UNIVERSITY OF CALIFORNIA
RIVERSIDE

Assessing Personality Across 13 Countries Using the California Adult Q-Sort

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Psychology

by

Esther Mabel Hanes

June 2015

Dissertation Committee:
Dr. David C. Funder, Chairperson
Dr. Sonja Lyubomirsky
Dr. Gene Anderson

The Dissertation of Esther Mabel Hanes is approved:

Committee Chairperson

University of California, Riverside

DEDICATION

This dissertation is dedicated to my three babies – now children – who have been with me on this journey since the day they were all born.

***

Jackson conditioned me to be consistent, thorough, and truthful. And to keep a straight face at all times.

Emilia holds up the mirror for me, especially on days I need it the most.

William taught me how mornings should be done – early, and off to a running start. With the brightest smile ever.

ABSTRACT OF THE DISSERTATION

Assessing Personality Across 13 Countries Using the California Adult Q-Sort

by

Esther Mabel Hanes

Doctor of Philosophy, Graduate Program in Psychology
University of California, Riverside, June 2015
Dr. David C. Funder, Chairperson

Objective: The purpose of this dissertation is to quantitatively compare personality profiles, dimensions, and characteristics around the world using a personality measure that is well suited for cross-cultural research, the California Adult Q-sort (CAQ).

Method: 2370 members of college communities in 13 countries, recruited by selected collaborators, provided data via our custom-built website in 10 languages. Using the 100 CAQ items, participants described their personalities.

Results: Correlations among the average personality profiles of each country ranged from $r = .69$ to $r = .98$. On average across all 13 countries, participants described themselves as largely pleasant and well-adjusted individuals. The most similar averaged personality profiles were between USA/Canada; the least similar were South Korea/Russia and Poland and China/Russia. Personality descriptions within the Czech Republic were the most homogeneous, and South Korea was the least homogeneous.

Further analyses examined the Big Five traits using templates constructed from the CAQ. The results revealed that CAQ measures of the Big Five produce similar results to previous studies using Likert scales specifically designed to measure the Big Five traits. **Conclusion**: This is the first study to use the ipsative CAQ to examine personality across countries. People around the world report very similar personalities, on average. The Big Five templates constructed from CAQ items produced similar findings to previous research on the Big Five across countries (e.g., Costa, Terracciano, & McCrae, 2001; Feingold, 1994; McCrae et al. 2005; Schmitt et al., 2007; Schmitt, Realo, Voracek, & Allik, 2008).

Table of Contents

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1 - INTRODUCTION

Personality organizes thoughts, emotions, and behavior (Allport, 1931). Characteristics of personality have been widely studied, and measured not only by self and observer reports, but also by non-verbal behavior, where even the smallest expressions and gestures reveal personality across several countries and languages (Paunonen, Ashton, & Jackson, 2000). Additionally, in a review of 19 studies, Gosling and John (1999) found that across a number of divergent species (e.g., dogs, rats, donkeys), extraversion, neuroticism, and agreeableness showed the strongest cross-species generality, followed by openness; conscientiousness appeared only in chimpanzees (Gosling & John, 1999).

By far, the most widely studied personality attributes are the Big Five (i.e., extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience). The Big Five or Five Factor Model was first developed as a lexical paradigm under the belief that important differences in thoughts, feelings and behaviors become encoded into everyday language (Cattell, 1943). The Big Five have emerged from many countries and languages (McCrae & Costa, 1997), and evidence suggests these traits have a biological basis (De Young, 2010; Yamagata et al., 2006). Traditionally, Likert scales have been the tool of choice for assessing the Big Five across countries, but some suggest that other methods (e.g., forced-choice instruments) are better suited for cross-cultural assessments of personality (Heine, Lehman, Peng & Greenholtz, 2002).

Cross-Cultural Assessment of the Big Five Personality Traits

McCrae (2001) was one of the first researchers to study the Big Five across countries using the Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992). Researchers translated and back translated the NEO in to 30 languages, and mean comparisons for the Big Five traits were reported across 26 countries. Results were surprising. It appeared that the structure of the Big Five replicated across countries, and that characteristics of the Big Five traits were likely universal. Using the same data set, Costa and colleagues (2001) investigated personality differences in gender across 26 countries, and a clear pattern emerged: on average, men scored higher than women in assertiveness and openness to ideas (a facet of openness to experience), and women reported higher levels of neuroticism, agreeableness, warmth, and openness to feelings (a facet of openness to experience). Gender differences varied across countries, with traditionally collectivist countries (e.g., African and Asian) showing smaller differences between men and women, and individualistic countries (e.g., European and American) displaying greater differences (Costa et al., 2001).

In 2005, McCrae and colleagues reported personality data from 51 countries, this time using informant reports in addition to self-reports. The reports were intended to circumvent bias in self-reports, and again, findings were replicated from past studies, demonstrating that the Big Five may be a universal personality construct. One notable finding was that Europeans, on average, were rated by informants as being more extraverted than Asians or Africans; Men were also higher than women in assertiveness,

excitement seeking, and openness to ideas (a facet of openness to experience), whereas women were higher in anxiety, vulnerability, aesthetics, feelings, and tender-mindedness.

In order to explore the implications of country-level personality scores, McCrae and colleagues (2005) correlated the NEO-PI-R with Hofstede's (2001) five value dimensions. Hofstede was one of the first researchers to conduct a large cross-cultural study examining how values in the workplace are influenced by culture. Between 1967 and 1973, Hofstede collected data from IBM employees in over 70 countries, and then further extended the research by validating earlier analyses with various groups (pilots, civil service managers, "elites") all of which eventually lead him to identify the following dimensions:

1. Power distance happens when members of a country accept a hierarchical society with unequal treatment of less powerful members. Less powerful people in a society endorse the structure as much as more powerful people. Countries with higher power distance leave important family and/or organizational decisions to those at the top of the hierarchy, and children are socialized toward obedience. Countries with low power distance are more egalitarian, and important decisions are weighed among all members.

2. Individualism is the degree to which a country prefers to serve the self over the group. In countries that score high in individualism, everyone is expected to look after himself or herself and his or her immediate family. The opposite is collectivism, where in-group harmony and loyalty are valued above individual desires.

3. Masculinity refers to the extent to which a society will be driven by competition, achievement and success. In masculine countries, the men tend to be more assertive and

competitive than in less masculine countries. The women in masculine countries also tend to be more assertive, but not as much as the men, so a gap is seen between women and men in masculine countries. That gap disappears in more feminine countries where men have the same modest and caring values as women.

4. Uncertainty avoidance is the distrust of ambiguous or unknown situations. Uncertainty-avoiding countries prefer strict laws and rules, guided by safety and security, where they tend to believe: "There can only be one Truth and we have it." In countries that accept uncertainty, people are more tolerant of differing opinions, and prefer fewer and more flexible societal rules and standards.

5. Long-term orientation refers to a country's preference to maintain traditions and societal norms while viewing changes with suspicion. Those with long-term orientation have an eye for the future; they delay gratification and adapt to changes well. Those with short-term orientation live in the moment and are concerned with tradition, social hierarchy and social obligations.

A number of Hofstede's (2001) country-level value dimensions were significantly related to the NEO (McCrae et al., 2005). Neuroticism was related to uncertainty avoidance, extraversion was related to low power distance and individualism, openness was related to low power distance and individualism. Agreeableness and conscientiousness were not significantly related to the value dimensions.

McCrae and colleagues (2005) also correlated the NEO scales of extraversion and neuroticism with Lynn and Martin's (1995) results from the Eysenck Personality Questionnaire (EPQ), which allowed for the opportunity to investigate cross-instrument

convergent validity (Campbell & Fiske, 1959). Together, the two studies overlapped in data collection for 37 countries. The results of both showed that women had higher mean scores on neuroticism than men, and the country correlations between the EPQ and the NEO reached a significant correlation. However, the extraversion scales between the two measures did not. McCrae and colleagues (2005) offer several reasons for this puzzling finding: samples were small, both studies had participants from different locations within countries, and there were large differences in age and sex of respondents between the two studies. Finally, although the EPQ provides general similarity to the NEO, the two scales are not identical in conception or operationalizing of scales.

As an extension to the previous work on the cross-cultural assessment of the Big Five personality traits, Schmitt and colleagues (2007) supported many findings from previous cross-cultural studies using the Big Five Inventory (BFI), a 44-item self-report measure of the Big Five (Benet-Martínez & John, 1998) by gathering convenience samples from 56 nations. South American and European countries tended to be highest in openness, whereas Asian countries such as Hong Kong, Japan, South Korea, and Taiwan were lowest in openness, and African countries tended to be low in neuroticism. Likewise, Allik and McCrae (2004) found that Europeans and North American countries tend to be outgoing and open to new experiences, whereas Asian and African countries are more introverted and traditional.

Lynn and Martin (1995) published the mean scores of neuroticism and extraversion as measured by the EPQ for 37 countries. Schmitt and colleagues' (2007) BFI data overlapped with 24 countries from the EPQ, which also allowed for the

opportunity to investigate cross-instrument convergent validity (Campbell & Fiske, 1959). Country-level scores of the BFI and the EPQ showed a moderate correlation for neuroticism, but the correlation between the two scales for extraversion was disappointingly low, and did not reach significance (Schmitt et al., 2007). Twenty-seven countries measured by the BFI also had mean level personality traits that overlapped with the Big Five NEO-PI-R scores (McCrae, 2002). The correlations between the BFI and the NEO-PI-R were moderate to strong for all Big Five domains, implying good cross-instrument validity between the BFI and the NEO.

Using the same data set as Schmitt and colleagues (2007), Schmitt and colleagues (2008) examined gender differences with the BFI. Women were significantly higher on neuroticism, agreeableness, extraversion, and conscientiousness than men combined across all 55 countries sampled. Gender differences were most pronounced with neuroticism; women were higher in neuroticism than men in every country sampled. Women also scored higher than men in agreeableness in 34 countries, with only South Korea displaying a significant difference in men reporting more agreeableness than women. Women scored higher than men in extraversion in 25 countries, and higher than men in conscientiousness in 23 countries. Finally, men scored higher than women in openness in 37 countries (Schmitt et al., 2008).

The magnitude of gender differences was also examined. Using the *d* statistic, Schmitt and colleagues (2008) found that gender differences were relatively small to moderate, with the largest differences found for neuroticism, and the second largest found for agreeableness, followed by conscientiousness and extraversion (Schmitt et al., 2008).

Results also revealed that the African and Asian countries tended to have smaller gender differences than Europe, North and South America.

Finally, a review by Feingold (1994) also found that gender differences in personality traits were generally constant across ages, time of data collection, educational levels, and countries, and that women were higher in extraversion, anxiety, trust, and nurturance. However, no noteworthy gender differences were found in social anxiety, impulsiveness, activity, ideas (e.g., reflectiveness), locus of control, or orderliness.

Further Examinations of the Big Five

Data from the US show that personality varies by region. Extraversion tends to be highest in the central states and lowest in the Northwest and most of the East Coast states; Agreeableness appears to be highest in the Midwest and Southern states, and lowest in Northeast states. Conscientiousness seems to be highest in the Southern and Midwest states and lowest in the Northeastern states. Neuroticism divided the East and West, with states between Maine to Louisiana being highest, and states to the immediate Northwest and Southeast having slightly lower levels, and states in the West having the lowest levels; Finally, openness to experience was higher in the Northeast and West coast states than in the Midwest and Southern states (Rentfrow, Gosling, & Potter, 2008).

McCrae (2002) cautioned against attributing mean country trait profiles to individuals because within country variation in all Big Five traits is greater than cross country variations in mean profiles. In fact, some have gone as far as to say that relating country to personality is not supported by empirical evidence because there is considerable variability of personality within countries (Triandis, 1997).

The Big Five have also emerged from indigenous measures (e.g., personality measures that were developed within a country), such as the Philippines (Katigbak et al., 1996). Likewise, Benet-Martinez and Waller (1995) replicated the Big Five in the Spain, but also uncovered two additional personality dimensions: positive and negative valence. Finally, some claim that only three of the five factors replicate across countries: extraversion, agreeableness, and conscientiousness (De Raad et al., 2010; Di Blas, Forzi, & Peabody, 2000), while others insist that six essential personality constructs exist, including the Big Five, and an additional factor called Honesty-Humility (Ashton et al., 2004, 2006).

One possibility for these divergent findings is that highly evaluative terms and physical descriptors may lead to the discovery of factors beyond the Big Five. When restricted to conventional disposition descriptors, one study found that the Big Five only emerged in northern European languages, with northern European countries showing the most similarity to the Big Five, and tropical regions the least (Saucier, Hampson, & Goldberg, 2000). In other words, the choice of items and scales used to measure the Big Five will indeed produce different findings when compared across countries.

In an effort to design a measure of personality that would capture both indigenous and universal personality characteristics, Cheung, Cheung, and Zhang (2010) compared the Minnesota Multiphasic Personality Inventory (MMPI) (an instrument that has been widely utilized in cross-cultural research) to a similarly constructed inventory of local Chinese items, the Chinese Personality Assessment Inventory (CPAI). Making

comparisons of both measures revealed universal items suitable for cross-cultural research not only in China and the US, but also many other countries as well.

Schmitt and colleagues (2000) also attempted to develop a cross-cultural measure of personality, the Global Personality Inventory (GPI). Through input and testing from collaborators in 11 countries, tests of validity were conducted. Although not perfect, the GPI is another admirable attempt to develop a cross-cultural tool specifically intended for personality measurement beyond the Big Five (Marsella, Dubanoski, Hamada, & Morse, 2000).

Issues with Cross-Cultural Research in Personality

Along with theories, measures of personality have made their way across countries and continents. During the advent of this rather new crusade of cross-cultural assessment, researchers were quick to gather data by any means possible, and publish findings swiftly. It was not long before the scientific debates began; some speculated that certain cross-cultural differences in personality – especially large ones - were highly improbable, and likely exaggerated due to misfit constructs, misunderstood translations, and haphazard sampling methods. Others claimed that differences were real, despite the inevitable measurement biases.

One of the greatest concerns with the importation of personality measures, methods, and constructs has been validity. Ironically, it is those very differences researchers seek that also make cross-cultural comparisons difficult in terms of measurement. If constructs do not replicate across countries, and cultural groups utilize measures in different ways, how then is it possible to fairly compare one country's scores on any measure to

another's? Cross-cultural differences in personality are plagued with issues of reliability and validity, leading one to ask whether all these purported cross-cultural differences are merely methodological artifacts, or if they do indeed exist.

Many traditional measures of personality have shown poor validity when applied cross-culturally, including the Eysenck Personality Questionnaire (Bijnen, Theo, Van Der Net, & Poortinga, 1986) and the Big Five Personality Inventory (Church et al., 2011; Huang, Church, & Katigbak, 1997). Problems may occur from a) the inability to assign countries to individuals, leading to quasi-experimental designs that do not allow matching on background variables, and b) the construction and application of measures that inevitably lead to measurement errors. When true experimental conditions cannot be achieved, the choice, construction, and application of items and constructs should be of sound methodological practice. Biases result when a construct does not exist in all countries, inadequate instruments and administration techniques are applied, or poorly worded items cause confusion. Van de Vijver and Leung (2011) provide an excellent overview of the following most common biases.

Sample Bias

First, when sample characteristics influence results, *sample bias* occurs. Varying the population by comparing university students to community members, for example, is one way to confound results. Another way is to introduce different motivations among samples by using different incentives to participate (e.g., pay, course credit, or volunteerism). One way to address sample bias is to match samples on all background

variables (i.e., education, age, gender, socio-economic status). However, this may limit the representativeness of a particular population.

Administration Bias

Administration bias may occur as a result from two factors: physical environments and test administrators. If the physical environments are drastically different, such as a formal lab compared to an informal outside setting, or an online vs. an in-person test, participants may feel more or less comfortable answering personal questions. Test administrators could also create experimenter effects when untrained personnel administer tests rather than trained professionals. Communication problems, cultural insensitivity, and unfamiliarity with the population are a few examples that may result from inadequately trained personnel. One way to address administration biases is to properly train all personnel and develop rigorous procedural manuals, especially if the interviewer and interviewee are from different countries. Another way to circumvent this problem is to use an online platform that allows all participants to have the same online experience.

Construct Bias

Construct bias occurs when the characteristics that make up a construct (such as personality traits) differ across countries. Construct bias leads to construct nonequivalence, thereby affecting all other levels of equivalence, making cross-cultural differences appear larger than they actually are. One way construct bias can occur is if the construct itself is very broad in nature, and "short" versions of an instrument with too few items are unable to capture all that may be relevant within different countries. Another

more typical way construct bias may emerge is when constructs themselves are country-bound and leave out additional items that may be relevant to other countries. For example, Snyder (1974) hypothesized that those who score higher in collectivism would be more likely to guide their behaviors by situational cues rather than internal dispositions. He developed a scale that typed people as either "high self-monitors" or "low self-monitors." For example, members of collectivist countries are thought to adjust their behaviors to situations more so than members of individualistic countries, so more high self-monitors were expected in collectivist countries.

Contrary to Synder's (1987) original view, some researchers believed that it was more likely to find low self-monitors in collectivist cultures. This is because the high-self monitor attempts to encompass the prototypic person for each situation, and it is more likely to find someone who wants to be the prototypic person in the individualist society than the collectivist society (Gudykunst et al., 1989). Upon closer inspection, it became apparent that many of the self-monitoring items were similar to extraversion, and extraversion tends to be lower in collectivist countries, therefore, low country scores on self-monitoring may have been due to the extraversion subscale.

Once some of the items were dropped from the extraversion scale (resulting in an 18 item scale instead of a 15 item scale), analyses revealed that high self-monitoring occurred more in individualist countries, and low self-monitoring occurred more in collectivist countries (Gudykunst, et al., 1989). Gudykunst and colleagues (1989) suggests that it is necessary to conceptualize the self-monitoring scale in Chinese samples and include items referencing the self to in groups, social contexts and social status.

Instrument Bias

Instrument bias occurs when an instrument elicits certain responses unrelated to its purpose. A common form in personality research is response bias, which can occur in a number of ways. Two types are acquiescence and socially desirable responding. Those who acquiesce have a natural tendency to agree with statements or items that are presented, and those who want to look "good" may identify themselves with more positive and socially acceptable items. This may be an individual differences problem, but it can also be a cultural phenomenon. Ross and Mirowsky (1984) compared Anglos, Mexicans, and Mexican-Americans and found that responding in a way as to put the best face forward is more common among those of Mexican origin. This may be due to the more collectivist nature of Mexican culture as acquiescence response bias is higher among collectivist nations. However, some suggest that social desirable responding may be viewed as a communication style, rather than a source of error needing correction (Smith, 2004).

Another type of instrument bias is extreme responding, where one group of respondents over another tends to favor the far ends of Likert scales. In general, European countries tend to have less extreme responses than other countries (McCrae, 2002). The tendency to mark more extreme ends of the Likert scale may be a function of fatigue, a desire to remain consistent, or familiarity with the hypothesis (Hui & Triandis, 1985, 1989).

Item Bias

When members of different countries have the same underlying latent construct (e.g., personality traits), but the items on the corresponding questionnaire administered do not have the same familiarity or usage across countries, item bias occurs. When item bias is present, concerns with scalar equivalence arise. This can happen because of poor translations or the use of idioms, and unclear items can result in middle category endorsements (Kulas & Stachowski, 2009). Idioms and clarity of items must be addressed before translations are finalized, and linguistic variation is often necessary..

Reference Group Effects

People tend to compare themselves to others in order to evaluate their own characteristics, and this may result in the reference group effect. When using Likert scales, the tendency to compare oneself to others deduces the mean of an item on a Likert scale to represent the average level of the reference group of the participant (Heine et al., 2002). Some suggest the reference group effect directly influences measurement invariance (Chen, 2008). In one study, participants were asked to rate themselves on personality measures using Likert scales, and then rate themselves again on those same measures, but in comparison to a reference group (family, peers, or people in general). Responses varied depending on the group referenced, and sometimes, differences across countries actually fall away (Credé, Bashshur, & Niehorster, 2010). Another study used anchoring vignettes to control for reference group effects by asking participants to describe scenarios in which conscientious behavior was displayed. Across 21 countries,

participants described similar situations, indicating that no cross-cultural differences in conscientiousness exist when the reference group is controlled (Mõttus, et al., 2012).

Addressing Issues in Cross-cultural Research on Personality

The aforementioned issues in cross-cultural assessment of personality may be investigated by examining factor structures and item equivalences of personality measures across countries (van de Vijver & Leung, 2001), but some suggest that measurement invariance may not necessarily lead to construct bias (Little, 2001), and that the numerous ways to conduct and interpret the clustering of items on multi-scale personality measures leads to divergent findings across researchers. Studies using exploratory factor analyses, confirmatory factor analyses, principal components analyses, and their various rotations may all be found within the literature, and results in confusion about appropriate methodological steps in determining factors. Some researchers conclude that determining the validity of personality items based on by how they load on various sub-scales leads to interpretation issues that are difficult to avoid (Church et al., 2011).

One alternative method is to examine the convergent validity of various personality instruments. This type of cross-cultural validation has rarely been employed, mainly because personality data sets from around the world are relatively new. Theoretically, if correlations from two measures are positive, then the instruments probably tap in to the same construct (Campbell & Fiske, 1959). Another way is to determine whether various personality instruments intended to measure the same construct also demonstrate a similar distribution of personality traits across countries. For

example, neighboring regions and countries appear to have similar means in personality (Allik & McCrae, 2004), and gender differences in the Big Five traits show a geographically ordered pattern, with the smallest gender differences among Asian and African countries, and the largest gender differences in North American and European countries (Costa et al., 2001; Schmitt et al., 2008). Finally, one last way to establish the validity of a personality measure is to examine correlations with external criteria. For example, do the Big Five factors correlate with other country-level values and dimensions (e.g., individualism, power distance) in a predicable manner?

Purpose of Present Study

My dissertation research addresses the aforementioned issues in cross-cultural psychology by matching samples across countries, unifying the manner of assessment, comparing the CAQ Big Five with similar measures and correlates across countries, and by utilizing a forced-choice instrument that may circumvent issues with Likert scales often used in cross-cultural research (Heine et al., 2002). As discussed, the great majority of cross-cultural research on personality has focused on the domains of the Big Five factors, but they may not encompass the most important or relevant personality characteristics for all countries. Therefore, I will compare CAQ personality descriptors at the item level and examine overall CAQ personality profiles across countries. I will also determine whether the CAQ Big Five follows general trends in cross-cultural differences and similarities of traditional Big Five Likert scale measures.

CHAPTER 2—METHOD

Participants

All participants were members of college/university communities, primarily students, and recruited by research collaborators in13 countries, on five continents, using 9 languages, with a total $N = 2370$; women: 1607; men: 763). Table 1 displays characteristics of the sample sets.

Table 1
Characteristics of Samples. Total N = 2370; Females:1607; Males:763

Country	University	Language	Compensation	*N*	Female	Male	*MAge*
Canada	University of British Columbia	English	Course credit	316	236	80	20
China	Several universities	Chinese	$0.67 USD per person	398	213	185	23
Czech Republic	7 Universities	Czech	Volunteer	266	204	62	29
France	University of Chambery; Aix en Provence	French	Volunteer	60	34	26	22
Poland	Kazimierz Wielki University	Polish	Volunteer	79	66	13	26
Russia	Ural Federal University	Russian	Course credit	114	79	35	19
Singapore	National University of Singapore	English	Course credit	148	92	56	22
Slovakia	3 Universities	Slovak	Volunteer	58	52	6	24
South Africa	University of Capetown	English	Course Credit	181	117	64	23
South Korea	Chonnam National University	Korean	Course credit	104	71	33	21
Switzerland	University of Geneva	French	Volunteer	106	77	29	25
UK	University of Edinburgh	English	Course credit	159	120	39	20
US	University of California, Riverside	English	Course credit	381	246	135	20

Note. Countries including samples from multiple universities: China, Slovakia, Czech Republic.

Rationale for Deleting Cases

The first step for deletion of individual cases was based on correlating each individual's profile with the grand mean profile of all individuals in the study. These results were plotted on a histogram, and the cases that correlated substantially less than the rest of the data were removed because it was assumed that participants had accidentally reversed their item scoring or otherwise misunderstood the instructions. A total of eight cases were removed based on correlations ranging from r = -. 18 to r = -.26. The discarded eight cases were removed from the following countries: Canada, Poland, Singapore, South Korea, and the UK.

Second, if a participant did not indicate gender, the case was deleted. As a general rule, if participants were the same age and gender, using the same ID, they were deleted on the assumption that the same person took the study twice. However, based on responses to other questions, those that appeared to be different participants (e.g., different ages and gender, or provided additional unique codes that were also used in several of our samples) were retained under the assumption that it was possible for two people to be given the same ID, or for a participant to accidentally enter the incorrect ID that was assigned to someone else (e.g., a participant entering 007 as 700).

Third, some sites also had participants provide unique codes anonymously so that those individuals could be linked to another study externally. Because the codes asked for first two letters of the mother's and father's names, and the day of birth, it was possible that two participants could provide the same code. Given any differences in age or gender, and these double cases were not deleted. Respondents who failed to indicate

gender were removed. Finally, the any incomplete CAQ profiles were removed. In total, 147 cases were removed from the data collected in thirteen countries.

Instrument

The California Adult Q-Sort (CAQ: Block, 1978) contains 100 diverse personality characteristics (e.g., "Is genuinely dependable and responsible"; "Has a wide range of interests"). The CAQ was developed over the course of many years by Jack Block and his colleagues, and has been employed in a number of personality studies. Each participant describes his or her own personality by placing each of the items into one of nine categories (1 = *extremely uncharacteristic*, 9 = *extremely characteristic*) forming a forced choice, quasi-normal distribution. For this particular study, the CAQ was revised for cross-cultural use (see appendix A).

Utilizing the CAQ as a Cross-Cultural Personality Assessment Tool

As discussed, selecting an appropriate measure for cross-cultural research in personality is critical. In particular, it is important to a) avoid imposing complex constructs that may not replicate across countries, b) ensure the measure is utilized similarly by divergent groups of people, and c) use items that are as free as possible of cultural idioms. I will argue that the California Adult Q-sort (CAQ) meets all these requirements.

First, forced-choice measures such as the CAQ may be the most effective way to minimize reference group effects (Heine et al., 2002). Instead of comparing oneself to others, participants compare the items to each other, with the fewest items going in the most and least characteristic piles, and the majority of items landing in neutral piles. This

is fine for making within country comparisons, but problematic if an entire country is lower than another country on say, extraversion, because these differences would go unnoticed by those within the country. Heine and colleagues (2002) found that when people were asked to describe their own traits or personal attributes, they tended to compare themselves to those around them – not with those in other countries who may be very different. With forced-choice measures, raters compare items to *each other* rather than comparing themselves to others. Forced-choice measures such as the CAQ have not previously been employed in cross-cultural research, despite occasional suggestions that they are ideal (Heine et al., 2002). This may be due to the nature of the Q-sort, and the difficulty in finding or developing an online tool to support its unique functionality.

Second, the ipsative nature of the CAQ reduces the influence of response styles that have traditionally plagued cross-cultural research (Ross & Mirowsky, 1984; van de Vijver & Leung, 1997, 2011). For example, forced choice instruments help eliminate acquiescence bias -which is the tendency to agree with items regardless of their content - because a set number of items is forced into each evaluative category. Social desirability bias, which is the tendency to rate desirable items high and undesirable items low, is reduced because the highest and lowest rating categories are not large enough to contain all of the desirable and undesirable items, respectively. Other issues related to Likert scales are also avoided – like mid-point biases and extreme responding. Additionally, the halo effect, which is the tendency to rate groups of semantically-related items similarly to each other, is partially corrected by Q-sorts because there is generally no room to put all items of a type (e.g., all socially desirable items) into a single category.

Third, I chose the CAQ measure because it allows for item-by-item comparisons, and unique "profiles" that may be compared across countries. The CAQ was purposefully designed to capture distinct trait attributes that minimally overlap with one another. When scores on the Big Five are compared, it is usually assumed that each scale measures the same latent construct in all countries. If that assumption holds true, comparisons and analyses of those scores are valid, and subsequent interpretations are meaningful. However, if those assumptions do not hold (as suggested by some), then researchers cannot compare country scores. This general issue of measurement invariance is particularly what the use of the Q-sort is attempting to avoid.

Custom Built Website

I hired a team of professional developers to custom build a website solely for the purpose of conducting this study and others like it (www.internationalsituationsproject.com).

Many cross-cultural studies in personality have relied on convenience samples which may inflate differences by introducing numerous divergent variables across groups (Costa et al., 2001; McCrae et al., 2005). In order to make data collection as uniform as possible across all locations, it was necessary to develop a website that would ensure that administration of the study would be matched across all countries. The need to create a "custom-built" website was required for four reasons: 1) Popular online platforms, such as Amazon's Mechanical Turk (Mtruk) recruit subjects known as "nonnaïve respondents" or Mturk "workers" who participant in many studies. This creates an issue with sampling bias because the "workers" become familiar with overlapping questionnaires, engage in

cross-talk, and may not be representative of the population (Chandler, Mueller, & Paolacci, 2014); 2) Online platforms (e.g., Qualtrics, M-turk) could not support forced-choice measures that create a quasi-normal distribution; 3) The website needed to support multiple languages, including non-Roman characters, and those languages that read right to left, such as Arabic and Hebrew; 4) Several research locations lacked facilities that would have allowed participants to complete measures in a lab. Alternatively, several sites recruited participants that would have otherwise been unable to physically come in to a lab anyway; 5) A recent study revealed that Q-sort items presented at the end of the sort have less variance than those presented at the beginning of the sort (Serfass & Sherman, 2013). The website built for this study presented Q-sort items in random order.

Procedure

The first step was to translate and back-translate the CAQ to ensure the final translations were accurate. First, the CAQ was translated in to the target language. Then, a qualified bilingual without prior knowledge of the CAQ translated it back in to English. The two versions were then compared, and alongside the collaborator/s, we revised the back translations that lost their original meanings. Although translations will never be perfect, we found common ground before settling on final translations. Once settled upon, translated materials were adapted to the website.

The next step was for the international collaborators to distribute login IDs to participants within each of their countries. All participants received instructive emails and login IDs, and none were brought into a university laboratory, ensuring the study was implemented in the same manner across countries. Once IDs were established,

participants logged in, and began by providing basic demographic information (e.g., native language, country of birth, country of childhood, mother's country of origin, father's country of origin).

Last, participants described their personalities using CAQ. Again, the items were presented randomly, in order to avoid increasing the odds of the first items being placed in end categories and the final items landing in the middle (Serfass & Sherman, 2013). Once completed, participants were thanked, and contact information was provided.

CHAPTER 3—RESULTS

The present study is mostly exploratory, and has six data analytic goals:

1. Assess the average personality profile similarity across countries. Past research demonstrates that averaged personality profiles tend to exhibit a similar pattern across countries (Allik & McCrae, 2004; McCrae et al., 2005).

2.Within each country, examine how similar each individual is to every other individual. This will assess the homogeneity of individual personality profiles within countries, in order to answer the question, "Are inhabitants of certain countries more homogenous others, and if so, which ones?"

3. Examine overall CAQ item endorsement collapsed across countries. Which items are most endorsed as reflective of personality, and which items are least endorsed?

4. Examine gender and country differences in the CAQ Big Five (using items from McCrae et al., 1986) across all samples using the above methods. In terms of personality, gender differences for certain characteristics have been quite large within countries,

appearing largest in the European and US samples and smallest in Asian and African samples (Costa et al., 2001).

5. Correlate the mean scores of the CAQ Big Five (using items from McCrae et al., 1986) with the mean scores of Big Five Inventory (BFI) collected from Schmitt et al. (2007). This analysis will determine how similar the CAQ Big Five are to other country-level mean Big Five scores that have been assessed with traditional Likert scales.

6. Correlate the CAQ Big Five with other country-level dimensions, and compare the results to previous research that also correlated the NEO-PI-R with country-level dimensions (McCrae et al., 2005). Hofstede (2001) provides five dimensions: *power distance* (the acceptance of a hierarchical society with unequal treatment of less powerful members), *individualism* (the degree to which a culture prefers to serve the self over the group), *masculinity* (the extent to which a society will be driven by competition, achievement and success), *uncertainty avoidance* (the distrust of ambiguous or unknown situations), and *long-term orientation* (preferences to maintain traditions and societal norms while viewing change with suspicion).

Average CAQ Mean Item Placements Across Countries

The first step in analysis was to examine the overall highest and lowest mean item placements of CAQ items averaged across countries. Most analyses of personality have uncovered "positivity" and "negativity" factors. My data also show this as well. Across all thirteen countries, the most endorsed items were positive and socially desirable, and the least endorsed items were quite negative or undesirable in nature (Table 2).

Table 2
California Adult Q-sort (CAQ) Highest to Lowest Mean Item Placements Across 13 Countries

CAQ #	CAQ item	Overall Mean
56	Responds to and appreciates humor.	7.00
70	Behaves ethically; has a personal value system and is faithful to it.	6.90
96	Values own independence and autonomy; emphasizes his/her freedom to think and act without interference or help from others.	6.71
66	Enjoys aesthetic impressions; is aesthetically sensitive (appreciates art, music, drama, etc.).	6.53
51	Places high value on intellectual and cognitive matters (does not necessarily imply high intellectual achievement or intellectual ability).	6.47
64	Is socially perceptive; is alert to cues from other people that reveal what they are thinking and feeling.	6.46
95	Gives advice; concerns self with the business of others.	6.38
84	Is cheerful, happy (low placement implies depression).	6.32
35	Has warmth; has the capacity for close relationships; compassionate.	6.26
58	Appears to enjoy sensuous experiences (e.g., touch, taste, smell, bodily contact).	6.20
71	Is ambitious; sets high personal goals.	6.19
60	Has insight into and understands own needs, motives and behavior; knows self well (low placement implies little insight into own motives and behavior).	6.17
77	Appears straightforward, candid, frank in dealing with others.	6.08
16	Is introspective; thinks about self; examines own thoughts and feelings (does not necessarily imply that the person understands himself/herself well).	6.02
17	Behaves in a sympathetic and considerate manner (low placement implies unsympathetic and inconsiderate behavior).	6.00
2	Is dependable and responsible (low placement implies undependable and irresponsible).	5.98
80	Is sexually interested in others (whether of the opposite sex or same sex; low placement implies an absence of sexual interest).	5.96
89	Compares self with others; is alert to real or imagined	5.92

	differences between self and others in status, appearance, achievement, abilities, and so forth.	
57	Is an interesting, colorful person.	5.89
98	Is verbally fluent; can express ideas well in words.	5.89
44	Evaluates the motives of others; tries to figure out the intentions underlying people's actions (accuracy is not assumed).	5.84
46	Tends to fantasize and daydream.	5.83
88	Is personally charming.	5.77
8	Appears to have a high degree of intellectual capacity (whether or not this capacity translates into actual accomplishments).	5.76
79	Tends to ruminate and have persistent, preoccupying thoughts.	5.75
54	Is sociable, gregarious; emphasizes being with others.	5.72
26	Is productive; gets things done.	5.72
11	Is protective of those close to him/her (high placement implies overprotective; medium placement implies appropriate caring; low placement implies lack of concern)	5.71
18	Initiates humor; makes spontaneous funny remarks.	5.70
83	Able to see to the heart of important problems; does not get caught up or sidetracked by irrelevant details.	5.68
28	Tends to arouse liking and acceptance in people (low placement implies a tendency to arouse dislike and rejection).	5.67
3	Has a wide range of interests (regardless of how deep or superficial the interests are).	5.65
59	Is concerned about own body, its health and adequacy of functioning (high placement implies excessive concern or hypochondriasis).	5.64
92	Has social poise and presence; appears socially at ease.	5.63
29	Is turned to or sought out for advice and reassurance.	5.61
90	Is concerned with philosophical problems, for example, religions, values, free will, the meaning of life, and so forth.	5.61
5	Is giving, generous toward others (regardless of the motivation).	5.54
33	Is calm, relaxed in manner.	5.47
81	Is physically attractive; is good looking (as defined by the relevant culture).	5.47
93	(a) Behaves in a masculine style or manner (b) Behaves in a femnine style or manner	5.41

32	Seems to be aware of the impression he/she makes on others (low placement implies person is unaware of the impression he/she makes).	5.38
24	Prides self on being rational, logical and objective (high placement implies a person who is more comfortable with intellectual concepts than with feelings; low placement implies a person who is irrational and overly emotional).	5.36
52	Behaves in an assertive fashion; not afraid to express opinions; speaks up to get what he/she wants.	5.19
41	Makes moral judgments; judges self and others in terms of right and wrong (regardless of the nature of the moral code, whether traditional or liberal; high placement implies being moralistic and self-righteous; low placement implies an unwillingness to make value judgments).	5.15
6	Is fastidious, meticulous, careful and precise.	5.13
19	Seeks reassurance from others (high placement implies lack of self-confidence).	5.11
39	Thinks about ideas in unusual ways; has unconventional thought processes.	5.09
15	Is skilled in social techniques of imaginative play, pretending and humor.	5.09
91	Values power in self and others.	5.09
82	Has fluctuating moods; moods go up and down.	5.08
4	Is a talkative person.	5.06
85	Tends to communicate through actions, deeds, and non-verbal behavior, rather than through words.	5.05
31	Regards self as physically attractive (this item refers to how person sees himself/herself, whether accurate or not).	4.96
20	Behaves and acts quickly.	4.91
43	Has large or vivid facial expressions or gestures.	4.90
47	Has a readiness to feel guilty (high placement implies a tendency to feel guilt even when he/she is not at fault).	4.90
61	Likes others to be dependent on him/her; likes to be thought needed by others (low placement implies encouraging others to be independent of him/her).	4.88
72	Has doubts about own adequacy as a person; appears to have feelings of inadequacy.	4.87
9	Is uncomfortable with uncertainty and complexity.	4.83
10	Develops physical symptoms in reaction to stress and anxiety (e.g., sweating, racing heart, headaches, stomach aches, rashes, asthma, etc.).	4.82
75	Is easy to understand and describe (low placement implies	4.81

	someone who is difficult to understand and describe).	
74	Feels satisfied with self; is unaware of self-concern.	4.78
87	Tends to interpret clear-cut, simple situations in complicated ways.	4.72
1	Is critical, skeptical, not easily impressed.	4.64
42	Reluctant to commit self to any definite course of action; tends to delay or avoid making decisions or taking action.	4.62
67	Is self-indulgent; tends to pamper himself or herself.	4.58
63	Is influenced by social pressures (e.g., "popularity," conventional social norms).	4.53
7	Favors conservative values in a variety of areas; emphasizes traditional values and beliefs (low placement implies rejection of traditional values).	4.50
21	Arouses nurturant feelings in others; behaves in ways that lead others to feel caring and protective toward him/her.	4.49
13	Takes offense easily; is sensitive to anything that can be construed as a criticism or insult.	4.48
69	Is sensitive to anything that can be construed as a demand or request for favors; is quick to feel imposed on.	4.46
73	Tends to see sexual overtones in many situations (high placement implies reading sexual meanings into situations in which none exist; low placement implies inability to recognize sexual signals).	4.43
68	Is basically anxious.	4.39
76	Imagines that the needs, wishes and feelings of others are the same as his/her own; tends to project own feelings and motivations onto others.	4.38
100	Relates to everyone in the same way (low placement implies a person who acts differently with different people).	4.36
65	Resists limits and rules; sees what he/she can get away with.	4.35
12	Tends to be self-defensive; unable to acknowledge personal shortcomings or failures; quick to defend self from criticism	4.31
34	Is irritable; overreacts to minor frustrations.	4.28
49	Is basically distrustful of people in general; questions their motivations.	4.24
30	Gives up and withdraws when possible in the face of frustration and adversity (high placement implies person gives up easily; low placement implies person does not know when, realistically, it is time to give up).	4.11

40	Is generally fearful; is vulnerable to real or imagined threat.	4.06
25	Has excessive self-control; postpones pleasures unnecessarily.	4.06
50	Is unpredictable and changeable in attitudes and behavior.	4.04
45	Is psychologically frail, vulnerable; has poor ability to cope with stress.	4.03
48	Keeps people at a distance; avoids close relationships.	4.00
62	Tends to be rebellious and nonconforming.	3.95
94	Expresses hostility and angry feelings directly (low placement implies someone who is unable to express hostility, who holds angry feelings in).	3.95
53	Is impulsive; has little self-control; unable to postpone pleasure.	3.90
14	Genuinely submissive; accepts domination comfortably; gives in easily.	3.90
22	Feels a lack of meaning in life.	3.74
23	Tends to blame others for own mistakes, failures, and shortcomings.	3.49
86	Denies the presence of anxiety and conflicts; tends to convince himself/herself that unpleasant thoughts and feelings do not exist; deceives self into thinking everything is fine, when everything is not fine.	3.43
97	Is an unemotional person; tends not to experience strong emotions (low placement implies a highly emotional person).	3.42
99	Is self-dramatizing; theatrical; prone to exaggerate feelings; seeks attention.	3.36
55	Is self-defeating; acts in ways that frustrate, hurt, or undermine own chances to get what he/she wants.	3.35
27	Is condescending toward others; acts superior to others.	3.33
38	Has hostility toward others (whether or not the hostile feelings are actually expressed).	3.21
78	Feels cheated and victimized by life; self-pitying; feels sorry for self.	2.83
37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.63
36	Tends to undermine, obstruct, or sabotage other people.	2.50

Note. Countries include: Canada, China, Czech Republic, France, Poland, Russia, Singapore, Slovakia, South Africa, South Korea, Switzerland, UK, US.

Additionally, the most and least endorsed items, on average, were examined for each country. The previous analyses suggested that most countries are highly similar in average personality profiles, and, as expected, most countries shared one or more most and least endorsed items. In order to keep the picture as clear as possible, I only report the top two most and least endorsed items, on average, across our 13 countries. The full sets of top two most and least endorsed items may be found in Appendix B.

In terms of items most endorsed across our countries, item #56, "Responds to and appreciates humor" was among the most endorsed items in 9 out of 13 countries, with means ranging from 7.07 to 7.35. Countries included Canada, the Czech Republic, France, Singapore, Slovakia, South Africa, Switzerland, the UK and the US. The second most-endorsed item, on average, appeared in 7 out of our 13 countries sampled and was item #70, "Behaves ethically; has a personal value system and is faithful to it," with mean item placements ranging from 6.6 to 7.28, and countries included Canada, China, France, Poland, Singapore, Switzerland, and the US.

The items least endorsed across our countries included item #36, "Tends to undermine, obstruct, or sabotage other people," which was among the top two least endorsed items in 11 out of 12 of our countries, with means ranging from 2.06 to 2.91. South Korea was the only country that did not have this item in the top two least endorsed items. The second least endorsed item, on average, appeared in 10 out of our 13 countries sampled and was #37, "Is guileful, deceitful, manipulative, opportunistic; takes advantage of others," with mean item placements ranging from 1.99 to 3.08. (France, Russia and the US did not have this item among their top two least endorsed).

Based on these analyses, it appeared that individuals in most countries reported similar personalities on average, and mostly positive or socially desirable personality attributes were given the highest ratings. In order to test this, I correlated the average mean profiles of all CAQ items with the optimally adjusted character, who is warm, productive, insightful, ethically consistent, perceptive, and candid. The opposite is someone who exudes hostility, anxiety, fearfulness, pervasive guilt feelings, distrust, self-pity, and the use of repressive mechanisms (Block, 1978).

The optimally adjusted character consisted of CAQ items that were selected by raters, and rated on a one to nine scale. The items that were given 8's and 9's or 1's and 2's were included in the measure. There was a strong positive correlation with the average CAQ profile across countries (r = .92), indicating that most people report more positive characteristics than negative, and are likely well adjusted.

Cross-cultural Similarity in CAQ Profiles

The next step in data analysis was to compare the average personality profiles across countries. For each country, we separated the samples by gender, and then averaged all participants' CAQ-sorts. This yielded one average CAQ profile for each gender and country, resulting in 26 CAQ profiles. We then averaged men's and women's profiles within each country, resulting in 13 CAQ profiles, one for each country. This method allows both genders to contribute equally to the composite, instead of the gender with the most respondents (usually women). This procedure assumes that both genders were adequately sampled to represent their respective populations. These average Q-sorts

can then be compared with each other using a standard Pearson correlation, yielding a 13 x 13 correlation matrix. The results appear in Table 3.

Table 3
Intercorrelations of Averaged CAQ Profiles of Females and Males (Combined) Across 13 Countries

	CA	CN	CZ	FR	PL	RU	SG	SK	ZA	KR	CH	UK	US
CA	-	0.83	0.83	0.84	0.82	0.84	0.91	0.83	0.94	0.83	0.86	0.93	0.98
CN		-	0.79	0.74	0.76	0.69	0.80	0.72	0.80	0.82	0.78	0.74	0.83
CZ			-	0.82	0.82	0.77	0.82	0.85	0.86	0.74	0.88	0.81	0.84
FR				-	0.83	0.81	0.82	0.79	0.90	0.71	0.90	0.86	0.85
PL					-	0.79	0.73	0.79	0.85	0.69	0.83	0.80	0.83
RU						-	0.77	0.82	0.84	0.69	0.77	0.83	0.83
SG							-	0.79	0.90	0.80	0.86	0.87	0.92
SK								-	0.84	0.71	0.83	0.82	0.83
ZA									-	0.76	0.90	0.92	0.94
KR										-	0.74	0.75	0.81
CH											-	0.86	0.87
UK												-	0.91
US													-
AVE	**.89**	**.78**	**.82**	**.83**	**.80**	**.79**	**.84**	**.81**	**.88**	**.76**	**.85**	**.85**	**.88**
95% CI	.86 - .92	.75 - .81	.80 - .84	.80 - .86	.77 - .83	.76 - .82	.81 - .87	.79 - .83	.85 - .91	.74 - .78	.83 - .87	.82 - .88	.86 - .90

Note. Countries are as follows: Canada, China, Czech Republic, France, Poland, Russia, Singapore, Slovakia, South Africa, South Korea, Switzerland, UK, US. Averages computed using the *r* to *z* transformation. The most similar countries (with each other and overall) are highlighted in green; the least similar are highlighted in red.

In general, the correlations were very high. Across all 13 countries, the average cross-cultural correlation was $r = .82$. Not surprisingly, the pair most similar in averaged personality profiles was between the United States and Canada ($r = .98$; 95% CI [.84, .92], $df = 98$). The lowest similarities were between South Korea and Poland, and South Korea and Russia, and Russia and China ($r = .69$; 95% CI [.57, .78], $df = 98$).

The bottom rows of Table 3 show the average correlation of each country's mean profile to the other 12, along with the confidence intervals around each mean. A conventional one-way ANOVA demonstrates a significant difference among these means overall (F (12, 143) = 6.35, p <.0001). The country most similar to all the others was Canada (average r = .89; 95% CI [.87, .91], df = 12); the country least similar to the others was South Korea (average r = .76; 95% CI [.74, .78], df = 12).

Within-Country Homogeneity

The correlations described thus far are all between averages of personality profiles computed within each country. With these data, it was also possible to assess the degree of similarity of CAQ reports among individuals *within* each country. This analysis entails correlating the complete CAQ report of each individual with that of every other individual within the country and then averaging these correlations. I did this separately within each gender, and then averaged the two within-country correlations, which are shown on the diagonal in Table 4. Not surprisingly, these numbers were much smaller than the correlations in Table 3, because they represent correlations among *individuals* rather than mean profiles. The correlations along the diagonal in Table 4 (highlighted in bold) can be interpreted as measures of within-country homogeneity of personalities – the degree to which individuals tend to resemble other individuals in the same country. By this measure, the country with the most homogeneity of personality profiles was the Czech Republic (within-country average r = .31; 95% CI [.29, .33], df = 264), and the least homogenous was found within South Koreans (average r = .16; 95% CI[.13, .19], df = 102).

In further analyses, I correlated each participant's CAQ in each country with every other participant's (of the same gender, and then averaged men and women) in each of the other countries, and the average of these correlations is reported in the off-diagonal cells of Table 4. The between-country comparisons are not dramatically smaller than the within-country comparisons. The within-country average was $r = .25$, 95% CI [.22, .26], $df = 12$; The across-countries average was $r = .22$, 95% CI [.21, .23], $df = 77$).

Previous research has revealed a geographic pattern in standard deviations: Asian and African countries have smaller variability in personality, and European countries have shown greater heterogeneity (McCrae, 2002). However, our data show that South Korea, a country traditionally known as collectivist, had the least amount of homogeneity, and the Czech Republic, a country traditionally known to be individualistic, shows the most homogeneity. However, Canadians had less similarity in profiles than the Chinese. The findings in Table 4 are mixed; no clear pattern of expected differences in homogeneity between Asian, African, and European countries emerged.

Table 4
Average Inter-individual CAQ Correlations of Women and Men (Combined) Within and Across 13 Countries

	CA	CN	CZ	FR	PL	RU	SG	SK	ZA	KR	CH	UK	US
CA	**0.22**	0.21	0.25	0.23	0.25	0.23	0.23	0.26	0.25	0.18	0.25	0.25	0.26
CN		**0.26**	0.21	0.18	0.20	0.17	0.18	0.21	0.19	0.16	0.21	0.18	0.20
CZ			**0.31**	0.24	0.26	0.22	0.22	0.29	0.24	0.17	0.27	0.23	0.23
FR				**0.24**	0.24	0.22	0.20	0.24	0.23	0.15	0.25	0.23	0.22

PL	**0.28**	0.23	0.20	0.26	0.23	0.16	0.26	0.23	0.23
RU		**0.26**	0.19	0.25	0.21	0.15	0.22	0.22	0.21
SG			**0.22**	0.23	0.21	0.16	0.23	0.21	0.22
SK				**0.29**	0.24	0.17	0.27	0.25	0.25
ZA					**0.24**	0.15	0.24	0.23	0.23
KR						**0.16**	0.17	0.16	0.16
CH							**0.29**	0.24	0.24
UK								**0.25**	0.23
US									**0.24**

Note. Countries are as follows: Canada, China, the Czech Republic, Poland, Russia, Singapore, Slovakia, South Africa, South Korea, the UK, US. Diagonal figures in **boldface** represent within-country homogeneity; highest is highlighted in green and lowest in red.

The CAQ Big Five Dimensions

The most widely studied personality traits across countries are the Big Five. Although the CAQ was not originally designed to measure the Big Five, the CAQ contains items that embody the factors for each of the Big Five traits (McCrae, Costa, & Busch, 1986). These items from the CAQ were identified using a varimax-rotated principal component analysis. The authors equated these principal components with the Big Five traits. The component loadings > .30 for each trait are listed in Table 5.

Table 5
McCrae et al. (1986) Big Five CAQ Items and Loadings

Extraversion	Loadings
4. Is a talkative person.	.56
54. Is sociable, gregarious; emphasizes being with others.	.45
92. Has social poise and presence; appears socially at ease.	.45
52. Behaves in an assertive fashion; not afraid to express opinions; speaks up to get what he/she wants.	.43

15. Is skilled in social techniques of imaginative play, pretending and humor.	.41
20. Behaves and acts quickly.	.41
57. Is an interesting, colorful person.	.41
99. Is self-dramatizing; theatrical; prone to exaggerate feelings; seeks attention.	.40
43. Has large or vivid facial expressions or gestures.	.37
98. Is verbally fluent; can express ideas well in words.	.36
29. Is turned to or sought out for advice and reassurance.	.33
18. Initiates humor; makes spontaneous funny remarks.	.33
35. Has warmth; has the capacity for close relationships; compassionate.	.32
28. Tends to arouse liking and acceptance in people (low placement implies a tendency to arouse dislike and rejection).	.32
95. Gives advice; concerns self with the business of others.	.30
97. Is an unemotional person; tends not to experience strong emotions (low placement implies a highly emotional person).	-.53
48. Keeps people at a distance; avoids close relationships.	-.51
25. Has excessive self-control; postpones pleasures unnecessarily.	-.51
30. Gives up and withdraws when possible in the face of frustration and adversity (high placement implies person gives up easily; low placement implies person does not know when, realistically, it is time to give up).	-.38
45. Is psychologically frail, vulnerable; has poor ability to cope with stress.	-.38
14. Genuinely submissive; accepts domination comfortably; gives in easily.	-.34
79. Tends to ruminate and have persistent, preoccupying thoughts.	-.33

Neuroticism	Loadings
13. Takes offense easily; is sensitive to anything that can be construed as a criticism or insult.	.58
68. Is basically anxious.	.58
34. Is irritable; overreacts to minor frustrations.	.53
47. Has a readiness to feel guilty (high placement implies a tendency to feel guilt even when he/she is not at fault).	.52
19. Seeks reassurance from others (high placement implies lack of self-confidence).	.51
12. Tends to be self-defensive; unable to acknowledge personal shortcomings or failures; quick to defend self from criticism	.48
82. Has fluctuating moods; moods go up and down.	.46
72. Has doubts about own adequacy as a person; appears to have feelings of inadequacy.	.46
45. Is psychologically frail, vulnerable; has poor ability to cope with stress.	.44
40. Is generally fearful; is vulnerable to real or imagined threat.	.43

55. Is self-defeating; acts in ways that frustrate, hurt, or undermine own chances to get what he/she wants.	.42
78. Feels cheated and victimized by life; self-pitying; feels sorry for self.	.42
10. Develops physical symptoms in reaction to stress and anxiety (e.g., sweating, racing heart, headaches, stomach aches, rashes, asthma, etc.).	.36
50. Is unpredictable and changeable in attitudes and behavior.	.35
89. Compares self with others; is alert to real or imagined differences between self and others in status, appearance, achievement, abilities, and so forth.	.35
23. Tends to blame others for own mistakes, failures, and shortcomings.	.34
30. Gives up and withdraws when possible in the face of frustration and adversity (high placement implies person gives up easily; low placement implies person does not know when, realistically, it is time to give up).	.33
38. Has hostility toward others (whether or not the hostile feelings are actually expressed).	.31
33. Is calm, relaxed in manner.	-.56
74. Feels satisfied with self; is unaware of self-concern.	-.51
75. Is easy to understand and describe (low placement implies someone who is difficult to understand and describe).	-.48
24. Prides self on being rational, logical and objective (high placement implies a person who is more comfortable with intellectual concepts than with feelings; low placement implies a person who is irrational and overly emotional).	-.44
57. Is an interesting, colorful person.	-.44
84. Is cheerful, happy (low placement implies depression).	-.42
83. Able to see to the heart of important problems; does not get caught up or sidetracked by irrelevant details.	-.37
92. Has social poise and presence; appears socially at ease.	-.36
88. Is personally charming.	-.35
60. Has insight into and understands own needs, motives and behavior; knows self well (low placement implies little insight into own motives and behavior).	-.32
70. Behaves ethically; has a personal value system and is faithful to it.	-.32
8. Appears to have a high degree of intellectual capacity (whether or not this capacity translates into actual accomplishments).	-.31
98. Is verbally fluent; can express ideas well in words.	-.30

Agreeableness	Loadings
17. Behaves in a sympathetic and considerate manner (low placement implies unsympathetic and inconsiderate behavior).	.56
35. Has warmth; has the capacity for close relationships; compassionate.	.52

28. Tends to arouse liking and acceptance in people (low placement implies a tendency to arouse dislike and rejection).	.44
5. Is giving, generous toward others (regardless of the motivation).	.37
84. Is cheerful, happy (low placement implies depression).	.34
56. Responds to and appreciates humor.	.33
21. Arouses nurturant feelings in others; behaves in ways that lead others to feel caring and protective toward him/her.	.32
88. Is personally charming.	.30
1. Is critical, skeptical, not easily impressed.	-.48
52. Behaves in an assertive fashion; not afraid to express opinions; speaks up to get what he/she wants.	-.48
27. Is condescending toward others; acts superior to others.	-.47
65. Resists limits and rules; sees what he/she can get away with.	-.45
94. Expresses hostility and angry feelings directly (low placement implies someone who is unable to express hostility, who holds angry feelings in).	-.45
91. Values power in self and others.	-.43
48. Keeps people at a distance; avoids close relationships.	-.41
62. Tends to be rebellious and nonconforming.	-.39
38. Has hostility toward others (whether or not the hostile feelings are actually expressed).	-.32
49. Is basically distrustful of people in general; questions their motivations.	-.30

Conscientiousness	Loadings
70. Behaves ethically; has a personal value system and is faithful to it.	.43
2. Is dependable and responsible (low placement implies undependable and irresponsible).	.42
8. Appears to have a high degree of intellectual capacity (whether or not this capacity translates into actual accomplishments).	.39
26. Is productive; gets things done.	.36
71. Is ambitious; sets high personal goals.	.35
83. Able to see to the heart of important problems; does not get caught up or sidetracked by irrelevant details.	.33
51. Places high value on intellectual and cognitive matters (does not necessarily imply high intellectual achievement or intellectual ability).	.33
73. Tends to see sexual overtones in many situations (high placement implies reading sexual meanings into situations in which none exist; low placement implies inability to recognize sexual signals).	-.53
80. Is sexually interested in others (whether of the opposite sex or same sex; low placement implies an absence of sexual interest).	-.44
53. Is impulsive; has little self-control; unable to postpone pleasure.	-.41
67. Is self-indulgent; tends to pamper himself or herself.	-.41

58. Appears to enjoy sensuous experiences (e.g., touch, taste, smell, bodily contact).	-.37
86. Denies the presence of anxiety and conflicts; tends to convince himself/herself that unpleasant thoughts and feelings do not exist; deceives self into thinking everything is fine, when everything is not fine.	-.33
46. Tends to fantasize and daydream.	-.32

Openness	Loadings
51. Places high value on intellectual and cognitive matters (does not necessarily imply high intellectual achievement or intellectual ability).	.45
62. Tends to be rebellious and nonconforming.	.41
39. Thinks about ideas in unusual ways; has unconventional thought processes.	.38
16. Is introspective; thinks about self; examines own thoughts and feelings (does not necessarily imply that the person understands himself/herself well).	.36
8. Appears to have a high degree of intellectual capacity (whether or not this capacity translates into actual accomplishments).	.34
66. Enjoys aesthetic impressions; is aesthetically sensitive (appreciates art, music, drama, etc.).	.34
3. Has a wide range of interests (regardless of how deep or superficial the interests are).	.32
46. Tends to fantasize and daydream.	.30
7. Favors conservative values in a variety of areas; emphasizes traditional values and beliefs (low placement implies rejection of traditional values).	-.55
63. Is influenced by social pressures (e.g., "popularity," conventional social norms).	-.51
9. Is uncomfortable with uncertainty and complexity.	-.35
41. Makes moral judgments; judges self and others in terms of right and wrong (regardless of the nature of the moral code, whether traditional or liberal; high placement implies being moralistic and self-righteous; low placement implies an unwillingness to make value judgments).	-.34
93. (a) Behaves in a masculine style or manner. (b) Behaves in a feminine style or manner (If person is male, rate 93a; if person is female, rate 93b. The cultural definition of masculinity and femininity are intended here.)	-.33
26. Is productive; gets things done.	-.30

I first examined the means of the CAQ Big Five factors across gender and country in our data set, based on the items listed in Table 5 (McCrae et al., 1986). For each

individual in each country, a mean score of all the CAQ Big Five items was obtained by simply averaging the each individual's score for the given unweighted items. Items that loaded negatively were reverse-scored. These individual averages were then averaged across all individuals in each country, separated by gender. The first step was then to preform a multivariate analysis of variance (MANOVA), which tests for differences among all five traits by country and gender. The results show that there were indeed significant differences among countries (F (12, 60) = 12.26, $p < .001$) and between genders (F (1, 5) = 39.01, $p < .001$).

For all Big Five traits, I performed two-way ANOVAs testing gender effects, country effects, and gender-by-country interactions. Previous research on the Big Five personality traits has found differences across genders and countries (Costa et al., 2001; McCrae et al., 2005). For this reason, it would be inappropriate to treat each country's population as homogeneous (i.e., to ignore gender differences) and test for differences by country with a one-way ANOVA, or to treat each gender's population as homogeneous (i.e., to ignore country differences) and test for differences by gender with a simple t-test. Instead, a two-way factorial ANOVA was selected to test for independent effects of gender and country simultaneously. This allows statistical control of each other factor's effect when testing for an independent effect of gender or country. This analysis also tests for an interaction between gender and country effects in order to determine if gender effects vary across countries. Past research supports this choice, in that Western countries tend to report greater gender differences in personality than Eastern countries (Costa et al., 2001; Feingold, 2004; Schmitt et al., 2008).

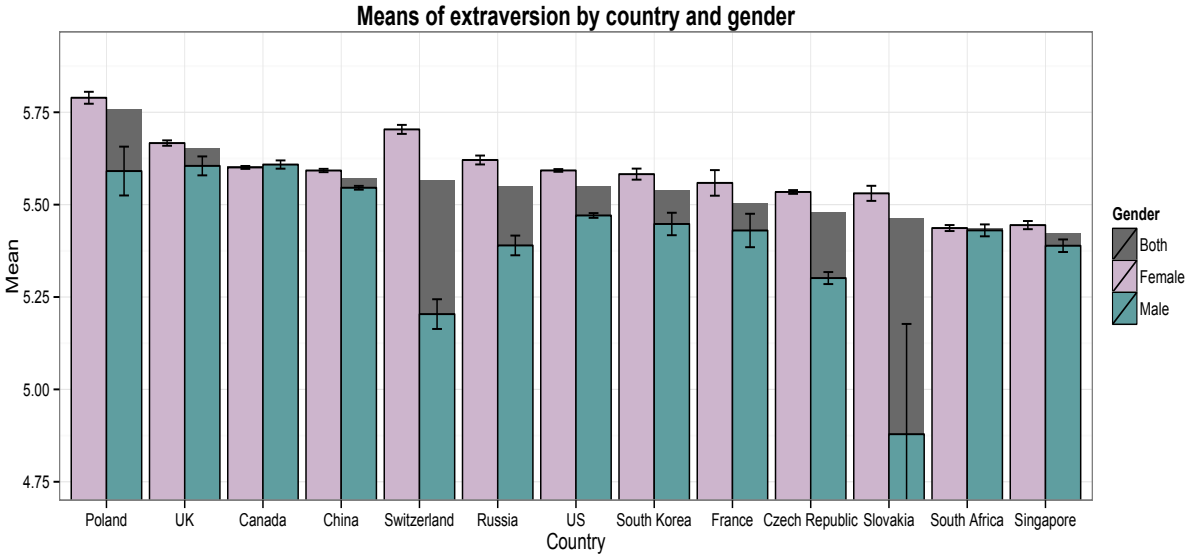

Figure 1. CAQ Extraversion by country and gender

Figure 1 shows that across all countries, women, on average, reported higher levels of extraversion. The two-way ANOVA found significant main effects of gender ($F(1,2344) = 14.55$, $p < .001$) and country ($F(12, 2344) = 2.15$, $p = .01$). According to Tukey's Honestly Significant Differences (HSD), across all countries except Canada, women's extraversion scores exceeded men's, but not by much (mean difference = .12, 95% CI: [.06, .18]). Other than in Canada, the largest margins were in Europe, and the smallest margins in South Africa and Asia. In terms of country differences, Poland is the most extraverted, and Singapore the least. North American and European countries tended to have the highest extraversion scores, and Asian countries and South Africa had the lowest extraversion scores, on average. Although the factorial ANOVA found

significant differences by country, Tukey's HSD tests did not detect significant differences among countries. This is due to small differences and subsamples.

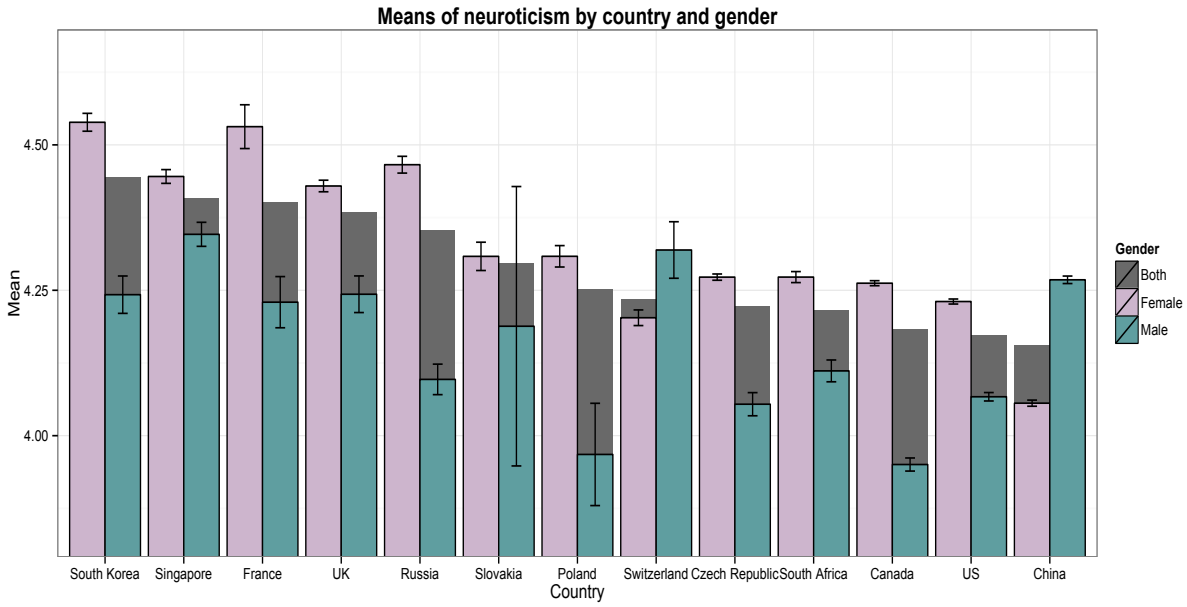

Figure 2. CAQ Neuroticism by country and gender

Figure 2 displays the CAQ neuroticism means by country and gender. A two-way ANOVA found significant main effects of gender ($F(1, 2344) = 12.82$, $p < .001$) and country ($F(12, 2344) = 2.66$, $p = .002$) and an interaction ($F(12, 2344) = 2.44$, $p = .004$). Women's neuroticism scores exceeded men's (Tukey HSD mean difference = .13, 95% CI: [.06, .19]), except in China and Switzerland. On average, the country with the highest neuroticism score was South Korea, and the country with the lowest neuroticism score was China. North American countries tended to have the lowest neuroticism scores, and Asian countries the highest (except China). Given small differences and subsamples,

Tukey's HSD between men and women within countries did not achieve significance, though between-country pairs did (see Appendix C for a list of country pairs).

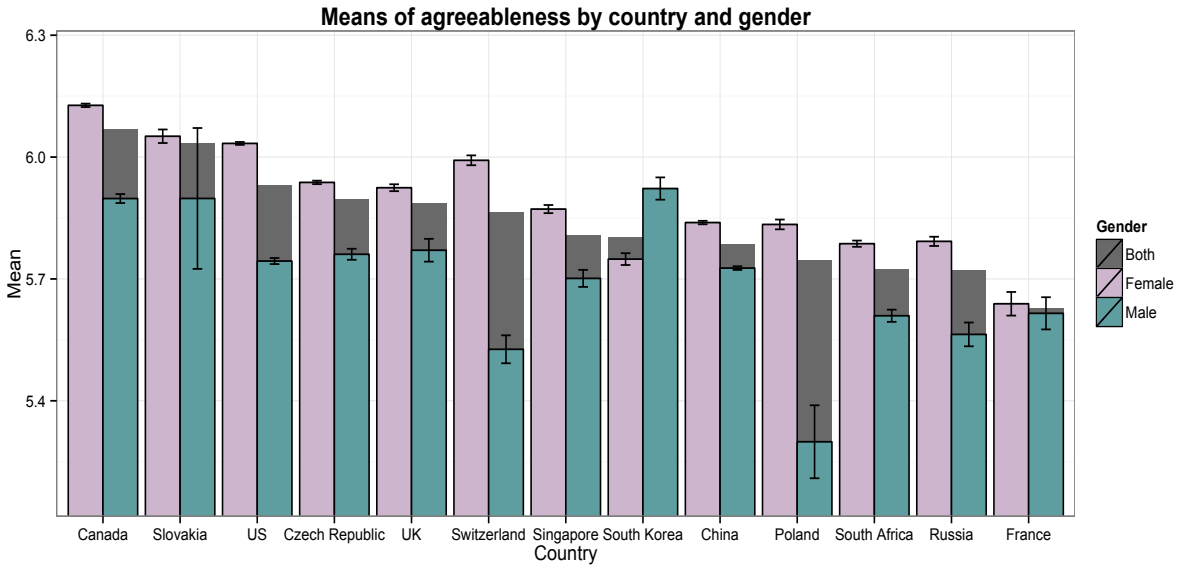

Figure 3. CAQ Agreeableness by country and gender

Figure 3 displays agreeableness by country and gender. The two-way ANOVA found significant main effects of gender ($F(1, 2344) = 49.75$, $p < .001$) and country ($F(12, 2344) = 4.95$, $p < .001$). (See Appendix C for a list of significant county-pair differences). Women's agreeableness scores tended to exceed men's (Tukey's HSD mean difference = .21, 95% CI: [.15, .26]), except in South Korea. Women's agreeableness scores exceeded men's by the largest margins in Europe (except France), and by less in South Africa and Asia. Canada had the highest mean agreeableness score, and France the lowest score. Tukey HSD tests found eight significantly different pairs of countries, all of which included Canada.

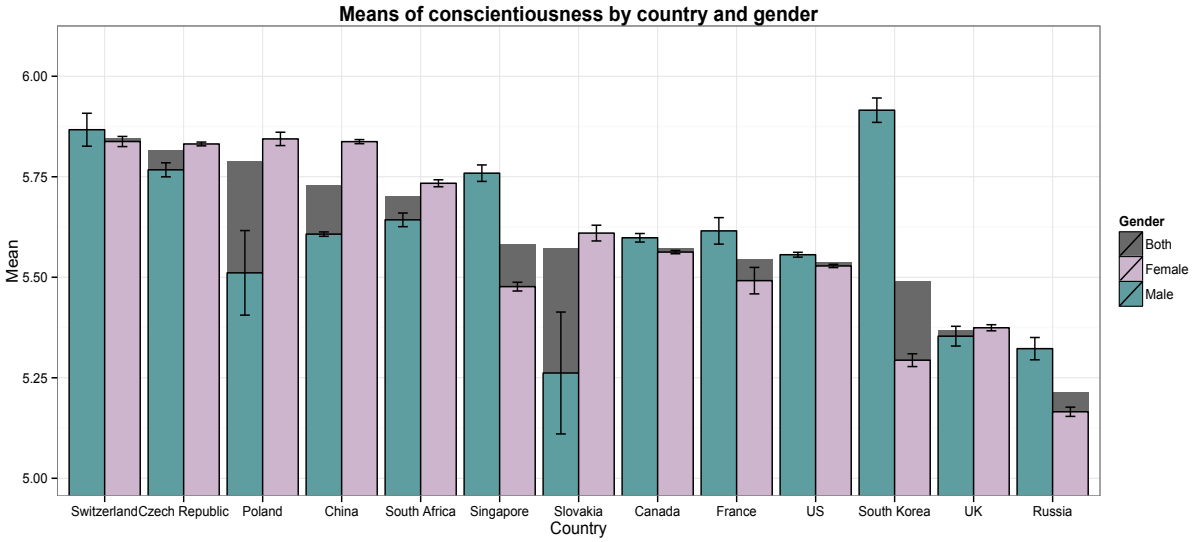

Figure 4. CAQ Conscientiousness by country and gender

Figure 4 displays conscientiousness by country and gender. The two-way ANOVA did not find a significant main effect of gender ($F(1, 2344) = .008$, $p = .93$), but did for country ($F(12, 2344) = 9.61$, $p < .001$) as well as an interaction between country and gender ($F(12, 2344) = 3.31$, $p < .001$). The difference between conscientiousness scores for men and women within countries only achieved significance in South Korea, with men being higher (mean difference = .62, 95% CI: [.07, 1.17], $p = .009$). The country with the highest conscientiousness score was Switzerland, and the lowest was Russia's. Tukey's HSD between countries found 19 significant differences among country pairs, and 36 differences among country-by-gender interaction pairs (see Appendix C for a list of pairs).

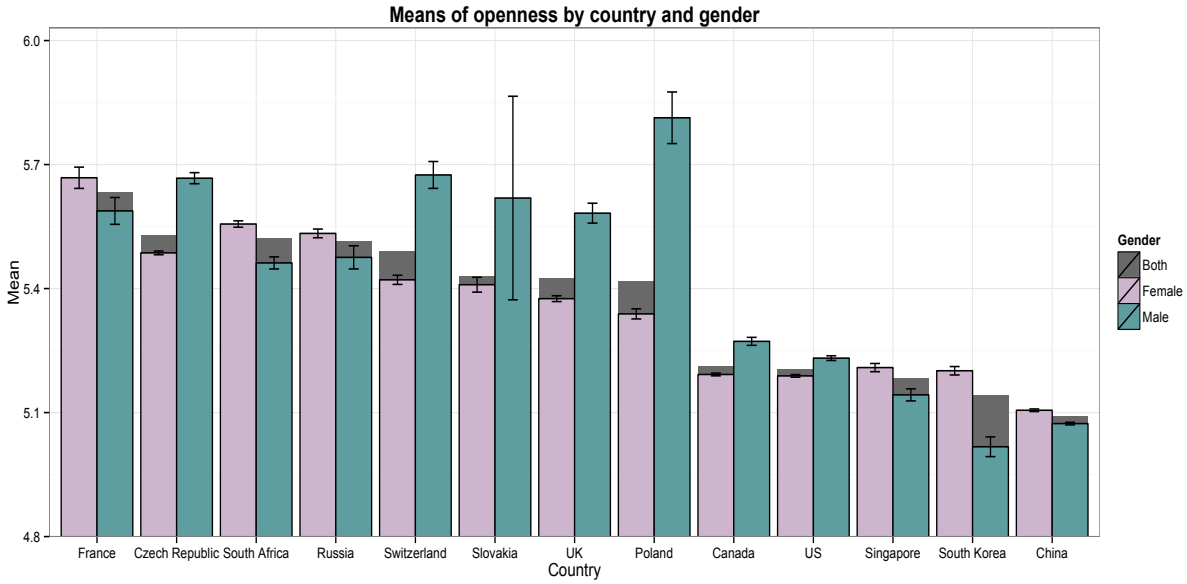

Figure 5. CAQ Openness by country and gender

Figure 5 displays openness to experience. The two-way ANOVA did not find a significant main effect of gender ($F(1, 2344) = .009$, $p =. 92$), but did for country ($F(12, 2344) = 18.01$, $p < .001$) and an interaction ($F(12, 2344) = 2.07$, $p = .02$). Men's openness scores exceeded women's by the largest margins in Europe, and by the least in North America, South Africa, and Asia. European countries tended to have the highest openness scores, followed by Canada and the US, and then South Africa and Asian countries had the lowest openness scores. Tukey's HSD tests among countries resulted in 32 significant country pair differences, and 75 significant differences between country-gender pairs, yet differences among men and women within countries did not achieve significance (see Appendix C for a list of all pairs).

Country Level Correlations

Thus far, we have explored trends in our data using the CAQ Big Five. One way to examine the validity of the CAQ Big Five trait scores is to correlate the country-level means in our data with country-level means in others' articles. If moderate or strong correlations exist between the two studies, than it is likely due to the fact that both measures are estimating the same latent variables (Campbell and Fiske, 1959). In other words, this analysis will determine empirically whether the CAQ Big Five have similar relationships to certain country level variables as other measures of the Big Five show.

The first step in the analyses was to put the CAQ Big Five scores on the same scale as those obtained from Schmitt and colleagues (2007). Across 56 nations, Schmitt et al. (2007) provided country level *T*-scores for each of the Big Five traits using the 44-item Big Five Inventory (BFI; Benet-Martínez & John, 1998). The 10 countries from Schmitt and colleagues that overlap with this study are displayed in Table 7. Because cross-cultural samples often have differences that may bias results (adult vs. college student; college student vs. community member), researchers use *T*-scores in order to adjust for these differences, and typically, the US is used as the standard of comparison (McCrae, 2002; McCrae et al., 2005).

Likewise, we converted the CAQ Big Five means to *T*-scores, which have an overall mean of 50 and a standard deviation of 10. We subtracted the US mean from each country's mean, and the result was divided by the US standard deviation. Then, each country's score was multiplied by 10 and 50 was added. This process necessarily renders the US mean 50 and standard deviation, 10. *T*-scores were calculated for all 10 countries

that overlapped with Schmitt and colleagues' (2007) country scores (Table 6; see appendix D for *T*-scores of all 13 countries).

Table 6
Big Five CAQ T-scores Across 10 Countries

	CA	CZ	FR	PL	SK	ZA	KR	CH	UK	US
E	50.83	50.13	48.80	54.10	50.22	47.83	50.67	50.15	52.12	50
N	50.14	50.66	53.06	51.07	51.65	50.58	53.65	50.83	52.83	50
A	52.02	49.49	45.58	47.29	51.53	46.97	48.14	49.03	49.35	50
C	50.50	54.13	50.11	53.73	50.53	52.43	49.30	54.56	47.50	50
O	50.15	55.87	57.77	53.85	54.11	55.77	48.90	55.18	54.02	50

Note. CAQ items with loadings of -/+ .30 or higher were obtained from McCrae et al. (1986).

Table 7
Big Five BFI T-scores Across 10 Countries

	CA	CZ	FR	PL	SK	ZA	KR	CH	UK	US
E	48.32	50.22	45.44	49.12	49.05	49.61	44.86	50.47	49.79	50
N	50.58	51.02	52.29	51.80	51.57	49.01	53.99	48.72	51.39	50
A	49.14	44.09	46.64	46.74	47.38	49.97	44.11	47.69	47.31	50
C	49.05	42.87	49.26	46.15	42.44	49.61	40.60	45.03	46.89	50
O	48.75	50.59	48.09	49.06	52.53	49.01	44.30	52.62	45.97	50

Note. These data were originally published by Schmitt and colleagues (2007).

Figure 6 displays the scatterplot of extraversion *T*-scores with an ordinary least squares regression line predicting CAQ *T*-scores from BFI *T*-scores. South Korea had the least similar extraversion scores from the CAQ and BFI, followed by Poland; Switzerland's scores were the most similar, followed by the Czech Republic's.

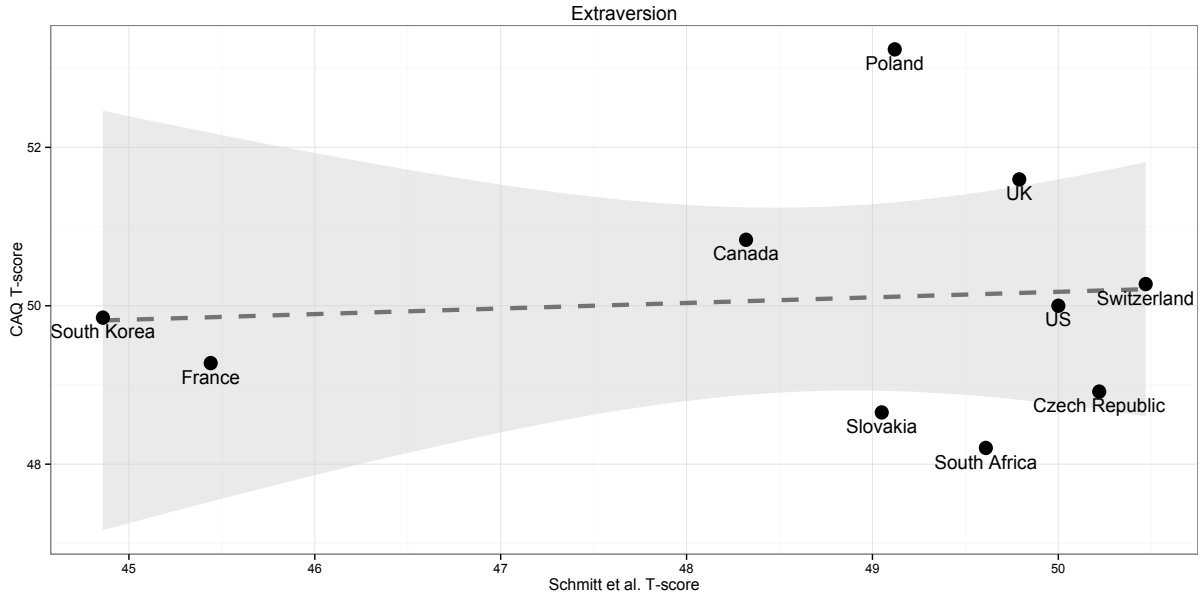

Figure 6. Extraversion: Scatterplot of Big Five CAQ *T*-scores and BFI *T*-scores

Figure 7 displays the scatterplot of neuroticism *T*-scores with a regression line predicting CAQ *T*-scores from BFI *T*-scores. The CAQ and BFI produced very similar results within each country. The Czech Republic's BFI and CAQ scores were the least similar, followed by Slovakia's; France had the most similar scores, followed by Poland.

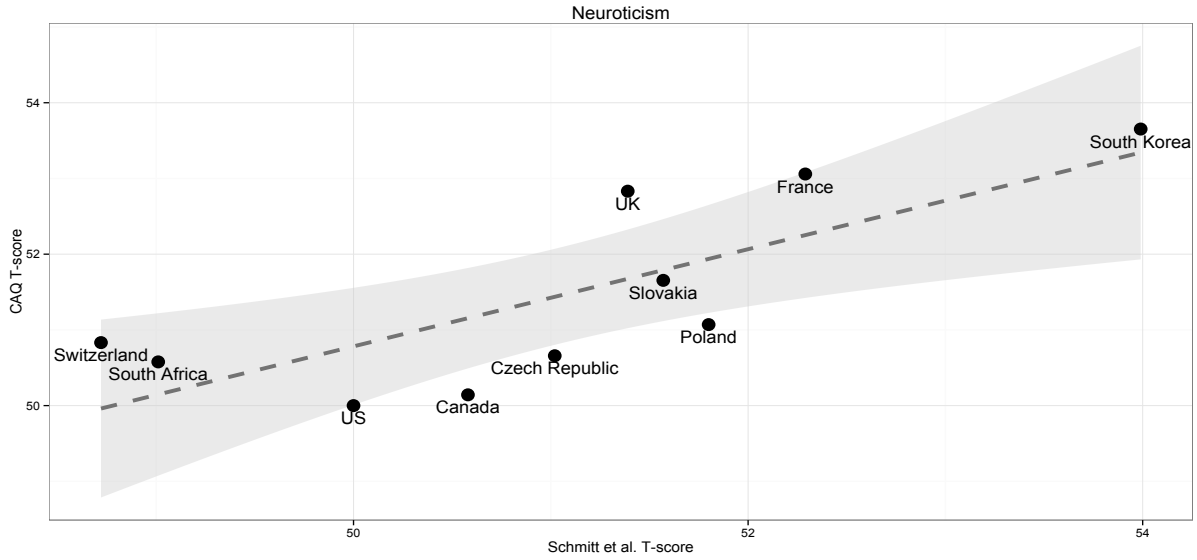

Figure 7. Neuroticism: Scatterplot of Big Five CAQ *T*-scores and BFI *T*-scores.

Figure 8 displays the scatterplot of agreeableness *T*-scores with a regression line predicting CAQ *T*-scores from BFI *T*-scores. The Czech Republic's CAQ Big Five and BFI scores were least similar, followed by South Korea's; Poland had the most similar scores, and then France.

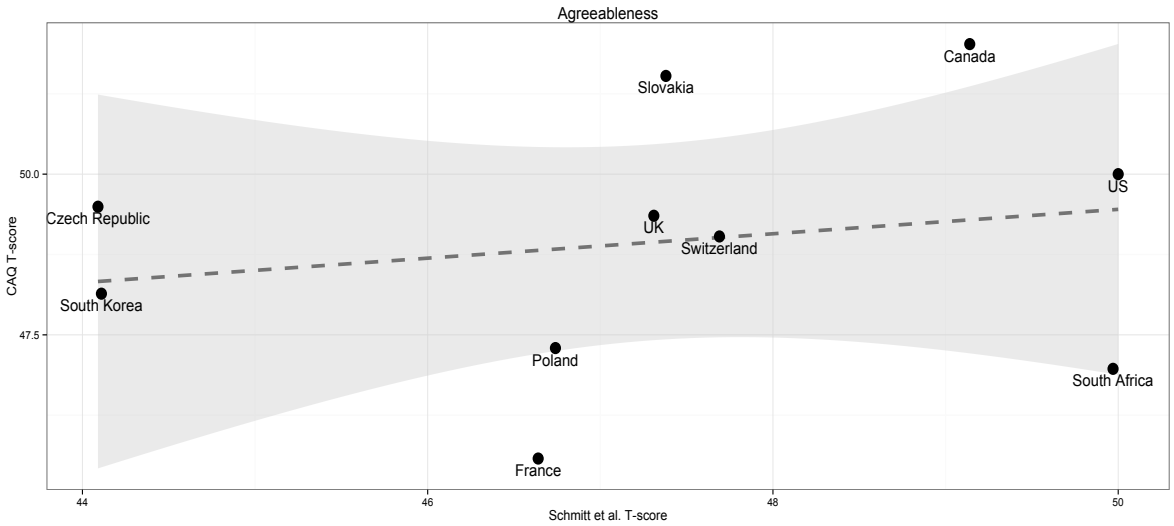

Figure 8. Agreeableness: Scatterplot of Big Five CAQ *T*-scores and BFI *T*-scores.

Figure 9 displays the scatterplot of conscientiousness *T*-scores with a regression line predicting CAQ *T*-scores from BFI *T*-scores. The Czech Republic had the greatest differences in scores, followed by Switzerland, South Korea and Slovakia. The UK had the most similar scores across the CAQ and BFI, followed by Canada.

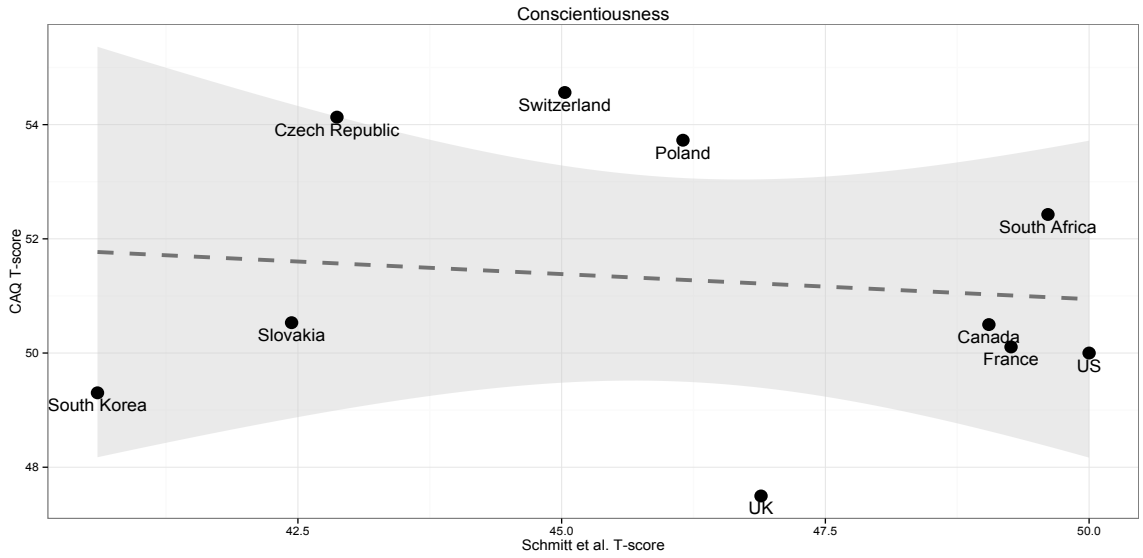

Figure 9. Conscientiousness: Scatterplot of Big Five CAQ *T*-scores and BFI *T*-scores.

Figure 10 displays the scatterplot of Openness *T*-scores with a regression line predicting CAQ *T*-scores from BFI *T*-scores. The Czech Republic had the greatest difference in *T*-scores across measures, followed by the US. CAQ and BFI conscientiousness scores were most similar for the Canadian samples, followed by Slovakia.

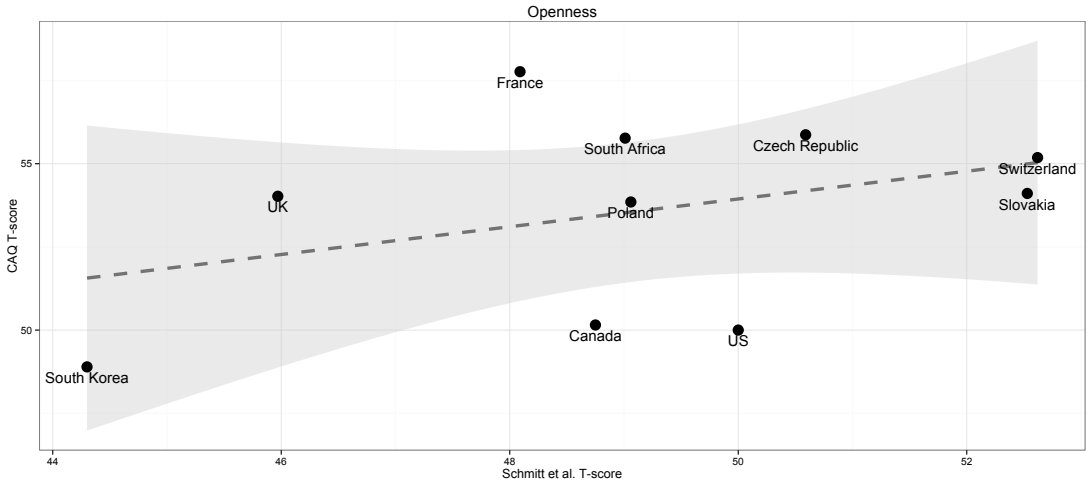

Figure 10. Openness: Scatterplot of Big Five CAQ *T*-scores and BFI *T*-scores.

Table 8 demonstrates cross-instrument correlations for each CAQ Big Five domain and the corresponding BFI domains, collapsed across all countries. Each trait's *T*-score across countries from Schmitt and colleagues (2007) was then correlated with the 10 overlapping countries' CAQ Big Five scores. Neuroticism has the strongest correlation (r = .76), indicating strong convergence for this trait. Openness followed (r = .47), then extraversion (r = .15), agreeableness (r = .13), and finally, conscientiousness (r = -.05).

Table 8
T-scores of Big Five CAQ Correlated with T-scores of the BFI

	CAQe	CAQn	CAQa	CAQc	CAQo
BFIe	0.15				
BFIn		0.76			
BFIa			.13		
BFIc				-.05	
BFIo					0.47

Note. Big Five NEO scores were originally published by Schmitt and colleagues (2007). CAQ Big Five traits were based on principal components analyses from McCrae and colleagues (1986).

Another way to examine the validity of the CAQ Big Five factors is to correlate them with country-level scores on dimensions made available in other studies, and then compare the CAQ results with the results found by other researchers who had done the same.

I correlated the CAQ Big Five with Hofstede's (2001) value dimensions (Table 9) because country-level scores were available for all of the countries in our study. McCrae and colleagues (2005) correlations between the NEO-PI-R and Hofstede's (2001) value dimensions (Table 10) we used for comparison. The correlation between the two Tables revealed a strong positive relationship ($r = .47$, $t(23) = 2.52$, $p = .02$).

Table 9
Country Level Correlates of the CAQ Big Five and Hofstede's (2001) Value Dimensions (N = 13)

	E	N	A	C	O
Power Distance	-0.25	0.25	-0.22	-0.23	0.03
Uncertainty Avoidance	0.31	0.19	-0.38	-0.10	0.50
Individualism	0.30	-0.32	0.31	0.01	0.41
Masculinity	0.01	-0.41	0.52	0.39	0.07
Long-term orientation	-0.26	0.42	-0.16	-0.05	-0.10

Table 10
Country Level Correlates of the NEO-PI-R Big Five and Hofstede's (2001) Value Dimensions (N = 49)

	E	N	A	C	O
Power Distance	-0.46	0.20	-0.31	0.11	-0.41
Uncertainty Avoidance	0.07	0.30	-0.02	0.20	-0.03
Individualism	0.51	0.05	0.37	-0.14	0.33
Masculinity	0.00	-0.14	0.04	0.03	0.10
Long-term orientation	-0.17	-0.09	-0.18	-0.01	-0.05

Note. These data were originally published by McCrae and colleagues (2005).

The Magnitude of Gender Differences in the CAQ Big Five

Researchers have noted that gender differences tend to be smaller in African and Asian countries, and larger in European and North American countries. Costa and colleagues (2001) and Schmitt and colleagues (2008) both calculated Cohen's *d* to represent the magnitude of gender differences within each of the counties in their studies. Traditionally, the *d* statistic has been computed such that positive values indicate that men are higher than women on a particular scale (Cohen, 1988). However, previous studies on gender differences in personality traits (Costa et al., 2001) have computed *d* such that positive values indicate that women are higher than men. I also used this method in order to compare my findings with Schmitt et al. (2008).

Table 11 shows the magnitude of gender differences in the CAQ with the *d* statistic, which is the mean of women's z-scores subtracted from the mean of men's z-scores, and then divided by their pooled standard deviation. Table 12 shows the results from Schmitt and colleagues (2008). In general, the *ds* were small to moderate in size. Across the 13 countries, the magnitudes of gender differences were largest for agreeableness ($d = .30$), extraversion ($d = .26$) and neuroticism ($d = .26$) For agreeableness, Poland ($d = .73$) and Switzerland ($d = .68$) had the largest differences; China ($d = .18$) and France ($d = .03$) had the smallest differences.

Across all CAQ Big Five traits, a *t*-test revealed that South Africa and the Asian countries were not significantly different from the other countries ($t\ (42) = 1.24$, $p = .22$), yet the Cohen's *d* associated with this *t*-test is $d = .33$ in the direction I expected (i.e., gender differences are smaller in South Africa and Asian countries, and larger in European and North American countries). Additionally, the *t*-test comparing extraversion in South Africa and Asian countries to European and North American countries was significant ($t\ (11) = 2.54$, $p = .02$).

Finally, the correlation between all values in Tables 11 and 12 is $r = .32$, indicating a moderate relationship between the magnitude of gender differences in CAQ Big Five and the magnitude of gender differences in the BFI.

Table 11

Mean Z Score Differences (d) Between Women and Men in 10 Countries on CAQ Big Five Factors

	E	N	A	C	O
Canada	-0.01	0.47	0.35	-0.06	-0.15
Czech Republic	0.32	0.26	0.29	0.09	-0.30
France	0.16	0.36	0.03	-0.18	0.14
Poland	0.33	0.45	0.73	0.38	-0.89
Slovakia	0.68	0.15	0.27	0.66	-0.26
South Africa	0.01	0.19	0.27	0.12	0.14
South Korea	0.19	0.40	-0.26	-0.85	0.34
Switzerland	0.65	-0.13	0.68	-0.04	-0.40
UK	0.09	0.22	0.20	0.03	-0.32
US	0.19	0.23	0.42	-0.04	-0.08
Average	0.26	0.26	0.30	0.01	-0.18

Note. For each country, women's means were subtracted from men's; negative *ds* indicate that the men's mean was larger than the women's mean. Large d = 0.8; Medium d = 0.5; Small d = .02.

Table 12
Mean Z Score Differences (d) Between Women and Men in 10 Countries on the BFI Big Five Factors

	E	N	A	C	O
Canada	0.17	0.49	0.20	0.27	-0.14
Czech Republic	0.40	0.31	0.55	0.11	0.04
France	0.36	0.53	0.11	0.77	0.11
Poland	0.11	0.47	0.18	0.09	0.14
Slovakia	0.29	0.28	0.49	0.21	0.37
South Africa	0.19	0.41	0.00	0.06	-0.08
South Korea	0.02	0.40	0.20	-0.17	-0.02
Switzerland	0.52	0.30	0.01	0.25	0.03
UK	0.03	0.55	0.29	-0.09	-0.12
US	0.15	0.27	0.19	0.20	-0.22
Average	0.22	0.40	0.22	0.17	0.01

Note. These data were originally published by Schmitt and colleagues (2008). For each country, women's means were subtracted from men's; negative *ds* indicate that the men's mean was larger than the women's mean. Large $d = 0.8$; Medium $d = 0.5$; Small $d = .02$.

CHAPTER 4—DISCUSSION

The purpose of this study was to explore the universality of personality traits measured by the California Adult Q-sort (CAQ) and the CAQ Big Five factors. Cross-cultural research on personality has primarily utilized Likert scales which have been dogged by response style issues such as acquiescence, extreme response bias, social desirability, and the reference group effect (Chen, 2008; Cheung & Rensvold, 2000; Heine et al., 2002; Ross & Mirowsky, 1984; van de Vijver, & Leung, 2011). Researchers have suggested that forced choice measures such as the CAQ circumvent issues with Likert scales, and serve as an alternative method for examining personality across countries (Marsella, Dubanoski, Hamada, & Morse, 2000).

The 100-item California Adult Q-sort provided a number of ways to examine data from around the world. The first step in analyses was to make broad country comparisons in CAQ profiles, and to compare how individual profiles relate to one another both within and across countries; Next, I examined gender and country differences using the items that McCrae and colleagues' (1986) suggested for the CAQ Big Five. Third, we compared the CAQ Big Five with data gathered by Schmitt and colleagues (2007) using the Big Five inventory (the Big Five Inventory; BFI). Fourth, I correlated the CAQ Big Five with Hofstede's value dimensions (Hofstede, 2001), and compared my results to McCrae and colleagues' (2005) findings. Finally, I compared the magnitude of gender differences in my study with previous researchers' findings on gender differences in the Big Five across countries (Schmitt at al., 2008).

Averaged CAQ Profiles and Inter-Individual Profiles

The overall personality profiles of individuals around the world were, on average, highly similar and largely pleasant, and the homogeneity of personalities was nearly as pervasive between countries as within. Profile correlations across countries ranged from r = .69 to .98. These findings emerged from personalities examined in 13 countries on 5 continents, using materials rendered in 9 different languages. While this amount of similarity may or may not be surprising, it is an encouraging indication that instructions to participants and the content of the CAQ items were indeed understood similarly across many different countries and languages (Guillaume et al., 2015).

The degree of similarity of CAQ reports among individuals within each country revealed that South Korea was the least homogenous country, and the Czech Republic the

most. The homogeneity of personality profiles was nearly as great between countries as within. Although smaller than the within-country comparisons, the between-country comparisons are not dramatically smaller. This finding suggests a greater degree of universality in personality than perhaps would have been expected (McCrae, 2002), and that individual differences in personality may be greater than international differences. Drawing on behavior genetics research, identical twins separated at birth tend to exhibit amazing similarities in personality, despite being reared in different family environments (Tellegen et al., 1988). In studies of identical and fraternal twins reared together, if monozygotic twins are more similar on certain traits than dizygotic twins, then the variation in the trait may be the result of variation in genes. Drawing on this method of comparison, one study found there is no shared environmental influence on extraversion (Borkenau, Riemann, Angleitner, & Spinath, 2001). These studies suggest that the shared and non-shared environments may have smaller effects in shaping certain personality characteristics than may have been expected.

Highest and Lowest CAQ Mean Item Placements Across 13 Countries

The similarities of CAQ profiles across countries showed that the most endorsed items were similarly positive across countries, and the least endorsed items were negative. These included item #56, "Responds to and appreciates humor," and item #70, "Behaves ethically; has a personal value system and is faithful to it." In other words most people - on average – define themselves primarily in positive terms. Likewise, the least endorsed items were very similar across the 13 countries. The least endorsed items included item #36, "Tends to undermine, obstruct, or sabotage other people," and item

#37, “Is guileful, deceitful, manipulative, opportunistic; takes advantage of others,” which among others of the same suit, generally represent negative or undesirable aspects of a person.

Overall these analyses showed that on average, across 13 countries, people report very similar personalities – consisting mostly of positive, socially adept, and desirable attributes. Indeed, when these means were correlated with the CAQ items that represented the optimally adjusted character, the correlation was extremely strong and positive. From this we may infer that people tend to see themselves in a positive light – or that most people actually *are* optimally adjusted.

Gender Differences in the CAQ Big Five

Previous researchers have found that gender differences in the Big Five personality traits or facets have a geographically ordered pattern, with the largest gender differences found in Europe and the smallest differences in Asian and African countries (Costa et al., 2001; Schmitt et al., 2008). In general, the results from this study trended similarly with previous findings: South African and Asian samples had smaller gender differences than our European and North American samples across the CAQ Big Five. Although the *t*-test was not significant, the effect size (d = .33) was in the direction I expected. In terms of individual traits, the *t*-test for extraversion was significant in that the South African and Asian samples had smaller gender differences than the European and North American samples. Schmitt et al. (2007) also found that larger gender differences were more common in countries whose inhabitants enjoy a long and healthy life, knowledge and education, and decent standard of living. Likewise, Costa and

colleagues (2001) also noted that Western, individualistic countries have greater sex differences in personality than do non-Western, collectivistic cultures. In traditional cultures where clear sex role differences are prescribed, self-descriptions are based on comparisons of the self with others of the same gender; additionally, personality traits may be less relevant to members of collectivist cultures (Costa et al. 2001).

For CAQ extraversion, women's scores exceeded men's in every country except Canada, with the largest margins in Europe, and the smallest margins in South Africa and Asia. In line with other findings, a meta-analysis that examined gender differences across ages, education levels, and nations found that women scored higher than men on extraversion (Feingold, 1994). Recently, Schmitt and colleagues (2008) also found that across 55 nations, women scored higher in extraversion than men. These results regarding gender differences in extraversion fully support existing theory and reflect well on the cross-cultural validity of the CAQ as a measure of extraversion.

For CAQ neuroticism, women reported higher levels in every country this study sampled. Our findings corroborate several other studies as well: a large meta-analysis by Feingold (1994) confirmed that women scored notably higher than men on certain neuroticism scales (e.g., anxiety) across ages, education levels, and nations; similarly, results from the Eysenck Personality Questionnaire (EPQ) obtained in 37 countries found that women scored higher on neuroticism than men (Lynn & Martin, 1995); Costa and colleagues (2001) also found that across college-age samples from 24 countries, and adult samples across 14 countries, women scored significantly higher in neuroticism; finally, Schmitt and colleagues (2008) found that across 55 nations, women were higher in

neuroticism than men. Although Feingold (1994) suggested that gender differences found in neuroticism may be due to method variance because social desirability biases drive men to avoid endorsing "weak" items, such as fearfulness, the CAQ-sort should have mostly controlled for social desirable responding, meaning that the difference between men and women is likely caused by a real difference between the genders. These results regarding gender differences in neuroticism fully support existing theory and reflect well on the cross-cultural validity of the CAQ as a measure of neuroticism.

For CAQ agreeableness, women again scored higher than men in all countries sampled except in South Korea. Women's agreeableness scores exceeded men's by the largest margins in Europe (except France), and by less in South Africa and Asia. Other researchers have also noted that women score higher on agreeableness (Feingold, 1994; Schmitt et al., 2008), and this may be due to the fact that women tend to score higher on nurturance (Costa et al., 2001). Evolutionary psychologists suggest that women who were more nurturing and agreeable prehistorically may have been more likely to protect their children, thus conferring a naturally selective advantage to their children (Buss, 1995). A cursory glance at Table 5 reveals that many CAQ items representing agreeableness are related to nurturing (e.g., "Behaves in a sympathetic and considerate manner," "Arouses nurturant feelings in others"), thus it is not surprising that women score higher in agreeableness than men in the CAQ Big Five.

There were no main effects of gender for CAQ openness to experience. This is surprising because most CAQ items that represent openness are related to cognitive matters (e.g., "Places high value on intellectual and cognitive matters"), and items that

tap into cognitive matters tend be endorsed more by men than women (Costa et al., 2001). In fact, Costa and colleagues (2001) found that across 26 countries, women scored higher on openness to feelings facet whereas men scored higher on the openness to ideas facet. However, my analyses revealed that the interaction between country-gender pairs were significantly different, even though within country-gender pairs were not.

There was also no relationship between CAQ conscientiousness and gender, which lines up with previous research (Costa et al., 2001; Feingold, 1994). However, men in South Korea scored much higher than women in conscientiousness.

Country Differences in the CAQ Big Five

In our study, Poland had the highest score in extraversion, and Singapore, the lowest. North American and European countries tended to have the highest extraversion scores, and South Africa and Asian countries had the lowest extraversion scores. Previous research has also found that North American and European countries tend to have the highest extraversion scores, and South Africa and Asian countries have the lowest extraversion scores (McCrae et al., 2005; Schmitt et al., 2008). Informant ratings from 51 countries further demonstrated that Europeans, on average, appeared to be more extraverted than Asians or Africans (McCrae et al., 2005), and Allik and McCrae (2004) found that Europeans and North American countries tend to be outgoing, whereas Asian and African countries are more introverted and traditional. Thus, country differences in extraversion are supported by existing theory and reflect well on the cross-cultural validity of the CAQ as a measure of extraversion.

For neuroticism, North American countries tended to have the lowest neuroticism scores, and Asian countries, the highest (except China). South Korea had the highest neuroticism score and China had the lowest score. These country differences also line up with previous Big Five findings across countries (McCrae et al., 2005; Schmitt et al., 2008). Thus the current study supports existing theory and reflects well on the cross-cultural validity of the CAQ as a measure of neuroticism.

For agreeableness, Canada had the highest scores on average, and France, the lowest. According to post hoc analyses, eight country pairs had significant differences – all of which included Canada. The Asian countries in our sample (Singapore, South Korea, and China) were neither high nor low in agreeableness. These findings are surprising, because one might predict that countries high in agreeableness would also value harmony and in-group norms, whereas those low in agreeableness would be less concerned with getting along and perhaps more concerned with getting ahead. In other words, one might expect that countries traditionally known to be collectivist (e.g., Asian countries) might score higher on agreeableness than countries known to be individualist (e.g., Canada).

For conscientiousness, Switzerland had the highest scores on average, and Russia, the lowest. Although stereotypes indicate that Asians are prototypically industrious and detail-oriented, the present study shows that China and Singapore are just about average in conscientiousness among our 13 countries, and South Korea, the third from the least conscientious country. Recent studies have also found that like our data, Switzerland

scores among the highest countries in conscientiousness, and Asian countries score at or below average (McCrae et al., 2005).

For openness, European countries tended to have the highest scores, followed by Canada and the US, and then South Africa and Asian countries; France was most open, and China the least. Out of 32 significant main effects of country, 19 were between South Africa or Asian and European or North American countries, indicating that Asian countries and South Africa had scored lower in openness, which confirms previous findings (Schmitt et al., 2007). Allik and McCrae (2004) also found that Europeans and Americans are more open to new experiences, whereas Asian and African countries are more traditional.

Country Level Correlations

I found a strong positive correlation between the country level BFI neuroticism scores and the CAQ neuroticism scores across the 10 countries (r = .76). In other words, this study saw a similar pattern to findings reported by Schmitt and colleagues (2007). The countries that scored higher on neuroticism (e.g., South Korea and the UK) and the lower on neuroticism (Canada and South Africa) were generally the same across both studies. Additionally, the country level mean scores of the CAQ openness factor strongly correlates with the corresponding BFI country level mean scores (r = .47). These findings are encouraging because they suggest that responses biases often attributed to the use of Likert scales may not have such a strong effect as to yield cross-cultural comparisons useless (Grimm & Church, 1999). In other words, these findings demonstrate good cross-instrument, cross-method validity (Campbell & Fiske, 1959).

On the other hand, the CAQ conscientiousness country level scores were least associated with Schmitt and colleagues' (2007) results from the BFI (r = -.04). In fact, multiple researchers have singled out this trait for its inconsistent relationship with objective behavioral criteria. Mottus and colleagues (2012) suggest that cross-cultural differences in self-enhancement and the motivation to present oneself in a favorable manner (e.g., highly conscientious) may differ across cultural settings, but also that intuitions about conscientiousness and its relationships with objective criterion variables may be mistaken. It is possible this negligible relationship may also reflect cross-sectional differences (sampling from different universities within countries) or cohort differences; e.g., Schmitt and colleagues (2007) sampled prior to 2007, whereas the current study collected data between 2013 and 2014. University selection criteria may have changed for some of the sampled countries as well, but a more plausible explanation is that both studies did not sample from all the same universities, and selection bias is at play.

The correlation between the CAQ extraversion scores and its BFI equivalent across countries was also negligible (r = .15). Although past research would have predicted similar cross-cultural patterns with various Big Five measures in extraversion, agreeableness, and conscientiousness (De Raad et al., 2010; Di Blas, Forzi, & Peabody, 2000), we found small to negligible correlations between the CAQ extraversion, agreeableness, and conscientiousness country level scores and their corresponding BFI scores. One possible explanation is that the samples gathered from Schmitt and colleagues (2007) were considerably different from the samples gathered in the present

study, and each country's subsample responded to extraversion items differently. In fact, the correlation between Schmitt and colleagues' (2007) BFI mean extraversion scores and Lynn and Martin's (1995) EPQ mean extraversion scores was also low: $r = .18$. This may provide further evidence of the uniqueness and perhaps less universal representation of Schmitt and colleagues' (2007) data set. Similarly, the CAQ agreeableness factor had a negligible relationship with the BFI agreeableness factor ($r = .13$).

Nonetheless, despite differences in measures, methods, time of collection, researchers, and sampling strategies, the country level means for the CAQ neuroticism and openness factors show similarities to Schmitt and colleagues' 2007 findings, just as other researchers found strong correlations between different instruments that measure the Big Five (McCrae, 2002).

The correlation between the magnitudes of gender differences in the CAQ Big Five and the BFI as measured by Schmitt and colleagues (2008) was moderate, which supports cross-instrument and cross-method validity. Additionally, the correlation of the CAQ Big Five and Hofstede's dimensions with the NEO-PI-R and Hofstede's dimensions (McCrae et al., 2005) was also moderately strong and significant. For example, both studies found that power distance and long-term orientation are negatively correlated with extraversion, whereas individualism is positively associated with extraversion, and masculinity has a negligible relationship. That these measures of extraversion both show associations with individualism, for example, provides reassuring evidence that they are functioning similarly across cultures. The similarities between my findings and McCrae and colleagues' (2005) is notable because the two studies were

performed many years apart, and in some cases, sampled from different parts of each country, with two different methods and measures of the Big Five (the CAQ vs. the NEO-PI-R).

Limitations and Future Directions

Because this study had only half the number of samples gathered by other researchers, I cannot fully trust these results without replication. I would also need to gather informant reports of personality to support this conclusion, as others have done (McCrae, et al., 2005).

Several questions may yet be asked with the CAQ. Tests of configurable, metric, and scalar equivalence across cultures would help establish that observed differences in the CAQ Big Five scores do not arise from cultural bias in items. Some suggest that if scalar equivalence is not achieved, then means should not be compared across countries (Billiet, 2003). Tests of measurement invariance would allow for metric and scalar equivalence to be calculated. Although a few of the countries sampled in this dissertation do not provide a large enough sample size for stable estimates, it is possible to combine all samples, or group together certain regions. Preliminary analyses using confirmatory factor analysis revealed that both extraversion and neuroticism at least demonstrated configural invariance with CAQ items from McCrae and colleagues (1986).

Additionally, exploratory factor analyses may yield similar or different CAQ Big Five items. It is also possible to have each item of the CAQ coded for relevance to each of the Big Five factors. For example, a coder may decide that the item 28 ("Tends to arouse liking and acceptance in people") would receive a high rating for relevance to both

agreeableness and extraversion. Confirmatory factor analysis could then test the fitness of measurement models derived from a theoretically-based coding process such as this.

Conclusion

This was an exploratory study that utilized the California Adult Q-sort (CAQ) to address methodological issues commonly found in cross-cultural research on personality, and to replicate previous cross-cultural findings in personality by a) matching samples across countries (avoiding sample bias), b) using an item-by-item personality measure that examines personality characteristics across countries without incorporating complex constructs (avoiding problems of replication and construct bias), c) administering a forced-choice instrument instead of a Likert scale (avoiding instrument biases and reference group effects), and d) correlating the CAQ Big Five with other measures of the Big Five in the literature.

Before the development of our website (www.interantionalsituationproject.com), it was impossible to run online cross-cultural studies using a forced-choice instrument with a quasi-normal distribution, yet researchers have speculated about the usefulness of forced-choice measures in cross-cultural research (Heine et al., 2002). Do Q-sorts yield dramatically different results from Likert scales (that have traditionally been used to measure personality in cross-cultural research)? Overall, I believe the answer is no. Findings from this study show convergent validity with previous research on the Big Five personality across countries (McCrae et al., 2005; Schmitt et al., 2007), and several trends within my data converged with previous research on sex and country differences (Allik &

McCrae, 2002; Allik & McCrae, 2004; Costa et al., 2001; McCrae, 2004; McCrae et al., 2005;).

The fact that my findings corroborate previous studies is encouraging, and shows for the most part that the CAQ Big Five demonstrate cross-instrument, cross-method validity. Had there been translation issues with members of different countries interpreting the CAQ items differently (e.g., "reserved" or "responsible" meaning something slightly different among Asians vs. Europeans), I would not have found such high profile correlations, and similarities in how people describe their personalities (positively). In other words, if the use of Q-sorts provided drastically different results from previous research, the CAQ Big Five would not have aligned so well with other Likert scale measures of the Big Five.

Nonetheless, these data are not entirely definitive. The number of countries sampled is relatively small, and because the samples were limited to university students, I cannot claim they were strictly representative of any country's overall population. I also cannot assume configurable, metric, and scalar equivalence in terms of the CAQ Big Five because none of these tests were preformed for this dissertation, meaning that findings reported in this dissertation may suffer from common limitations in cross-cultural research.

Despite these potential issues, the overall similarities of averaged CAQ profiles across 13 countries mirror previous work done by my colleagues and myself. We asked participants to describe the situation they were in the night before using the Riverside Situational Q-sort (RSQ), participants sorted Q-sort items that described that situation.

Results showed that, overall, university students in 20 countries, using 14 different languages, reported remarkably similar experiences. Not only do people tend to endorse the most positive, socially desirable items of the CAQ, participants also report being in more positive than negative situations as well (Guillaume et al., 2015). Additionally, according to the averaged profile analyses, both the RSQ study and the current CAQ study found that South Korea had the least similar profile correlations among other countries in *both* situational and personality profiles, and Canada the strongest. It appears that not only are the situations college students find themselves in highly similar, their personalities are highly similar as well. College students describe both situations and personalities in mostly positive terms. These similarities may represent a global university "culture" (Flere & Lavrič, 2008), therefor both studies would need to be replicated with members of the larger community before generalizing the findings to the overall populations of each country.

The general trends of each CAQ Big Five trait seem to replicate others' findings. One would have to make fine distinctions among specific CAQ items in order to determine how the CAQ measures the Big Five differently from classical studies using Likert scales. In general, McCrae's et al.'s (1986) CAQ Big Five factors mostly align with previous cross-cultural research on the Big Five. In other words, despite their differences, both Likert scales and Q-sorts capture the pervasiveness of personality.

REFERENCES

Allik, J., & McCrae, R. R. (2004). Toward a geography of personality traits: Patterns of profiles across 36 cultures. *Journal of Cross Cultural Psychology, 35,* 13-28.

Allport, G.W. (1931). What is a trait of personality? *Journal of Abnormal and Social Psychology, 25*, 368-372.

Ashton, M.C., Lee, K., Perugini, M., Szarota, P., de Vries, R. E., Di Blas, L., …De Raad, B. (2004). Factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology, 86,* 356-366.

Ashton, M. C., Lee, K., de Vries, R. E., Perugini, M., Gnisci, A., & Sergi, I. (2006). The HEXACO model of personality structure and indigenous lexical personality dimensions in Italian, Dutch, and English. *Journal of Research in Personality, 40,* 851-875.

Benet-Martínez,V., & John, O. P. (1998). Los cinco grandes across cultures and ethnic groups: Multitrait-multimethod analysis of the Big Five in Spanish and English. *Journal of Personality and Social Psychology, 75*, 729-750.

Benet-Martinez, V., & Waller, N.G. (1995). The Big Seven factor model of personality description: Evidence for its cross-cultural generality in a Spanish sample. *Journal of Personality and Social Psychology, 69*, 701-718.

Bijnen, E. J., Van Der Net, T. Z., & Poortinga Y. H. (1986). On cross-cultural comparative studies with the Eysenck Personality Questionnaire, *Journal of Cross-Cultural Psychology, 17,* 3 -16.

Billiet, J. (2003). Cross-cultural equivalence with structural equation modeling. In J. A. Harkness, F. J. R. van de Vijver, & P. P. Mohler (Eds*.), Cross-cultural survey methods* (pp. 247-264). New York: John Wiley.

Block, J. (1978). *The Q-sort method in personality assessment and psychiatric research.* Palo Alto, CA: Consulting Psychologists Press. (Original work published 1961).

Borkenau, P., Riemann, R., Angleitner, A., & Spinath, F. M. (2001). Genetic and environmental influences on observed personality: Evidence from the German Observational Study of Adult Twins. *Journal of Personality and Social Psychology, 80(4),* 655.

Buss, D. M. (1995). Psychological sex differences: Origins through sexual selection. *American Psychologist, 50,* 164-168.

Campbell, D. T., & Fiske, D. W. (1959). Covergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin, 56,* 81-105.

Cattell, R. B. (1943). The description of personality: Basic traits resolved into clusters. *Journal of Abnormal and Social Psychology, 38*, 476–506.

Chandler, J., Mueller, P., & Paolacci, G. (2014). Nonnaïveté among Amazon Mechanical Turk workers: Consequences and solutions for behavioral researchers. *Behavioral Research Methods, 46,* 112-130.

Cheung, F.M., Cheung, S., & Zhang, J. (2010). Convergent validity of the Chinese personality assessment inventory and the Minnesota Multiphasic Personality Inventory-2: Preliminary findings with a normative sample. *Journal of Personality Assessment, 82,* 92-103.

Cheung, G.W., & Rensvold, R.B (2000). Assessing extreme and acquiesce response sets in cross-cultural research using structural equations modeling. *Journal of Cross-Cultural Psychology, 31,* 187- 212.

Cheung, F. M., van de Vijver, F. J. R., & Leong, F. T. L. (2011). Toward a new approach to the study of personality in culture. *American Psychologist, 66,* 593-603.

Chen, F. (2008). What happens if we compare chopsticks with forks? The impact of making inappropriate comparisons in cross-cultural research. *Journal of Personality and Social Psychology, 95,* 1005-1018.

Church, A. T., Alvarez, J. M., Mai, N. T. Q., French, B. F., Katigbak, M. S., & Ortiz, F. A. (2011). Are *cross-cultural* comparisons of *personality* profiles meaningful? Differential item and facet functioning in the revised NEO personality inventory. *Journal of Personality and Social Psychology, 101,* 1068-1089.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

Costa, P.T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology, 81,* 322-331.

Credé, M., Bashshur, M., & Niehorster, S. (2010). Reference group effects in the measurement of personality and attitudes. *Journal of Personality Assessment, 92,*

390-399.

De Fruyt, F., De Bolle, M., McCrae, R. R., Terracciano, A., & Costa, P. T. (2009). Assessing the universal structure of personality in early adolescence: The NEO-PI-R and NEO-PI-3 in 24 cultures. *Assessment, 16,* 301-311.

De Raad B., Barelds D.P., Levert E., Ostendorf F., Mlacić B., Di Blas L., … Katigbak M.S. (2010). Only three factors of personality description are fully replicable across languages: a comparison of 14 trait taxonomies. *Journal of Personality and Social Psychology, 98,* 160 -173.

DeYoung, C. G. (2010). Personality neuroscience and the biology of traits. Social and *Personality Psychology Compass, 4,* 1165–1180.

Di Blas, L., Forzi M., & Peabody D. (2000). Evaluative and descriptive dimensions from Italian personality factors. *European Journal of Personality, 14,* 279-290.

Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, 116, 429-456.

Flere, S., & Lavrič, M. (2008). On the validity of cross-cultural social studies using student samples. *Field Methods, 20,* 399-412.

Funder, D.C., & Guillaume E. (2013). *Revised CAQ for international research.* Unpublished MS., University of California, Riverside.

Gosling, J. O., & John, O.P. (1999). Personality dimensions in nonhuman animals: A cross-species review. *Current Directions in Psychological Science, 8,* 69-75.

Grimm, S.D., & Church, T.A. (1999). A cross-cultural study of response biases in personality measures. *Journal of Research in Personality 33,* 415–441.

Gudykunst, W. B., Gao, G., Nishida, T., Bond, M. H., Leung, K., Wang, G., & Barraclough, R. A. (1989). A cross-cultural comparison of self-monitoring. *Communications Research Reports, 6,* 7–12.

Guillaume, E., & Funder, D.C. (2014). Theoretical issues in making cross-national and cross-cultural comparisons. In Smith, P.K., Kwak, K., & Toda, Y. (Eds.) *Reducing bullying and cyberbullying in schools – Eastern and Western Perspectives.* Cambridge University Press.

Guillaume, E., Baranski, E., Todd, E., Bastin, B., Ivanova, C., Cheng, J., and 28 other members of the International Situations Project… Funder, D.C. (2015). The world at 7: Exploring situational experience in 19 countries with the Riverside Situational Q-sort. *Journal of Personality*.

Heine, S. J., Lehman, D. R., Peng, K., & Greenholtz, J. (2002). What's wrong with cross-cultural comparisons of subjective Likert scales? The reference-group effect. *Journal of Personality and Social Psychology*, *82*, 903–918.

Heine, S. J., Buchtel, E. E., & Norenzayan, A. (2008). What Do Cross-National Comparisons of Personality Traits Tell Us?: The Case of Conscientiousness. *Psychological Science 2008 19,* 309 – 313.

Hendriks, A. A. J., Perugini, M. Angleitner, A. Ostendorf, F., Johnson, J. A., De Fruyt, F.,…Ruisel, I. (2003). The Five-Factor Personality Inventory: Cross-cultural generalizability across 13 countries. *European Journal of Personality, 17,* 347-373.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors,

institutions, and organizations across nations (2nd ed.). Thousand Oaks, CA: Sage.

Huang, C. D., Church, a. T., & Katigbak, M. S. (1997). Identifying cultural differences in items and traits: Differential item functioning in the NEO personality inventory. *Journal of Cross-Cultural Psychology*, *28*, 192–218.

Hui, C. H., & Triandis, H. C. (1985). The instability of response sets. *Public Opinion Quarterly*, *49,* 253-260.

Hui, C. H., & Triandis, H. C. (1989). Effects of culture and response format on extreme response style. *Journal of Cross-Cultural Psychology*, *20,* 296-309.

Katigbak, M.S., Church, T. A., & Akamine, T. X. (1996). Cross-cultural generalizability of personality dimensions: Relating indigenous and imported dimensions in two cultures. *Journal of Personality and Social Psychology, 70,* 99-114.

Kulas, J. T., & Stachowski, A. A. (2009). Middle category endorsement in odd-numbered Likert response scales: Associated item characteristics, cognitive demands, and preferred meanings. *Journal of Research in Personality, 43*, 489-493.

Little, T. D. (2000). On the comparability of constructs in cross-cultural research: A critique of Cheung and Rensvold. *Journal of Cross-Cultural Psychology, 31,* 213-219.

Lippa, R. A. (2010). Sex differences in personality traits and gender-related occupational preferences across 53 nations: Testing evolutionary and social environmental theories. Archives of Sexual Behavior, 39(3), 619–636.

Lynn, R., & Martin, T. (1995). National differences for thirty-seven nations in extraversion, neuroticism, psychoticism and economic, demographic and other correlates. Personality and Individual Differences, 19, 403-406.

Marsella, A. J., Dubanoski, J., Hamada, W. C., & Morse, H. (2000). The measurement of personality across cultures: Historical, conceptual, and methodological issues and considerations. *American Behavioral Scientist*, *44*, 41–6

McCrae, R. R. (2001). Trait psychology and culture: Exploring intercultural comparisons. *Journal of Personality, 69*, 819-846.

McCrae, R. R. (2002). NEO-PI-R data from 36 cultures: Further intercultural comparisons. In R. R.McCrae & J. Allik (Eds.), The five-factor model of personality across cultures (pp. 105-125). New York: Kluwer Academic/Plenum.

McCrae, R. R., Costa, P.T., Busch, C.M. (1986). Trait psychology and culture: Exploring intercultural comparisons. *Journal of Personality, 54*, 431-446.

McCrae, R. R., & Costa, P. T. (1997). Personality trait structure as a human universal. *American Psychologist, 52,* 509-516.

McCrae, R. R., Terracciano, A., & 79 Members of the Personality Profiles of Cultures Project (2005). Personality profiles of cultures: Aggregate personality traits. *Journal of Personality and Social Psychology, 89,* 407-425.

Mõttus, R., Allik, J., Realo, A., Pullmann, H., Rossier, J., Zecca, G., … Tseung, C. N. (2012). Comparability of self-reported conscientiousness across 21 countries, *European Journal of Personality, 317*, 303–317.

Paunonen, S. V., Michael C. Ashton, M.C., & Jackson, D. N. (2000). Nonverbal

assessment of the Big Five personality factors. *European Journal of Personality, 15,* 3 – 18.

Rentfrow, P. J., Gosling, S. D., & Potter, J. (2008). A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics. *Perspectives on Psychological Science, 3,* 339-369.

Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The Big Five personality factors and personal values. Personality and Social Psychology Bulletin, 28, 789–801.

Ross, C. E., & Mirowsky, J. (1984). Socially-desirable response and acquiescence in a cross-cultural survey of mental health. *Journal of Health and Social Behavior, 25,* 189-197.

Saucier, G., Hampson, S.E., & Goldberg, L.R. (2000). Cross-language studies of lexical personality factors. In S. E. Hampson (Ed.), *Advances in personality psychology*. Philadelphia, PA: Psychology Press.

Schmit, M.J., Kihm, J. A., & Robie, C. (2000). Development of a global measure of personality. *Personnel Psychology, 53,* 153 – 193.

Schmitt, D. P., Allik, J., McCrae, R. R., Benet-Martinez, V., et al. (2007). The geographic distribution of Big Five personality traits: Patterns and profiles of human self-description across 56 nations. *Journal of Cross- Cultural Psychology, 38,* 173–212.

Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures.

Journal of Personality and Social Psychology, 94, 168–182.

Serfass, D. G., & Sherman, R. A. (2013). A methodological note on ordered Q-Sort ratings. *Journal of Research in Personality 47*, 853 - 858.

Sherman, R.A., & Funder, D.C. (2009). Evaluating correlations in studies of personality and behavior: Beyond the number of significant findings to be expected by chance. *Journal of Research in Personality, 99,* 330-343.

Smith, P. B. (2004). Acquiescent response bias as an aspect of cultural communication style. *Journal of Cross-Cultural Psychology, 35,* 50 – 61.

Snyder, M. (1987). *Public appearances, private realities: The psychology of self-monitoring.* New York: Freeman.

Tellegen, A., Lykken, D. T., Bouchard, T. J., Wilcox, K. J., Segal, N. L., & Rich, S. (1988). Personality similarity in twins reared apart and together. *Journal of Personality and Social Psychology*, *54*(6), 1031.

Triandis, H.C. (1997). Cross-cultural perspectives on personality. In R. Hogan, J. A. Johnson, Briggs, & S. R. (Eds). *Handbook of personality psychology*. San Diego, CA: Academic Press.

van de Vijver, F. J. R., & Leung, K. (1997). *Methods and data analysis for cross-cultural research.* Thousand Oaks, CA: Sage Publications.

van de Vijver, F. J. R., & Leung, K. (2001). Personality in cultural context: Methodological issues. *Journal of Personality, 69,* 1007-1031.

van de Vijver, F. J. R., & Leung, K. (2011). Equivalence and bias: A review of concepts, models, and data-analytic procedures. In F.J.R. Van de Vijver, & D. Matsumoto

(Eds.), *Cross- cultural research methods in psychology.* New York, NY: Cambridge University Press.

Yamagata, S., Suzuki, A., Ando J., Ono Y., Kijima, N., Yoshimura, K., … Jang K.L. (2006). Is the genetic structure of human personality universal? A cross-cultural twin study from North America, Europe, and Asia. *Journal of Personality and Social Psychology, 90,* 987-998.

Appendix A

California Adult Q-Sort (revised for cross-cultural use) Full Item Content

1. Is critical, skeptical, not easily impressed.
2. Is dependable and responsible (low placement implies undependable and irresponsible).
3. Has a wide range of interests (regardless of how deep or superficial the interests are).
4. Is a talkative person.
5. Is giving, generous toward others (regardless of the motivation).
6. Is fastidious, meticulous, careful and precise.
7. Favors conservative values in a variety of areas; emphasizes traditional values and beliefs (low placement implies rejection of traditional values).
8. Appears to have a high degree of intellectual capacity (whether or not this capacity translates into actual accomplishments).
9. Is uncomfortable with uncertainty and complexity.
10. Develops physical symptoms in reaction to stress and anxiety (e.g., sweating, racing heart, headaches, stomach aches, rashes, asthma, etc.).
11. Is protective of those close to him/her (high placement implies overprotective; medium placement implies appropriate caring; low placement implies lack of concern)
12. Tends to be self-defensive; unable to acknowledge personal shortcomings or failures; quick to defend self from criticism

13. Takes offense easily; is sensitive to anything that can be construed as a criticism or insult.
14. Genuinely submissive; accepts domination comfortably; gives in easily.
15. Is skilled in social techniques of imaginative play, pretending and humor.
16. Is introspective; thinks about self; examines own thoughts and feelings (does not necessarily imply that the person understands himself/herself well).
17. Behaves in a sympathetic and considerate manner (low placement implies unsympathetic and inconsiderate behavior).
18. Initiates humor; makes spontaneous funny remarks.
19. Seeks reassurance from others (high placement implies lack of self-confidence).
20. Behaves and acts quickly.
21. Arouses nurturant feelings in others; behaves in ways that lead others to feel caring and protective toward him/her.
22. Feels a lack of meaning in life.
23. Tends to blame others for own mistakes, failures, and shortcomings.
24. Prides self on being rational, logical and objective (high placement implies a person who is more comfortable with intellectual concepts than with feelings; low placement implies a person who is irrational and overly emotional).
25. Has excessive self-control; postpones pleasures unnecessarily.
26. Is productive; gets things done.
27. Is condescending toward others; acts superior to others.

28. Tends to arouse liking and acceptance in people (low placement implies a tendency to arouse dislike and rejection).
29. Is turned to or sought out for advice and reassurance.
30. Gives up and withdraws when possible in the face of frustration and adversity (high placement implies person gives up easily; low placement implies person does not know when, realistically, it is time to give up).
31. Regards self as physically attractive (this item refers to how person sees himself/herself, whether accurate or not).
32. Seems to be aware of the impression he/she makes on others (low placement implies person is unaware of the impression he/she makes).
33. Is calm, relaxed in manner.
34. Is irritable; overreacts to minor frustrations.
35. Has warmth; has the capacity for close relationships; compassionate.
36. Tends to undermine, obstruct, or sabotage other people.
37. Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.
38. Has hostility toward others (whether or not the hostile feelings are actually expressed).
39. Thinks about ideas in unusual ways; has unconventional thought processes.
40. Is generally fearful; is vulnerable to real or imagined threat.
41. Makes moral judgments; judges self and others in terms of right and wrong (regardless of the nature of the moral code, whether traditional or liberal; high

placement implies being moralistic and self-righteous; low placement implies an unwillingness to make value judgments).

42. Reluctant to commit self to any definite course of action; tends to delay or avoid making decisions or taking action.
43. Has large or vivid facial expressions or gestures.
44. Evaluates the motives of others; tries to figure out the intentions underlying people's actions (accuracy is not assumed).
45. Is psychologically frail, vulnerable; has poor ability to cope with stress.
46. Tends to fantasize and daydream.
47. Has a readiness to feel guilty (high placement implies a tendency to feel guilt even when he/she is not at fault).
48. Keeps people at a distance; avoids close relationships.
49. Is basically distrustful of people in general; questions their motivations.
50. Is unpredictable and changeable in attitudes and behavior.
51. Places high value on intellectual and cognitive matters (does not necessarily imply high intellectual achievement or intellectual ability).
52. Behaves in an assertive fashion; not afraid to express opinions; speaks up to get what he/she wants.
53. Is impulsive; has little self-control; unable to postpone pleasure.
54. Is sociable, gregarious; emphasizes being with others.
55. Is self-defeating; acts in ways that frustrate, hurt, or undermine own chances to get what he/she wants.

56. Responds to and appreciates humor.
57. Is an interesting, colorful person.
58. Appears to enjoy sensuous experiences (e.g., touch, taste, smell, bodily contact).
59. Is concerned about own body, its health and adequacy of functioning (high placement implies excessive concern or hypochondriasis).
60. Has insight into and understands own needs, motives and behavior; knows self well (low placement implies little insight into own motives and behavior).
61. Likes others to be dependent on him/her; likes to be thought needed by others (low placement implies encouraging others to be independent of him/her).
62. Tends to be rebellious and nonconforming.
63. Is influenced by social pressures (e.g., "popularity," conventional social norms).
64. Is socially perceptive; is alert to cues from other people that reveal what they are thinking and feeling.
65. Resists limits and rules; sees what he/she can get away with.
66. Enjoys aesthetic impressions; is aesthetically sensitive (appreciates art, music, drama, etc.).
67. Is self-indulgent; tends to pamper himself or herself.
68. Is basically anxious.
69. Is sensitive to anything that can be construed as a demand or request for favors; is quick to feel imposed on.
70. Behaves ethically; has a personal value system and is faithful to it.
71. Is ambitious; sets high personal goals.

72. Has doubts about own adequacy as a person; appears to have feelings of inadequacy.
73. Tends to see sexual overtones in many situations (high placement implies reading sexual meanings into situations in which none exist; low placement implies inability to recognize sexual signals).
74. Feels satisfied with self; is unaware of self-concern.
75. Is easy to understand and describe (low placement implies someone who is difficult to understand and describe).
76. Imagines that the needs, wishes and feelings of others are the same as his/her own; tends to project own feelings and motivations onto others.
77. Appears straightforward, candid, frank in dealing with others.
78. Feels cheated and victimized by life; self-pitying; feels sorry for self.
79. Tends to ruminate and have persistent, preoccupying thoughts.
80. Is sexually interested in others (whether of the opposite sex or same sex; low placement implies an absence of sexual interest).
81. Is physically attractive; is good looking (as defined by the relevant culture).
82. Has fluctuating moods; moods go up and down.
83. Able to see to the heart of important problems; does not get caught up or sidetracked by irrelevant details.
84. Is cheerful, happy (low placement implies depression).
85. Tends to communicate through actions, deeds, and non-verbal behavior, rather than through words.

86. Denies the presence of anxiety and conflicts; tends to convince himself/herself that unpleasant thoughts and feelings do not exist; deceives self into thinking everything is fine, when everything is not fine.
87. Tends to interpret clear-cut, simple situations in complicated ways.
88. Is personally charming.
89. Compares self with others; is alert to real or imagined differences between self and others in status, appearance, achievement, abilities, and so forth.
90. Is concerned with philosophical problems, for example, religions, values, free will, the meaning of life, and so forth.
91. Values power in self and others.
92. Has social poise and presence; appears socially at ease.
93. (a) Behaves in a masculine style or manner

    (b) Behaves in a feminine style or manner

    (If person is male, rate 93a; if person is female, rate 93b. The cultural definition of masculinity and femininity are intended here.)
94. Expresses hostility and angry feelings directly (low placement implies someone who is unable to express hostility, who holds angry feelings in).
95. Gives advice; concerns self with the business of others.
96. Values own independence and autonomy; emphasizes his/her freedom to think and act without interference or help from others.
97. Is an unemotional person; tends not to experience strong emotions (low placement implies a highly emotional person).

98. Is verbally fluent; can express ideas well in words.

99. Is self-dramatizing; theatrical; prone to exaggerate feelings; seeks attention.

100. Relates to everyone in the same way (low placement implies a person who acts differently with different people).

Appendix B

Highest Mean Item Placements Across 13 Countries

Country	Item #	Item	Mean
Canada			
	70	Behaves ethically; has a personal value system and is faithful to it.	7.19
	56	Responds to and appreciates humor.	7.10
China			
	57	Is an interesting, colorful person.	6.63
	70	Behaves ethically; has a personal value system and is faithful to it.	6.61
Czech Republic			
	56	Responds to and appreciates humor.	7.24
	51	Places high value on intellectual and cognitive matters (does not necessarily imply high intellectual achievement or intellectual ability).	7.19
France			
	56	Responds to and appreciates humor.	7.10
	70	Behaves ethically; has a personal value system and is faithful to it.	6.95
Poland			
	70	Behaves ethically; has a personal value system and is faithful to it.	7.16
	71	Is ambitious; sets high personal goals.	7.10
Russia			
	66	Enjoys aesthetic impressions; is aesthetically sensitive (appreciates art, music, drama, etc.).	7.09
	58	Appears to enjoy sensuous experiences (e.g., touch, taste, smell, bodily contact).	6.92
Singapore			
	56	Responds to and appreciates humor.	7.32
	70	Behaves ethically; has a personal value system and is faithful to it.	6.9
Slovakia			
	56	Responds to and appreciates humor.	7.24
	64	Is socially perceptive; is alert to cues from other people that reveal what they are thinking and feeling.	7.21
South Africa			
	96	Values own independence and autonomy; emphasizes	7.44

		his/her freedom to think and act without interference or help from others.	
	56	Responds to and appreciates humor.	7.07
South Korea			
	35	Has warmth; has the capacity for close relationships; compassionate.	6.34
	17	Behaves in a sympathetic and considerate manner (low placement implies unsympathetic and inconsiderate behavior).	6.32
Switzerland			
	70	Behaves ethically; has a personal value system and is faithful to it.	7.28
	56	Responds to and appreciates humor.	7.07
UK			
	56	Responds to and appreciates humor.	7.35
	80	Is sexually interested in others (whether of the opposite sex or same sex; low placement implies an absence of sexual interest).	6.95
US			
	56	Responds to and appreciates humor.	7.19
	70	Behaves ethically; has a personal value system and is faithful to it.	6.90

Lowest Mean Item Placements Across 13 Countries

Country	Item #	Item	Mean
Canada			
	36	Tends to undermine, obstruct, or sabotage other people.	2.46
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.56
China			
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.55
	36	Tends to undermine, obstruct, or sabotage other people.	2.78
Czech Republic			
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	1.99
	36	Tends to undermine, obstruct, or sabotage other people.	2.21
France			
	36	Tends to undermine, obstruct, or sabotage other people.	2.37
	99	Is self-dramatizing; theatrical; prone to exaggerate feelings; seeks attention.	2.93
Poland			
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.22
	36	Tends to undermine, obstruct, or sabotage other people.	2.51
Russia			
	36	Tends to undermine, obstruct, or sabotage other people.	2.91
	78	Feels cheated and victimized by life; self-pitying; feels sorry for self.	2.93
Singapore			
	36	Tends to undermine, obstruct, or sabotage other people.	2.40
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.65
Slovakia			
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.03
	36	Tends to undermine, obstruct, or sabotage other people.	2.12

South Africa			
	36	Tends to undermine, obstruct, or sabotage other people.	2.52
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.63
South Korea			
	55	Is self-defeating; acts in ways that frustrate, hurt, or undermine own chances to get what he/she wants.	2.89
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	3.08
Switzerland			
	36	Tends to undermine, obstruct, or sabotage other people.	2.06
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.58
UK			
	36	Tends to undermine, obstruct, or sabotage other people.	2.43
	37	Is guileful, deceitful, manipulative, opportunistic; takes advantage of others.	2.62
US			
	36	Tends to undermine, obstruct, or sabotage other people.	2.48
	78	Feels cheated and victimized by life; self-pitying; feels sorry for self.	2.66

Appendix C

Tukey's HSD Tests Among All Countries for the CAQ Big Five

Neuroticism

Interaction Between Country and Gender

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
Female:Russia-Male:Canada	0.516	0.053	0.978	0.011	1
Female:Singapore-Male:Canada	0.495	0.05	0.941	0.011	2
Female:South Korea-Male:Canada	0.588	0.113	1.063	0.002	3
Female:UK-Male:Canada	0.479	0.058	0.899	0.007	4
Female:Russia-Female:China	0.41	0.026	0.794	0.021	5
Female:Singapore-Female:China	0.39	0.026	0.753	0.019	6
Female:South Korea-Female:China	0.483	0.084	0.882	0.002	7
Female:UK-Female:China	0.373	0.041	0.706	0.009	8

Agreeableness

Main Effects of Country

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
China-Canada	-0.239	-0.405	-0.072	0	1
France-Canada	-0.403	-0.715	-0.092	0.001	2
Poland-Canada	-0.341	-0.62	-0.063	0.003	3
Russia-Canada	-0.336	-0.578	-0.094	0	4
Singapore-Canada	-0.236	-0.456	-0.016	0.023	5

Slovakia-Canada	-0.065	-0.381	0.251	1	6
South Africa-Canada	-0.324	-0.531	-0.118	0	7
South Korea-Canada	-0.252	-0.502	-0.002	0.046	8

Conscientiousness

Main Effects of Country

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
Czech Republic-Canada	0.245	0.048	0.442	0.003	1
Russia-Canada	-0.358	-0.616	-0.1	0	2
Switzerland-Canada	0.274	0.009	0.539	0.035	3
Russia-China	-0.516	-0.767	-0.265	0	4
UK-China	-0.361	-0.582	-0.139	0	5
US-China	-0.192	-0.361	-0.023	0.011	6
Russia-Czech Republic	-0.603	-0.868	-0.339	0	7
South Korea-Czech Republic	-0.326	-0.599	-0.053	0.005	8
UK-Czech Republic	-0.447	-0.684	-0.211	0	9
US-Czech Republic	-0.279	-0.468	-0.09	0	10
Russia-Poland	-0.576	-0.922	-0.23	0	11
Singapore-Russia	0.37	0.075	0.664	0.002	12
South Africa-Russia	0.488	0.205	0.77	0	13
Switzerland-Russia	0.632	0.313	0.951	0	14
US-Russia	0.324	0.072	0.576	0.001	15
UK-South Africa	-0.332	-0.589	-0.075	0.001	16

Switzerland-South Korea	0.355	0.029	0.681	0.019	17
UK-Switzerland	-0.476	-0.772	-0.18	0	18
US-Switzerland	-0.308	-0.567	-0.048	0.006	19

Conscientiousness

Interaction Between Country and Gender

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
Female:China-Female:Canada	0.275	0.027	0.523	0.012	1
Female:Czech Republic-Female:Canada	0.269	0.018	0.52	0.019	2
Female:Russia-Female:Canada	-0.397	-0.738	-0.056	0.005	3
Female:Russia-Male:Canada	-0.433	-0.849	-0.017	0.03	4
Female:Russia-Female:China	-0.672	-1.017	-0.326	0	5
Male:Russia-Female:China	-0.515	-0.993	-0.037	0.018	6
Female:Singapore-Female:China	-0.361	-0.688	-0.033	0.013	7
Female:South Korea-Female:China	-0.544	-0.903	-0.184	0	8
Female:UK-Female:China	-0.463	-0.762	-0.164	0	9
Male:UK-Female:China	-0.484	-0.941	-0.027	0.023	10
Female:US-Female:China	-0.309	-0.555	-0.064	0.001	11
Female:Russia-Male:China	-0.442	-0.794	-0.089	0.001	12
Female:Russia-Female:Czech Republic	-0.666	-1.014	-0.319	0	13
Male:Russia-Female:Czech Republic	-0.509	-0.989	-0.029	0.023	14
Female:Singapore-Female:Czech	-0.355	-0.684	-0.026	0.018	15

Republic					
Female:South Korea-Female:Czech Republic	-0.538	-0.899	-0.176	0	16
Female:UK-Female:Czech Republic	-0.457	-0.759	-0.155	0	17
Male:UK-Female:Czech Republic	-0.478	-0.936	-0.02	0.029	18
Female:US-Female:Czech Republic	-0.303	-0.552	-0.055	0.002	19
Female:Russia-Male:Czech Republic	-0.602	-1.047	-0.157	0	20
Female:Russia-Female:Poland	-0.679	-1.116	-0.241	0	21
Female:South Korea-Female:Poland	-0.55	-0.999	-0.102	0.002	22
Female:UK-Female:Poland	-0.47	-0.872	-0.068	0.005	23
Male:Singapore-Female:Russia	0.593	0.135	1.052	0.001	24
Male:South Africa-Female:Russia	0.477	0.036	0.918	0.017	25
Male:South Korea-Female:Russia	0.75	0.207	1.294	0	26
Female:Switzerland-Female:Russia	0.672	0.252	1.092	0	27
Male:Switzerland-Female:Russia	0.702	0.132	1.271	0.002	28
Female:US-Female:Russia	0.363	0.024	0.702	0.02	29
Male:US-Female:Russia	0.391	0.019	0.762	0.026	30
Female:South Korea-Female:South Africa	-0.44	-0.835	-0.046	0.011	31
Female:UK-Female:South Africa	-0.359	-0.7	-0.019	0.025	32
Male:South Korea-Female:South Korea	0.622	0.069	1.174	0.009	33
Female:Switzerland-Female:South Korea	0.544	0.112	0.975	0.001	34

Female:UK-Male:South Korea	-0.541	-1.057	-0.026	0.026	35
Female:UK-Female:Switzerland	-0.463	-0.846	-0.08	0.002	36

Openness

Main Effects of Openness

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
Czech Republic-Canada	0.316	0.157	0.475	0	1
France-Canada	0.421	0.152	0.69	0	2
Russia-Canada	0.303	0.095	0.512	0	3
South Africa-Canada	0.311	0.133	0.489	0	4
Switzerland-Canada	0.278	0.064	0.493	0.001	5
UK-Canada	0.214	0.028	0.4	0.009	6
Czech Republic-China	0.437	0.286	0.589	0	7
France-China	0.543	0.278	0.807	0	8
Poland-China	0.325	0.09	0.561	0	9
Russia-China	0.425	0.222	0.628	0	10
Slovakia-China	0.34	0.071	0.608	0.002	11
South Africa-China	0.432	0.261	0.603	0	12
Switzerland-China	0.399	0.191	0.608	0	13
UK-China	0.335	0.156	0.514	0	14
Singapore-Czech Republic	-0.344	-0.54	-0.148	0	15
South Korea-Czech Republic	-0.385	-0.606	-0.164	0	16
US-Czech Republic	-0.324	-0.477	-0.172	0	17

Singapore-France	-0.45	-0.742	-0.157	0	18
South Korea-France	-0.491	-0.8	-0.181	0	19
US-France	-0.43	-0.695	-0.164	0	20
Singapore-Russia	-0.332	-0.57	-0.094	0	21
South Korea-Russia	-0.373	-0.632	-0.114	0	22
US-Russia	-0.312	-0.516	-0.108	0	23
South Africa-Singapore	0.339	0.127	0.551	0	24
Switzerland-Singapore	0.306	0.063	0.55	0.002	25
UK-Singapore	0.242	0.024	0.46	0.015	26
South Korea-South Africa	-0.38	-0.615	-0.145	0	27
US-South Africa	-0.319	-0.491	-0.146	0	28
Switzerland-South Korea	0.348	0.084	0.611	0.001	29
UK-South Korea	0.283	0.042	0.524	0.007	30
US-Switzerland	-0.286	-0.496	-0.077	0	31
US-UK	-0.222	-0.402	-0.042	0.003	32

Openness

Interactions Between Country and Gender

Country Pairs	Mean difference	Lower CI	Upper CI	*p*-value	Count
Female:Czech Republic-Female:Canada	0.294	0.091	0.497	0	1
Male:Czech Republic-Female:Canada	0.475	0.172	0.778	0	2
Female:France-Female:Canada	0.476	0.087	0.865	0.002	3

Male:Poland-Female:Canada	0.621	0.017	1.225	0.035	4
Female:Russia-Female:Canada	0.341	0.066	0.617	0.002	5
Female:South Africa-Female:Canada	0.364	0.124	0.604	0	6
Male:UK-Female:Canada	0.39	0.024	0.757	0.022	7
Male:Czech Republic-Male:Canada	0.395	0.036	0.754	0.013	8
Female:Czech Republic-Female:China	0.381	0.173	0.589	0	9
Male:Czech Republic-Female:China	0.561	0.255	0.868	0	10
Female:France-Female:China	0.562	0.171	0.954	0	11
Male:France-Female:China	0.482	0.042	0.923	0.014	12
Male:Poland-Female:China	0.708	0.102	1.314	0.005	13
Female:Russia-Female:China	0.428	0.148	0.707	0	14
Female:South Africa-Female:China	0.451	0.206	0.695	0	15
Male:South Africa-Female:China	0.356	0.054	0.659	0.004	16
Female:Switzerland-Female:China	0.316	0.033	0.598	0.01	17
Male:Switzerland-Female:China	0.569	0.149	0.989	0	18
Female:UK-Female:China	0.27	0.028	0.512	0.011	19
Male:UK-Female:China	0.477	0.107	0.846	0.001	20
Female:Czech Republic-Male:China	0.413	0.198	0.628	0	21
Male:Czech Republic-Male:China	0.594	0.282	0.905	0	22
Female:France-Male:China	0.595	0.199	0.991	0	23
Male:France-Male:China	0.515	0.07	0.959	0.006	24
Male:Poland-Male:China	0.74	0.131	1.349	0.002	25
Female:Russia-Male:China	0.46	0.175	0.745	0	26
Male:Russia-Male:China	0.402	0.011	0.793	0.035	27

Female:Slovakia-Male:China	0.336	0.003	0.669	0.045	28
Female:South Africa-Male:China	0.483	0.232	0.733	0	29
Male:South Africa-Male:China	0.389	0.081	0.696	0.001	30
Male:Switzerland-Male:China	0.602	0.178	1.025	0	31
Female:UK-Male:China	0.302	0.054	0.551	0.002	32
Male:UK-Male:China	0.509	0.135	0.883	0	33
Female:Singapore-Female:Czech Republic	-0.277	-0.544	-0.011	0.029	34
Male:Singapore-Female:Czech Republic	-0.343	-0.664	-0.023	0.019	35
Male:South Korea-Female:Czech Republic	-0.469	-0.867	-0.071	0.004	36
Female:US-Female:Czech Republic	-0.298	-0.498	-0.097	0	37
Male:US-Female:Czech Republic	-0.255	-0.49	-0.019	0.017	38
Female:Singapore-Male:Czech Republic	-0.458	-0.807	-0.11	0	39
Male:Singapore-Male:Czech Republic	-0.524	-0.915	-0.133	0	40
Female:South Korea-Male:Czech Republic	-0.466	-0.835	-0.097	0.001	41
Male:South Korea-Male:Czech Republic	-0.65	-1.107	-0.193	0	42
Female:US-Male:Czech Republic	-0.478	-0.78	-0.177	0	43
Male:US-Male:Czech Republic	-0.435	-0.761	-0.11	0	44
Female:Singapore-Female:France	-0.459	-0.885	-0.033	0.018	45

Male:Singapore-Female:France	-0.525	-0.986	-0.064	0.007	46
Female:South Korea-Female:France	-0.467	-0.909	-0.024	0.025	47
Male:South Korea-Female:France	-0.651	-1.169	-0.132	0.001	48
Female:US-Female:France	-0.479	-0.867	-0.091	0.002	49
Male:US-Female:France	-0.436	-0.843	-0.029	0.02	50
Male:South Korea-Male:France	-0.571	-1.127	-0.014	0.036	51
Male:Singapore-Male:Poland	-0.67	-1.323	-0.017	0.036	52
Male:South Korea-Male:Poland	-0.796	-1.491	-0.101	0.007	53
Female:US-Male:Poland	-0.624	-1.228	-0.021	0.032	54
Female:Singapore-Female:Russia	-0.325	-0.65	0.001	0.052	55
Male:Singapore-Female:Russia	-0.391	-0.761	-0.02	0.025	56
Male:South Korea-Female:Russia	-0.516	-0.956	-0.076	0.004	57
Female:US-Female:Russia	-0.345	-0.619	-0.07	0.001	58
Male:US-Female:Russia	-0.302	-0.602	-0.001	0.048	59
Female:South Africa-Female:Singapore	0.347	0.052	0.643	0.004	60
Male:Switzerland-Female:Singapore	0.466	0.014	0.918	0.034	61
Female:South Africa-Male:Singapore	0.413	0.069	0.758	0.003	62
Male:Switzerland-Male:Singapore	0.532	0.047	1.017	0.014	63
Male:UK-Male:Singapore	0.44	-0.003	0.882	0.054	64
Female:South Korea-Female:South Africa	-0.355	-0.674	-0.036	0.011	65
Male:South Korea-Female:South Africa	-0.539	-0.957	-0.121	0.001	66

Female:US-Female:South Africa	-0.367	-0.606	-0.129	0	67
Male:US-Female:South Africa	-0.324	-0.592	-0.056	0.002	68
Male:South Korea-Male:South Africa	-0.445	-0.899	0.01	0.065	69
Male:Switzerland-Female:South Korea	0.474	0.006	0.941	0.042	70
Male:Switzerland-Male:South Korea	0.658	0.118	1.198	0.002	71
Male:UK-Male:South Korea	0.565	0.063	1.067	0.009	72
Female:US-Male:Switzerland	-0.486	-0.903	-0.07	0.005	73
Male:US-Male:Switzerland	-0.443	-0.877	-0.009	0.039	74
Female:US-Male:UK	-0.394	-0.759	-0.028	0.018	75

Appendix D

Big Five CAQ T-scores Across 13 Countries

	CA	CN	CZ	FR	PL	RU	SG	SK	ZA	KR	CH	UK	US
E	50.83	50.33	50.13	48.80	54.10	50.01	48.03	50.22	47.83	50.67	50.15	52.12	50
N	50.14	49.76	50.66	53.06	51.07	52.41	53.16	51.65	50.58	53.65	50.83	52.83	50
A	52.02	47.89	49.49	45.58	47.29	46.94	48.19	51.53	46.97	48.14	49.03	49.35	50
C	50.50	52.86	54.13	50.11	53.73	45.19	50.67	50.53	52.43	49.30	54.56	47.50	50
O	50.15	47.95	55.87	57.77	53.85	55.64	49.64	54.11	55.77	48.90	55.18	54.02	50

Note. CAQ items with loadings of -/+ .30 or higher were obtained from McCrae et al. (1986).