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Culture and Vocational Interests: The Moderating Role of Collectivism and Gender Egalitarianism

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In some cultures, individuals are free to pursue careers that match their personalities. In others, familial and societal expectations regarding career paths may restrict the links between individual personality and interests. Gender role expectations also may vary across cultures and may be associated with gender differences in interests. Past meta-analytic research has shown some career interests are related to personality traits (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002), but the cross-cultural variation of these relationships has not been sufficiently explored. Interest and personality data were obtained from an archival data set of 391,485 individuals from 20 countries. Results indicated that in cultures with high in-group collectivism, connections between personality traits and occupational interests may be less pronounced. Cultural gender egalitarianism moderated the level of gender differences in interests, unexpectedly demonstrating that gender differences may be wider in egalitarian cultures. Implications for career guidance in multicultural settings are discussed.

Keywords: personality, occupational interests, culture, gender, careers

In Western cultures, there has long been an assumption that individuals gravitate toward jobs based on their interests (Wilk, Desmarais, & Sackett, 1995) and that individuals' personalities affect interests (Holland, 1997). While on a global basis, individuals now have a greater ability to gravitate toward jobs that intrinsically appeal to their personal preferences, cultural expectations regarding occupational paths may still be associated with the extent to which career interests relate closely to personality traits. The goal of the present study is to examine whether the relationships among personality traits, gender, and career interests differ based on cultural influences.

Our study contributes to the literature on these relationships in several ways. First, the examination of how cultural contexts relate to individuals' proclivity for career interests directly addresses Leong's (1997) call for a better understanding of cultural variables vis-à-vis the oft-studied person variables in the vocational literature. Most psychological research to date has focused on the U.S. population. Arnett (2008) has noted that generalizing from less than 5% of the world's population to the other 95% can be problematic. Specifically in terms of in-group collectivism, the United States ranks much lower than many other societies (Gelfand, Bhawuk, Nishii, & Bechtold, 2004). Second, in meta-analytic work that has established links between personality and interests (Barrick et al., 2003; Larson et al., 2002) and gender and interests (Su, Rounds, & Armstrong, 2009), the presence of moderators has been suggested, but culture has not been considered as a potential moderator. Third, much cross-cultural research suffers from insufficient attention to conceptual and methodological concerns related to how culture is considered or levels of analysis (Gelfand, Erez, & Aycan, 2007). We approached this study by grounding culture constructs in Global Leadership and Organizational Behavior Effectiveness (GLOBE) research, one of the most comprehensive measurements of cultural values to date (House, Hanges, Javidan, Dorfman, & Gupta, 2004), and by employing a large multinational sample to investigate our research questions using multilevel analyses.

To preface our research, we first provide a brief overview of the literature connecting personality and interests and that connecting gender and interests. We then explicate specific expectations regarding how the cultural constructs of in-group collectivism and gender egalitarianism might moderate established relations.

Personality and Interest Relationships

Holland (1997) argued that vocational interests are important expressions of a person's personality, but as Barrick et al. (2003) noted, there is little theoretical work on how interests and person-

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ality connect. Interests reflect preferences, and personality traits reflect behavioral tendencies, so the intuitive expectation is that preferences connect to how one tends to behave (Barrick et al., 2003). Two meta-analyses, one by Larson et al. (2002) and one by Barrick et al. (2003), demonstrated some clear connections between certain Five-Factor Model (FFM) traits and RIASEC interest profiles. The FFM model is the most prevalent personality model used in current psychological literature and involves five primary dimensions: conscientiousness (dependability, self-discipline), agreeableness (cooperativeness, compassion), extraversion (being outgoing, surgency), neuroticism (emotional instability, moodiness), and openness to experience (curiosity, creativity; Costa & McCrae, 2010). The RIASEC model, developed by John Holland (1973), is the most established occupational interest framework in psychology today. It partials occupational interests into six types: *realistic* (mechanical, practical, physically oriented), *investigative* (scientific, methodical, exploratory), *artistic* (creative, imaginative), *social* (enjoys working with people), *enterprising* (persuasive, strategic, business-oriented), and *conventional* (organized, systematic, orderly).

In our study, we examined five underlying interest categories—artistic, conventional, realistic, social, and investigative interests—and three Big Five traits—extraversion, conscientiousness, and neuroticism. We selected these interest types and personality traits for further study based on three factors: the meta-analytic findings of Larson et al. (2002) and Barrick et al. (2003), the constructs within our available data that best matched the RIASEC and FFM frameworks, and relationships where cultural values could be supported theoretically as moderators. That is, there are several robust personality–interest relationships within these meta-analyses that could in fact be moderated by culture but were not investigated in the present study (e.g., openness to experience and investigative interests type, extraversion and enterprising), because we did not have strong convergence evidence of the validity of our measures of openness and agreeableness, and we did not have a measure of enterprising interests. Given our desire to situate our findings into the broader personality and interest literatures, strong links to the FFM and RIASEC frameworks were determined necessary, and thus these limitations dictated the relationships we examined.

Several trait–interest relationships we examined were of particular interest based on past research. First, Barrick et al. (2003) predicted conscientious individuals, given their orderly, self-disciplined, and methodical nature, would find conventional activities more rewarding. This prediction was supported in the meta-analyses of both Larson et al. (2002) and Barrick et al. (2003), with conventional interests showing a moderate positive relationship with conscientiousness: respectively, $r = .25$, lower 95% confidence interval (CI) = .22, upper 95% CI = .28, $K = 12$, $N = 4{,}929$; $\rho = .19$, $SD_\rho = .13$, $K = 36$, $N = 10{,}685$). Second, Barrick et al. (2003) noted that extraverts desire external rewards and social influence that social occupational activities provide. Both Larson et al. (2002) and Barrick et al. (2003) found support for a extraversion–social type relationship: respectively, $r = .31$, lower 95% CI = *.30,* upper 95% CI = .35, $K = 12$, $N = 4{,}929$; $\rho = .29$, $SD_\rho = .16$, $K = 39$, $N = 10{,}382$). Third, past meta-analytic research has revealed a weak inverse relationship between conscientiousness and artistic interests (Larson et al., 2002; $r = -.05$, lower 95% CI = –.07, upper 95% CI = –.02, $K = 12$, $N = 4{,}929$; Barrick et al., 2003, $\rho = -.06$, $SD_\rho = .07$, $K = 38$, $N = 11{,}079$). We felt this relationship merited further exploration because of the consistency in meta-analytic findings as well as other research suggesting potential connections (e.g., negative relations between conscientiousness and overall preferences for art, Chamorro-Premuzic, Reimers, Hsu, & Ahmetoglu, 2009; negative relations between conscientiousness and creativity, Guastello, 2009; low conscientiousness levels of professional fine artists, Gridley, 2006).

Although the meta-analyses (Barrick et al., 2003; Larson et al., 2002) did not show strong links between the other two interest types (investigative and realistic) and any personality dimensions based on theory, we included these interests in our study to provide a more complete picture. Likewise, emotional stability was not strongly associated in the meta-analyses to any of the interests examined here, but we included it so as to consider culture's role in its relationship to interests.

In summarizing their findings, Barrick et al. noted that a large portion of variance in correlations across studies was unexplained and suggested there likely were moderators of personality–interest relations. According to trait activation theory (Tett & Burnett, 2003), an individual's expression of distal traits—that is, a particular trait–behavior relationship—is bounded by trait-relevant cues from the immediate context. Culture provides an overarching context in which personality, situation, and behavior are interpreted (e.g., Markus & Kitayama, 1998). Social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) suggests that the formation of interests is influenced by cognitive characteristics (e.g., self-efficacy, outcome expectancies, goals) in interaction with environmental factors. In SCCT, distal environmental variables—which would include cultural context—influence the experiences through which these cognitive differences develop, which then influences one's interests and ultimately one's career choice behavior. Therefore, we expected the personality–interest relationships would be moderated by cultural values.

In-Group Collectivism as a Moderator

In-group collectivism has been defined as the extent to which individuals express interdependence and devotion in their families (Gelfand et al., 2004).[1] There are several reasons to expect that personality–interest relations would be particularly weak in highly collectivistic cultures. First, in collectivistic cultures, individuals tend not to differentiate their personal goals and group goals, or they tend to forego their personal goals for the sake of the collective goals (Triandis, 1990). Specifically, in cultures high on in-group collectivism, individuals' career choices may be dictated by familial expectations or history and less so by their dispositions. A key component of in-group collectivism is the extent to which parents take pride in the accomplishment of their children (Gelfand et al., 2004). Furthermore, family dynamics may play a more important role in shaping individuals' career interests in cultures high on in-group collectivism (Leong, Kao, & Lee, 2004). For example, in-group collectivistic cultures may also place a strong

[1] Researchers have distinguished in-group collectivism from institutional collectivism, which focuses on facilitating and rewarding collective action (House et al., 2004). In-group collectivism would have a greater association with how interests are shaped and thus is the focus of our study.

emphasis on picking careers based on how much they can contribute monetarily to family needs, or how accommodating they are to family time and location demands, or how they fit with family businesses. In SCCT terms, environments high in in-group collectivism influence experiences that lead to the development of self-efficacy, outcome expectancies and goals. Thus, the relationships with occupational interests were examined in light of the potential for in-group collectivism moderation.

Hypothesis 1: The relationships between interests and personality traits are moderated by in-group collectivism such that the relationships are weaker in cultures higher in in-group collectivism.

Gender and Interests

Gender differences in interests have been the focal point of considerable research (e.g., Hansen, Collins, Swanson, & Fouad, 1993) because of the role they play in occupational gender segregation, such as in the STEM (science, technology, engineering and math) disciplines (Ceci & Williams, 2010). In a meta-analysis of the literature, Su et al. (2009) found that females reported greater social (d = 0.68, K = 80, lower 95% CI = .62, upper 95% CI = .74), conventional (d = 0.33, K = 80, lower 95% CI = .26, upper 95% CI = .39), and artistic (d = 0.35, K = 80, lower 95% CI = .31, upper 95% CI = .39) interests than males. In the meta-analysis, males were found to have greater realistic (d = 0.84, K = 80, lower 95% CI = .79, upper 95% CI = .89) and investigative (d = 0.26, K = 79, lower 95% CI = .20, upper 95% CI = .31) interests than females.

The extent to which these gender differences are exacerbated or diminished by cultural context has not been examined. One well-established cultural difference is gender egalitarianism, or the degree to which there is a minimizing of gender stereotyping and gender inequality in a culture (Emrich, Denmark, & Den Hartog, 2004). Researchers assess gender egalitarianism by asking about whether there are societal gender differences in encouraging educational and professional development directions. At first blush, one might think that the relationship between gender egalitarianism and interests is straightforward: if gender roles are less prescribed at a societal level, there should be smaller gender differences in interests. However, research results suggest greater complexity. That is, in low-egalitarian societies, gender roles may restrain the ability of women to achieve certain careers (and thus affect their interest patterns), but this does not mean male–female differences across interests are necessarily more exacerbated in low-egalitarian settings. In these societies, men are free to pursue their interests, but women's interests may be more concentrated in female-linked activities (Lyness & Judiesch, 2008). Thus, gender differences may be greater in areas where interest by women is discouraged or curtailed, but not in areas where interests by women and men are not gender-role prescribed. Others have noted asymmetry in high-gender-egalitarian societies as well, where women may enter more male-dominated fields but men do not necessarily then adopt more feminine values and jobs (i.e., gender differences in feminine activities remains strong; Wood & Eagly, 2010). Thus, even in high-gender-egalitarian societies, gender differences in interests do exist, although they may be driven by different forces or be of a qualitatively different nature than in low-egalitarian societies.

Occupation-based gender stereotypes have been shown to be relatively stable across different cultures (Sczesny, Bosak, Neff, & Schyns, 2004). Assuming traditional occupational gender stereotypes are shared across cultures, one might expect that women are free to pursue interests in certain occupations in both high- and low-egalitarian societies but may be less universally supported in pursuing male-typed occupational interests in low-egalitarian societies. For example, women do express greater artistic interests than males but artistic occupations (e.g., musician, actor) are often considered acceptable for both sexes (Brown, White, & Gerstein, 1989), and sex differences in artistic interests have been shrinking across cohorts over the last 40 years (Su et al., 2009), coinciding with declines in gender inequality (Dorius & Firebaugh, 2010). Thus, gender egalitarianism may be related to the level of gender differences in interests. We hypothesized:

Hypothesis 2: Gender differences in interests are moderated by cultural gender egalitarianism such that differences are smaller in high-egalitarian cultures.

Method

Participants

The archival data used in this study included 395,823 individuals from 20 countries. Data were collected between 2001 and 2009. Individuals who did not report gender were excluded from all analyses, as gender was one of the key variables in the study, resulting in an effective sample of 391,485. Participants were on average 42 years old (SD = 11), and 54% were males. Modal education level was a college degree (43%), followed by 28% who attended some college and 19% high school graduates. Table 1 lists sample counts and the gender ratio by country. Participants were drawn from a vast number of industries, such as engineering, child care, agriculture, and accounting.

Data were collected with an online survey. The assessment was used mostly (i.e., approximately 90%) in workplace settings for employee development and initiated by trained organizational consultants or human resources professionals. The remaining assessments were used in nonprofit, career service, and educational settings by trained practitioners. Two characteristics of the present sample ensured generalizability of the results. First, the present sample was drawn from hundreds of jobs, organizations, and industries, thus mitigating the concern on generalizability when personality and interest data are obtained from single organization and single occupations (see Schaubroeck, Ganster, & Jones, 1998). Second, the vast majority of data in this study was collected for development purposes (e.g., team building, outplacement career counseling), where respondents are motivated to respond honestly to learn more about themselves, as opposed to for summative purposes (e.g., employee selection, succession planning), where socially desirable responding may be present (Schmit & Ryan, 1993).

Measures

Personality. The Birkman Method (Birkman, Elizondo, & Wadlington, 2013) is a 298-item personality, social perception, and occupational interest assessment. Respondents answer 125

Table 1
Sample Size and Cultural Practice Scores in Each Country

Country	*N*	In-group collectivism	Gender egalitarianism
Argentina	136	5.51	3.44
Australia	14,807	4.14	3.41
Austria	123	4.89	3.18
Brazil	2,230	5.16	3.44
Canada	30,185	4.22	3.66
China	1,315	5.86	3.03
Denmark	699	3.63	4.02
Great Britain	14,276	4.08	3.67
Greece	47	5.54	3.53
Hungary	70	5.31	4.02
India	858	5.81	2.89
Mexico	3,110	3.79	3.62
Netherlands	19,972	5.83	4.07
Russia	92	5.66	3.52
Singapore	1,435	5.18	3.25
South Africa	163	5.71	2.45
South Korea	3,910	5.62	3.50
Spain	610	5.53	3.06
Switzerland	1,502	4.20	3.12
United States	295,945	4.22	3.36
Standard deviation	—	0.42	0.19

Note. Cultural practice scores taken from House et al. 2004 (pp. 742–744, Table B.2). Item scales ranged from 1 to 7. For South Africa, the GLOBE study's "white sample" values were used, as our sample was majority White. The standard deviation reflects a weighted standard deviation of the cultural constructs for the present data.

items about how they perceive themselves, creating 10 orientation scales. We examined the three orientation scales that best mapped onto the FFM dimensions of neuroticism, extraversion, and conscientiousness. *Emotive Orientation* (i.e., neuroticism) describes the extent to which individuals express their feelings and grapple with (i.e., "overthink") personal decisions (22 items; $\alpha = .88$). *Social Orientation* (i.e., extraversion) describes how much individuals pursue opportunities to interact with others (25 items; $\alpha = .86$). *Process Orientation* (i.e., conscientiousness) represents the extent to which individuals are cautious and disciplined (15 items; $\alpha = .71$). Items were dichotomous and were summed to form scale scores. The construct validity of the measure has been established using exploratory and confirmatory factor analysis and standards from both classical test theory and item response theory (online technical report, Birkman International, 2013; technical manual, Birkman et al., 2013). Validation evidence presented in the assessment manuals shows support for expected relationships between the Birkman Method scales and corresponding scales in the Revised NEO Personality Inventory (NEO PI–R, Costa & McCrae, 1992), the Myers–Briggs Type Indicator (MBTI; Briggs-Myers, McCaulley, Quenk, & Hammer, 2003), the Hogan Personality Inventory (HPI; Hogan & Hogan, 2007), and the Sixteen Personality Factor Questionnaire (16PF; Conn & Rieke, 1994). For example, the Emotive Orientation Scale correlates with the Neuroticism Scale of the NEO PI–R, the Adjustment Scale of the HPI, and the Emotional Stability Scale of the 16PF, as expected; the Social Orientation Scale correlates with the Extraversion Scale from the NEO PI–R and with the Ambition, Sociability, and Likeability Scales of the HPI; and Process Orientation correlates with the NEO PI–R measure of Conscientiousness and the 16PF Dutifulness/Rule Consciousness scale (see Birkman et al., 2013, for details).

Culture. The GLOBE study was conducted using data from 62 countries to develop cultural constructs that are related to multicultural interactions and, more specifically, to leadership across cultures (House et al., 2004). For our study, we elected to use the GLOBE practices rather than the GLOBE values (for more information on this distinction, see House & Javadin, 2004). Practices measure the extent to which actual behaviors of individuals in a given country vary according to that cultural dimension, whereas values measure the ideals of a given society. Practices were measured by asking "what is" and "what are" common behaviors. For example, a cultural practices item is "The economic system in this society is designed to maximize . . ." (Hanges & Dickson, 2004). Respondents rated items on a 1-to-7 Likert scale, with 1 labeled *Individual interests* and 7 labeled *Collective interests*. Emphasizing societal realities and behaviors makes practices more likely to influence how individuals engage in their careers and define occupational interests than societal values, which represent aspirations or desired states (see Atwater, Wang, Smither, & Fleenor, 2009, for a similar view).

The aggregation of culture practice scores has been supported, average $r_{wg(j)} = .85$ (within-group interrater agreement for multiple-item measures; Hanges & Dickson, 2004). The gender egalitarianism practice measure exhibited acceptable interitem reliability ($\alpha = .77$), whereas in-group collectivism had a lower internal consistency ($\alpha = .66$; Hanges & Dickson, 2004). Hanges and Dickson (2004) corrected scores in the GLOBE study for cultural response bias by calculating an average and standard deviation across all surveyed items for each individual, subtracting the average item score from the actual item score, and dividing this value by the overall standard deviation of the individual's scores. Corrected scores were aggregated to country level of analysis and reported by Hanges and Dickson. We adopted the country-level bias-corrected scores on in-group collectivism and gender egalitarianism (see Table 1). Validation evidence for in-group collectivism includes a negative relationship with Hofstede's (1980) measure of individualism ($r = –.82$; Hanges & Dickson, 2004) and a positive relationship with low divorce rates ($r = .60$; Gupta, Sully de Luque, & House, 2004). Gender-egalitarian practices have been linked to archival measures of male–female social equality, indicating lower discrimination against women and a higher contributions from women in the workforce ($r = .46$; Gupta et al., 2004).

Interest scales. The Birkman Method also contains 48 items on occupational interests, creating 10 interest scales. Items were ipsative, in that individuals were forced to choose which two of four occupation activities they preferred. Every scale item was given a corresponding raw value of 0, 1, or 2 (Birkman et al., 2013). The number of items and interitem reliabilities for each of the interests are as follows: Artistic interest, 14 items ($\alpha = .84$); Clerical interest, 22 items ($\alpha = .90$); Literary, 11 items ($\alpha = .85$); Mechanical, 18 items ($\alpha = .91$); Musical, 10 items ($\alpha = .87$); Numerical, 19 items ($\alpha = .90$); Outdoor, 16 items ($\alpha = .88$); Persuasive, 15 items ($\alpha = .79$); Scientific, 14 items ($\alpha = .74$); and Social Service, 19 items ($\alpha = .86$; Birkman et al., 2013).

Because the Birkman Method divides interests into a larger number of types than the RIASEC, and thus does not provide an

exact parallel to the RIASEC framework, we performed a principal component analysis to examine scores on all 10 Birkman interest scales in relation to the RIASEC typology. Past research (e.g., Prediger, 1982; Tracey & Rounds, 1996) has shown RIASEC types tend to exhibit a general component and two dimensions representing data–ideas and people–things continuums. Along these two continuums, Prediger (1982) suggested that there are opposing interest types, including social and realistic interests, investigative and enterprising interests, and artistic and conventional interests. Thus, we examined the unrotated solution to investigate the presence of a two-dimensional structure reflecting these dimensions. A general component was not found, which is likely due to the ipsative nature of the interests measure (see Lippa, 1998). As expected, the unrotated solution exhibited a two-dimensional structure, accounting for 52% of variance in observed interest scores. We present the loadings in Table 2 and the location of the interest scales in the two-dimensional space in Figure 1. The first component captured the data–ideas dimension, with artistic, musical, and literary interests occupying the high end of the dimension while numerical and clerical interests occupied the low end. The second component captured the people–things dimension, with mechanical, outdoor, and scientific interests at the high end of the dimension while social services and persuasive interests were at the low end. The overall pattern of the interest location largely resembled the ones reported in Prediger (1982) and in Lippa (1998), although the enterprising interests dimension is missing in the current figure, as Birkman's interest scales do not include an enterprising dimension.

Given the unrotated components resembled the two-factor structure typically found in the RIASEC, we proceeded to examine the conceptual mapping between the Birkman Method's 10 interest scales and the RIASEC types, based on the Birkman manual (Birkman et al., 2013) and Holland's definitions (Holland, 1997). We mapped the Birkman artistic, musical, and literature interests onto the artistic type, the numerical and clerical interests onto the conventional type, mechanical and outdoor interests onto the realistic type, social services and persuasive interests onto the social type, and scientific interests onto the investigative type. With this conceptual mapping, we proceeded to examine the relationship between personality factors (conscientiousness, extraversion, and neuroticism) and these Holland dimensions.

Table 2
Unrotated Principal Component Analysis of the Birkman Method's 10 Interest Types

Interest	Principal component	
	Data–ideas (1)	People–things (2)
Literary	**.70**	−.29
Musical	**.77**	−.17
Artistic	**.75**	.02
Social services	−.08	**−.61**
Persuasive	−.02	**−.60**
Mechanical	−.15	**.86**
Scientific	.17	**.57**
Clerical	**−.71**	−.27
Numerical	**−.70**	.01
Outdoor	.14	**.69**

Note. Principal component analysis with unrotated solution, primary loadings in bold. Variance explained by the first component: 27%. Variance explained by the second component: 25%.

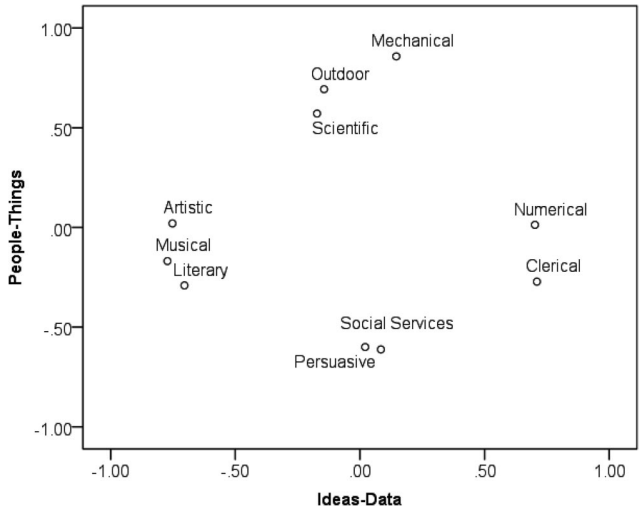

Figure 1. Data–ideas dimension from the original principal component analysis was reflected to ideas–data by multiplying with −1.

Multilevel Analysis

Because respondents in the present study were nested within cultures, we performed multilevel analyses with hierarchical linear modeling (HLM Version 7.0; (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011) to evaluate the study hypotheses. Multilevel modeling is the preferred method with which to analyze nested data because traditional ordinary-least-square analysis may produce incorrect estimates of standard error (Bliese & Hanges, 2004). More important, the current questions pertained to the moderating effects of higher level constructs (i.e., cultural variables) on individual level relationships (i.e., personality–interest associations), making multilevel modeling a natural candidate for analysis.[2] Prior to the analysis, we ascertained that no significant skewness or kurtosis was present in predictor and outcome variables, with skewness ranging from −0.53 to 1.14 and kurtosis ranging from −1.17 to 0.86 (see Table 3).

We conducted the multilevel modeling in a series of steps. As the initial step, we estimated intraclass correlation (ICC) (1) to indicate how much observed variance in each interest type can be attributed to culture. An nonzero ICC(1) would indicate observations are influenced by group membership and necessitate the use

[2] As restricted-maximum-likelihood (REML) estimation is recommended in the case of small sample size at Level 2 (Hayes, 2006), we adopted REML rather than full-maximum-likelihood estimation. For hypothesis testing, the significance levels for fixed and random effects were based on *t* ratio and chi-square tests from REML estimation, respectively. When we allowed a fixed effect to randomly vary across Level-2 units (from Step 3a to Step 3b), we used the likelihood ratio test on deviance statistics to examine the significance of each random parameter, and we included a random effect only when the model with that random effect provided a significantly better fit to the data than the model with only the fixed effect. We reported results of likelihood ratio tests across multiple random effects to save space. Detailed results with each model comparison are available from the second author.

Table 3
Descriptive Statistics and Intercorrelations for Personality and Interest Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Extraversion	—												
2. Neuroticism	−.48	—											
3. Conscientiousness	.15	−.35	—										
4. Literary interest	.02	.12	−.19	—									
5. Musical interest	.06	.10	−.17	.53	—								
6. Artistic interest	−.05	.13	−.16	.47	.49	—							
7. Social service interest	.21	−.07	−.02	−.09	−.07	−.22	—						
8. Persuasive interest	.42	−.17	−.02	.03	.01	−.25	.32	—					
9. Mechanical interest	−.15	−.03	.05	−.34	−.24	−.17	−.48	−.37	—				
10. Scientific interest	−.10	.01	.03	−.08	.10	.03	−.29	−.34	.32	—			
11. Clerical interest	−.19	.08	.15	−.29	−.46	−.34	−.04	−.08	−.23	−.27	—		
12. Numerical interest	−.16	−.05	.18	−.34	−.34	−.42	−.19	−.19	.06	−.09	.50	—	
13. Outdoor interest	−.03	−.04	−.03	−.17	−.16	.00	−.24	−.26	.52	.15	−.41	−.31	—
M	16.68	5.69	9.49	10.35	8.56	15.04	17.12	10.91	10.10	11.45	9.87	11.41	12.08
SD	5.19	5.00	2.86	5.79	5.82	6.37	8.14	5.90	8.16	5.32	8.32	8.76	7.38
Skewness	−0.53	1.01	−0.35	0.07	0.11	−0.15	0.08	0.40	0.93	0.27	1.14	0.79	0.38
Kurtosis	−0.53	0.40	−0.47	−0.98	−1.17	−0.81	−0.66	−0.47	0.12	−0.46	0.86	−0.15	−0.64

Note. $N = 391{,}485$. All correlations were statistically significant, $ps < .01$. Scale range: Extraversion (Social Orientation) = 0–25; Neuroticism (Emotive Orientation) = 0–22; Conscientiousness (Process Orientation) = 0–15; Literary = 0–22; Musical = 0–20; Artistic = 0–28; Social Services = 0–38; Persuasive = 0–30; Mechanical = 0–36; Scientific = 0–28; Clerical = 0–44; Numerical = 0–38; Outdoor = 0–32.

of multilevel modeling (Stapleton & Thomas, 2008). The ICC(1) for social was .03, clerical was .05, literary was .01, mechanical was .02, musical was .02, numerical was .03, outdoor was .02, persuasive was .03, scientific was 0.04, and social services was .03. This indicated that 1%–5% of variation in interests were due to culture. Researchers have argued (e.g., Hayes, 2006) or demonstrated (e.g., Nezlek, 2008) that multilevel modeling is beneficial for analyzing nested data even when ICC(1) is near zero. Given the nonzero ICC(1)s and our substantive interest in cultural effects at Level 2, we proceeded with multilevel modeling.

The second step involved centering the predictors. Because the current focus was the extent to which Level-1 associations would depend on Level-2 variables, we followed Enders and Tofighi's (2007) guideline in centering. Specifically, we removed culture-level differences on the three personality traits by centering Level-1 personality variables around their respective cultural means (i.e., each country's new means on neuroticism, extraversion, and conscientiousness would all be zero). We also centered Level-2 variables around the grand means. We coded gender so that males had values of 1 and females had values of 0, and we did not center this variable. Although not required for the analysis, we further standardized the outcome variables and the centered personality variables to aid the interpretation of Level-1 coefficients, such that the Level-1 coefficients for personality variables could be viewed in a similar fashion as beta coefficients in ordinary-least-square regression.

The third step in the current multilevel modeling was to estimate the fixed effects (Step 3a) and random effects (Step 3b) of Level-1 predictors. Fixed effects of Level-1 predictors can be thought of as the average of within-culture regression coefficients. For example, the fixed effect of extraversion on social services interest can be viewed as regressing social service interest on extraversion within each of the 20 cultures and then aggregating the 20 regression coefficients. When significant, a fixed effect indicates the presence of a pancultural association. The examination of the fixed effects offers an opportunity to reexamine Larson et al.'s (2002) and Barrick et al.'s (2003) findings.

In contrast, random effects can be viewed as the variation of the within-culture regression coefficients. In the previous example, the random effect of extraversion on social services interest would indicate the degree to which the 20 conceptual regression coefficients vary around the fixed effect. When significant, a random effect suggests the need to look for cultural-level moderators. When nonsignificant, however, a random effect would not be modeled in subsequent analysis.

The fourth and final step in the present analyses involved estimating the moderating effects of cultural variables. Specifically, the main effects of cultural variables were entered as controls, and proposed cultural interactions were examined. As both Hypotheses 1 and 2 pertain to culture's attenuating effects on individual-level relationships (i.e., personality–interest and gender–interest associations), we expected the interaction term to be opposite in sign from the corresponding individual level main effect.

Results

The means, standard deviations, and intercorrelations for the personality and interest variables are listed in Table 3. The negative relationship between extraversion and neuroticism is not surprising in light of past research. Extraversion has been linked to the experience of positive affect, whereas neuroticism has generally been associated with negative affective states (Larsen & Ketelaar, 1991). Recent research has shown similar-sized negative relationships between extraversion and neuroticism ($r = –.39$; Maruskin, Thrash, & Elliot, 2012). The negative relationship between neuroticism and conscientiousness also matches the size and direction of relationships in existing literature (e.g., Beckmann, Wood, & Minbashian, 2010; Lee, Kelly, & Edwards, 2006). The intercorrelations between interests in this study were around .10 lower than

found in other past research (Tay, Su, & Rounds, 2011.) The lower intercorrelations may be due to the ipsative nature of the interest measures. The relationship of neuroticism with each of the interest scales were similar to those found in Barrick et al. (2003). The relationship between conscientiousness and artistic interests (r = –.19 with literary, –.17 with musical and –.16 with artistic) was larger than that found in Barrick et al. (ρ = –.06). Differences may be due to the use of a specific measure in this study (vs. a meta-analysis across various measures in Barrick et al.) and the global nature of the sample (vs. a more U.S.-centric sample in Barrick et al.).

We organized our results to reflect the five RIASEC types conceptually matched by the Birkman interest scales. Results of the analyses are presented in Tables 4–8. These tables show the multilevel models predicting Birkman interest dimensions that fit within the RIASEC artistic (Table 4), conventional (Table 5), realistic (Table 6), social (Table 7), and investigative (Table 8) types. In each table for each specific interest, Step 3 tests the fixed and random effects at Level 1, and Step 4 allows for the examinations of the cultural moderating effects.

We first focus on the results related to artistic interests in Table 4. Looking across these three variables, Step 3a and 3b revealed significant fixed effects for extraversion, neuroticism, and conscientiousness. In general, neuroticism and extraversion were positively associated with the three interest variables, whereas conscientiousness was negatively associated with them, with the pattern of effects similar across artistic, literary, and musical interests. For example, one standard deviation increase in conscientiousness was associated with .11, .15, and .14 standard deviation decrease in artistic, literary, and musical interests, respectively. A significant gender difference was found: males were lower on all three artistic interests than females, when the three personality variables were controlled. As Step 3b revealed significant random effects for all but one of the slopes (i.e., extraversion on musical interest), we proceeded to examine the hypothesized cultural moderating effects in Step 4.

Hypothesis 1 pertains to the extent to which in-group collectivism moderates the personality–interest relationship. Although the effects of extraversion and conscientiousness on the three artistic interests were not significantly moderated by in-group collectivism, neuroticism's relations provided partial support for Hypothesis 1. The association between neuroticism and all three artistic interests was weaker in cultures higher on in-group collectivism. Examination of the extent to which gender egalitarianism influenced gender differences in the three artistic interests revealed the gender difference in musical interests was smaller in cultures higher on gender egalitarianism, providing partial support for Hypothesis 2.

Next, we turn to the results on conventional interests in Table 5. The fixed effect of conscientiousness converged with meta-analytic findings that individuals high on conscientiousness tend to prefer conventional activities (Barrick et al., 2003; Larson et al., 2002). There was a negative association between extraversion and clerical and numerical interests. Neuroticism was negatively associated with numerical interests but showed no association with clerical interests. In addition, gender's effect diverged between clerical and nu-

Table 4
Multilevel Modeling for Artistic Interests (Artistic, Literary, and Musical)

	Artistic interest			Literary interest			Musical interest		
Model step	3a	3b	4	3a	3b	4	3a	3b	4
Fixed effect coefficients									
Intercept	.46***	.38***	.38***	.22***	.18***	.18***	.11**	.12**	.13***
Egalitarianism	—	—	.06	—	—	.02	—	—	−.04
In-group	—	—	−.04	—	—	−.04	—	—	.09*
Male	−.64***	−.51***	−.51***	−.35***	−.27***	−.26***	−.17***	−.18***	−.17***
Egalitarianism × Male	—	—	.03	—	—	.10	—	—	.20**
Neuroticism	.05***	.03**	.03**	.07***	.07***	.06***	.10***	.09***	.08***
In-Group × Neuroticism	—	—	−.03**	—	—	−.04**	—	—	−.02*
Extraversion	.01***	.03***	.03**	.09***	.09***	.09***	.14***	.14***	.14***
In-Group × Extraversion	—	—	.00	—	—	.00	—	—	—
Conscientiousness	−.12***	−.11***	−.12***	−.17***	−.15***	−.14***	−.15***	−.14***	−.14***
In-Group × Conscientious	—	—	.00	—	—	.01	—	—	.01
Standard deviation of random effects									
Intercept	.14***	.11***	.11***	.11***	.09***	.09***	.14***	.15***	.13***
Male slope	—	.10***	.10***	—	.07***	.07***	—	.12***	.08***
Neuroticism slope	—	.03***	.03*	—	.03***	.03***	—	.03***	.02***
Extraversion slope	—	.02***	.03***	—	.01*	.01	—	—	—
Conscientiousness slope	—	.02***	.03***	—	.04***	.03***	—	.02***	.02***
Level-1 residual	.93	.93	.93	.96	.96	.96	.97	.97	.97
Deviance (−2LL)	1053136	1052472	—	1079459	1079064	—	1088624	1088419	—
Degrees of freedom	2	16	—	2	16	—	2	11	—
Δ chi-square test	—	665***	—	—	395***	—	—	205***	—

Note. Significance of random effects was verified using the model comparison approach according to Hayes (2006). Deviance test was not conducted for Step 4, because restricted maximum likelihood only allows −2LL test when adding new random (i.e., Step 3b) but not fixed (i.e., Step 4) parameters. Dash indicates an effect was not tested. Egalitarianism = gender egalitarianism; in-group = in-group collectivism; −2LL = −2 log likelihood.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5
Multilevel Modeling for Conventional Interests (Clerical and Numerical)

Model step	Clerical interest			Numerical interest		
	3a	3b	4	3a	3b	4
Fixed effect coefficients						
Intercept	.42***	.30***	.30***	.05	.00	.01
Egalitarianism	—	—	.01	—	—	.08
In-group	—	—	.06	—	—	.13*
Male	−.53***	−.34***	−.35***	.04***	.11**	.12**
Egalitarianism × Male	—	—	−.28**	—	—	−.01
Neuroticism	.01***	.01	.02	−.10***	−.08***	−.08***
In-Group × Neuroticism	—	—	.04*	—	—	.03**
Extraversion	−.20***	−.19***	−.18***	−.23***	−.22***	−.22***
In-Group × Extraversion	—	—	.01	—	—	.02
Conscientiousness	.18***	.17***	.17***	.18***	.20***	.20***
In-Group × Conscientious	—	—	−.03*	—	—	.02
Standard deviation of random effects						
Intercept	.23***	.22***	.23***	.17***	.21***	.16***
Male slope	—	.16***	.14***	—	.13***	.13***
Neuroticism slope	—	.05***	.04***	—	.03***	.02**
Extraversion slope	—	.03***	.03***	—	.04***	.04***
Conscientiousness slope	—	.04***	.03***	—	.04***	.04***
Level-1 residual	.93	.92	.92	.96	.96	.96
Deviance (−2LL)	1050910	1049181	—	1078545	1077725	—
Degrees of freedom	2	16	—	2	16	—
Δ chi-square test	—	1728***	—	—	61***	—

Note. Significance of random effects was verified using the model comparison approach according to Hayes (2006). Deviance test was not conducted for Step 4, because restricted maximum likelihood only allows −2LL test when adding new random (i.e., Step 3b) but not fixed (i.e., Step 4) parameters. Dash indicates an effect was not tested. Egalitarianism = gender egalitarianism; in-group = in-group collectivism; −2LL = −2 log likelihood.
* $p < .05$. ** $p < .01$. *** $p < .001$.

merical interests, such that males were significantly lower on clerical interests but slightly higher on numerical interests than females. All random effects were significant, again enabling the examination of cultural moderation in Step 4.

In Step 4, we first examined the moderating effects of in-group collectivism on the personality–trait relationship (Hypothesis 1). In support of the hypothesis, the negative association between neuroticism and numerical interests and the positive association between conscientiousness and clerical interests were both weakened by in-group collectivism. However, in-group collectivism unexpectedly strengthened the relations between neuroticism and clerical interests. We also examined the moderating effect of gender egalitarianism on the gender difference in interests. The effect was significant yet opposite to hypothesized: gender egalitarianism widened the male–female difference on clerical interests and had almost no effect on numerical interests. Thus, Hypothesis 2 was not supported.

Next, we examined the extent to which cultural practices moderated the relationships between personality and realistic interests (see Table 6). Neuroticism and extraversion were negatively associated with both realistic interests. Conscientiousness was positively associated with mechanical interests but was negatively associated with outdoor interests. In addition, a sizable gender difference emerged: males were almost a full standard deviation higher on mechanical interests and a half standard deviation higher on outdoor interests than women. All but one random slope (neuroticism on outdoor interest) was significant across cultures.

In Step 4, the negative associations between extraversion and both mechanical and outdoor interests were weakened by in-group collectivism, thus providing support for Hypothesis 1. However, in-group collectivism did not moderate the relationship of conscientiousness or Neuroticism with realistic interests. Gender egalitarianism did not have significant moderating effects on the male–female difference on either interests.

The cultural moderation of personality and social interests was examined next (see Table 7). Extraversion had a strong, positive relationship with both social interests, whereas conscientiousness was negatively associated with social interests. Neuroticism showed a weak positive relationship with persuasive interests but was unrelated to social service interests. Opposite gender differences appeared in the two social interest dimensions: males were 0.32 standard deviations higher on persuasive interests than females, yet females were 0.31 standard deviations high on social service interests.

In Step 4, in-group collectivism weakened the positive effect of extraversion and the negative effect of conscientiousness on social service interests, thus providing support to Hypothesis 1. However, in-group collectivism somehow strengthened the positive association between neuroticism and persuasive interest. In support of Hypothesis 2, gender egalitarianism reduced the gender difference on persuasive interests but had no significant moderating effect on gender difference on social service interests.

Finally, we examined the association between personality and investigative interests. Neuroticism and extraversion exhibited negative relationships with scientific interests, whereas conscientiousness exhibited a weak positive relationship. Males were 0.22 standard deviations higher on scientific interests than women.

Table 6
Multilevel Modeling for Realistic Interests (Mechanical and Outdoor)

Model step	Mechanical interest			Outdoor interest		
	3a	3b	4	3a	3b	4
Fixed effect coefficients						
Intercept	−.70***	−.56***	−.56***	−.41***	−.31***	−.32***
Egalitarianism	—	—	.12***	—	—	.05
In-group	—	—	−.01	—	—	−.06
Male	.94***	.71***	.71***	.61***	.46***	.46***
Egalitarianism × Male	—	—	.14	—	—	−.01
Neuroticism	−.05***	−.04***	−.05***	−.04***	−.04***	−.04***
In-Group × Neuroticism	—	—	.00	—	—	—
Extraversion	−.21***	−.18***	−.18***	−.07***	−.07***	−.06***
In-Group × Extraversion	—	—	.03**	—	—	.03*
Conscientiousness	.05***	.03***	.03**	−.04***	−.05***	−.05***
In-Group × Conscientious	—	—	.00	—	—	.00
Standard deviation of random effects						
Intercept	.16***	.06***	.04***	.15***	.12***	.10***
Male slope	—	.18***	.15***	—	.11***	.12***
Neuroticism slope	—	.01***	.01***	—	—	—
Extraversion slope	—	.03***	.02***	—	.03***	.03***
Conscientiousness slope	—	.02***	.02***	—	.02***	.03***
Level-1 residual	.86	.86	.86	.95	.95	.95
Deviance (−2LL)	993477	991067	—	1069337	1068615	—
Degrees of freedom	2	16	—	2	11	—
Δ chi-square test	—	2410***	—	—	722***	—

Note. Significance of random effects was verified using the model comparison approach according to Hayes (2006). Deviance test was not conducted for Step 4, because restricted maximum likelihood only allows −2LL test when adding new random (i.e., Step 3b) but not fixed (i.e., Step 4) parameters. Dash indicates an effect was not tested. Egalitarianism = gender egalitarianism; in-group = in-group collectivism; −2LL = −2 log likelihood.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Step 4 showed the results of the moderation analyses. The negative relationship of extraversion with investigative interests was weakened by in-group collectivism. Although the effect of conscientiousness also varied across cultures, it was not moderated by in-group collectivism. Contrary to Hypothesis 2, the gender differences in scientific interests were strengthened by cultural gender egalitarianism.

Taken together across the five interest dimensions, a total of 27 significant random slopes for neuroticism, extraversion, and conscientiousness were tested for moderation effects by in-group collectivism, and 10 significant moderating effects were in support of Hypothesis 1. Thus, the results showed general support for Hypothesis 1 that in-group collectivism constrains the effect of personality on vocational interests. Surprisingly, of the 10 gender random slopes, only two (i.e., on musical and persuasive interests) were moderated by gender egalitarianism in the expected direction, whereas two others (i.e., on clerical and scientific interests) were moderated by gender egalitarianism in the opposite direction. Therefore, the cultural moderating effect of gender egalitarianism appears complex and interest-dependent.

Discussion

In many ways, our findings conform to what past meta-analytic research has shown regarding the main effects between personality and interest—the positive relationships between extraversion and social interests and between conscientiousness and conventional interests, and the negative relationship between conscientiousness and artistic interests mirror the findings of Larson et al. (2002) and Barrick et al. (2003). Further, our findings that men displayed significantly lower artistic (Table 4), conventional (Clerical; Table 5), and social interests (Social Services; Table 7) and higher realistic (Table 6) and investigative interests (Table 8) than women were in line with research findings by Su et al. (2009).

As for the role of culture as a moderator, we found that in-group collectivism weakened 10 of the 27 trait–interest relationships tested, although the overall influence was typically not large. For organizations and professions interested in expanding the global reach of their recruiting efforts, understanding how culture might relate to the connection between individual proclivities and expressed interests is important. Untapped talent may exist in certain fields because individuals do not align their interests with their personality but pursue interests for other reasons (e.g., family pressures, societal expectations). The converse is also true: individuals may express interests and pursue occupations that are less aligned with their personality, resulting in poorer occupational fit.

We also found that the association of gender egalitarianism with gender differences in occupational interests was interest-dependent. Gender differences in musical and persuasive interests decreased in countries with high gender egalitarianism, yet clerical and scientific interests were higher when gender egalitarianism was high. These unexpected findings require thinking about how gender egalitarianism might link to the ability of individuals to pursue activities of interest. It may be that in high-egalitarian societies, women and men feel even more free to acknowledge (and ultimately pursue) their interests in clerical and scientific interests (respectively), increasing gender differences in these areas. However, the social pres-

Table 7
Multilevel Modeling for Social Interests (Persuasive and Social Services)

Model step	Persuasive interest			Social services interest		
	3a	3b	4	3a	3b	4
Fixed effect coefficients						
Intercept	−.04	−.04	−.04	.22***	.22***	.22***
Egalitarianism	—	—	.01	—	—	−.17*
In-group	—	—	.09	—	—	.02
Male	.32***	.32***	.31***	−.31***	−.31***	−.31***
Egalitarianism × Male	—	—	−.09*	—	—	−.09
Neuroticism	.04***	.04***	.04***	.00	.00	.00
In-Group × Neuroticism	—	—	.02**	—	—	−.02*
Extraversion	.44***	.42***	.42***	.23***	.18***	.17***
In-Group × Extraversion	—	—	−.01	—	—	−.04**
Conscientiousness	−.07***	−.07***	−.07***	−.05***	−.04***	−.04***
In-Group × Conscientious	—	—	.00	—	—	.02*
Standard deviation of random effects						
Intercept	.18***	.18***	.17***	.17***	.13***	.10***
Male slope	—	.04***	.04***	—	.09***	.08***
Neuroticism slope	—	.02***	.01**	—	.02**	.02***
Extraversion slope	—	.03***	.02***	—	.05***	.03***
Conscientiousness slope	—	.01***	.01***	—	.03***	.03***
Level-1 residual	.88	.88	.88	.96	.96	.96
Deviance (−2LL)	1013859	1013712	—	1080042	1079576	—
Degrees of freedom	2	16	—	2	16	—
Δ chi-square test	—	146***	—	—	466***	—

Note. Significance of random effects was verified using the model comparison approach according to Hayes (2006). Deviance test was not conducted for Step 4, because restricted maximum likelihood only allows −2LL test when adding new random (i.e., Step 3b) but not fixed (i.e., Step 4) parameters. Dash indicates an effect was not tested. Egalitarianism = gender egalitarianism; in-group = in-group collectivism; −2LL = −2 log likelihood.
* $p < .05$. ** $p < .01$. *** $p < .001$.

sures limiting options in low-egalitarian societies would still translate into greater gender differences in musical and persuasive interests. Cultural gender egalitarianism captures equalizing educational and developmental opportunities, but its influence on occupational attraction and gender roles appears more complex than we predicted.

Our study has several limitations that should be considered. First, the interest measures in our data did not provide an exact match to the RIASEC model. However, we feel our factor structure and conceptual matching suitably link our findings to previous research on career interests. Second, our measure of cultural variables was at the country level as a societal characteristic. Measuring cultural values at the individual level as an individual's identity endorsement (Chao & Moon, 2005) may provide a different lens through which to examine the strength of cultural moderation. Last, the cross-sectional nature of our data provides insufficient evidence for causal relationships. The relationships explored here should be further tested in a longitudinal setting to establish the possible causal direction in personality–interest relationship.

Implications for Counseling

Our findings provide a number of implications for those engaged in career counseling practice. First, as counselors engage with those from a multitude of cultural backgrounds, awareness of how culture might affect the alignment of personality and interest inventory scores can be useful in appropriately interpreting assessments and working with those clients. Further, understanding culture's role in disconnects among personality, interests, and career choice may aid counselors in designing effective tools, exercises, and interventions to assist a broad range of clients. Finally, assessing cultural values along with personality, interests, and ability may provide helpful information in understanding contextual influences on individual career aspirations and behavior.

Future Directions

We examined two cultural variables, in-group collectivism and gender egalitarianism, but did not find any theoretical rationale for proposing other cultural values as moderators of personality–interest relationships. Work on new and emerging cultural distinctions (e.g., tightness–looseness; Gelfand et al., 2011) might provide additional insights into the cultural influences on these relations. Specific cultural values that relate to life roles, such as Confucianism (Hwang, 2001), might be worthy of exploration. At a lower analysis level, family characteristics are likely to explain variance in personality–interest relations. For example, parental SES and educational level might constrain one's exploration of interests (Splete & Freeman-George, 1985).

There were several places where our findings did not line up with meta-analytic findings (e.g., stronger relationship for conventional–artistic interests; finding of a relationship between extraversion and conventional interests). These discrepancies may be a function of the measures examined here, differences in samples, and publication bias and other concerns with meta-analytic databases (Bakker, van Dijk, & Wicherts, 2012; Ferguson &

Table 8
Multilevel Modeling of Investigative Interests (Scientific)

Model step	Scientific interest		
	3a	3b	4
Fixed effect coefficients			
Intercept	−.42***	−.30***	−.31***
Egalitarianism	—	—	−.16
In-group	—	—	−.15*
Male	.22***	.03	.05
Egalitarianism × Male	—	—	.19*
Neuroticism	−.02***	−.02***	−.02***
In-Group × Neuroticism	—	—	—
Extraversion	−.12***	−.13***	−.12***
In-Group × Extraversion	—	—	.02*
Conscientiousness	.03***	.03***	.03***
In-Group × Conscientious	—	—	.00
Standard deviation of random effects			
Intercept	.20***	.18***	.15***
Male slope	—	.13***	.10***
Neuroticism slope	—	—	—
Extraversion slope	—	.01***	.01***
Conscientiousness slope	—	.02**	.02***
Level-1 residual	.98	.98	.98
Deviance (−2LL)	1095449	1094494	—
Degrees of freedom	2	11	—
Δ chi-square test	—	955***	—

Note. Significance of random effects was verified using the model comparison approach according to Hayes (2006). Deviance test was not conducted for Step 4, because restricted maximum likelihood only allows −2LL test when adding new random (i.e., Step 3b) but not fixed (i.e., Step 4) parameters. Dash indicates an effect was not tested. Egalitarianism = gender egalitarianism; in-group = in-group collectivism; −2LL = −2 log likelihood.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Brannick, 2012). These differences do suggest in further work on personality–interest relationships, researchers should seek to compare findings with different interest measures and different personality assessments, using samples with varied cultural backgrounds.

Interpreting the role of cultural values in career decision making would be aided by longitudinal research. The discrepancies between personality and occupational interests may vary across different points in individuals' developmental trajectories. Further, examining cultural context early in life, along with changes in personality, interests, and cultural value endorsement over time, would provide valuable information; embedding such examinations into an SCCT framework would also be particularly useful.

Meta-analytic research on the relationships between personality and interests and on gender differences in interests has indicated the potential for moderation. In this study, we demonstrated that cultural values serve as moderators. Further theoretical work as to how culture might be associated with levels of interest as well as specific occupational pursuits of men and women would enhance our ability to interpret the findings here. In terms of practical implications, those engaged in career counseling for individuals might better consider how culture influences the relationships to be expected between personality and interest assessments, as well as how it may influence normative gender responses to interest inventories. In societies where collective action is valued, environmental factors may have a stronger influence on career choices than an individual's personality. Within cultures with gender equality, occupational interests may not reflect the gender neutrality intuitively expected.

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