lastly, following the guidelines offered by Hunter and Schmidt (1990), the mean scores were weighted by the sample size. The distributions of the mean scores along each of the dimension closely resembled the bell curve.

The list of the individual level independent variables included gender, age, education level, socio-economic status (SES) and generation. The variables were coded based on the description of the samples provided in the papers. The gender variable was coded as the percent of males in the sample and the age and education level were the average age and years of formal education of the individuals comprising the sample. The SES variable was coded using a 1-to-5 scale based on the information about the occupations of the respondents. The lowest values were assigned to the samples comprised of jobless people or people in the welfare programs and the highest values were assigned to the samples that consisted of top managers, company owners or
celebrities. The middle categories included, for example, blue-collar workers (lower middle), office employees (middle) and professionals (upper middle). The generation variable was derived as a difference between the respondent’s age and the year of the survey and thus corresponds the respondent’s birth year. In other words, the generation variable represents the era in which the respondent was growing up. It has a low correlation with and is conceptually different from the age variable. For instance, the corresponding age value of two persons who grew up in the 60’s, but one of them was surveyed in 1985 and the other one in 2005 will differ by whole 20 years. However, their generation score will be identical as both of the respondents represent the same generation (e.g., Baby Boomers).

Of note, the level-1 variables actually represent not the individuals, but the samples. This should be taken into account when interpreting the results of the analysis. However, for the sake of simplicity, we will be referring to level-1 as *individual* level.

At the *country* level, the dependent variable was the average country scores along the cultural dimensions, that is averaged individual scores within each level-2 unit. To calculate the averages, we weighted the sample means by their corresponding sample sizes. The list of the independent variables included: GDP per capita, economic, political and civil freedom, and gender equality. The country level data were taken from several external sources, including databases of the United Nations Development Program, Freedom House, and the Heritage Foundation.

The country characteristics were matched with the exact times when the data for the papers were collected. For example, if a sample from China was surveyed in 1995, the corresponding country level variables were characteristics of China in 1995. If the date of the survey was not specifically reported in the paper, it was assumed that the data were gathered 6
months prior to the first submission of the paper. If the data of the first submission was not reported, the data was estimated to have been collected 21 months prior to the publication date (based on the average revision time of 15 months for the sample, plus the 6 months).

The GDP per capita was measured in the year 2000 US dollars. Due to extremely high correlations between economic, political, and societal freedom (0.87 to 0.95) the variables were consolidated and a single composite score converted to the 1-to-100 format was used to represent the freedom variable. Women participation in country politics (the percentages of women in country parliaments or analogous institutions) was used as a measure of the gender equality.

**HLM Sample Structure**

There is always a number of ways to structure an HLM dataset. Some of the challenges we had to deal with were the data availability and longitudinal nature of our sample that creates a problem similar to that of autocorrelation in time-series analysis. After a thorough consideration of several 2- and 3-level alternatives and consultations with external HLM experts, we decided that a two-level structure with individuals (samples) at level-1 nested within countries at level-2 would be optimal.

To make reliable estimation possible, multilevel analysis requires that each level-2 unit (country) is represented by a substantial number of level-1 observations (samples). As noted by Hofmann (1997), it is difficult to provide specific guidelines on sample size requirements because estimation of different parameters in HLM is sensitive to different factors, such as the total number of level-1 observations, the number of level-2 units, or number of level-1 observations within each level-2 unit. In terms of specific numbers, Hofmann (1997) cites Bassiri (1988) and Van Der Leeden and Busing (1994) who concluded that in general at least 30 units with 30 observations in each are required. However, there is tradeoff among within and
between unit observations (i.e., with an increase in the number of level-2 units, the required number of observations per unit decreases). Because in our meta-analytics dataset the number of samples representing some countries was quite low, the countries were grouped in cultural regions (e.g., East Africa, West Africa, Arab countries). In this case, the level-2 variables describing the regions were obtained by averaging characteristics of the countries included in the region.

All of the countries in our dataset were represented by multiple samples surveyed in different years. Even though the country characteristics in these different years were different, we could not treat them as separate level-2 units because these scores were not independent. On the other hand, we could not average characteristics of the countries across the 35-year period covered by our dataset because of the dramatic changes most of the countries experienced over this time. After considering several alternatives, we averaged the country characteristics within decades. This way we did not have to use the less meaningful 35-year averages, yet a substantial change in country characteristics over 10 years allowed us to address the issue of autocorrelation. Thus, our level-2 units represented countries in specific decades.

RESULTS

Sample Description

There was sufficient data to summarize four out of Hofstede’s five dimensions. As mentioned in the introduction, Confucius Dynamism, aside from being typically misunderstood, proved to be rarely used and is not analyzed due to limited data availability. After excluding papers that were not compatible with Hofstede’s model or did not contain original quantitative data, the final pool contained 508 studies yielding 2,115 samples comprising about 500,000 individuals from 66 countries. Depending on the dimension, the number of samples ranged from
684 to 2,063 and total sample size ranged from 192,463 to 496,912. Across all dimensions, the average sample size was 355 ranging from 1 to 11,386. Of note, the small minimum sample size of 1 reflects that quite a few studies involved surveying members of international teams. Overall, these teams were frequently large in size, but the cultural scores were reported separately for representatives from each country, including at times a single representative. Each of these groups of representative is treated as a separate sample for the purpose of the meta-analysis. Due to space limitations, the complete list of papers (500 +) used for the meta-analysis is not provided in the paper. The reference list can be obtained from the authors upon request.

While for some countries the number of samples was also quite small, bigger countries tended to be well represented. For example, there were 704 samples from the US, 101 samples from Canada, 84 samples from China, and 75 samples from Hong Kong, all with approximately 355 respondents per sample. After the countries were grouped in cultural regions and the multilevel dataset was constructed, the number of level-2 units ranged from 37 to 51 with 20 to 41 observations (samples) per unit depending on the dimension.

Examination of the studies included in the meta-analysis revealed that all of the data were gathered through self-report questionnaire forms. No significant correlation between countries and response rates was found. The majority of the samples were of working age (\( \bar{X} = 35.5 \) years) and were fairly well educated (\( \bar{X} = 15.8 \) years of schooling).

**Regressions Results**

Hypotheses 1, 2, and 3 (dependent variable: individual cultural values) were tested using a set of six HLM regressions and hypothesis 4 (dependent variable: national culture) was tested
using WLS regressions. In each case, the cultural mean scores were weighted by their corresponding sample sizes and the results were estimated with robust standard errors. The analyses were conducted for each of the four dimensions separately. Hierarchical linear modeling was chosen for the analysis because it was specifically designed to analyze multilevel nested data at different levels of analysis. Because HLM does not allow for a level-2 variable to be a dependent variable, WLS was used to test the effect of country characteristics on national cultures.

All independent variables except for gender were centered on their grand means. This way, the intercepts represent estimated values for a woman (sample consisting of women) whose value on $X_i$ is equal to the grand mean.

The findings for *power distance* (PD) are summarized in Table 2. Our hypotheses predict that both individual and country characteristics would be significantly related to personal cultural values. In order for these hypotheses to be supported, there has to be a significant between-country variance in cultural values ($H_0$). The first model (2), which essentially is a one-way ANOVA with random effects, tests whether the intercepts vary significantly across countries. $\beta_0$ is the intercept and $r$ is the variance component at level-1 and $\gamma_{00}$ and $u_0$ are the intercept and the variance component at the country level. The error terms are assumed to be normally distributed with means of zero and variances $\sigma^2$ and $\tau_{00}$ respectively.

\[
\begin{align*}
\text{Level-1: } PD &= \beta_0 + r \\
\text{Level-2: } \beta_0 &= \gamma_{00} + u_0 \\
\end{align*}
\]

(2)

The results show that the estimated value of the variance component $\tau_{00}$ is significantly greater than zero indicating a significant variation in mean PD scores across countries. Using the
data in the output, we can calculate the Intraclass Correlation Coefficient (ICC), which in this case represents the proportion of variance in power distance residing between countries (3).

\[
ICC = \frac{\tau_{00}}{\tau_{00} + \sigma^2}
\] (3)

The estimated value of ICC is 0.12 indicating that 12% of the total variance in PD is residing between countries and 88% of the variance is within countries.

Our general hypothesis 1 predicts that individual characteristics are related to individual cultural values. Model 2 tests the hypothesis with an assumption that the effects of individual characteristics on power distance are fixed across countries (4). The results provide a strong support for the hypothesis. Under the fixed slopes condition, gender, generation and SES significantly affect individual power distance orientation. On average, men and people representing earlier generations are more power distance oriented and higher SES is associated with lower power distance orientation.

Level-1: \(PD = \beta_0 + \beta_1 \times (\text{Gender}) + \beta_2 \times (\text{Generation}) + \beta_3 \times (\text{Education}) + \beta_4 \times (\text{SES}) + r\)

Level-2: \(\beta_0 = \gamma_{00} + u_0\)
\(B_1 = \gamma_{10}\)
\(B_2 = \gamma_{20}\)
\(B_3 = \gamma_{30}\)
\(B_4 = \gamma_{40}\)

(4)

By comparing the output from models 1 and 2, we can calculate a measure similar to \(R^2\) used in OLS (5). In our case, however, the coefficient will represent not the total amount of variance account for by the model, but the percentage of variance accounted for by the included level-1 predictors. \(R^2\) equals 0.37 indicating that individual characteristics account for about 37% of the variance in power distance.

\[
R^2 = \frac{\delta^2_{\text{ANOVA}} - \delta^2_{\text{Fixed Slopes}}}{\delta^2_{\text{ANOVA}}}
\] (5)
Model 3 also tests hypothesis 1; however, this time we assume that the effects of education and gender on power distance vary across countries (6). The findings are consistent with the earlier results. It was found again that gender, generation, and SES all are significantly related to power distance. The direction of the effects is the same as in the previous model. The $R^2$ for model 3 is 0.39. It is slightly higher than that for model 2, indicating that the model with varying slopes provides a better fit to the data.

$$\text{Level-1: } PD = \beta_0 + \beta_1 \times \text{(Gender)} + \beta_2 \times \text{(Generation)} + \beta_3 \times \text{(Education)} + \beta_4 \times \text{(SES)} + r$$

$$\text{Level-2: } \beta_0 = \gamma_{00} + u_0$$
$$\beta_1 = \gamma_{10} + u_1$$
$$\beta_2 = \gamma_{20}$$
$$\beta_3 = \gamma_{30} + u_4$$
$$\beta_4 = \gamma_{40}$$

(6)

Model 4 contains only level 2 predictors and tests the hypothesis that individual cultural values are affected by country characteristics (7). The results confirm that individuals are likely to be low power distance oriented in countries characterized by high freedom. By comparing $\tau_{00}$ estimates from the random ANOVA model and the current model with level-2 predictors, we can calculate $R^2$ (8). In this case, it indicates the portion of “variance explained” by the level 2 variables. It shows that freedom accounts for about 3.45% of between-country variance in individual power distance orientation.

$$\text{Level-1: } PD = \beta_0 + r$$
$$\text{Level-2: } \beta_0 = \gamma_{00} + \gamma_{01} \times \text{(Freedom)} + u_0$$

(7)

$$R^2 = \frac{\tau_{00 \text{ANOVAN}} - \tau_{00 \text{Level-2}}}{\tau_{00 \text{ANOVAN}}}$$

(8)

Model 5 contains the level-2 moderators to explain the hypothesized (H4) variation in the slopes of level-1 predictors (9). The results re-confirm the significant fixed effects of gender, generation and SES on power distance (H1) as well as supported the hypotheses that the effect of gender and education are moderated by country characteristics. As expected, the effect of gender
was found to be weaker in countries with high gender equality (i.e., no significant difference between cultural values of men and women), and stronger in countries with high gender inequality (i.e., men and women display different cultural values). Figure 2 illustrates the finding. As can be seen, the predicted slope for the countries in which women account for 15% of the seats in parliament (high gender equality) is close to horizontal indicating no effect of gender on cultural values. In contrast, the predicted slope for the countries in which women account for only 5% of the seats in parliament (low gender equality) is rather steep. Of note, due to centering the values on x-axis have been shifted.

Level-1: \( PD = \beta_0 + \beta_1 \times (Gender) + \beta_2 \times (Generation) + \beta_3 \times (Education) + \beta_4 \times (SES) + r \)

Level-2: \( \beta_0 = \gamma_{00} + u_0 \)
\( B_1 = \gamma_{10} + \gamma_{11} \times (Gender\ Equality) + u_1 \)
\( \beta_2 = \gamma_{20} \)
\( \beta_3 = \gamma_{30} + \gamma_{31} \times (Freedom) + u_3 \)
\( \beta_4 = \gamma_{40} \)

A strong moderating effect of the country characteristics was found for education (Figure 3). In countries described by high freedom, more education is associated with lower power distance orientation, whereas in low freedom countries, more education is associated with higher power distance orientation. As confirmed by the results for Model 5, low power distance values are typical for free countries and high power distance values are dominating in countries with low freedom. Thus, the effect of education strengthens the cultural values typical for the society and the more people study, the more indoctrinated they become to the dominating values in their country.
Model 6 includes all components of the previous simpler models (10). The results of the full model are consistent with the findings from simpler models. It reconfirms that individual and country characteristics significantly affect individual power distance orientation and the effect of gender and education on cultural values is moderated by country characteristics.

\[
\begin{align*}
\text{Level-1: } PD &= \beta_0 + \beta_1 \cdot \text{(Gender)} + \beta_2 \cdot \text{(Generation)} + \beta_3 \cdot \text{(Education)} + \beta_4 \cdot \text{(SES)} + r \\
\text{Level-2: } \beta_0 &= \gamma_{00} + \gamma_{00} + \gamma_{01} \cdot \text{(Freedom)} + u_0 \\
\beta_1 &= \gamma_{10} + \gamma_{11} \cdot \text{(Gender Equality)} + u_1 \\
\beta_2 &= \gamma_{20} \\
\beta_3 &= \gamma_{30} + \gamma_{31} \cdot \text{(Freedom)} + u_4 \\
\beta_4 &= \gamma_{40} 
\end{align*}
\]

Finally, Model 7 focuses exclusively on the country level and tests whether country characteristics affect national cultures (H4). This time the dependent variable is power distance scores aggregated to the national level. The results confirm a significant negative association between freedom and power distance. The $R^2$ for the model is 0.14, indicating that freedom explains about 14% of the variance in national culture along the power distance dimension.

Tables 3-5 summarize the results for the rest of the cultural dimension. Because the model equations and interpretation of the parameter estimates are the same for every dimension, we will provide only a brief discussion of the analysis results.

For *individualism*, the random one-way ANOVA model confirmed a significant variation across level-2 units providing a basis for further hypothesis testing. The ICC index indicates that only 3% of the variance resides at the country level suggesting that individual characteristics are likely to be stronger predictors of personal cultural values along the dimension than country characteristics.

---

Insert Table 3 about here

---

As expected, individual characteristics were found to affect individualism under fixed and varying slopes conditions (Models 2 and 3). On average, men were found to be significantly less individualistic than women, older people less individualistic than younger people, representatives of earlier generation s more individualistic than those representing later generations, and people with higher SES more individualistic than those with lower SES. The “variance explained” index $R^2$ is 0.03 and 0.07 for models 2 and 3 respectively, indicating that individual characteristics account for up to 7% of variance in individualism, depending of model specification. According to our hypothesis 3, GDP per capita will be positively related to personal individualism orientation. The results of Model 4 confirm the hypothesis. The moderation hypothesis (Model 5) was not confirmed for individualism indicating that the effects of gender and education on individualism are not moderated by country characteristics. The results of the full model reconfirmed the earlier findings: individual and country characteristics have a significant effect on personal cultural values along individualism dimension and the effects of personal characteristics are not significantly moderated by country characteristics. In terms of national culture, Model 7 confirmed the hypothesis that wealthy countries tend to have individualistic cultures.

The regression results for masculinity confirmed all the hypotheses for this cultural dimension. Based on the ICC for the ANOVA (Model 1), 8% of the variance in masculinity resides between countries. All models that included level-1 predictors consistently confirmed the hypothesis that individual characteristics affect personal cultural values. It was found that people representing earlier generations and people with higher SES are likely to score significantly higher on masculinity. The individual characteristics accounted for 21% to 23% of the
“explained variance”, based on the $R^2$ for the models with fixed and varying slopes correspondingly.

-------------------------------------------------------------------------------
Insert Table 4 about here
-------------------------------------------------------------------------------

The effect of freedom on masculinity was significant at both individual and national levels (Models 4 and 7) and accounted for 21% and 16% of “explained variance” correspondingly. However, the direction of the effect was unexpectedly negative meaning that freedom is actually associated with feminine values. This is surprising given the strong emphasis placed on achievement and success in Western countries that are usually described as free. The confusion is reconciled by the result of moderation analysis (Models 4 and 6). As expected, more education was found to be associated with higher masculinity in free countries and higher femininity in countries with low freedom. In other words, as hypothesized education strengthens cultural values emphasized in the society: achievement and success seeking (masculine values) in Western countries and personal relationship and harmony (feminine values) in Eastern countries. The moderating effect of gender equality on the effect of gender on cultural values was also found to be highly significant. As hypothesized, cultural differences between men and women are much smaller in countries with high gender equality.

The findings for Uncertainty Avoidance (Table 5) were similar to those for individualism. As hypothesized, the results for all models confirmed significant effects of individual and country characteristics on personal cultural values (Models 1-6) and national cultures (Model 7). Based on the regression outputs, people representing earlier generations are more uncertainty averse and people with higher SES are more comfortable with ambiguity. Freedom as a country characteristic was found to be negatively related to uncertainty avoidance at both individual
values and national culture levels. According the estimated ICC and $R^2$ indices, about 18% of the variance was found to be between countries and 8% to 15% of the variance was “explained” by individual level predictors and 20% to 29% by county characteristics, depending on model specification. The hypothesis that the effects of individual characteristics will be moderated by country characteristics was not supported at a statistically significant level.

DISCUSSION

The results of our multilevel multivariate meta-analysis demonstrated a significant effect of personal and country characteristics on cultural values at individual and country levels. The findings were significant for such individual characteristics as SES, age, gender, education, and generation and such country characteristics as economic, political and societal freedom and GDP per capita, though the strength and the direction of their effects differed across the cultural dimensions. Additionally, it was found that the effect of such personal characteristics as age and education were moderated by country characteristics. Generally, the effect of gender was found to be significantly stronger in countries with high gender inequality and negligible in countries where men and women enjoy equal rights and opportunities. The effect of education on cultural values seems to be present in all countries. However, its direction depends on country characteristics. More education is associated with lower power distance and higher masculinity in free countries and is associated with higher power distance and feminine cultural values in countries characterized by low freedom. A comparison of these results with the findings for the effect of country characteristics on cultures shows an indoctrination effect, that is more education is associated with stronger preference for the cultural values characteristic for the society.
Based on the results we can conclude that cultures are determined by a set of individual and country level factors and are likely to change in response to a change in the culture-determining factors. At the national level, as more and more countries reorient towards democracy and more political and civil freedom as well as display fast and steady economic growth, their cultures can be expected to evolve towards the values typical for so-called first-world countries. Similarly at the individual level, as one matures, gains more education and moves up the corporate ladder, one’s cultural values will likely be changing in response to his these personal characteristics.

Based on our findings, we would like to highlight the danger of using national averages to make assumptions about individual cultural values. According to our results, only about 3% to 18% of the variance in cultural values resides between countries, while 82% to 92% being within countries, depending on the cultural dimension. For example, an elderly Kansas farmer and a young Manhattan lawyer are likely to have very different sets of work-related cultural values, despite both being Americans. Comparatively, the Manhattan lawyer is more likely to have cultural values similar to those of a young Tokyo lawyer, even though they have grown up in different countries.

Thus, it is very questionable to label people with national culture characteristics on the basis of their country of origin. National cultures, as well as cultural values of individuals residing in them, do not depend on the country names, but are determined by country and one’s personal characteristic. The reorientation towards economic and political freedom and economic growth currently observed in many so-called third-world countries has triggered a major shift in cultures at individual and national levels (Taras & Steel, 2005). As the countries move towards higher freedom and wealth, we can expect their cultures to change too.
Limitations and Future Research

The results of our meta-analysis are subject to some limitations. First of all, it should be noted that we attempted to replicate Hofstede’s original approach to studying cultures as much as possible. Therefore, our study is subject to some limitations that Hofstede’s IBM research has been criticized. For example, we adopted Hofstede’s model of cultural differences despite some concerns that the five dimensions do not adequately capture all aspects of cultures and existence of alternative models of cross-cultural differences (House et al., 2004; Maznevski et al., 1995; Schwartz, 1994; Trompenaars, 1993).

Another limitation of our research project, as with most meta-analyses, is the issue of commensurability. Not all studies aggregated were conceptual identical. While it is relatively easy to address differences in the sample size or in the number of points on the scale, it is much more difficult to deal with the differences in composition and wording of actual items in different instruments. Even in Hofstede’s own works, the definition of masculinity-femininity has been altered from a publication to publication (compare Hofstede 1980, 1991, and 2001) and it can not be expected that different authors defined and presented the concepts identically. However, we minimize the problem by inspecting scales as the item level to ensure their consistency with Hofstede’s definitions of the cultural dimensions and his original Value Survey Module. Only the instruments that were found to be closely related Hofstede’s framework were included in the meta-analysis.

While the focus of this study was on predicting cultural values, future research may choose to study the predictors of heterogeneity in cultural values. We can hypothesize that certain individual characteristics, such as education, for example, and certain country characteristics, such as freedom, can lead to a greater variety of cultural values while others can
cause cultural homogeneity. To test the hypothesis we could rerun the same HLM and WLS analysis, but this time our dependent variable will be a measure of dispersion, such as standard deviation of means in the samples and level-2 units. This will help establish what permits cultural diversity.

Finally, a number of potentially relevant variables have not been included in our analysis. For example, such country characteristics as wealth distribution inequality, economic growth rate, population size and density and percent living in urban areas and such individual characteristics as marital status, number of siblings, race or religion all could have significant effects on cultural values. These absences largely reflect the enormity of the work to be done, which is far larger than any single article can address. Explicating culture as consequence is an endeavor that can be expected to span decades of work and dozens of publications.
APPENDIXES

FIGURE 1. Multi-Level Model of Cultural Values and General Research Hypotheses

FIGURE 2. Moderating Effect of Gender Equality on the Effect of Gender on Power Distance

FIGURE 3. Moderating Effect of Freedom on the Effect of Education on Power Distance
### TABLE 1
Means, Standard Deviations, and Weighted Correlations

<table>
<thead>
<tr>
<th></th>
<th>( \bar{x} )</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power Distance (PD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Level (N=878)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 PD</td>
<td>0.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Gender</td>
<td>68.61</td>
<td>26.72</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Generation</td>
<td>1957</td>
<td>13.15</td>
<td>-0.41</td>
<td>-0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Education</td>
<td>15.85</td>
<td>1.96</td>
<td>0.03</td>
<td>0.60</td>
<td>-0.62</td>
<td></td>
</tr>
<tr>
<td>5 SES</td>
<td>3.82</td>
<td>0.81</td>
<td>-0.37</td>
<td>0.34</td>
<td>-0.15</td>
<td>0.66</td>
</tr>
<tr>
<td>Country Level (N=46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 PD</td>
<td>0.00</td>
<td>0.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 GDP/capita (x1000)</td>
<td>11.65</td>
<td>10.69</td>
<td>-0.27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Freedom</td>
<td>66.57</td>
<td>22.63</td>
<td>-0.38</td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Gender equality</td>
<td>11.87</td>
<td>8.78</td>
<td>-0.51</td>
<td>0.31</td>
<td>0.23</td>
<td></td>
</tr>
</tbody>
</table>

| **Individualism (IND)**  |               |     |     |     |     |     |
| Individual Level (N=2,063)|               |     |     |     |     |     |
| 1 IND                    | 0.00          | 1.00|     |     |     |     |
| 2 Gender                 | 55.96         | 30.08| 0.05|     |     |     |
| 3 Generation             | 1967          | 12.50| -0.08| -0.62|     |     |
| 4 Education              | 14.72         | 2.02 | 0.08| 0.45| -0.71|     |
| 5 SES                    | 3.45          | 0.73 | 0.05| 0.57| -0.53| 0.63|
| Country Level (N=51)     |               |     |     |     |     |     |
| 1 IND                    | -0.08         | 0.41|     |     |     |     |
| 2 GDP/capita (x1000)     | 10.97         | 10.33| 0.43|     |     |     |
| 3 Freedom                | 65.25         | 22.83| 0.49| 0.82|     |     |
| 4 Gender equality        | 12.53         | 8.65 | 0.25| 0.11| 0.19|     |

| **Masculinity (MAS)**    |               |     |     |     |     |     |
| Individual Level (N=978) |               |     |     |     |     |     |
| 1 MAS                    | 0.00          | 1.00|     |     |     |     |
| 2 Gender                 | 65.12         | 28.64| 0.05|     |     |     |
| 3 Generation             | 1958          | 14.18| 0.12| -0.16|     |     |
| 4 Education              | 15.51         | 2.14 | 0.18| 0.14| -0.35|     |
| 5 SES                    | 3.75          | 0.81 | 0.23| 0.13| -0.28| 0.79|
| Country Level (N=46)     |               |     |     |     |     |     |
| 1 MAS                    | 0.03          | 0.52|     |     |     |     |
| 2 GDP/capita (x1000)     | 11.78         | 10.57| -0.14|     |     |     |
| 3 Freedom                | 67.07         | 22.23| -0.40| 0.75|     |     |
| 4 Gender equality        | 12.53         | 9.11 | -0.52| 0.24| 0.21|     |

| **Uncertainty Avoidance (UA)** |               |     |     |     |     |     |
| Individual Level (N=684)      |               |     |     |     |     |     |
| 1 UA                         | 0.00          | 1.00|     |     |     |     |
| 2 Gender                     | 70.77         | 27.23| -0.04|     |     |     |
| 3 Generation                 | 1958          | 12.56| -0.21| -0.62|     |     |
| 4 Education                  | 15.96         | 2.00 | -0.07| 0.65| -0.68|     |
| 5 SES                        | 3.92          | 0.77 | -0.15| 0.40| -0.24| 0.59|
| Country Level (N=37)         |               |     |     |     |     |     |
| 1 UA                         | -0.04         | 0.54|     |     |     |     |
| 2 GDP/capita (x1000)         | 11.14         | 10.81| -0.34|     |     |     |
| 3 Freedom                    | 66.22         | 21.96| -0.45| 0.81|     |     |
| 4 Gender equality            | 13.49         | 9.15 | -0.45| 0.20| 0.17|     |
TABLE 2
Results of Regression Analysis for Power Distance

<table>
<thead>
<tr>
<th>Power Distance</th>
<th>One-Way ANOVA</th>
<th>Only Level-1 Predictors</th>
<th>Only Level-2 Predictors</th>
<th>Level-1 Predictors and Level-2 Moderators</th>
<th>Full Model</th>
<th>National Culture, OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed Slopes</td>
<td>Varying Slopes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

**Fixed Effects**

**Level-1**
- Intercept, ($\gamma_{00}$) 0.40* -0.43 -0.29 0.47* -0.30* -0.26
- Gender, ($\gamma_{10}$) 0.01* 0.01* 0.01** 0.01** 0.01**
- Generation, ($\gamma_{20}$) -0.04** -0.04** -0.03** -0.03**
- Education, ($\gamma_{30}$) -0.03 -0.08 -0.03 0.03
- SES, ($\gamma_{40}$) -0.80** -0.69** -0.65** -0.68**

**Level-2**
- Intercept, ($\gamma_{01}$) 0.98**
- Freedom, ($\gamma_{31}$) -0.01* 0.01* -0.01**
- Gender Equality → Gender, ($\gamma_{11}$) -0.01** -0.01*
- Freedom → Education, ($\gamma_{31}$) -0.01** -0.01*
- Variance Component
  - $\tau_{00}$, ($u_{00}$) 0.29** 0.11** 0.01 0.28** 0.04 0.01
  - Gender, ($u_{1}$) 0.01 0.00 0.00
  - Education, ($u_{3}$) 0.12** 0.02** 0.02**
  - $\sigma^2_r$ 2.04 1.29 1.24 2.04 1.24 1.25
- Deviance 3211.70 2819.52 2810.17 2806.78 2785.69 2791.88

* p<0.05
** p<0.01
### TABLE 3
Results of Regression Analysis for Individualism

<table>
<thead>
<tr>
<th></th>
<th>One-Way ANOVA</th>
<th>Only Level-1 Predictors</th>
<th>Only Level-2 Predictors</th>
<th>Level-1 Predictors and Level-2 Moderators</th>
<th>Full Model</th>
<th>National Culture, OLS</th>
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<tr>
<td></td>
<td>Fixed Slopes</td>
<td>Varying Slopes</td>
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<tr>
<td>Individualism</td>
<td>1</td>
<td>2</td>
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<td>5</td>
<td>6</td>
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<tr>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Level-1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intercept, (\gamma_{00})</td>
<td>0.07</td>
<td>0.32**</td>
<td>0.06†</td>
<td>-0.03</td>
<td>0.06†</td>
<td>0.02</td>
</tr>
<tr>
<td>Gender, (\gamma_{10})</td>
<td>-0.01**</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
</tr>
<tr>
<td>Age, (\gamma_{20})</td>
<td>-0.03**</td>
<td>-0.02**</td>
<td>-0.02**</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
</tr>
<tr>
<td>Generation, (\gamma_{30})</td>
<td>-0.02**</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
<td>-0.01*</td>
</tr>
<tr>
<td>Education, (\gamma_{40})</td>
<td>-0.05</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.02</td>
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* p<0.05
** p<0.01
### TABLE 4
Results of Regression Analysis for Masculinity

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<th>Fixed Effects</th>
<th>One-Way ANOVA</th>
<th>Only Level-1 Predictors</th>
<th>Only Level-2 Predictors and Level-2 Moderators</th>
<th>Full Model</th>
<th>National Culture, OLS</th>
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* p<0.05
** p<0.01
TABLE 5
Results of Regression Analysis for Uncertainty Avoidance

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<th>One-Way ANOVA</th>
<th>Only Level-1 Predictors</th>
<th>Only Level-2 Predictors</th>
<th>Level-1 Predictors and Level-2 Moderators</th>
<th>Full Model</th>
<th>National Culture, OLS</th>
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* p<0.05  
** p<0.01
REFERENCES


