

Sex Differences and Sexual Orientation Differences in Personality: Findings from the BBC Internet Survey

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Abstract Analyzing a large international data set generated by a BBC Internet survey, I examined sex differences and sexual orientation differences in six personality traits: extraversion, agreeableness, neuroticism, disagreeable assertiveness, masculine versus feminine occupational preferences (MF-Occ), and self-ascribed masculinity-femininity (Self-MF). Consistent with previous research, sex differences and sexual orientation differences were largest for MF-Occ and for Self-MF. In general, heterosexual-homosexual differences mirrored sex differences in personality, with gay men shifted in female-typical and lesbians in male-typical directions. Bisexual men scored intermediate between heterosexual and gay men on MF-Occ; however, they were slightly more feminine than gay men on Self-MF. Bisexual women scored intermediate between heterosexual women and lesbians on both MF-Occ and Self-MF. Sex differences and sexual orientation differences in MF-Occ, Self-MF, and other personality traits were consistent across five nations/world regions (the UK, USA, Canada, Australia/New Zealand, and Western Europe), thereby suggesting a biological component to these differences.

Keywords Sexual orientation · Sex differences · Personality · Masculinity–femininity · Cross-cultural research

Introduction

On average, men and women differ on a number of personality traits (Costa, Terracciano, & McCrae, 2001; Feingold, 1994; Lippa, 2005a). Men score higher than women on some extraversion facets (e.g., assertiveness, dominance), but lower on others (sociability, warmth), whereas women score higher than men on many neuroticism facets (e.g., anxiety, depression, self-consciousness) and on many agreeableness facets (tender-mindedness, altruism, empathy). Men and women show large differences in their gender-related interests, with men more interested in thing-oriented activities and occupations (e.g., mechanics, carpentry, engineering) and women more interested in people-oriented activities and occupations (e.g., social work, elementary school teaching, nursing). When asked to rate themselves explicitly on masculinity–femininity, men rate themselves to be considerably more masculine than women do, and women rate themselves to be considerably more feminine than men do.

Just as men and women differ on some personality traits, so do heterosexual and homosexual individuals. In a recent meta-analytic review, I synthesized the results of eight studies I conducted that assessed personality traits in a combined total of 2,724 heterosexual men, 799 gay men, 157 bisexual men, 5,053 heterosexual women, 697 lesbian women, and 317 bisexual women (Lippa, 2005b). The results showed that, on average, heterosexual men scored higher than gay men on the masculinity–femininity of their occupational preferences (MF-Occ; $d = 1.28$) and on self-ascribed masculinity–femininity (Self-MF; $d = .60$), whereas gay men scored higher than heterosexual men on expressiveness ($d = .37$), agreeableness ($d = .22$), conscientiousness ($d = .35$), neuroticism ($d = .20$), and openness to experience ($d = .42$). Heterosexual women scored higher than lesbians on neuroticism ($d = .30$), whereas lesbians scored higher than heterosexual

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women on MF-Occ ($d = 1.46$), Self-MF ($d = 1.28$), instrumentality ($d = .27$), and openness to experience ($d = .47$). Bisexual individuals tended to score intermediate between same-sex heterosexuals and homosexuals; however, bisexual men proved to be more similar to gay men than to heterosexual men, whereas bisexual women were more truly intermediate between lesbian and heterosexual women.

When effect sizes for homosexual–heterosexual differences in personality were correlated with corresponding effect sizes for sex differences in personality, across the eight assessed personality dimensions, the correlations were .90 ($p = .001$) for men and $-.97$ ($p < .001$) for women. Simply stated, heterosexual–homosexual differences tended to mirror sex differences in personality. Although the personality traits of gay men and lesbian women were, on average, shifted in the direction of other-sex heterosexuals, it is important to note that gay men were not “like women” nor were lesbians “like men” in personality. Rather, gay men and lesbians tended to score intermediate between heterosexual men and women on various personality traits. Thus, my meta-analytic results supported a “gender shift hypothesis” rather than the more extremely stated “gender inversion hypothesis” (see Pillard, 1991). The strongest “feminine shift” for gay men and the strongest “masculine shift” for lesbian women occurred for MF-Occ (i.e., gender-related interests) and Self-MF.

Why do gay men and lesbians differ in personality from same-sex heterosexuals? Both biological and social-environmental theories offer plausible explanations (for a detailed discussion, see Lippa, 2005b). Possible biological factors include the effects of genes, prenatal hormones, and genetic and environmental processes that lead to developmental instability. One influential theory holds that variations in prenatal exposure to androgens affect the sexual differentiation of the brain, thereby leading to both sex differences and sexual orientation differences on a number of behavioral traits, including personality (Ellis & Ames, 1987; Wilson & Rahman, 2005). Possible social-environmental factors that lead to heterosexual–homosexual differences in personality include variations in parental socialization and child-rearing practices, the effects of social stereotypes about gender and sexual orientation, and the effects social roles—specifically, gender roles and sexual orientation roles. For example, social stereotypes and social roles that conflate gender roles with heterosexuality and homosexuality may lead some individuals to behave consistently with the stereotypes (e.g., some gay men may behave in feminine ways, as social stereotypes and social roles prescribe; see Lippa (2005b) for a more detailed account of various theories, including sex-role identity, social role, gender socialization, and “exotic becomes erotic” theories. See also Bailey and Zucker (1995), Bem (1996, 2000), Eagly, Wood, and Diekmann (2000), and Kagan (1964)).

Based on the results of my meta-analysis, I concluded that sex differences and heterosexual–homosexual differences in

Big Five traits, instrumentality, and expressiveness could plausibly result from the influence of social roles and stereotypes. One piece of evidence consistent with this hypothesis is research showing that women’s dominance levels changed as sex roles changed over the course of the 20th century, and by implication, sex differences in dominance also changed with changing sex roles (Twenge, 2001). The effect sizes for these historical changes in women’s dominance levels are roughly equivalent in magnitude to effect sizes for heterosexual–homosexual differences in Big Five traits. Although this evidence is circumstantial, it nonetheless suggests that social roles are capable of influencing group differences in personality. Social role theories may be particularly promising as explanations for heterosexual–homosexual difference in openness to experience, a difference that is in the same direction for gay men and lesbians. My preferred explanation for this difference is that gay and lesbian individuals’ norm-breaking, culture-straddling life experiences lead them, in some ways, to be more iconoclastic, liberal, and cognitively flexible than heterosexuals (Lippa, 2005b).

Although I hypothesized that heterosexual–homosexual differences in some Big Five traits might result from social roles, I concluded that large observed heterosexual–homosexual differences in gender-related interests ($d = 1.28$ for men and -1.46 for women) and in Self-MF ($d = .60$ for men and -1.28 for women) were less likely to be explained fully by social-environmental factors. It seemed likely to me that a complete explanation of these differences would require some appeal to biological factors. In essence, I argued that because of the noisiness of the causal processes proposed by various social-environmental theories, these theories could not adequately account for such large differences.

In the research reported here, I further test the plausibility of this biological-influence hypothesis in two ways: (1) by attempting to replicate the existence of sizeable heterosexual–homosexual differences in MF-Occ and Self-MF and smaller differences in other personality traits in a considerably larger and more diverse sample than the sample reviewed by my meta-analysis and (2) by investigating whether these differences were consistent across nations and cultures. If a sex difference is consistent across cultures, then this constitutes one kind of evidence favoring the existence of a biological component to the sex difference. The reasoning is that “[i]f a sex difference occurs consistently, despite all the variations in learning and socialization practices that occur across cultures, then a biological *signal*—an innate predisposition—is probably showing through all the cultural noise” (Lippa, 2005a, p. 138). The same logic applies to heterosexual–homosexual differences, i.e., cross-cultural consistencies increase the likelihood that biological factors contribute to such differences.

Although my meta-analytic review demonstrated a number of significant associations between sexual orientation and

personality, the studies that I reviewed suffered from a number of limitations. First, all were conducted by one researcher—namely myself. Second, all of the studies made use of convenience samples. Most heterosexual participants were southern California college students, and most gay and lesbian participants were recruited at southern California gay pride festivals. Because of this, heterosexual participants were, on average, younger and more homogeneous in educational level than gay and lesbian participants were. Thus, my meta-analytic findings are best viewed as preliminary findings in need of replication in broader, more diverse samples. In the current research, I attempted to achieve such a replication using data from a recent BBC Internet survey that assessed a very large and diverse international sample of participants.

Apart from the studies summarized by my meta-analysis, published research on the relation between sexual orientation and broadly defined personality traits has been scarce (for reviews of past research on associations between sexual orientation and masculinity–femininity measures, see Pillard, 1991; Lippa, 2005b). Findings that document higher rates of psychopathology in homosexual than in heterosexual individuals (e.g., see Meyer, 2003) might be taken to imply that gay men and lesbians will score higher on Big Five neuroticism than same-sex heterosexuals do. The results of my meta-analysis did, in fact, show slightly higher levels of neuroticism in gay men than in heterosexual men, but at the same time they showed lower levels of neuroticism in lesbians than in heterosexual women. This pattern of results supports the “gender shift hypothesis,” that gay men are shifted in the female-typical direction and lesbians in the male-typical direction, over the “social stress hypothesis,” that gay and lesbians generally score higher on neuroticism than same-sex heterosexuals because of societal prejudice and environmental stresses.

In a recent study that peripherally investigated associations between sexual orientation and personality, Schmitt and Buss (2000) had a group of university students complete a Big Five personality measure and also rate themselves on a set of sexuality related adjectives, including the items “homosexual,” “bisexual,” and “heterosexual.” Although Schmitt and Buss did not classify participants as homosexual, bisexual, or heterosexual, they computed sexual orientation factor scores for participants and correlated these scores with participants’ personality scores. Unfortunately, correlations were computed for men and women combined, and thus the analyses could not detect whether associations between the sexual orientation factor and personality differed for men and women. Nonetheless, Schmitt and Buss did find a significant association between sexual orientation and openness to experience, with non-heterosexuality associated with higher openness. These results were consistent with my findings that both gay men and lesbians tended to score higher on openness than same-sex heterosexuals did.

Patterson (1997) administered the NEO-PI-R (a Big Five inventory; Costa & McCrae, 1992) and Cattell’s (Cattell, Eber, & Tatsuoka, 1970) 16PF to 145 heterosexual and 114 homosexual men, and he found that gay men tended to score higher than heterosexual men on tender-mindedness, anxiety, and openness—findings that are again consistent with the results of my meta-analysis. Both the Schmitt and Buss and the Patterson studies shared many of the limitations of my studies, however (e.g., they assessed relatively small numbers of young, mostly college student, North American participants). Clearly, it is important to replicate and extend their findings to larger and more diverse samples—a primary goal of the current research.

Method

Participants

From February through May 2005, the British Broadcasting Corporation (BBC) conducted an Internet survey, with the goal of presenting results in the BBC television documentary, “Secrets of the Sexes” (for details, see Reimers, 2007). The BBC survey was designed in consultation with several researchers, including myself. Its main topic was human sex differences in cognition, motivation, personality, and sexuality. The survey was advertised on the BBC website and participants responded online. Because of the broad reach of the BBC as an international news source, survey participants came from all over the world, with particularly large numbers from the United Kingdom, the United States, Canada, Australia, New Zealand, and Western Europe. People who logged on to the BBC survey website could complete a variety of psychological tests and questionnaires, which were arranged in six modules, each of which took about 5 min to complete. A total of 462,859 people worldwide responded in part or in full to the survey, with 255,114 responding to at least some items in every module. The data analyzed here came from the latter group. Most participants reported their sex and sexual orientation and also completed scales that assessed a number of personality traits. These variables—sex, sexual orientation, and personality scores—were central to the current analyses.

Participants reported their “gender” via a drop-down menu that asked them to select one of two responses: “male” or “female.” Sexual orientation was assessed via three items. One drop-down menu asked, “What is your sexual orientation?” and provided three response options: “Heterosexual (straight),” “Homosexual (gay/lesbian),” and “Bisexual.” In addition, two items asked “How sexually attracted are you to men” and “How sexually attracted are you to women,” with each question followed by seven radio buttons that allowed participants to respond on a seven-point scale

that ranged from “not at all” to “very.” About 19% of the 255,114 participants who responded to at least some items in all modules did not respond to all three sexual orientation questions, leaving 209,275 participants with complete sexual orientation data.

Some participants showed inconsistency in their responses to the three sexual orientation items. To exclude these participants from further analysis, the following screening system was used. To be classified as “heterosexual,” a man had to describe himself as “Heterosexual (straight)” on the first item and he also had to report more attraction to women than to men on the other two items. To be classified as “homosexual,” a man had to describe himself as “Homosexual (gay)” on the first item and he also had to report more attraction to men than to women on the other two items. To be classified as “bisexual,” a man had to describe himself as “Bisexual” on the first item and he also had to report at least some attraction (i.e., more than “Not at all”) both to men and to women. The same rules were applied, with appropriate changes, to women. The 3,457 participants who responded inconsistently to the sexual orientation items were excluded from further analyses, leaving 205,818 who were classified unambiguously as heterosexual, homosexual, or bisexual. The results reported later in this article were not much altered when participants who responded inconsistently to the sexual orientation questions were included in analyses (labeled according to their drop-down menu responses).

As might be expected, heterosexual men expressed much higher levels of attraction to women than to men (respective $M_s = 6.74$ and 1.39 , on seven-point scales of attraction), whereas gay men expressed much higher levels of attraction to men than to women ($M_s = 6.82$ and 1.84). Similarly, heterosexual women expressed much higher levels of attraction to men than to women (respective $M_s = 6.55$ and 1.97), whereas lesbians expressed much higher levels of attraction to women than to men ($M_s = 6.65$ and 1.97). Paired-data t -tests showed all these differences to be highly significant. Perhaps less expected was the finding that bisexual men expressed more attraction to women ($M = 5.76$) than to men ($M = 4.53$), a difference that was highly significant, paired-data $t(4849) = -35.40$, $p < .001$. Similarly, bisexual women expressed more attraction to men ($M = 5.72$) than they did to women ($M = 5.17$), a difference that was also highly significant, paired-data $t(6595) = 23.19$, $p < .001$. Thus, in their self-reported attractions, bisexual men seemed more similar to heterosexual men than to gay men and bisexual women seemed more similar to heterosexual women than to lesbian women.

After being screened for age and inconsistent responding to sexual orientation items, the remaining sample included 102,961 heterosexual men (91% of men), 5,938 gay men (5%), 4,850 bisexual men (4%), 82,819 heterosexual women (90% of women), 2,548 lesbian women (3%), and 6,596

bisexual women (7%). The mean ages in years of the six groups were as follows: 32.2 ($SD = 11.3$) for heterosexual men, 31.9 ($SD = 10.2$) for gay men, 32.7 ($SD = 11.8$) for bisexual men, 31.1 ($SD = 10.8$) for heterosexual women, 33.1 ($SD = 10.9$) for lesbian women, and 28.3 ($SD = 9.44$) for bisexual women.

Demographic information collected by the BBC Internet survey included relationship status, country of residence, ethnicity, education level, and income level. The breakdown of participants (i.e., those screened for age and consistency of sexual orientation responses) by their reported relationship status was as follows: 29% married, 29% single, 16% living together in a serious relationship, 15% living apart in a serious relationship, 8% in a causal relationship, 3% divorced, and under 1% widowed. Not surprisingly, these statistics varied somewhat for men and women and across sexual orientation groups. For example, 32% of heterosexual men, 29% of heterosexual women, 3% of gay men, 7% of lesbian women, 25% of bisexual men, and 19% of bisexual women reported being married. When the two “serious relationship” categories were collapsed, 26% of heterosexual men, 35% of heterosexual women, 39% of gay men, 53% of lesbians, 21% of bisexual men, and 39% of bisexual women reported being in a serious relationship.

Participants came from countries across the world, but the largest contingents came from the United Kingdom (45%), the United States (29%), Canada (5%), and Australia (4%). In aggregate, participants from continental Western Europe made up about 6% of the screened sample. Of those participants who responded to a question about ethnicity, most (85%) reported being White. The next largest categories were “Asian/Asian British” (6%), “mixed ethnic” (4%), “Chinese” (2%), and “Middle/Near Eastern” (1%). One survey question asked participants to report their highest level of schooling. In response to this item, 16% of participants reported having a post-graduate or professional degree, 41% reported university training, 13% reported “other college” training, 11% reported vocational or technical college training, 18% reported secondary or high school education, and 1% reported primary or grammar school education.

Participants were asked to report their income level in terms of four categories: (1) 0 to 10,000 £ British (approximately 0–\$17,000 US), (2) 10,000–25,000 £ British (approximately \$17,000–\$43,500 US), (3) 25,000–50,000 £ British (approximately \$43,500–\$87,000 US), and (4) greater than 50,000 £ British (greater than \$87,000 US). The percent of participants in each of these four income categories were respectively, 31%, 32%, 28%, and 9%. Overall, the BBC survey participants could be characterized as relatively young, well educated, mostly White and Anglo-American, and relatively affluent. At the same time, participants showed substantial variation in age, education level, and income. Because participants responded to the BBC survey online, it is likely that most were computer

literate, and because the BBC survey was written in English, it is likely that participants from non-English-speaking countries were reasonably fluent in English.

Among the demographic information collected from participants was age in years, which participants typed in as a string variable. Reported ages ranged from 0 to 99 years. Because age was the second item in the BBC Internet survey (“gender” was the first), some participants may have been “playing” with the survey, testing out its different modules, and therefore not responding seriously. To eliminate participants with suspiciously low or high ages and to eliminate participants who might be too young to be fully aware of their sexual orientation, I excluded from analysis participants who reported ages less than 18 and greater than 80 years. This left for those analyses involving sexual orientation 113,749 men and 91,963 women.

Measures

The BBC survey assessed a number of personality traits with 50 items taken from the International Personality Item Pool (IPIP; see <http://www.ipip.ori.org/>). The included items were intended to assess five traits similar to the following traits assessed by Cattell’s 16PF inventory (Cattell et al., 1970): friendliness, warmth, emotional stability, assertiveness/dominance, and introversion (scale items are listed in Table 1). The BBC survey designers used IPIP items because they are not copyrighted, and they selected these particular scales because were relevant to the planned content of the BBC documentary, “Secrets of the Sexes.” The section of the BBC Internet survey that presented IPIP items posed the question, “How do you see yourself,” and then listed the 50 items. Each item (example: “Am the life of the party”) was accompanied by seven radio buttons that allowed participants to respond on a seven-point scale that ranged from “disagree” to “agree.”

To reduce the data storage requirements of the Internet survey web site, which would ultimately be visited by hundred of thousands of people, the BBC web design staff programmed the Internet survey to compute personality subscale scores (the sum of item responses for a given subscale) and store subscale scores rather than raw item responses. The nine computed IPIP subscale scores were: positive friendliness, negative friendliness, positive warmth, negative warmth, positive emotional stability, negative emotional stability, assertiveness/dominance, positive introversion, and negative introversion (subscales are presented in Table 1; the assertiveness/dominance scale is labeled there as “disagreeable assertiveness”). From these subscale scores, I computed proxy measures for three Big Five traits: (1) extraversion (the sum of positive friendliness, negative friendliness (reversed), positive introversion (reversed), and negative introversion),

Table 1 International personality item pool (IPIP) scales and items administered in the BBC Internet survey

Positive friendliness	Am the life of the party.
	Feel comfortable around people.
	Start conversations.
	Talk to a lot of different people at parties.
	Don’t mind being the centre of attention.
Negative friendliness	Don’t talk a lot.
	Keep in the background.
	Have little to say.
	Don’t like to draw attention to myself.
	Am quiet around strangers.
Positive warmth	Am interested in people.
	Sympathize with others’ feelings.
	Have a soft heart.
	Take time out for others.
	Feel others’ emotions.
	Make people feel at ease.
Negative warmth	Am not really interested in others.
	Insult people.
	Am not interested in other people’s problems.
	Feel little concern for others.
Positive emotional stability	Am relaxed most of the time.
	Seldom feel blue.
Negative emotional stability	Get stressed out easily.
	Worry about things.
	Am easily disturbed.
	Get upset easily.
	Change my mood a lot.
	Have frequent mood swings.
	Get irritated easily.
	Often feel blue.
Disagreeable assertiveness	Try to surpass others accomplishments.
	Try to outdo others.
	Am quick to correct others.
	Impose my will on others.
	Demand explanations from others.
	Want to control the conversation.
	Am not afraid of providing criticism.
	Challenge others’ points of view.
	Lay down the law to others.
	Put people under pressure.
Positive Introversion	Want to be left alone.

Table 1 continued

Prefer to do things by myself.
Enjoy spending time by myself.
Seek quiet.
Don't mind eating alone.
Enjoy silence.
Enjoy my privacy.
Negative Introversion
Enjoy being part of a group.
Enjoy teamwork.
Can't do without the company of others.

Note. In response to the prompt—“How do you see yourself?”—participants rated themselves on the previous items using a 7-point rating scale that ranged from “disagree” to “agree.” A Big Five extraversion scale was computed as the sum of positive friendliness, negative friendliness (reversed), positive introversion (reversed), and negative introversion. A Big Five agreeableness scale was computed as the sum of positive warmth and negative warmth (reversed), and a Big Five neuroticism scale was computed as the sum of positive emotional stability (reversed) and negative emotional stability

(2) agreeableness (the sum of positive warmth and negative warmth (reversed)), and (3) neuroticism (the sum of positive emotional stability (reversed) and negative emotional stability). The assertiveness/dominance scale was left as a separate measure.

The construction of the extraversion, agreeableness, and neuroticism scales was guided by my judgment of how the IPIP subscales related to these three Big Five dimensions. To gain a better sense of the reliability of these constructed Big Five scales and to ascertain how they calibrated against a standard Big Five measure, I administered the 50 IPIP items and a 44-item Big Five inventory (John & Srivastava, 1999) to 290 participants (mostly college students) via an Internet survey implemented by myself. In this sample, the reliabilities (alphas computed from individual scale items) of the IPIP-based extraversion, agreeableness, and neuroticism scales were respectively .90, .87, and .89. The IPIP assertiveness/dominance scale had a reliability of .88. The IPIP-based extraversion scale correlated .67 with the Big Five extraversion scale, the IPIP-based agreeableness scale correlated .67 with the Big Five agreeableness scale, and the IPIP-based neuroticism scale correlated .80 with the Big Five neuroticism scale (all $ps < .001$). Thus, the IPIP-based scales proved to assess reasonably well the Big Five traits they were intended to assess. The IPIP assertiveness/dominance scale correlated significantly with Big Five agreeableness ($r = -.43$, $p < .001$) and Big Five neuroticism ($r = .19$, $p = .001$), and this suggests that the IPIP assertiveness scale, in fact, assessed an amalgam of traits. Given its relatively substantial negative correlation with Big Five agreeableness, I shall henceforth refer to this IPIP scale as *disagreeable assertiveness* (see items in Table 1).

In the BBC data set, certain values of IPIP subscale scores indicated the existence of missing values for raw items. For example, the “positive friendliness” scale comprised five items, which participants responded to on a 7-point scale that ranged from “1” to “7.” Thus, possible scale scores could range from 5 (all items rated “1”) to 35 (all items rated “7”). If a participant’s subscale score was less than 5, then that participant had not responded to some of the items and therefore had received a zero on these items. Personality scores that indicated such missing values were excluded from the analyses that follow.

An examination of the final distributions of personality scores indicated that they approximated normal distributions. However, there appeared to be excess numbers of lowest possible scores (which would occur if every scale item were responded to with a “1”) and highest possible scores (which would occur if every scale item were responded to with a “7”). Such extreme scores may have resulted, in some cases, from participants who responded with systematic, nonvarying responses (e.g., all items were answered with a “1”). Such extreme scores were excluded from the analyses that follow. The results that follow were only trivially altered when the suspect scores described in the last two paragraphs were included in analyses.

In addition to responding to 50 IPIP items, BBC Internet survey participants also completed a 10-item measure of gender-related occupational preferences. Specifically, they were asked to rate on 7-point scales ranging from “strongly dislike” to “strongly like” how much they were interested in the following jobs: *car mechanic, costume designer, builder, dance teacher, carpenter, school teacher, electrical engineer, florist, inventor, and social worker*. Pretesting had shown that the odd-numbered items in this list tend to be preferred more by men than women, whereas the even-numbered items tend to be preferred more by women than by men. A scale of male-typical versus female-typical occupational preferences (MF-Occ) was computed by averaging the masculine items and the reversed feminine items.

The reliabilities (alphas) of this scale for all screened BBC participants, men, and women were respectively .74, .64, and .59. Occupational preference items are often corrected for “elevation response set”—the general tendency for respondents to prefer many or few occupations—by computing ipsatized items (e.g., subtracting from each item the individual’s mean rating on all items) (Lippa, 1998; Prediger, 1982; Tracey & Rounds, 1993). The reliabilities of MF-Occ computed from ipsatized items for all participants, men, and women were respectively .82, .76, and .71. There were equal numbers of masculine and (reversed) feminine items in the MF-Occ scale, which guaranteed that the elevation response set was removed from scale scores. Indeed, in this case, MF-Occ computed from raw items was identical to MF-Occ computed from ipsatized items. However, the

alphas computed from ipsatized items probably provide a more accurate estimate of scale reliabilities.

Finally, BBC survey participants completed a single-item measure of self-ascribed masculinity–femininity (Self-MF) that asked, “How masculine or feminine do you consider yourself to be mentally, compared to others of your sex and age?” Participants responded via radio buttons using a seven-point scale that ranged from “feminine” to “masculine.” The Self-MF item was the next-to-the-last item in the final module of the BBC Internet survey, but due to a “glitch” in the submit process in this final module, about half of the responses to the Self-MF item were not recorded in the final BBC data set. The responders and non-responders to this item did not appear to differ in any systematic way, however, for they differed very little on the other assessed personality traits. Because the Self-MF measure was based on a single item, its reliability could not be estimated.¹

Results

Sex Differences and Sexual Orientation Differences in Personality

Table 2 presents effect sizes for personality differences between the following contrasted groups: men versus women, heterosexual versus gay men, heterosexual versus bisexual men, bisexual versus gay men, heterosexual versus lesbian women, heterosexual versus bisexual women, and bisexual versus lesbian women. Also included in Table 2, for ease of comparison with the corresponding BBC results, are mean effect size estimates from my meta-analysis for heterosexual–gay male and heterosexual–lesbian female differences in personality.

Table 2 shows that all assessed personality traits showed significant sex differences. Sex differences in Big Five traits

were small to moderate in magnitude, whereas sex differences in MF-Occ and Self-MF were large in magnitude. When sex differences from the BBC data were correlated with corresponding sex differences from my earlier meta-analysis, the resulting correlation was .94 ($p = .005$), indicating that the pattern of sex differences was quite similar in the two data sets.

Columns 3 and 7 of Table 2 present, respectively, heterosexual–gay male differences and heterosexual–lesbian female differences in personality. To the left of each of these columns (in columns 2 and 6) are corresponding results from my meta-analysis. The results for heterosexual–homosexual male differences in the BBC data were strikingly similar to the corresponding results from my meta-analysis, both in absolute magnitude and in pattern, as reflected by the fact that the correlation between corresponding effects sizes in columns 2 and 3 was .99 ($p < .001$). The results for heterosexual–lesbian female differences in the BBC data did not match quite as well the absolute magnitudes of the corresponding meta-analytic results, but once again the profiles of effect sizes were quite similar in the two analyses—the correlation between effect sizes in columns 6 and 7 was .98 ($p = .001$). For both men and women, heterosexual–homosexual differences in personality tended to mirror sex differences in personality in the BBC data, i.e., the effect sizes in column 1 (sex differences) correlated .95 ($p = .004$) with the corresponding effect sizes in column 3 (heterosexual–gay male differences) and $-.94$ ($p = .006$) with the corresponding effect sizes in column 7 (heterosexual–lesbian female differences).

As was true for the meta-analytic results, the largest heterosexual–homosexual differences in personality were for MF-Occ ($d = 1.15$ for men and $-.91$ for women in the BBC data; $d = 1.28$ for men and -1.46 for women in the meta-analytic results) and for Self-MF ($d = .57$ for men and $-.78$ for women in the BBC data; $d = .60$ for men and -1.28 for women in the meta-analytic results). In the BBC data, the heterosexual–gay male difference in MF-Occ was 83% the magnitude of the corresponding sex difference; however, the heterosexual–gay male difference in Self-MF was only 47% the magnitude of the corresponding sex difference. The heterosexual–lesbian female difference in MF-Occ was 65% the magnitude of corresponding sex difference, and difference in Self-MF was 64% the magnitude of the corresponding sex difference. Thus, gay men showed a stronger cross-sex shift in MF-Occ than lesbians did, but they showed a weaker cross-sex shift in Self-MF than lesbians did.

The results in Table 2 that contrast bisexuals with other groups on MF-Occ and Self-MF showed somewhat different patterns for men and women. Bisexual men were intermediate between heterosexual and gay men on MF-Occ, but they were more similar to gay men ($d = .40$) than they were to heterosexual men ($d = .70$) on this trait. In contrast,

¹ Because of missing and excluded data for various personality measures, sample sizes varied for men and women and for sexual orientation groups within each sex. As noted before, there were about half as many participants with Self-MF scores as there were participants with other personality scores because of a technical problem with the data submission process in the final module of the BBC survey. For personality traits other than Self-MF, the range of sample sizes for the comparisons listed in Table 2 was as follows: 108,651–117,648 men, 87,765–97,123 women, 94,247–101,781 heterosexual men, 74,135–82,171 heterosexual women, 5,416–5,880 gay men, 2,287–2,522 lesbian women, 4,370–4,786 bisexual men, and 5,752–6,508 bisexual women. For Self-MF sample sizes were as follows: 56,496 men, 50,291 women, 48,968 heterosexual men, 42,994 heterosexual women, 2,977 gay men, 1,283 lesbian women, 2,190 bisexual men, and 3,068 bisexual women. Sample sizes for men in total and women in total were larger than the combined sample sizes of sexual orientation subgroups because some participants were eliminated from the sexual orientation subgroups because of inconsistent responses to sexual orientation questions and others were eliminated because they did not respond to sexual orientation questions.

Table 2 Effect sizes (*d*-statistics) for sex differences and sexual orientation differences in personality in the BBC Internet study data and effect sizes for heterosexual–homosexual differences in personality from Lippa's (2000b) meta-analysis

Personality traits	Contrasted Groups								
	BBC sex diffs	Meta-analysis het-gay men	BBC het-gay men	BBC het-bi men	BBC bi-gay men	Meta-analysis het-les women	BBC het-les women	BBC het-bi women	BBC bi-les women
Extraversion	-.17	-.08	-.01 ^{ns}	.12	-.13	.04	.25	.13	.12
Agreeableness	-.60	-.37/-.22	-.34	-.17	-.17	.04/-.01	.14	.24	-.09
Neuroticism	-.36	-.20	-.36	-.36	.00 ^{ns}	.30	.10	-.21	.30
Disagreeable assertiveness	.51	.04/.13	.13	.10	.03 ^{ns}	-.27/-.13	-.05	-.27	.22
MF-Occ	1.39	1.28	1.15	.70	.40	-1.46	-.91	-.23	-.65
Self-MF	1.21	.60	.57	.81	-.22	-1.28	-.78	-.47	-.31

Note. *ns* = not significant. All effect sizes without superscripts are significantly different from zero. In columns that present meta-analytic results, two effect sizes are presented for agreeableness, the first based on results from agreeableness scales and the second based on results from expressiveness scales. Similarly, two effect sizes are presented for disagreeable assertiveness. The first are estimates based on results from instrumentality scales. Given that the disagreeable assertiveness scale was an amalgam of disagreeableness and instrumentality, more accurate meta-analytic estimates for this trait are likely provided by averaging effect sizes for disagreeableness (reversed agreeableness) and instrumentality; these are the second estimates presented

bisexual men were *more feminine* than gay men on Self-MF ($d = -.22$), thus making them more dissimilar from heterosexual men on this trait ($d = .81$) than gay men were ($d = .57$). For both MF-Occ and Self-MF, bisexual women were intermediate between heterosexual and lesbian women. However, bisexual women were more similar to heterosexual women ($d = -.23$) than to lesbians ($d = -.65$) on MF-Occ, but they were more similar to lesbians ($d = -.31$) than to heterosexual women ($d = -.47$) on Self-MF.

Differences between bisexuals and other sexual orientation groups on Big Five traits also showed somewhat different patterns for men and women. Bisexual and gay men were indistinguishable on neuroticism ($d = .00$), and therefore they were equally higher than heterosexual men on this trait ($d = -.36$). However, bisexual men were intermediate between heterosexual and gay men on agreeableness, with gay men highest and heterosexual men lowest. Bisexual women stood out from lesbian and heterosexual women on Big Five traits in that they scored the highest of all three groups on neuroticism and disagreeable assertiveness, and the lowest on agreeableness.

Sex Differences and Sexual Orientation Differences in MF-Occ and Self-MF across Five Nations/World Regions

As described in the previous section, sex differences and sexual orientation differences in personality tended to be largest for MF-Occ and Self-MF. To test the cross-national and cross-cultural consistency of these differences, I examined differences in five nations/world regions: the United Kingdom, the United States, Canada, Australia and New

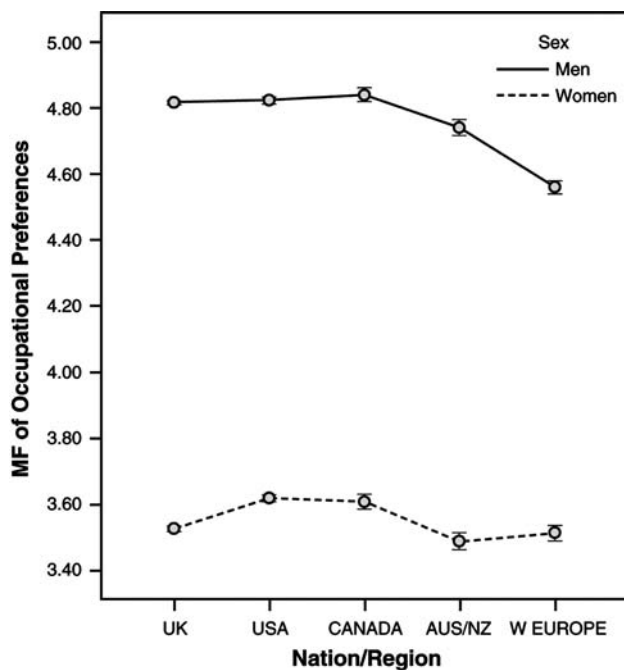
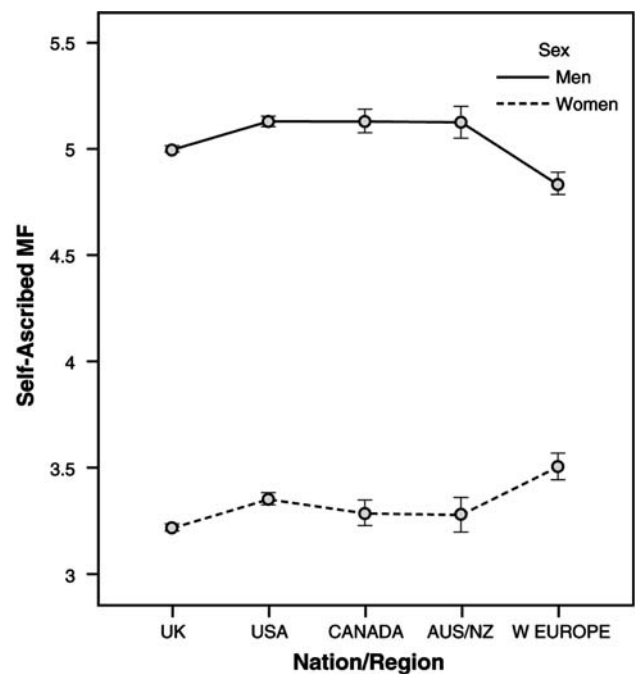
Zealand, and Western Europe (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, and Switzerland). These countries and the aggregate of western European countries were selected for analysis simply because they yielded samples large enough to make comparisons of sexual orientation groups meaningful. Table 3 lists the numbers of heterosexual, homosexual, and bisexual men and women in each of these countries and regions. In the analyses that follow, samples sizes for MF-Occ were somewhat smaller than those listed in Table 3 because of missing values, and sample sizes for Self-MF were less than half those listed in Table 3 because of missing values in this variable resulting from the technical Internet survey problems described earlier.

To examine the cross-national and cross-cultural consistencies of sex differences in MF-Occ and Self-MF, I conducted 2-way (sex by nation/region) ANOVAs on these dependent measures. I also present the results of a sex by nation/region ANOVA on neuroticism for comparison. The ANOVA on MF-Occ yielded a significant main effect for sex, $F(1, 185642) = 38294.27, p < .001$, partial $\eta^2 = .17$, a significant main effect for nation/region, $F(4, 185642) = 132.33, p < .001$, partial $\eta^2 = .003$, and a significant interaction, $F(4, 185642) = 59.79, p < .001$, partial $\eta^2 = .001$. Figure 1 graphically presents group means, which show that sex differences in MF-Occ were quite consistent across nation/regions. Because the scale of MF-Occ had a true mid-point at "4," the results in Fig. 1 indicate that men's MF-Occ scores were more to the masculine side of the mid-point than women's scores were to the feminine side of the mid-point.

The ANOVA on Self-MF yielded a significant main effect for sex, $F(1, 96643) = 10224.56, p < .001$, partial $\eta^2 = .10$, a significant main effect for nation/region, $F(4, 96643) =$

Table 3 Numbers of heterosexual, homosexual, and bisexual men and women in five nation/regions in the BBC data

Sexual orientation	United Kingdom	United States	Canada	Australia, New Zealand	Western Europe
Men					
Heterosexual	47,425	27,299	5,335	4,583	6,349
Gay	2,836	1,761	269	254	374
Bisexual	1,938	1,553	249	220	379
Women					
Heterosexual	36,867	24,550	4,805	4,041	4,060
Lesbian	971	1,022	140	127	133
Bisexual	2,270	2,672	413	329	459

**Fig. 1** Masculinity–femininity of occupational preferences (MF-Occ) as a function of sex and nation/region. MF-Occ is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals**Fig. 2** Self-ascribed masculinity–femininity (Self-MF) as a function of sex and nation/region. Self-MF is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals

38.82, $p < .001$, partial $\eta^2 = .002$, and a significant interaction, $F(4, 96643) = 29.15$, $p < .001$, partial $\eta^2 = .001$. Figure 2 graphically presents group means, which show that sex differences in Self-MF were quite consistent across nation/regions. Because the scale of Self-MF had a true mid-point at “4,” the results in Fig. 2 indicate that men’s Self-MF scores were more to the masculine side of the mid-point than women’s scores were to the feminine side of the mid-point.

The ANOVA on neuroticism yielded a significant main effect for sex, $F(1, 181648) = 3477.46$, $p < .001$, partial $\eta^2 = .02$, a significant main effect for nation/region, $F(4, 181648) = 168.95$, $p < .001$, partial $\eta^2 = .004$, and a significant interaction, $F(4, 181648) = 3.53$, $p < .01$, partial $\eta^2 = .0001$. Figure 3 graphically presents group

means, which show that sex differences in neuroticism were quite consistent across nation/regions.

To investigate the cross-national and cross-region consistency of sexual orientation differences in MF-Occ and Self-MF, I conducted six 2-way (sexual orientation by nation/region) ANOVAs: the first on men’s MF-Occ scores, the second on men’s Self-MF scores, the third on men’s neuroticism scores, the fourth on women’s MF-Occ scores, the fifth on women’s Self-MF scores, and the sixth on women’s neuroticism scores. The ANOVA on men’s MF-Occ scores yielded a significant main effect for sexual orientation, $F(2, 97350) = 1782.63$, $p < .001$, partial $\eta^2 = .035$, a significant main effect for nation/region, $F(4, 97350) = 23.10$, $p < .001$, partial $\eta^2 = .001$, and a significant interaction, $F(8, 97350) = 2.81$, $p < .01$,

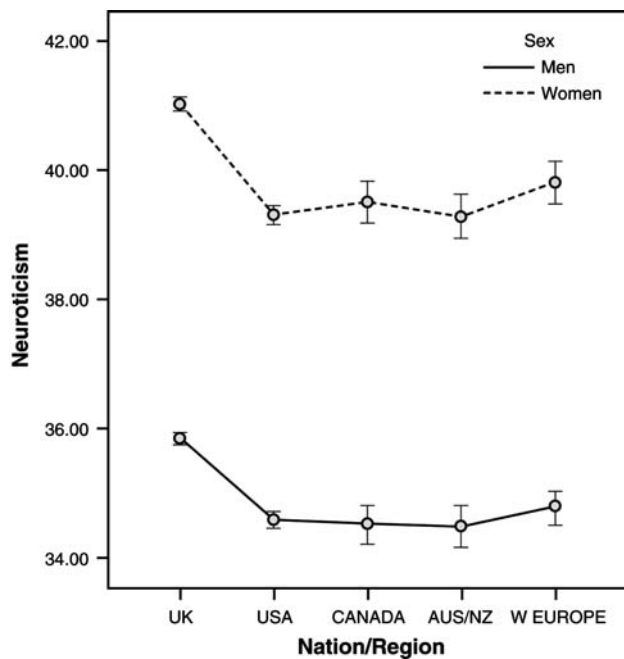


Fig. 3 Neuroticism as a function of sex and nation/region. Error bars represent 95% confidence intervals

partial $\eta^2 = .0002$. Figure 4 graphically presents group means, which show that sexual orientation differences in MF-Occ were quite consistent across nation/regions. Figure 4 also illustrates the ANOVA findings that sexual orientation accounted for some 35 times as much variance in men's MF-Occ as did nation/regions. Finally, Fig. 4 shows that in most nations and regions bisexual men tended to score closer to gay men than to heterosexual men on MF-Occ.

The ANOVA on men's Self-MF yielded a significant main effect for sexual orientation, $F(2, 49020) = 266.58, p < .001$, partial $\eta^2 = .01$, a significant main effect for nation/region, $F(4, 49020) = 5.84, p < .001$, partial $\eta^2 = .0005$, and a significant interaction, $F(8, 49020) = 3.69, p < .001$, partial $\eta^2 = .001$. Figure 5 graphically presents group means, which show that sexual orientation differences in Self-MF were quite consistent across nation/regions. It also illustrates the ANOVA findings that sexual orientation accounted for 20 times as much variance in men's Self-MF as did nation/regions. Finally, Fig. 5 shows that in all nations and regions bisexual men were more feminine on Self-MF than gay men were. Nonetheless, bisexual and gay men were more similar on Self-MF than either group was to heterosexual men.

The ANOVA on men's neuroticism yielded a significant main effect for sexual orientation, $F(2, 95427) = 235.48, p < .001$, partial $\eta^2 = .005$, a significant main effect for nation/region, $F(4, 95427) = 16.53, p < .001$, partial $\eta^2 = .001$, but a nonsignificant interaction, $F(8, 95427) < 1$. Figure 6 graphically presents group means, which show that sexual orientation differences in neuroticism were quite

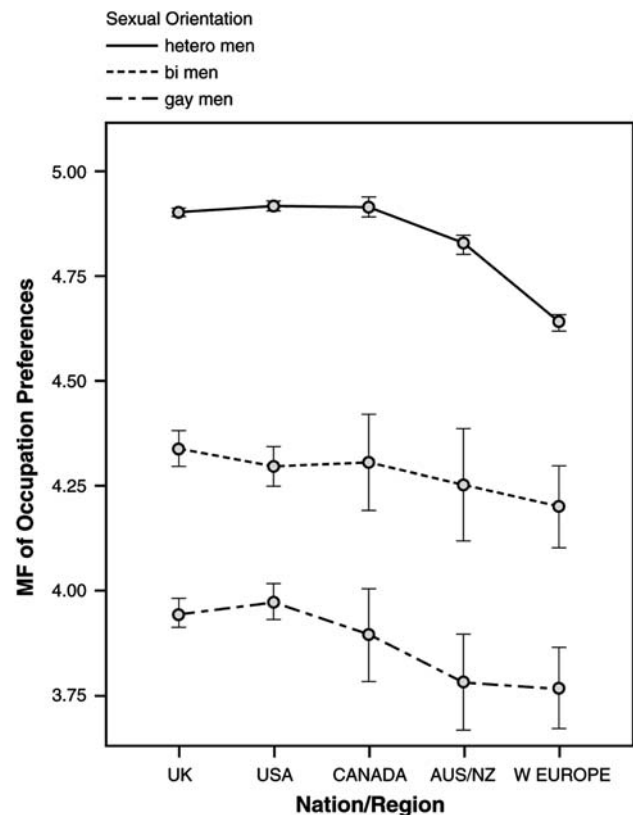


Fig. 4 Men's masculinity–femininity of occupational preferences (MF-Occ) as a function of sexual orientation and nation/region. MF-Occ is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals

consistent across nation/regions. It also illustrates that gay and bisexual men scored quite similarly on neuroticism, and both groups were consistently higher on neuroticism than heterosexual men were.

The ANOVA on women's MF-Occ yielded a significant main effect for sexual orientation, $F(2, 80450) = 367.80, p < .001$, partial $\eta^2 = .009$, a significant main effect for nation/region, $F(4, 80450) = 12.84, p < .001$, partial $\eta^2 = .001$, and a significant interaction, $F(8, 80450) = 2.32, p < .05$, partial $\eta^2 = .0002$. Figure 7 graphically presents group means, which show that sexual orientation differences in MF-Occ were quite consistent across nation/regions. It also illustrates that sexual orientation accounted for nine times as much variance in women's MF-Occ as did nation/regions. Finally, it shows that bisexual women were considerably more similar to heterosexual than to lesbian women on MF-Occ.

The ANOVA on women's Self-MF yielded a significant main effect for sexual orientation, $F(2, 43426) = 178.96, p < .001$, partial $\eta^2 = .008$. Neither the main effect for nation/region, $F(4, 43426) = 1.05$, nor the interaction between sexual orientation and nation/region, $F(8, 43426) = 1.61$, was significant in this analysis. Figure 8 graphically

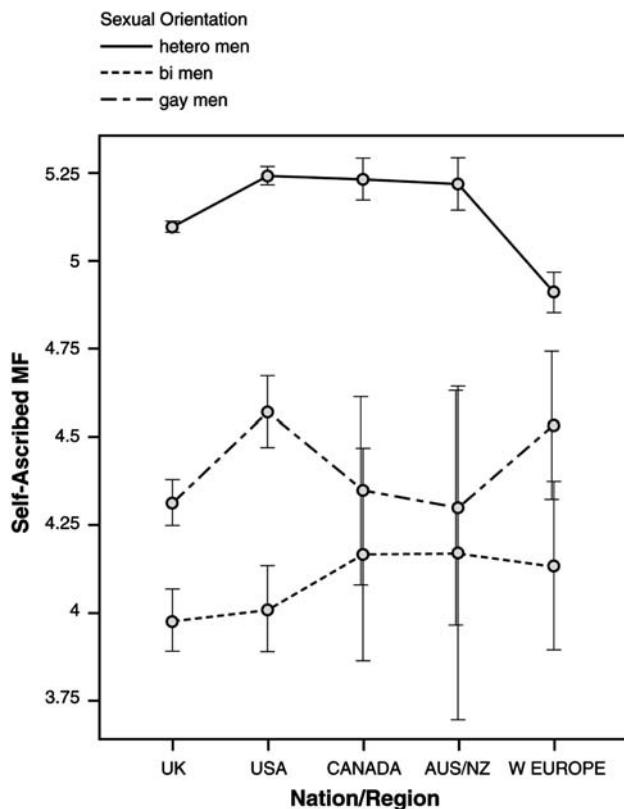


Fig. 5 Men's self-ascribed masculinity–femininity (Self-MF) as a function of sexual orientation and nation/region. Self-MF is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals

presents group means, which show that sexual orientation differences in Self-MF were quite consistent across nation/regions and that bisexual women tended to be more similar to lesbian than to heterosexual women on Self-MF.

Finally, the ANOVA on women's neuroticism yielded a significant main effect for sexual orientation, $F(2, 78437) = 80.02, p < .001$, partial $\eta^2 = .002$, a significant main effect for nation/region, $F(4, 78437) = 17.61, p < .001$, partial $\eta^2 = .001$, but a nonsignificant interaction, $F(8, 78437) < 1$. Figure 9 graphically presents group means, which show that sexual orientation differences in neuroticism were quite consistent across nation/regions and that bisexual women were distinctly higher on neuroticism than the other two groups, whereas lesbians were lowest on neuroticism of all three groups.

Discussion

On many levels, the BBC Internet survey results strongly replicated my earlier meta-analytic results. The pattern of sex differences and heterosexual–homosexual differences in personality in the two data sets were much the same. The

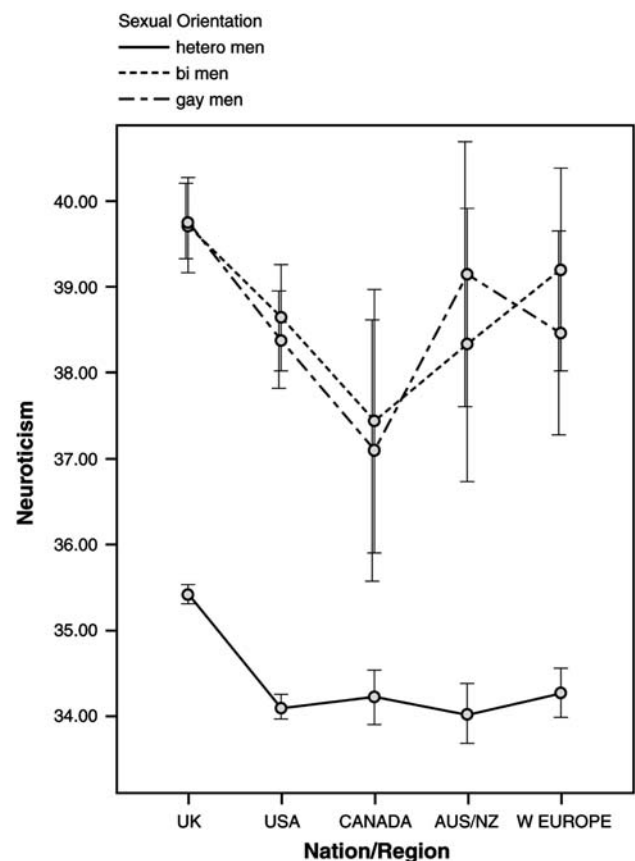


Fig. 6 Men's neuroticism as a function of sexual orientation and nation/region. Error bars represent 95% confidence intervals

strong correspondence between the BBC and meta-analytic results is impressive for several reasons. First and most obviously, the samples studied were quite different. My meta-analysis compiled data from studies that assessed primarily southern California college students and southern California gay pride festival attendees. In contrast, the BBC Internet survey assessed a very large, diverse international sample of participants who were not selected on the basis of sexual orientation.

Second, the personality measures used in the meta-analyzed studies and the BBC survey differed somewhat. The meta-analyzed studies used standard Big Five measures, whereas the BBC results were based on Big Five measures constructed from IPIP scales. The meta-analyzed studies employed 40- to 74-item measures of gender-related interests (MF-Occ), whereas the BBC survey used a 10-item scale, and, in addition, the meta-analyzed studies generally used a discriminant analysis technique to generate MF-Occ scores (see Lippa & Connelly, 1990), whereas the BBC MF-Occ scale was scored by averaging masculine and reversed feminine items. The meta-analyzed studies employed four- to six-item scales of Self-MF whereas the BBC survey used a one-item measure.

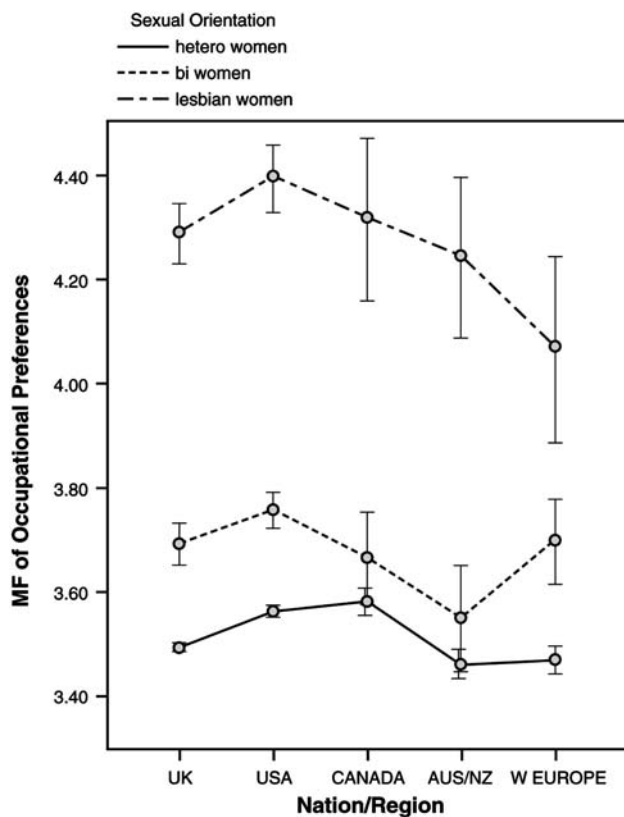


Fig. 7 Women's masculinity–femininity of occupational preferences (MF-Occ) as a function of sexual orientation and nation/region. MF-Occ is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals

Third, the participants in the meta-analyzed studies often completed questionnaires in public settings, whereas participants in the BBC Internet study responded online, often in the privacy of their own homes. Despite these differences in samples, measures, and methods, there was strong convergence between BBC Internet survey and meta-analytic results, suggesting that these results were quite robust. Finally, it is worth noting that the effect sizes for sex differences and sexual orientation difference presented in Table 2 were not corrected for attenuation due to the unreliability of measures, and thus they were to some extent underestimates of true values.

In both the BBC and meta-analytic results homosexual–heterosexual differences in personality tended to mirror sex differences in personality, with gay men shifted in female-typical directions and lesbians shifted in male typical directions. These cross-sex shifts in personality for gay men and lesbians were strongest for MF-Occ and Self-MF.

Both the BBC and meta-analytic results showed that bisexual men were more similar in personality to gay men than to heterosexual men and that the similarity between bisexual and gay men was greater for Self-MF than for

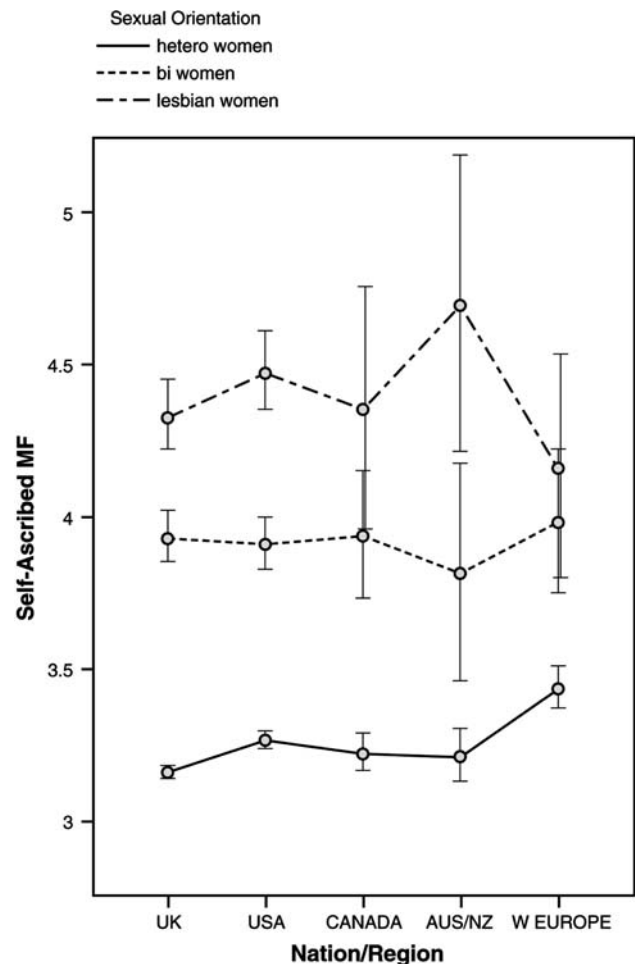


Fig. 8 Women's self-ascribed masculinity–femininity (Self-MF) as a function of sexual orientation and nation/region. Self-MF is scored so that higher scores are more masculine, and “4” represents a true midpoint for the scale. Error bars represent 95% confidence intervals

MF-Occ. In the BBC data, bisexual men were more feminine than gay men on Self-MF, although this difference was not large. The greater similarity between bisexual and gay men might suggest that psychologically and behaviorally bisexual men have more in common with gay men than with heterosexual men, and even that, in some ways, bisexual men are indistinguishable from gay men (e.g., see Rieger, Chivers, & Bailey, 2005). It is important to note, however, that in most of the analyses reported here bisexual men differed significantly from both gay and heterosexual men, and this suggests that there is a psychological reality to the category of bisexual men. Furthermore, as described earlier, bisexual men, on average, expressed more sexual attraction to women than to men, and thus, in terms of their self-reported attractions, they were more like heterosexual than like gay men. Unlike bisexual men, bisexual women were consistently intermediate between same-sex heterosexuals and homosexuals in their levels of Self-MF and MF-Occ.

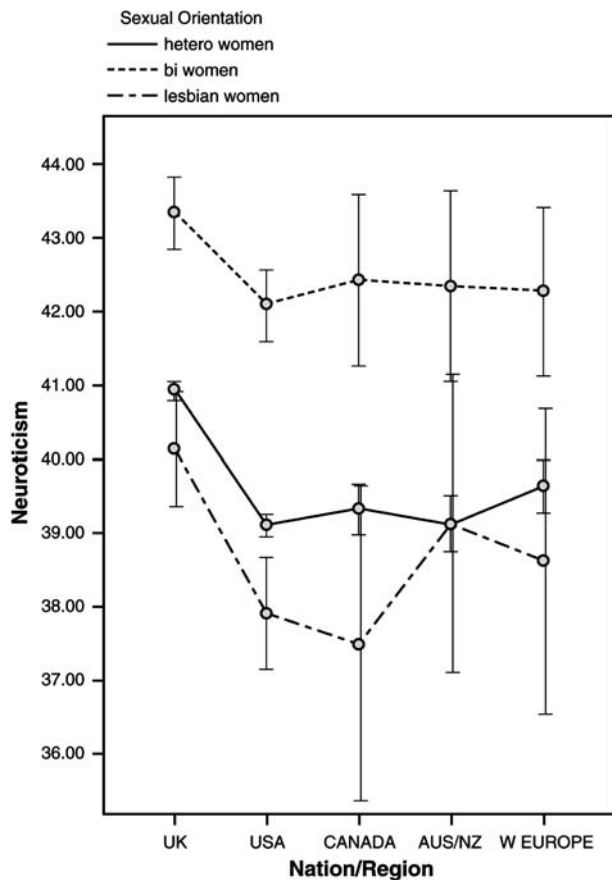


Fig. 9 Women's neuroticism as a function of sexual orientation and nation/region. Error bars represent 95% confidence intervals

The somewhat surprising finding that gay men rated themselves to be less feminine than bisexual men may have resulted, in part, from gay men's aversion to labeling themselves as feminine and from gay men's tendency to devalue femininity in romantic and sexual partners (see Bailey, Kim, Hills, & Linsenmeier, 2000; Lippa, 2005b). In both the BBC and meta-analytic results, gay men differed only moderately from heterosexual men in Self-MF ($d = .57$ and $.60$, respectively). This is noteworthy given that gay men differed substantially from heterosexual men on MF-Occ ($d = 1.28$ and 1.12 , respectively). Thus, in both data sets, gay men were considerably more feminine than heterosexual men in their interests, but this high level of interest-based femininity was not fully reflected in their conscious self-concepts of how masculine or feminine they were. Figure 5 shows that gay men showed some fluctuation, across nations, in their mean Self-MF levels, and this suggests that gay men's Self-MF may vary somewhat depending on national and local norms.

The BBC results extended earlier meta-analytic results by examining the consistency of sex differences and heterosexual-homosexual differences in personality across several nations and world regions. For MF-Occ and Self-MF, both

sex differences and sexual orientation differences tended to be consistent across nations and world regions, and these findings are consistent with the hypothesis that there is a biological component to these differences. Furthermore, the amount of variance accounted for by sex and by sexual orientation tended to be considerably larger than the amount of variance accounted for by nations and regions, which in turn tended to be considerably larger than the amount of variance accounted for by interaction effects. Social-structural and cultural explanations of group differences in personality would seem to imply strong interaction effects, i.e., that the size of sex differences and sexual orientation differences in personality depends on the particular culture being studied.

The large, consistent sex differences observed in MF-Occ were especially noteworthy, given recent debates on this topic. Using data from an earlier study, I estimated sex differences in the people-things dimension of interests to be very large ($d = 1.29$; see Lippa, 1998, 2006). Hyde (2006) responded that "we have no idea whether the large effect sizes (for sex difference in interests) that Lippa cited are replicable" (p. 641). The overall sex difference reported here ($d = 1.39$) for MF-Occ (which can be considered a short proxy measure for the people-things dimension of interests) was even larger than my previous estimate. Furthermore, sex differences in MF-Occ were extremely consistent across nations and world regions. These results provide strong new evidence that previously reported differences in men's and women's interests are indeed replicable.

ANOVAs on Big Five neuroticism showed much the same patterns as ANOVAs on MF-Occ and Self-MF, i.e., the effects of sex and sexual orientation were much stronger than the effects of nation/region, which in turn were much stronger than interaction effects. At the start of this article, I offered the hypothesis that sex differences and sexual orientation differences in Big Five traits might be more influenced by social roles and stereotypes than sex differences and sexual orientation differences in MF-Occ and Self-MF. However, once again, the statistical effects that seem most consistent with social role, social structural, and cultural explanations—sex by nation/region interactions and sexual orientation by nation/region interactions—were those that proved to be weakest in the BBC data. Although not presented here, ANOVAs on extraversion, agreeableness, and disagreeable assertiveness yielded results that were generally consistent with the ANOVA on neuroticism. The one exception occurred for extraversion. For this trait nation/region effects were about twice as strong as sex and sexual orientation effects, suggesting the existence of fairly strong mean national differences in extraversion. However, for extraversion, as for other traits, interaction effects were very weak (for both men and women, sexual orientation by nation/region ANOVAs interactions were not significant,

and for the sex by nation/region ANOVA, the interaction was significant but tiny, partial $\eta^2 = .0002$.²

Certainly, the current results do not provide the final word on cross-national and cross-cultural consistencies in sex differences and sexual orientation differences in personality. All of the countries and regions studied here represent modern industrialized societies, and four of the national groupings (the UK, US, Canada, and Australia/New Zealand) represent mostly English-speaking, Anglo-American cultures. It is important for future research to study a broader range of countries and cultures. Nonetheless, the cross-national and cross-cultural consistencies demonstrated here were impressive.

Combined with my earlier meta-analytic results, the current research lends strong support to the following conclusions: (1) there are consistent sex differences in personality; (2) there are also consistent sexual orientation differences in personality; (3) sexual orientation differences in personality tend to mirror sex differences in personality, with gay men shifted in female-typical directions and lesbian women shifted in male-typical directions, and these shifts are strongest for gender-related interests and Self-MF; (4) bisexual men and women show somewhat different profiles of MF-Occ and Self-MF scores in comparison to same-sex homosexual and heterosexual individuals, with bisexual men more similar to gay than to heterosexual men, and bisexual women more intermediate between lesbian and heterosexual women; also, bisexual women stand out from heterosexual and lesbian women on a number of Big Five traits, scoring higher on disagreeable assertiveness, disagreeableness, and neuroticism; (5) the previous conclusions hold true across the nations and world regions studied here. All of these robust, interrelated results add to evidence that there are biological as well as social-cultural factors that contribute to sex differences and sexual orientation differences in personality.

References

- Bailey, J. M., Kim, P. Y., Hills, A., & Linsenmeier, J. A. W. (2000). Butch, femme, or straight acting? Partner preferences in gay men and lesbians. *Journal of Personality and Social Psychology*, *73*, 960–973.
- Bailey, J. M., & Zucker, K. J. (1995). Childhood sex-typed behavior and sexual orientation: A conceptual analysis and quantitative review. *Developmental Psychology*, *31*, 43–55.
- Bem, D. J. (1996). Exotic becomes erotic: A developmental theory of sexual orientation. *Psychological Review*, *103*, 320–335.
- Bem, D. J. (2000). Exotic becomes erotic: Interpreting the biological correlates of sexual orientation. *Archives of Sexual Behavior*, *29*, 531–548.
- Cattell, R. B., Eber, H. W., Tatsuoka, M. M. (1970). *Handbook for the Sixteen Personality Factor Questionnaire (16PF)*. Champaign, IL: IPAT.
- Costa, P. T., & McCrae, R. R. (1992). *NEO PI-R professional manual: Revised NEO personality inventory (NEO PI-R) and NEO five-factor inventory (NEO-FFI)*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality across cultures: Robust and surprising results. *Journal of Personality and Social Psychology*, *81*, 322–331.
- Eagly, A. H., Wood, W., & Diekmann, A. B. (2000). Social role theory of sex differences and similarities: A current appraisal. In T. Eckes & H. M. Trautner (Eds.), *The developmental social psychology of gender* (pp. 123–174). Mahwah, NJ: Erlbaum.
- Ellis, L., & Ames, M. A. (1987). Neurohormonal functioning and sexual orientation: A theory of homosexuality–heterosexuality. *Psychological Bulletin*, *101*, 233–258.
- Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin*, *116*, 429–456.
- Hyde, J. S. (2006). Gender similarities still rule. *American Psychologist*, *61*, 641–642.
- John, O. P., & Srivastava, S. (1999). The big five taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). New York: Guilford.
- Kagan, J. (1964). Acquisition and significance of sex-typing and sex-role identity. In M. L. Hoffman & L. W. Hoffman (Eds.), *Review of child development research* (Vol. 1, pp. 137–167). New York: Russell Sage.
- Lippa, R. (1998). Gender-related individual difference and the structure of vocational interests: The importance of the “People-Things” dimension. *Journal of Personality and Social Psychology*, *74*, 996–1009.
- Lippa, R. A. (2005a). *Gender, nature, and nurture* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Lippa, R. A. (2005b). Sexual orientation and personality. *Annual Review of Sex Research*, *16*, 119–153.
- Lippa, R. A. (2006). The gender reality hypothesis. *American Psychologist*, *61*, 639–640.
- Lippa, R. A. (2007). *Men’s and women’s extraversion, agreeableness, neuroticism, and gender-related occupational preferences across 53 nations: Probing biological and cultural contributions to sex differences in personality*. Unpublished manuscript. California State University, Fullerton, CA.
- Lippa, R., & Connelly, S. C. (1990). Gender diagnosticity: A new Bayesian approach to gender-related individual differences. *Journal of Personality and Social Psychology*, *59*, 1051–1065.
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*, 674–697.
- Patterson, C. A. (1997). *Personality correlates of male sexual orientation and recalled childhood sex-typed behaviors*. Unpublished doctoral dissertation, American University, Washington, DC.
- Pillard, R. C. (1991). Masculinity and femininity in homosexuality: “Inversion” revisited. In: J. C. Gonsiorek & J. D. Weinrich (Eds.), *Homosexuality: Research implications for public policy* (pp. 32–43). Newbury Park, CA: Sage.
- Prediger, D. J. (1982). Dimensions underlying Holland’s hexagon: Missing link between interests and occupations? *Journal of Vocational Behavior*, *21*, 259–287.
- Reimers, S. (2007). The BBC Internet study: General methodology. *Archives of Sexual Behavior*, *36*, 147–161.
- Rieger, G., Chivers, M. L., & Bailey, J. M. (2005). Sexual arousal patterns of bisexual men. *Psychological Science*, *16*, 579–584.

² I deal more explicitly with national differences in mean levels of personality in R. A. Lippa (2007).

- Schmitt, D. P., & Buss, D. M. (2000). Sexual dimensions of person description: Beyond or subsumed by the Big Five? *Journal of Research in Personality*, *34*, 141–177.
- Twenge, J. M. (2001). Changes in women's assertiveness in response to status and role: A cross-temporal meta-analysis. *Journal of Personality and Social Psychology*, *81*, 133–145.
- Tracey, T. J. G., & Rounds, J. (1993). Evaluating Holland's and Gati's vocational interest models: A structural meta-analysis. *Psychological Bulletin*, *113*, 229–246.
- Wilson, G., & Rahman, Q. (2005). *Born gay: The psychobiology of sex orientation*. London: Peter Owen Publishers.