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Societal Individualism Predicts Prevalence of Nonhomosexual Orientation in Male-to-Female Transsexualism

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Abstract There are two distinct subtypes of male-to-female (MtF) transsexuals: homosexual and nonhomosexual. The relative prevalence of these two subtypes varies dramatically between countries, but no explanation of this variability has yet been proposed. This study examined the hypothesis that the prevalence of nonhomosexual MtF transsexualism, relative to homosexual MtF transsexualism, would be higher in individualistic countries than in collectivistic countries. I analyzed data from 22 studies of MtF transsexualism, conducted in 16 countries, examining the association between percentage of nonhomosexual participants and Hofstede's (*Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*, 2001) Individualism Index (IDV). IDV accounted for 77% of observed variance in the percentage of nonhomosexual MtF participants ($r = 0.88$, $p < .0001$). Controlling for differences in national wealth and in Hofstede's other indices of societal values (Power Distance, Uncertainty Avoidance, and Masculinity) did not significantly change the ability of IDV to account for variance in the percentage of nonhomosexual participants. The factors that contribute to the observed association between societal individualism and the relative prevalence of nonhomosexual MtF transsexualism remain to be determined, but a greater tolerance within individualistic countries for socially disruptive gender transitions by nonhomosexual gender dysphoric men, and the availability within many collectivistic countries of socially approved transgender roles for pervasively feminine homosexual gender dysphoric men, are plausible contributors.

Keywords Individualism · Collectivism · Transsexualism · Sexual orientation · Gender dysphoria

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Introduction

It is now widely accepted that there are two distinctly different types of gender dysphoric men who request or undergo sex reassignment (Blanchard, 1988; Buhrich & McConaghy, 1978; Freund, Steiner, & Chan, 1982; Levine, Gruenewald, & Shaiova, 1976; Money & Gaskin, 1970–1971; Smith, van Goozen, Kuiper, & Cohen-Kettenis, 2005). One type consists of men who are usually extremely feminine in their behavior and appearance and who are exclusively sexually attracted to men, an erotic interest called *androphilia*. These individuals are usually referred to as *homosexual* male-to-female (MtF) transsexuals. The other type consists of men who are less feminine in their behavior and appearance and who may be sexually attracted to women (an erotic interest called *gynephilia*), to women and men, or to persons of neither sex, but who also almost always have a history of sexual attraction to the idea of being women, an erotic interest called *autogynephilia* ("love of oneself as a woman"; Blanchard, 1989a, b, 2005). These latter individuals are usually referred to as *nonhomosexual* MtF transsexuals.

The relative prevalence of homosexual versus nonhomosexual MtF transsexualism appears to differ dramatically in Eastern versus Western countries. Studies conducted in Korea (Kim et al., 2006), Malaysia (Teh, 2001), Singapore (Tsoi, 1990), and Thailand (Winter, 2006), for example, have found that fewer than 5% of MtF transsexuals studied were nonhomosexual. Many studies conducted in the United

Kingdom (e.g., Green & Young, 2001; Muirhead-Allwood, Royle, & Young, 1999) and the United States (e.g., Lawrence, 2005; Schroder & Carroll, 1999), in contrast, have found that 75% or more of the MtF transsexuals studied were nonhomosexual. No explanation of these cross-cultural differences in the relative prevalence of homosexual and nonhomosexual MtF transsexualism, however, has yet been proposed.

The extent to which national cultures emphasize *individualism*, or its theoretical opposite, *collectivism*, may be an important factor in explaining differences in the relative prevalence of the two MtF transsexual types. Hofstede (2001) provided the following definitions of individualism and collectivism:

> Individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after himself/herself and her/his immediate family only. Collectivism stands for a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty. (p. 225)

Some relevant differences between individualistic and collectivistic national cultures, as described by Hofstede, are summarized in Table 1. Yet another significant difference between individualistic and collectivistic societies is wealth: Individualistic countries tend to be wealthier than collectivistic ones, and gross national income per capita (GNI/capita), a standard measure of societal wealth, is strongly correlated with measures of societal individualism (Hofstede, 2001).

Given these differences between individualistic and collectivistic countries, I hypothesize that gender transition by nonhomosexual gender dysphoric men probably would be better accepted, and would occur more commonly, in individualistic countries than in collectivistic countries. I also hypothesize, for reasons I will explain, that gender transition by homosexual gender dysphoric men probably would occur no less commonly, and perhaps more commonly, in collectivistic countries than in individualistic countries. Taken together, these ideas suggest the hypothesis that the prevalence of nonhomosexual MtF transsexualism, relative to homosexual MtF transsexualism, will be higher in individualistic countries than in collectivistic countries. What specific observations and arguments support these hypotheses?

First, consider nonhomosexual gender dysphoric men who request or undergo MtF sex reassignment: Probably a few nonhomosexual men in every country will experience gender dysphoria and will consider sex reassignment, but the extent to which they will openly request or actually undergo sex reassignment is likely to vary, based on societal attitudes and values. Gender transition by nonhomosexual men has the potential to be socially disruptive, because these men are often married (Lawrence, 2005; Muirhead-Allwood et al., 1999), frequently have children (Blanchard, Clemmensen, & Steiner, 1987; Lawrence, 2005; Muirhead-Allwood et al., 1999), and often hold established positions in their societies, especially if they undergo sex reassignment in their 40s or 50s (not an uncommon phenomenon in Western countries; Lawrence, 2005). Moreover, the physical appearance of nonhomosexual gender dysphoric men is less convincingly feminine than that of homosexual gender dysphoric men (Smith et al., 2005), which might make it more difficult for the former to blend smoothly into society following gender transition. In countries where individualism is a dominant value and individual self-expression is encouraged or at least tolerated, nonhomosexual gender dysphoric men probably would be more likely to openly express or actualize their cross-gender desires, up to and including undergoing sex

Table 1 Differences between individualistic and collectivistic national cultures

Individualistic cultures	Collectivistic cultures
"I" consciousness	"We" consciousness
Self-orientation	Collectivity orientation
Identity is based in the individual	Identity is based in the social system
Everyone has a right to a private life	Private life is invaded by institutions and organizations to which one belongs
Hedonism	Survival
Autonomy, variety, pleasure, individual financial security	Expertise, order, duty, security provided by organization or clan
Weak family ties, rare contacts	Strong family ties, frequent contacts
More divorces	Fewer divorces
Privacy is normal	Nobody is ever alone
Less conformity behavior	More conformity behavior
Self-concept idiocentric	Self-concept in terms of group
Self-supporting lifestyles	Other-dependent lifestyles

Note: From Hofstede (2001, pp. 227, 236, 237, 245)

reassignment, because any resulting social disruption would more probably be considered an excusable consequence of individual self-expression. In countries where collectivism is a dominant value and individual self-expression is discouraged or denigrated, however, nonhomosexual gender dysphoric men probably would be less likely to openly express their cross-gender desires by undergoing sex reassignment, because this type of socially disruptive self-expression would probably be considered undesirable, if not inexcusable.

A study by Blanchard (1994) supports the idea that feelings of social obligation influence the expression of cross-gender wishes in nonhomosexual gender dysphoric men, even in individualistic national cultures. In a study conducted in Canada, an individualistic country, Blanchard found that, among nonhomosexual gender dysphoric men, fatherhood and marriage were associated with delays of about 2 and 4 years, respectively, in requests to undergo sex reassignment. The nonhomosexual gender dysphoric men Blanchard studied usually attributed these delays to feelings of obligation toward their families. It seems plausible that nonhomosexual gender dysphoric men living in collectivistic countries might not only delay seeking sex reassignment, but might often forego sex reassignment altogether, based on feelings of obligation to their families.

Second, consider homosexual gender dysphoric men: There is good reason to believe that gender transition by homosexual gender dysphoric men probably would occur no less commonly, and perhaps more commonly, in collectivistic countries than in individualistic countries. Gender transition by homosexual men may create relatively little familial or social disruption, because homosexual men who seek sex reassignment rarely marry women or father children in individualistic countries (Bentler 1976; Blanchard et al., 1987; Lawrence, 2005), and almost never do so in collectivistic countries (Tsoi, 1990). Moreover, in individualistic countries, homosexual men who seek sex reassignment are likely to do so at younger ages than nonhomosexual men (Lawrence, 2005; Smith et al., 2005), usually by their late 20s. In collectivistic countries, homosexual men who undergo sex reassignment or begin living as women often do so in their teens or early 20s (Kim et al., 2006; Tsoi, 1990; Winter, 2006). Homosexual men this young are unlikely to hold positions of responsibility or influence in their societies. Consequently, it is probably much less socially disruptive for homosexual men to seek or undergo sex reassignment than for nonhomosexual men to do so, and this may be especially true in collectivistic countries. As a result, collectivistic countries may have little incentive to actively discourage gender transition by homosexual men, even if they do not officially condone or encourage it.

Levine's (1993) description of differing societal attitudes toward cross-dressing and cross-gender expression by homosexual and nonhomosexual men is also relevant here:

> Traditionally, when cross-dressing males are reasonably masculine in their gender roles and largely heteroerotic in their orientation, they have been diagnosed as transvestites. When they are either effeminate and homoerotic, or masculine appearing and homoerotic—that is, whenever they are clearly homoerotic—their cross-dressing has never been diagnosed in any of the DSM nosologies. This inconsistency—the influence of orientation on the diagnosis of cross-dressing—contains a message: the culture understands that cross-dressing reflects a deep, abiding wish to be a female. This is far more shocking when it occurs among seemingly masculine heterosexuals—"real men"—than among homoerotic males. We in the mental health establishment tend to diagnose that which is shocking. Many people intuitively grasp a relationship between homoeroticism and the persistent intense, but transformed childhood wish to be female. (p. 134)

As Levine suggests, the desire of nonhomosexual men to resemble or become women is usually regarded as shocking and unacceptable, whereas the desire of homosexual men to resemble or become women is often considered unremarkable. This suggests that gender transition by homosexual men will often be regarded as more socially acceptable than gender transition by nonhomosexual men.

As previously noted, collectivistic societies place a high value on inclusion; perhaps for this reason, many collectivistic countries provide socially approved transgender roles into which men who display pervasive (not merely episodic) cross-gender attitudes and behaviors may transition. Such men are almost always exclusively homosexual (Teh, 2005; Whitam, 1987, 1997; Winter, 2006). Examples of such socially approved transgender roles include the *bayot* in the Philippines (Whitam, 1997), the *hijras* in India (Nanda, 1994), the *kathoey* in Thailand (Winter, 2006), the *mak nyahs* in Malaysia (Teh, 2005), and the *waria* in Indonesia (Whitam, 1997). Individualistic societies, in contrast, are less concerned about inclusion, and few, if any, individualistic countries provide socially approved transgender roles into which men who display pervasive cross-gender attitudes and behaviors may transition. Consequently, gender transition by homosexual men who display pervasive cross-gender attitudes and behaviors will probably occur at least as often, if not more often, in collectivistic countries than in individualistic ones.

Additionally, there is evidence that extreme gender-variance tends to be more common among homosexual men living in collectivistic countries than among homosexual men living in individualistic countries. This implies that the percentage of homosexual men who might seriously consider undergoing sex reassignment is likely to be larger in collectivistic countries than in individualistic countries. Whitam (1987) observed that, in countries such as the United States

and the United Kingdom (both highly individualistic), only about 25% of homosexual men are markedly effeminate, whereas in countries such as the Philippines (highly collectivistic), the percentage of markedly effeminate homosexual men is much greater, perhaps as high as 65%.

The factors that create these cross-cultural differences in effeminacy among homosexual men are poorly understood. Lippa and Tan (2001) proposed that, in national cultures that are highly gender-polarized, including many collectivistic countries, gender roles are often inextricably linked to sexual roles. In such cultures, men who are sexually attracted to other men may strongly infer that they are therefore feminine, and their attitudes and behaviors may reflect this inference. In national cultures that are not highly gender-polarized, including many individualistic countries, such an inference of femininity by men who are attracted to other men may be less likely to occur, and the attitudes and behaviors of these men may tend to be less feminine. Lippa and Tan (2001) examined gender-related traits in homosexual and heterosexual men of Hispanic American, Asian American, and White American ethnicity; heterosexual men displayed more masculine scores than homosexual men across all ethnicities, but the difference was significantly greater among the Hispanic American and Asian American participants, perhaps reflecting greater gender polarization and more collectivistic attitudes in Hispanic American and Asian American cultures.

Finally, if gender transition by homosexual gender dysphoric men occurred less commonly—or no more commonly—in collectivistic countries than in individualistic ones, then this, combined with the hypothesized tendency of collectivistic countries to discourage gender transition by nonhomosexual gender dysphoric men to a greater extent than individualistic countries, would lead to the expectation that the overall prevalence of MtF transsexualism would be lower in collectivistic countries than in individualistic countries. Just the opposite pattern has been observed, however: In Singapore, the one collectivistic country for which reliable data are available, the prevalence of MtF transsexualism is about 1 in 3000 postadolescent males (Tsoi, 1988). This is the highest reported prevalence of MtF transsexualism in the world, much higher than in individualistic Western countries such as Belgium (De Cuypere et al., 2007), the Netherlands (Bakker, van Kesteren, Gooren, & Bezemer, 1993), and Scotland (Wilson, Sharp, & Carr, 1999), in all of which the reported prevalence is about 1 in 12,000 postadolescent males.

In summary, then, there is reason to believe that gender transition by homosexual gender dysphoric men probably would occur no less commonly, and perhaps more commonly, in collectivistic countries than in individualistic countries. There is also reason to believe that gender transition by nonhomosexual gender dysphoric men probably would occur more commonly in individualistic countries than in collectivistic countries. Taken together, these propositions suggest the hypothesis that the prevalence of nonhomosexual MtF transsexualism, relative to homosexual MtF transsexualism, will be higher in individualistic countries than in collectivistic countries. To test this hypothesis, I examined contemporary studies of MtF transsexuals and gender dysphoric men from a number of Eastern and Western countries that included information about the sexual orientation of study participants.

Method

Studies of MtF transsexuals and gender dysphoric men were eligible for inclusion in the analysis if (1) the participants either lived full-time as women, had completed sex reassignment surgery (SRS), or had been diagnosed with gender identity disorder (GID; American Psychiatric Association [APA], 1994, 2000), transsexualism (APA, 1987; World Health Organization, 1992), or gender dysphoria (APA, 2000); (2) the study had been published or presented between 1988 and 2008; (3) the study contained information about the participants' sexual orientation, or a reasonable proxy for this; and (4) the study had been conducted in a country for which the relevant measure of societal individualism versus collectivism was available (see below). Studies that intentionally excluded persons with a nonhomosexual orientation (e.g., Rakic, Starcevic, Maric, & Kellin, 1996) or persons with some correlated attribute, such as marriage to a woman (e.g., Bower, 2001) were considered ineligible. When two or more eligible studies from the same institution or team were available, and when the participant groups described in these studies appeared to significantly overlap each other, only the latest or largest study was included. Potentially eligible studies were identified using the PubMed database (www.pubmed.gov), the reference list from Pfäfflin and Junge's (1992/1998) review of SRS outcomes, tables of contents for volumes 1–10 of the *International Journal of Transgenderism*, abstracts from the biennial symposia of the Harry Benjamin International Gender Dysphoria Association for the period 1997–2007, and the reference lists of any studies identified using the previously listed sources. I sought to include studies from as many different countries as possible. I identified 22 eligible studies from 16 countries: Belgium (De Cuypere, Jannes, & Rubens, 1995), Brazil (Petry et al. 2007), Canada (Blanchard & Sheridan, 1992), Germany (Eicher, Schmitt, & Bergner, 1991; Pfäfflin & Junge, 1990), Ireland (De Gascun, Kelly, Salter, Lucey, & O'Shea, 2006), Japan (Okabe et al., 2008), Korea (Kim et al., 2006), Malaysia (Teh, 2001), the Netherlands (Doorn, Poortinga, & Verschoor, 1994; Smith et al., 2005; Verschoor & Poortinga, 1988), Singapore (Tsoi, 1990), Spain (Gómez-Gil, Trilla, Salamero, Godás, & Valdés, in press), Sweden (Landén, Wålinder,

Hambert, & Lundström, 1998), Switzerland (Rauchfleisch, Barth, & Battegay, 1998), Thailand (Winter, 2006), the United Kingdom (Green & Young, 2001; Muirhead-Allwood et al. 1999), and the United States (Lawrence, 2005; Rehman, Lazer, Benet, Schaefer, & Melman, 1999; Schroder & Carroll, 1999). Data from these studies are summarized in Table 2.

The eligible studies were diverse with respect to sample size, definition of transsexualism or equivalent, and criteria by which participants' sexual orientation was defined. The participants included persons who had undergone SRS, persons diagnosed with transsexualism, GID, or gender dysphoria, and persons who lived full-time as women, with or without a formal diagnosis. Most studies defined participants' sexual orientation in terms of self-reported attraction, partner preference, or sexual experience; in two studies, sexual orientation reflected the overall judgment of treating clinicians. For purposes of analysis, participants who were sexually oriented exclusively toward men were classified as homosexual and participants who were sexually oriented toward women, women and men, or persons of neither sex were classified as nonhomosexual (Blanchard, 1988, 1989a, b). For the study by Smith et al. (2005), participants' self-reported sexual preference data were adjusted, per the reanalysis by Lawrence (2008), to assign persons who reported sexual experience with female partners to the nonhomosexual group. For the study by De Gascun et al. (2006), which did not describe participants' sexual orientation as such, a history of marriage to a woman was used to provided a minimum estimate of nonhomosexual orientation.[1]

MtF transsexuals who report a nonhomosexual orientation before SRS sometimes claim that their sexual orientation changed after SRS, resulting in exclusive sexual orientation toward men (Lawrence, 2005). Because sexual orientation in adult males is usually considered to be immutable (Harry, 1984; Pillard & Bailey, 1995; Swaab, 2007), these reported changes probably reflect increased autogynephilic sexual interest in having sex as a woman with a man following SRS, rather than a genuine change in somatotypic preference (Blanchard, 1989b, 2005; Freund, 1985; Lawrence, 1999, 2008; see also Lawrence, Latty, Chivers, & Bailey, 2005). Consequently, classifying MtF transsexuals as homosexual versus nonhomosexual on the basis of self-reported sexual orientation after SRS may result in an overestimation of homosexual orientation. To address this concern, in the studies that included information about self-reported sexual orientation both before and after SRS (Lawrence, 2005; Muirhead-Allwood et al. 1999; Pfäfflin & Junge, 1990; Schroder & Carroll, 1999), participants were classified based on their orientation before SRS. In the study by Rehman et al. (1999), some participants were described as have been married to women before SRS, which constitutes strong presumptive evidence of nonhomosexual orientation; these participants were classified as nonhomosexual, regardless of their stated sexual orientation after SRS.[2]

The degree of societal individualism versus collectivism in the countries in which the studies were conducted was assessed using Hofstede's (2001) Individualism Index (IDV). The IDV was derived from factor analysis of the results from over 116,000 paper-and-pencil surveys, completed in 1968 and 1970 by employees of the IBM Corporation and its subsidiaries in 72 countries. These surveys included, among other items, many questions about cultural values. The range of possible IDV scores is 0–100. Countries with the highest IDV scores (highly individualistic) include the United States (91), Australia (90), the United Kingdom (89), and Canada (80). Countries with the lowest IDV scores (highly collectivistic) are found in Latin America and Asia: examples include Guatemala (6), Ecuador (8), and Panama (11) in Latin America and Indonesia (14), Pakistan (14), and Taiwan (17) in Asia. The IDV has been extensively validated and demonstrates good convergent validity (Hofstede, 2001).

Hofstede (2001) observed that societal wealth was strongly correlated with individualistic attitudes. To address the possibility that any observed relationship between societal individualism and MtF transsexual typology might be mediated principally by differences in wealth between countries, for which individualism might simply be an incidental correlate, GNI/capita, as reported by the World Bank (2007), was also explored as an alternative or supplemental predictor of differences in the relative prevalence of the two MtF transsexual types.

Hofstede's (2001) factor analysis of the IBM survey data yielded, in addition to IDV, three other indices that described differences in societal values between countries: (1) Power Distance Index (PDI), measuring societal acceptance of inequality; (2) Uncertainty Avoidance Index (UAI), measuring societal desire to avoid uncertainty about the future; and (3) Masculinity Index (MAS), measuring societal achievement orientation. These indices were also explored as alternative or supplemental predictors of differences in the relative prevalence of the two MtF transsexual types. Theoretically, IDV, PDI, UAI, and MAS should be uncorrelated; in reality, Hofstede (2001) found that IDV and PDI displayed a

[1] In studies of MtF transsexuals conducted in Western countries, the percentage of participants who have been married to a woman is typically 10–35 percentage points lower than the percentage of participants who have a nonhomosexual orientation (e.g., De Cuypere et al., 1995: 45% married vs. 55% nonhomosexual; Lawrence, 2005: 67% vs. 91%; Muirhead-Allwood et al., 1999: 59% vs. 86%; Smith et al., 2005, reanalyzed by Lawrence, 2008: 33% vs. 67%; Verschoor & Poortinga, 1988: 28% vs. 63%).

[2] MtF transsexuals whom clinicians would categorize as homosexual almost never report having been married to women (Bentler, 1976; Blanchard et al., 1987; Lawrence, 2005).

Table 2 Studies of male-to-female transsexualism included in the analysis

Study	Country	IDV	PDI	UAI	MAS	GNI/capita[a]	Diagnosis or status	N[b]	% NHS	Basis for deciding sexual orientation
1. Blanchard and Sheridan (1992)	Canada	80	39	55	53	36,170	Gender dysphoria	466	59	Clinician judgment
2. De Cuypere et al. (1995)	Belgium	75	65	80	53	38,600	Transsexualism	22	55	Stated preference
3. De Gascun et al. (2006)	Ireland	70	28	54	74	45,580	GID	45	38	Marriage to a woman
4. Doorn et al. (1994)	Netherlands	80	38	45	14	42,670	Transsexualism	155	46	Imagined partner
5. Eicher et al. (1991)	Germany	67	35	53	59	36,620	Completed SRS	40	33	Stated attraction
6. Gomez Gil et al. (in press)	Spain	51	57	89	35	27,570	Transsexualism	157	9	Stated orientation
7. Green and Young (2001)	UK	89	35	43	66	40,180	GID	443	76	Clinician judgment
8. Kim et al. (2006)	Korea	18	60	85	39	17,690	GID	43	2	Stated attraction
9. Landén et al. (1998)	Sweden	71	31	23	6	43,580	GID	120	42	Sexual experience
10. Lawrence (2005)	USA	91	40	36	62	44,970	Completed SRS	227	91	Stated attraction
11. Muirhead-Allwood et al. (1999)	UK	89	35	43	66	40,180	Completed SRS	133	86	Stated attraction
12. Okabe et al. (2008)	Japan	46	54	112	87	38,410	GID	228	60	Stated attraction
13. Petry et al. (2007)	Brazil	38	69	74	44	4,730	Completed SRS	21	0	Stated orientation
14. Pfäfflin and Junge (1990)	Germany	67	35	53	59	36,620	Completed SRS	42	55	Sexual partnerships
15. Rauchfleisch et al. (1998)	Switzerland	68	34	62	67	57,230	Completed SRS	13	38	Stated orientation
16. Rehman et al. (1999)	USA	91	40	36	62	44,970	Completed SRS	28	46	Preference/marriage[c]
17. Schroder and Carroll (1999)	USA	91	40	36	62	44,970	Completed SRS	17	76	Stated preference
18. Smith et al. (2005)	Netherlands	80	38	45	14	42,670	GID	112	67	Preference/experience[d]
19. Teh (2001)	Malaysia	26	104	36	50	5,490	Live as a woman	507	4	Stated attraction
20. Tsoi (1990)	Singapore	20	74	31	52	29,320	Transsexualism	200	0	Stated attraction
21. Verschoor and Poortinga (1988)	Netherlands	80	38	45	14	42,670	Transsexualism	135	63	Sexual experience
22. Winter (2006)	Thailand	20	64	73	45	2,990	Live as a woman	195	2	Stated attraction

Notes: IDV = Individualism Index, PDI = Power Distance Index, UAI = Uncertainty Avoidance Index, MAS = Masculinity Index (all from Hofstede, 2001), NHS = nonhomosexual male-to-female transsexuals, SRS = sex reassignment surgery, GID = Gender Identity Disorder. For studies in which participants had completed SRS, information about sexual orientation before SRS was used when available

[a] Gross national income per capita for 2006, in US dollars; from World Bank (2007)

[b] Excludes participants for whom sexual orientation data were not provided

[c] Stated preference data from this study were adjusted to assign persons who had been married to women to the nonhomosexual group

[d] Stated preference data from this study were adjusted per reanalysis by Lawrence (2008) to assign persons with sexual experience with female partners to the nonhomosexual group

significant negative correlation, albeit one that became nonsignificant after controlling for GNI/capita.

Results

Table 2 shows IDV, PDI, UAI, and MAS scores and GNI/capita for the countries in which the studies were conducted, along with the percentage of nonhomosexual MtF participants (%NHS) in each study. The relationship between IDV and %NHS is displayed in Fig. 1. IDV and %NHS were strongly correlated, $r(22) = .88$, $p < .0001$, with IDV accounting for 77% of the observed variance in %NHS, $R^2 = .77$; $R^2\ Adj = .76$. This represents a large effect size (Cohen, 1988).

To address the possibility that the association between the IDV and %NHS was attributable to principally to the inclusion of studies involving persons who had undergone SRS, the correlation was recalculated after excluding the eight studies that involved only participants who had undergone SRS. The correlation between IDV and %NHS was essentially unchanged, $r(14) = .88$, $p < .0001$, with IDV now accounting for 79% of the observed variance in %NHS, $R^2 = .79$; $R^2\ Adj = .77$.

Bivariate correlations between IDV, PDI, UAI, MAS, GNI/capita, and %NHS are shown in Table 3. As expected, IDV was significantly correlated with PDI and GNI/capita, as well as with %NHS. Also as expected, PDI, GNI/capita, and %NHS were significantly correlated with each other.

In a multiple regression analysis in which PDI, UAI, MAS, and GNI/capita were included along with IDV as predictors of %NHS, IDV was the only statistically significant predictor, and the amount of variance explained was essentially unchanged, $R^2 = .80$; $R^2\ Adj = .73$; these results are summarized in the first column of Table 4. In a similar multiple regression analysis that excluded the eight studies involving only participants who had undergone SRS, IDV again was the only statistically significant predictor of %NHS, and the amount of variance explained was again essentially unchanged, $R^2 = .84$; $R^2\ Adj = .74$; these results are summarized in the second column of Table 4. These analyses demonstrate that the relationship between IDV and %NHS was not mediated simply by differences in national wealth, and that controlling for PDI, UAI, MAS, and GNI/capita did

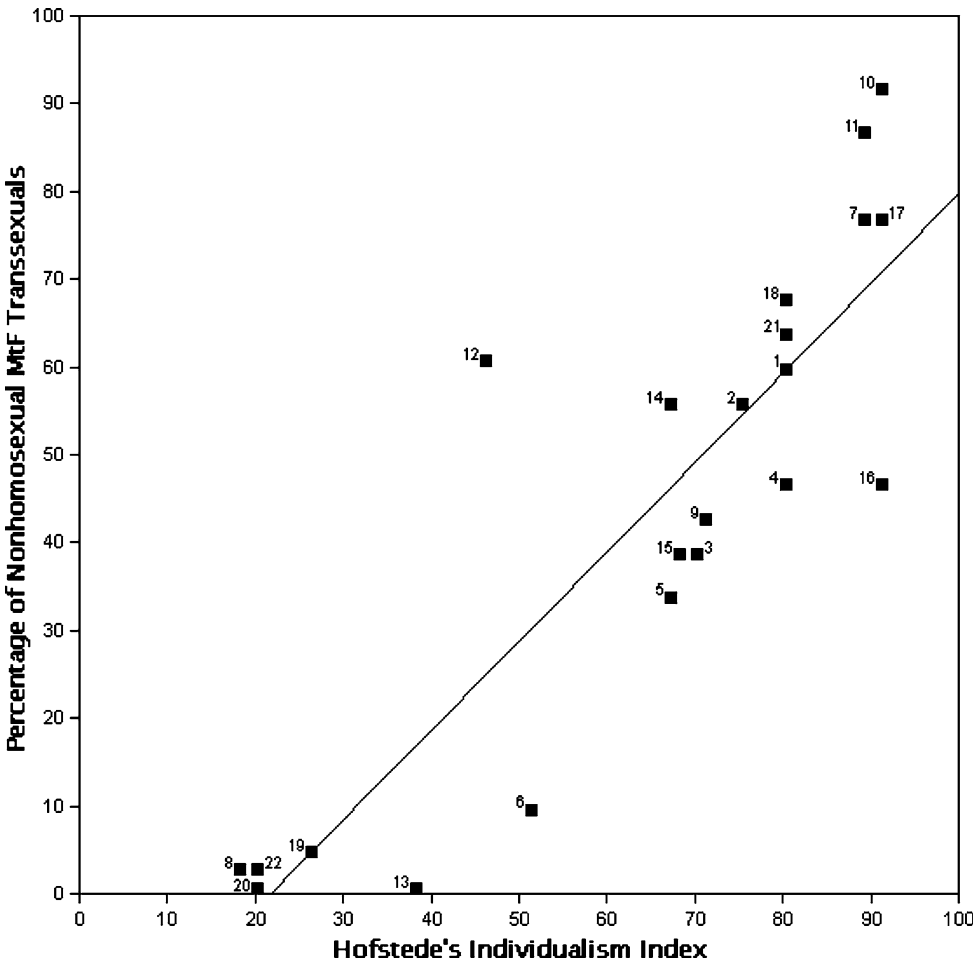

Fig. 1 Percentage of nonhomosexual MtF transsexual participants (%NHS) versus Hofstede's Individualism Index (IDV) for studies in Table 2

Table 3 Bivariate correlations between independent and dependent variables

	PDI	UAI	MAS	GNI/capita	%NHS
IDV	−.76****	−.42	.04	.80****	.88****
PDI		.23	.00	−.79****	−.66***
UAI			.26	−.30	−.28
MAS				.11	.19
GNI/capita					.73***

Notes: IDV = Individualism Index, PDI = Power Distance Index, UAI = Uncertainty Avoidance Index, MAS = Masculinity Index (all from Hofstede, 2001), GNI/capita = gross national income per capita for 2006 (from World Bank, 2007), NHS = nonhomosexual male-to-female transsexuals

*** $p < .001$, **** $p < .0001$

Table 4 Multiple regression analyses for variables predicting percentage of nonhomosexual male-to-female transsexuals

Variable	β, all 22 studies	β, 14 non-SRS studies
IDV	.88***	.87*
PDI	.06	.05
UAI	.06	.10
MAS	.13	.15
GNI/capita	.08	.14
	($R^2 = .80$; $R^2\,Adj = .73$)	($R^2 = .84$; $R^2\,Adj = .74$)

Notes: IDV = Individualism Index, PDI = Power Distance Index, UAI = Uncertainty Avoidance Index, MAS = Masculinity Index (all from Hofstede, 2001), GNI/capita = gross national income per capita for 2006 (from World Bank, 2007)

* $p < .05$, *** $p < .001$

not significantly affect the ability of IDV to account for variance in %NHS.[3]

Discussion

The study's hypothesis, that the prevalence of nonhomosexual MtF transsexualism, relative to homosexual MtF transsexualism, would be higher in individualistic countries than in collectivistic countries, was strongly supported. The observed effect size was surprisingly large, given the widely varying definitions of transsexualism employed in the studies analyzed and the diverse criteria by which sexual orientation was assessed.

The strong correlation between IDV and %NHS was not simply attributable to the inclusion of several studies that involved only participants who had undergone SRS, because a nearly identical correlation was observed when such studies were excluded. IDV was not simply acting as a proxy for national wealth, because controlling for GNI/capita did not significantly affect the ability of IDV to account for variance in %NHS. Controlling for Hofstede's (2001) other indices of societal values (PDI, UAI, and MAS) likewise did not significantly affect the ability of IDV to account for variance in %NHS.

One limitation of the analysis is the measure of societal individualism used. In recent years, the assumption that individualism and collectivism define a bipolar scale—an assumption that is inherent in the IDV—has been critically reexamined (Oyserman, Coon, & Kemmelmeier, 2002). At an individual level of analysis, individualism and collectivism arguably are not polar opposites; at a societal level of analysis, however, this is less clearly true (Dion & Dion, 2006). A more serious limitation of the IDV is that societal individualism is unlikely to have remained unchanged over the 40 years since Hofstede's data collection began in 1968. In fact, Hofstede observed an increase in individualism among Japanese workers between his first data collection in 1968 and his second in 1970. Consequently, the accuracy of IDV as a measure of societal individualism has probably decreased over time for some countries. Nevertheless, IDV continues to be widely used in cross-cultural research, partly for lack of any equally comprehensive measure (Oyserman et al., 2002). And, notwithstanding these concerns, the observed association between IDV and %NHS was remarkably strong.

Another limitation of the analysis is that the participants in the studies analyzed were unlikely to have constituted representative samples of MtF transsexuals in the countries in which the studies were conducted. For example, in countries where sex reassignment procedures are paid for by national health insurance programs when provided through officially designated clinics, nonhomosexual MtF transsexuals—who are usually assumed to be wealthier than their homosexual counterparts—plausibly may be underrepresented in reports

[3] A reviewer of an earlier version of this article proposed that I also examine two putative measures of societal gender polarization, the United Nations Development Programme's (2005) Gender-related Development Index (GDI) and Gender Empowerment Measure (GEM), as supplemental predictors of %NHS, based on Lippa and Tan's (2001) suggestion that societal differences in gender polarization might affect the likelihood that homosexual men will think of themselves as feminine (and therefore possibly consider gender transition). This note briefly summarizes the results of that analysis; further information is available from the author.

The GDI is a composite measure of male-female equality in life expectancy, literacy, education, and earned income; the GEM is a composite measure of male-female equality in political power, high-status professions, and earned income. GDI figures are available for all countries in the present study except Singapore; GEM figures are available for all except Brazil (United Nations Development Programme, 2005). For the countries in the present study, the most relevant bivariate correlations were: GDI and GEM, .77; GDI and IDV, .77; GDI and %NHS, .67; GEM and IDV, .84; GEM and %NHS, .57. In a multiple regression analysis, when GDI and GEM were added to IDV, PDI, UAI, MAS, and GNI/capita as predictors of %NHS, $R^2 = .82$, $R^2\,Adj = .72$, and IDV remained the only statistically significant predictor of %NHS (cf. Table 4, first column).

from such clinics, because they are arguably better able to afford alternative, privately provided services. Conversely, in countries where sex reassignment services are not covered by national health insurance, homosexual MtF transsexuals may plausibly be underrepresented in reports from private clinics that provide sex reassignment services, because these transsexuals are arguably less able to afford privately provided services.

Yet another limitation of the analysis involves possible inaccuracies in the assessment of sexual orientation in the studies analyzed. It is not unusual for nonhomosexual MtF transsexuals to misrepresent themselves as homosexual (Freund, 1985); consequently, the percentage of nonhomosexual transsexuals in a study can easily be underestimated by investigators. For some studies (e.g., Rehman et al., 1999; Smith et al., 2005), the availability of information concerning previous marriages or sexual partnerships with women allowed the reported figures for nonhomosexual orientation to be critically appraised and adjusted when necessary. For most studies, however, no such information was available. In the study by De Gascun et al. (2006), marital history almost certainly provided an underestimate of nonhomosexual orientation, but no better measure was available.

The factors that contribute to the observed association between societal individualism and the relative prevalence of nonhomosexual MtF transsexualism remain to be determined. I have proposed that a greater tolerance within individualistic countries for socially disruptive gender transitions by nonhomosexual gender dysphoric men, and the availability within many collectivistic countries of socially approved transgender roles for pervasively feminine homosexual gender dysphoric men, may plausibly explain this association. However, the qualitative, cross-cultural studies that could help decide the validity of these explanations have yet to be conducted. Moreover, the explanations I presented contained an unstated assumption: that the prevalence of the erotic interests thought to underlie homosexual and nonhomosexual MtF transsexualism—male androphilia and autogynephilia, respectively—probably do not vary greatly between countries, but that cross-cultural differences in the ways that these erotic interests are expressed (or not) are responsible for the observed differences between countries in the relative prevalence of homosexual and nonhomosexual MtF transsexualism. This assumption, while not unreasonable, might be incorrect. Hypothetically, the underlying prevalence of autogynephilia might be different—perhaps higher—in individualistic countries than in collectivistic countries. For example, if disturbances in young children's relationships with their primary caregivers and consequent separation anxiety contribute to the development of autogynephilia, as some psychoanalytic theories of transvestism and transsexualism implicitly suggest (see Person & Ovesey, 1978), and if such disturbances were to occur more frequently in individualistic countries than in collectivistic ones (perhaps due to differences in child-rearing practices), this might hypothetically result in a higher prevalence of autogynephilia in individualistic countries than in collectivistic countries. Hypothetically, the underlying prevalence of male androphilia might also be different—perhaps lower—in individualistic countries than in collectivistic countries, although the strong biological underpinnings of male androphilia might argue against the idea that differences in cultural values and practices would significantly affect its prevalence.

Given the observation in the present study that differences in societal individualism were strongly predictive of differences in the relative prevalence of homosexual and nonhomosexual MtF transsexualism between countries, one might wonder whether a similar pattern would be observed among population groups *within* countries. Although the data are inconsistent, there is some evidence that, in the United States, persons of color in general, and Hispanic Americans and Asian Americans in particular, tend to be less individualistic (or more collectivistic) than European Americans (Gaines et al., 1997; Oyserman et al., 2002). There is also some evidence that nonhomosexual orientation may be less prevalent among MtF transgender persons of color than among MtF transgender persons of European American ethnicity. For example, Kellogg, Clements-Nolle, Dilley, Katz, and McFarland (2001) studied 238 self-identified MtF transgendered persons who sought anonymous HIV testing in San Francisco, most of whom were persons of color (29% Hispanic American, 25% African American, and 14% Asian American, versus 29% European American). Among the 195 participants who provided information about their sexual orientation, only 71 (36%) identified as "lesbian" or "bisexual"; the remainder identified as "heterosexual" (i.e., presumably androphilic), "homosexual male," or "other." If the 36% figure provides an accurate estimate of the prevalence of nonhomosexual orientation among Kellogg et al.'s participants, then this represents a lower percentage of nonhomosexual orientation than was found in any of the three studies from the United States that were included in the present analysis.[4] Unfortunately, most studies conducted in the United States that have asked about the sexual orientation of ethnic-minority MtF transgender persons have provided

[4] The study by Kellogg et al. (2001) did not meet inclusion criteria for the present analysis, because the participants were not described as living full-time as women, having completed SRS, or having been diagnosed with gender identity disorder, transsexualism, or gender dysphoria. Moreover, MtF transgender persons who seek anonymous HIV testing may be unrepresentative of MtF transgender persons generally with respect to sexual orientation, in that exclusively gynephilic persons may be less likely to request such testing. Finally, ethnic minority groups appear to have been significantly overrepresented among the Kellogg et al. participants, relative to United States population norms. If the Kellogg et al. study had been included in the present analysis, the correlation between IDV and %NHS would have been .84.

even fewer indications than the Kellogg et al. study about whether reported sexual orientation was referenced to biologic sex or to some other criterion (e.g., gender identity), making interpretation difficult. Nevertheless, there is at least suggestive evidence that differences in individualism might predict differences in the relative prevalence of nonhomosexual MtF transsexualism between population groups within countries, as well as differences between countries. This might be a promising area for future research.

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