

Toward a Biology of Collectivism: Reducing the East West Divide to Its Physical and Physiological Substrates

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Abstract

The signs of mating competition are written into the physiology of the human male, but they are not written equally into the physiology of all racial groupings of human males. It seems that Asian males are different, different in that they are more fully dissimilar from the gorilla than are other races, showing less sexual dimorphism, muscularity, and less marked secondary sexual characteristics, and different in that they are more fully dissimilar from the chimpanzee than are other races, showing less sexual drive and activity as well as smaller testicles and lower sperm counts. It is presently argued that such anatomical differences are a testament to a more peaceably monogamous mating history. In turn, it is then argued that such physiological markers are directly associated with the collectivist ethos that has been historically, anthropologically, and sociologically observed among the Asian people.

Keywords

collectivism, biology, mating competition, culture, Asian, polygamy, monogamy

Introduction: Individualism and Collectivism

The West is the hemisphere that produced Lockean liberalism, which exalts individual freedom and autonomy, fiercely protecting these valued rights from majority will and governmental interference (J. Locke, 1690/1988). The West celebrates the image of the self-made man, deifying Lincoln for transforming himself from backwoods frontier rail splitter to the President of the United States of America (Howe, 2009). Horace Greeley says “go west” to the young man; Thoreau retreats to his cabin; Emerson advises, “insist on yourself, never imitate.” Similarly, Orestes Brownson (1865/2005) finds the American reliant on “individual energies and personal resources.” Most strikingly, Tocqueville bears testament to the spirit of individualism:

... I see an innumerable multitude of men, alike and equal, constantly circling around in pursuit of the petty and banal pleasures with which they glut their souls. Each of them withdrawn into himself, is almost unaware of the fate of the rest. Mankind, for him, consists in his children and his personal friends. As for the rest of his fellow citizens, they are near enough, but he does not notice them. He touches them but feels nothing. He exists in and for himself, and though he still may have a family, one can at least say that he has not got a fatherland. (Lawler & Schaefer, 2005, p. 184)

These individualistic Anglo-American values are representative, not only of England and the United States, but of the West more generally.

Alternatively, collectivism, associated with the East, most specifically the Asian cultures of China and Japan, “favours maintenance of social harmony over assertion of individuality” (Chiao & Blizinsky, 2010). Collectivism stresses communion and interconnectedness above competition and independence, as expressed in sport (Reid, 2010), economics (Dowdle, Gillespie, & Maher, 2013), management (Brew & David, 2004; Tinsley & Brett, 2001), job satisfaction (Hui, Yee, & Eastman, 1995), philosophical writings (Markus & Kitayama, 1991; Nisbett, Peng, Choi, & Norenzayan, 2001; Triandis, 1995), political organization (E. A. Locke, 2011), moral judgment (Fu et al., 2010), historical narratives (Imada, 2012), phenomenological apperception (Gudykunst, Matsumoto, Ting-Toomey, & Nishida, 1996; Lee, Beckert, & Goodrich, 2010), self-expression (Carducci, 2012), conflict resolution (Ohbuchi, Sato, & Tedeschi, 1999; P. B. Smith,

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Dugan, Peterson, & Leung, 1998), vocation (L. Q. Yang et al., 2012), education (Azuma, 1998), and, of course, social organization (Ho & Chiu, 1994; Wagner, 1995). In fact, the dichotomy between individualistic and collectivistic cultures is so thoroughly discussed as to be assumed a hackneyed heuristic or an antiquated artifact of social science texts. Truly, however, it is neither one nor the other. In spite of general critiques (Takano & Osaka, 1999) and allegations of binary simplicity (Briley & Wyer, 2001; Mateo, Cabanis, Stenmanns, & Krach, 2013; Oyserman, Coon, & Kemmelmeier, 2002), the individualism/collectivism dichotomy is a well-supported division between Western and Eastern styles of thinking, living, socializing, and being, seriously considered and actively generating research (Fijneman, Willemsen, & Poortinga, 1996; Rhee, Uleman, & Lee, 1996; Triandis et al., 1993); it is, in fact, the most generative research topic in cross-cultural psychology (Conway, Houck, & Gornick, 2014). Although widely documented, this dichotomy is not well explained. As Chiao and Blizinsky (2010, p. 530) stated, “a parsimonious explanation of the origin of individualistic and collectivistic cultural values has largely remained elusive.”

Culture: Autonomous Force or Biological Outgrowth?

Collectivist culture, like culture generally, has historically defied explanation because it is most often treated as a fully autonomous force with no identifiable antecedent. Representative of this view is renowned anthropologist and author of *Primitive Society* (Lowie, 1920) and *Social Organization* (Lowie, 1948), Robert Lowie, who, in a 1917 lecture on Culture and Ethnology, asserted that “culture is a thing *sui generis* which can be explained only in terms of itself” (Kuper, 2009, p. 62; Lowie, 1917). In contrast to this still prevalent view, now embodied in the Durkheim and Boaz tradition (Alves, 1999; Gat, 2006), Wilson (1975/2000, 2004) advanced the idea that *culture is on the leash of the gene*. In other words, cultural diversity is chained to evolved biology. Wilson’s quip is generally invoked to illustrate the functional similarities behind seemingly irreconcilable cultural practices. In this way, the contemporary American male buying, driving, and polishing an expensive car is akin to a 19th-century Argentinian Hussar twisting his mustachios and pruning his epaulettes, which is, in turn, akin to an 18th-century English aristocrat donning a powdered wig, stockings, and silver shoe buckles. In all cases, these trappings and actions function as display, advertising status to rival males and potential mates. Even though the surface features of these behaviors vary greatly, their underlying motivation is the same. From this perspective then, biology constrains cultural practices, such that every culture has religion and religious institutions, law and systems of justice, and marriage with associated rituals, all of which vary cross-culturally more in form than function. Yet, if, as Wilson states, evolved similarities give rise to cultural

similarities, then shouldn’t evolved dissimilarities give rise to cultural dissimilarities? If we encounter biological variation across races,¹ should we not question whether these gave rise to cultural dissimilarities?

Purpose of the Present Article

We find such racial dissimilarities across anatomical and behavioral characteristics of the Asian peoples, especially the Chinese² and Japanese. As differentiated from Caucasian and Africans, for example, Asians differ dramatically in secondary sexual characteristics, such as aggression, and sexual dimorphism, and they seem also to differ in testes weight, sexual activity, and sexual drive. It is the purpose of the present article to review these intraspecific biological differences across racial groupings, as they relate to interspecific biological differences across primates species. After extrapolating from animal models, the present work thereafter argues that Asian biology minimizes mating competition, promoting a more peaceable monogamous mating style, which, in turn, provided a biological substrate out of which collectivism could grow.

Overt and Covert Signatures of Mating Competition

All competition is resource competition. There are two classes of resources: those which perpetuate the life of the organism and those which perpetuate the lineage of the organism. Clearly, animals compete for survival alone, as many clonal species vie vigorously for space and food (Jackson & Coates, 1986). However, recombinatory reproduction augments competition, adding sexual selection to natural selection and buffeting organisms between the two. As Butovskaya and Kozintsev (1999) stated, “while females compete for resources, they themselves are the main resource and the main object of competition for males” (p. 262). Through the mechanism of sexual selection, mating competition leaves a marked signature (Darwin, 1871/1998; Jenions & Kokko, 2010), generating some of the most conspicuous phenomena in nature: the exhausting and unending croak of the frog (Dyson, Reichert, & Halliday, 2013; Ryan, 1985), the bioluminescent flash of the firefly³ (Lewis & Cratsley, 2008), the antlers of the stag (Kokko & Brooks, 2003), the recurved horns of the ibex, the elongated canine of the boar (Jennings & Gammell, 2013), the major cheliped claw of the fiddler crab (Briffa, 2013), as well as the horns and mandibles of beetles (Snell-Rood & Moczek, 2013).⁴ Likewise, the marks of competition between males for females resulted in the evolution of the dewlap of the lizard indicating bite force (Earley & Hsu, 2013), the comb of the rooster, honestly signaling physical condition and testosterone levels (Pryke, 2013), the lekking parade and plumage display of the sage-grouse, advertising high genetic quality and low parasite load (Harrell, 2008), and the bellowing of the buck during

the annual rut, simultaneously indicating dominance to rivals and fitness to females (Jennings & Gammell, 2013). These are the subjects of nature documentaries, the sources of inspiration to aspiring biologists, and the spur to research studies and conservation efforts.

However, there is another world of competition between the seminal discharges of males in the vaginal tracts of females: copulatory plugs, tandem sperm, capacitated sperm, horn-like structures to reposition rival sperm, penile flagella to displace rival sperm, parasperm used to cheaply fill reproductive tracts, and accessory gland proteins that manipulate females into laying more eggs and avoid remating (Arnqvist & Rowe, 2005; Davies, Krebs, & West, 2012). Moreover, males of some species are equipped with antiaphrodisiac gas (Price, 1999), enlarged testes, and short and muscular vas deferens (A. F. Dixson, 2009), among other emblems of furtive competition. So there is overt competition and covert competition, sometimes, respectively, referred to as somatic and genital selection (Suonr, 1979). These forms of selection, of course, act on primate species to varying degrees: Overt competition, exemplified among apes by the gorilla, marks a polygamous mating style; whereas covert competition, exemplified among apes by the chimpanzee, marks a promiscuous mating style. Armed with this dichotomy and these primate models, it is instructive to view humans and human racial variation.

Gorilla gorilla: The Signature of Polygamy

The gorilla is the primate exemplar of polygamy, carrying many markers of overt, somatic mating competition. With groups of around eight (Parnell, 2002) often containing a single breeding male (Margulis, Whitham, & Ogorzalek, 2003), reproductive success pivots on the ability to obtain and maintain a harem (Breuer et al., 2010). Massive heads with prominent fatty ridges and resonating air pockets that undergird the oft-beat chest may be unique markers of polygamy among gorillas (Breuer, Robbins, & Boesch, 2007); although, in addition to such stylized symbols, gorillas possess the sexually dimorphic pelage variation, which signals intra-male polygamous conflict (Plavcan, 2001). In fact, the gorilla is the most dichromatic of all the primates, with the females possessing muted colors and the males possessing a pronounced sagittal crest of silver gray (Breuer et al., 2007). Above all else, the gorilla's high male mass is the most conspicuous signature of polygamy. Heavily muscled and aggressively territorial, the gorilla is not only the largest of extant primates, it is the most sexually dimorphic (Taylor, 1997). By way of distinction, the enlargement of the male above and beyond the female is not a feature of those primates considered paradigms of monogamy: *Indri*, *Aotus*, *Callicebus*, *Callithrix*, *Saguinus*, *Hylobates* (A. F. Dixson, 2012). More systematically, when looking across 21 monogamous primate species, males collectively weigh 662.7 kg,

whereas their female counterparts collectively weigh 636.6 kg. Alternatively, 18 primarily polygamous male primates weighed 521.5 kg, whereas their female counterparts weighed only 310.9 kg. The disparity is blatant. Quantification yields a body weight ratio of 1.04 across monogamous primates and a body weight ratio of 1.68 across polygamous primates (A. F. Dixson, 2012; Table 3.2).⁵ Such cross-species comparisons show that monogamous primate species contain males and females that are essentially the same weight, whereas polygamous primate species contain males that are often more than 50% heavier than females. From such data comes the zoological dictum, holding that “the more females per male in the breeding group, the larger the male is in relation to the female” (Davies et al., 2012, p. 35). Similarly, Wilson (2004) stated that, “the average number of females consorting with successful males closely corresponds to the size gap between males and females when many species are considered together” (p. 20).

With these correlates in mind, it is instructive to view human data. Based on a cross-racial estimate of A. F. Dixson's (2012), *Homo sapiens* have a male–female body weight ratio of 1.21. Judging from this sex-based weight disparity, polygamy appears to play both a moderate historical and contemporary role in human mating—an assumption corroborated by anthropological data, such as Ford and Beach's classic 1951 study suggesting that more than 80% of cultures sanction polygamy (A. F. Dixson, 2012). So humans, by this standard, and when taken as an undifferentiated population, seem to be far from the polygamous gorilla, but still about a third of the way in that direction. Now to address pertinent racial particularities: It is clear that, when collapsing across both sexes, Asian populations are smaller and lighter than, for example, Caucasian and African populations (Deurenberg-Yap, Schmidt, van Staveren, & Deurenberg, 2000). Moreover, Asians appear to show a somewhat less pronounced size dimorphism: For example, Deurenberg-Yap (2000) reported a mean of 54 kg for females and a mean of 64.6 kg for males within a Chinese sample, creating a ratio of 1.19, somewhat below the cross-racial average of 1.21 reported by A. F. Dixson. This size dimorphism disparity, however, becomes more pronounced when looking at body composition specifically, as opposed to body weight generally.

By most measures and in most studies, Asian samples, when compared with Caucasian samples, have more fat and less muscle (Deurenberg, Deurenberg-Yap, & Guricci, 2002). Again, compared with Caucasians, Asians have greater bicep, abdomen, superiliac, and subscapular skin fold thickness (J. Wang et al., 1994). Alternatively, Caucasian men show higher ratios of fat-free mass on the arms, thighs, and trunk, than Asian men. Furthermore, on these same measures, Asian men are separated from Asian women less widely than Caucasian men are separated from Caucasian women (J. Wang et al., 1994). What is perhaps of most acute interest is that Asian men have body mass indexes (BMIs) that remain essentially the same across the adult life span. Gallagher et al. (2000) reported that Asian male BMI was an

average of 21.3, 22, and 22.3 across the age ranges of 20 to 39, 40 to 59, and 60 to 79 (Heymsfield, 2005). This implies that there is little difference between young men in their peak reproductive years and aged men in their post-reproductive years. In contrast, Caucasian BMI follows a different developmental trend being 18.3, 21, and 23 between the same age ranges. One interpretation of these data is that Asians show a high BMI throughout development, but Caucasians, being more pressured by mating competition, show a lower BMI that only approaches Asian levels in the post-reproductive years when mating competition has waned.

While gross measurement of weight is instructive, direct measurement of muscle mass is more so (A. F. Dixson, 2009). As compared with weight ratios of approximately 1.21, muscle ratios have been estimated at 1.53. This is because human females are singular among primates in their high degree of adipose tissue storage; consequently, the extent of human sexual dimorphism becomes evident only after controlling for this by looking specifically at ratios of male to female muscle mass (Puts, 2010). Moreover, male/female differences in muscle mass come principally from males possessing more fast-twitch muscle, which is the type of muscle that adds visible bulk and anaerobically enables short-lived explosions of speed and power. The effect of this is to endow the average man with 90% more upper body strength than the average woman (Puts, 2010). But fast-twitch muscle fiber is metabolically costly, exacting great amounts of nutrition in both its production and maintenance. Ever thrifty, the evolution of such a costly trait will not proceed without need. Females serve as the single most viable benchmark of how much fast-twitch fiber a species needs for survival. Even male/female division of labor, such as the common hunting versus gathering dichotomy, should not be expected to drive males far beyond females in terms of fast-twitch muscle fiber mass. This is especially true because, in hunting, humans do not regularly use fast-twitch muscle to overwhelm their prey with superior strength, or outstrip them with superior speed; rather, humans rely much more on intelligence, collective action, and weapons technologies, trapping and ambush (Bunn & Pickering, 2010). In fact, to the degree that muscle was necessary for successful hunting, slow-twitch muscle might have been more important than fast-twitch muscle fiber. This conclusion comes from studies of modern hunter-gathers, such as the bushmen of the Kalahari desert, who often employ *persistence hunting*, which entails tailing prey for extremely long distances until it becomes exhausted (Liebenberg, 2006). In contrast to fast-twitch muscle, slow-twitch muscle, enabling protracted repetitive motion, does not effectively separate men from women, such that female ultra-endurance swimmers (Eichenberger et al., 2012) and female ultra-endurance runners (Hoffman, 2008; Speechly, Taylor, & Rogers, 1979) often perform nearly as well as their male counterparts. In counterpoint, as Darwin (1871/1998) understood, differences in musculature are not a product of male–female

division of labor, but of male–male contest competition (Muller & Thompson, 2012; Plavcan, 2001, 2004; Puts, 2010). In this light, it is of utmost relevance that “sex difference in upper-body muscle mass in humans is similar to the sex difference in fat-free mass in gorillas,” which suggest an evolutionary history of male rivalry for female access (Puts, 2010, p. 161).

Having established the extent and significance of muscle, especially of the fast-twitch variety, it is instructive to examine racial variation. This most sensitive marker of polygamy highlights the extent of extant racial differences. Just as decreased emphasis on the explosiveness of fast-twitch muscle greatly diminishes the performance gap between males and females, so it lessens the performance gap between Asian and non-Asian males. Chinese runners, for example, rarely if ever win gold medals except in endurance competitions (Baker, 1975; Harpalani, 1996), which predominantly require slow-twitch muscle. It seems that Asian populations have less fat-free mass (Hull et al., 2011) and significantly less fast-twitch skeletal muscle fiber (Rushton, 2000; Silva et al., 2010). Furthermore, not only do Asian men have less visible bulk, but Asian women may prefer less visible bulk. As a general rule, females prefer males of the muscular mesomorphic type. However, the ectomorphic male, one who is skinny and less muscled, obtained proportionally higher ratings among Chinese samples (A. F. Dixson, 2009). Chinese women preferred average physiques to mesomorphic physiques, whereas British women, for instance, preferred mesomorphic physiques to average physiques. Therefore, the mesomorphic physique might be largely a product of sexual selection, generated and perpetuated through the mechanisms of male competition and female choice (A. F. Dixson, 2009; B. J. Dixson, Dixson, Li, & Anderson, 2007). Furthermore, data on Asian muscle mass are complemented by genetics studies: Improving sprint performance, showing correlations with muscle mass (Berman & North, 2010), conferring speed and velocity (N. Yang et al., 2003), and being commonly described as *a gene for speed* (Berman & North, 2010; MacArthur & North, 2004), ACTN3 is specifically expressed in fast-twitch skeletal muscles (Lachance & Tishkoff, 2013; Norman et al., 2009; North, 2008). Instructively, Asian populations show the highest rates of α -actinin-3-deficient genotype (577XX), as compared with Caucasian and African samples (N. Yang et al., 2003).

Finally, there are two more corroborating points of evidence. First, as compared with Caucasian and African males, Asian males have longer life spans, and, according to A. F. Dixson (2009), shortened male life span is possibly a product of the taxing nature of male–male competition in the matrix of polygamous mating systems. Second, body hair is an important and prominent secondary sexual characteristic of which Asians have less (Ewing & Rouse, 1978; Montagna & Parakkal, 1974; Rook, Wilkinson, & Ebling, 1972). Not only do Asian men have less body hair (Ewing & Rouse, 1978), but Asian women, judging from a Chinese sample, seem to

prefer less body hair (A. F. Dixson, 2009). Importantly, the beard is not excepted; Asian men have appreciably less facial hair (Santner et al., 1998; Wu, Konduru, & Deng, 2012). Beards, described by B. J. Dixson and Vasey (2012) as “strikingly sexually dimorphic androgen-dependent secondary sexual trait in humans,” seem to signal status, dominance, and aggressiveness (Addison, 1989; A. F. Dixson, Dixson, & Anderson, 2005), and in fact evolved “primarily via intrasexual selection between males” (B. J. Dixson & Vasey, 2012).

Pan troglodytes: The Signature of Promiscuity

The chimpanzee is the primate exemplar of promiscuity, carrying many markers of covert mating competition. Certainly, there are attempts by males to impede matings by other males, both by harassment and active interruption of coitus before insemination (A. F. Dixson, 2012), but there are no proprietary rights to females, no pair bonding, and no harem formation. The promiscuity of chimpanzees, who live in multi-male/multi-female troops, is well documented. Similar to *Papio ursinus* and *Brachyteles arachnoides*, chimpanzee females are mounted and mated by several males, sometimes more than 10, during the peak of their 36- to 48-hr cycles. Multiple matings with multiple males over a discreet period creates the conditions for sperm competition (A. F. Dixson & Anderson, 2004), such that a contest is carried out by proxy through sperm within the reproductive apparatus of the female chimpanzee. In consequence, male chimpanzees bear the marks of sperm competition, principally by virtue of their large testes, which, in combination, rival the mass and volume of the brain. Compared with the polygamous gorilla, chimpanzee testes are 4 times heavier in absolute terms, and 16 times heavier relative to body weight (A. F. Dixson, 2012). Along with large testes, chimpanzees have high sperm volume and high sperm counts. These are widely acknowledged to be physiological markers of promiscuity.

As humans do not show the prodigious sexual dimorphism of the gorilla, so they do not show the prodigious virility of the chimpanzee. Still, as before, humans appear to be part of the way in the same direction, though perhaps not progressed nearly so far along in that direction. Certainly though, human testes are outsized for the requirements of monogamous mating (Cachel, 2006; Harcourt, 1995; Simmons, Firman, Rhodes, & Peters, 2004). Some think this enlargement is vestigial and of little consequence (Brown, Shumaker, & Downhower, 1995; A. F. Dixson, 2009, 2012), whereas others think this enlargement is active and exceedingly relevant (Shackelford & Pound, 2010; R. L. Smith, 1984). It very well might be, as A. F. Dixson reasons from comparative analyses of human sperm activity, sperm mitochondrial density, sperm mid-piece volume, relatively low sperm recovery rates, and the lack of a baculum, that reports of sperm competition are greatly exaggerated; nonetheless, reports of strategic sperm

allocation (Ball & Parker, 2007; Goetz & Shackelford, 2009; Klusmann, 2006; Pham & Shackelford, 2013; Shackelford & Goetz, 2007) via the Coolidge effect (A. F. Dixson, 2012; Shackelford, Goetz, McKibbin, & Starratt, 2007; White, 1986), as well as prolonged intromission and the relatively large human penis, both of which are correlated with promiscuity and sperm competition, remain as support, unexplained except with the recognition of human sperm competition. Also, as Simmons and colleagues (2004) noted, evidence for modest sperm competition comes from approximately 1 in 400 double paternity dizygotic twins.

Without descending into the minutia of this argument, and assuming a modest, but relevant, role for human sperm competition, it is important to examine existing interracial differences (Brown et al., 1995; Harcourt, 1997). A. F. Dixson compiled data on testes weight from multiple studies showing that, collapsing across most racial groupings and including inhabitants from countries as geographically disparate as Australia and Finland, combined testes weight fluctuates between 30 and 50 g. All measured countries fall within this range save China, which, according to one sample of 109 individuals, showed a mean combined testes weight of 16.55 g (Short, 1984), and another sample of 100 individuals, which showed a mean combined testes weight of 19.01 g (K. S. F. Chang, Hsu, Chan, & Chan, 1960). This is a striking difference. A. F. Dixson remarked that “Nigerian men have testes more than twice as large as those of Hong Kong Chinese subjects of similar height” (A. F. Dixson, 2009, p. 31). Although this is an extreme example, general American samples indicate testicle weight almost twice that of Chinese samples. Furthermore, even though most of the aforementioned statistics do not control for body weight, they cannot be explained by it (A. F. Dixson, 2009).

Asian populations not only have less combined testicular mass but a relative reduction in the number and function of Sertoli cells (Johnson et al., 1998), which reside in the seminiferous tubules and secrete several hormones integral to spermatogenesis (Griswold, 1998). Although spermatogenesis is anatomically dependent on Sertoli cells, it is physiologically dependent on testosterone (Sharpe, 1987; Weinbauer & Nieschlag, 1990). Although there are no reliably recorded absolute differences in blood-circulating testosterone (Ewing & Rouse, 1978), when compared with Caucasian samples, Asian men, but not Asian women, have significantly less precursor androgens, such as *dehydroepiandrosterone sulfate* and *androstenedione* (Lookingbill et al., 1991). Furthermore, Asian males have less endogenous androgen receptors for testosterone (Zitzmann & Nieschlag, 2001) and possibly also less of a particular enzyme requisite for converting testosterone into an active form (Greaves, 2001). Therefore, it is not surprising that, following these anatomical and physiological differences, sperm counts are correspondingly low among Asian populations (Iwamoto, Nozawa, & Yoshiike, 2007; von Eckardstein et al., 2001) and sperm production can be more easily arrested with hormonal contraceptive injections

(Gonzalo et al., 2002; Ilani, Liu, Swerdloff, & Wang, 2011). Reduced sperm production among Asian males has a genetic derivative, specifically found in racial variation in the number of cytosine, adenine, guanine (CAG) repeats (Bennett et al., 2002; Sartor, Zheng, & Eastham, 1999). Asatiani, Eckardstein, Simoni, Gromoll, and Nieschlag (2003, p. 255) noted that “a slight increase in the number of CAG repeat sequences in exon 1 of the androgen receptor gene causes idiopathic oligozoospermia.” Both this condition and its cause have been implicated in Asian male infertility problems (Komori et al., 1999). Finally, racial differences might extend beyond spermatogenesis to encompass lower seminal fluid volume more generally. Among Asian males, the prostate, for example, appears to be less active, as judged by extremely low rates of prostate cancer (Rushton, 2000; Santner et al., 1998). This is significant because prostate cancer and productivity are positively correlated, such that the more metabolically active prostate will at once make its carrier more fecund and prone to cancer (Greaves, 2001). In this way, a less active prostate might be a sign of relaxed mating competition.

These anatomical and physiological differences are coupled with behavioral differences. Asian persons appear to be less sexually active than either European or African persons as judged by pornography usage (Lo, So, & Zhang, 2010), reports of sexual fantasy, age of first intercourse, and via percentage and frequency of pre-marital sexual encounters (Rushton, 2000). Furthermore, these racial differences in pre-marital intercourse are present in post-marital intercourse, with Asian couples engaging in coitus approximately half as much as European and African American persons. Sexual attitudes are also less permissive and feelings of guilt are more frequent. Even among Americans, and when controlling for the independent effects of socio-economic status, Asian Americans have lower rates of divorce, less extramarital affairs, and fewer out of wedlock births than the national average (Rushton, 1988). Finally, these racially based sexual differences correlate with extremely low rates of chlamydia, syphilis, HIV, and other sexually transmitted diseases among Asians, which can be taken as a crude proxy of sexual behavior⁶ (Rushton, 2000).

Discussion

It is very fortunate that humans are as dissimilar from the gorilla and chimpanzee as they are. The polygamous mating system of the gorilla renders dominant harem-holders preoccupied with defense and subordinate juveniles preoccupied with conquest. This breeds vigilance and anticipation on one side, and opportunism and aggression on the other. The young, roving male, unencumbered by children and insecure of his genetic future, is a destabilizing force in any society, ape or human. Alternately, the promiscuous mating system of the chimpanzee is distractingly sexual. It encourages physiologically taxing and time-consuming mating bouts as well as

vigilance for, and following of, females in estrous. At the same time, it creates paternal uncertainty and discourages joint parental care. Although under recent evolution humans have very likely become less sexually dimorphic and polygamous (Butovskaya & Kozintsev, 1999; Darwin, 1968/1859), as well as less sexually virile and promiscuous (Gavrilets, 2012), one might lament that we are not even further away from both the gorilla and the chimpanzee so as to be strictly monogamous.⁷ For, in the absence of strict monogamy, not only is there always some degree of male–male competition but also male–female antagonism, known as sexual conflict, of which infanticide (Arnqvist & Rowe, 2005), maternal effect lethals (Perrimon, Engstrom, & Mahowald, 1989; Shearn, Hersperger, & Hersperger, 1978), and parental zygotic conflict (Werren & Beukeboom, 1998) are examples.

All such competition, antagonism, and sexual conflict are divisive—it is a spur to violence, if not its principal source. As Gat (2006) said, sexual competition is “that other principal source of human competition” (p. 415). It is not only in myth that a *Helen* can bring war. Among the much studied Yanomamo peoples of the Amazonian forest, for example, within-village violence was most often precipitated by adultery and women-related quarrels. “Some incidents were caused by suitors’ competition, some by women’s abduction and forced sex, some by broken promises of marriage, and most, perhaps, by jealous husbands over suspicion of wives’ infidelity” (Gat, 2006, p. 69). In fact, it seems that the first instance of conflict between the New World and the Old stemmed from male–male conflict over access to native females (Landes, 1998). Likewise, “women-related feuds were the main cause of homicide” among the !Kung (Gat, 2006, p. 71). Transcending the anthropological anecdote, a cross-cultural study (Otterbein, 1994) has found polygyny to be one of the most distinctive correlates of “feuding and internal warfare” (Gat, 2006, p. 74). When elite elders monopolize fertile females, young males are disposed toward “abduction of women, elopement, and violence” (Gat, 2006, p. 181). By way of distinction, monogamy minimizes conflict (Gat, 2006; Tucker, 1993) creating “. . . affiliative bonds with females [that] circumvent the need for continual contest competition among males” (Alberts, 2012, p. 423 circumvent . . . ”). Not surprisingly, monogamy is encouraged in society, by governmental and within religious organizations, all of which provide incentives to enter into the marriage bond, and rituals to solidify that bond.

Although cross-national crime rate comparisons evince methodological problems (Maxfield & Babbie, 2014; Neapolitan, 1996; Skogan, 1975), and though rates may vary as a function of the international database selected, it is suggestive that a study referencing INTERPOL, the International Criminal Police Organization, reports that Asian populations display the lowest rates of violent crime, including rape,⁸ murder, and assault: Across the years 1984, 1990, and 1996, per 100,000 individuals, Asian countries show rates of 49, 32, and 35, as compared with combined averages for European

and African nations of 102, 157.5, and 95.5 (Rushton, 2000). These international trends are recapitulated in the multiracial United States, as documented by United States Department of Justice Federal Bureau of Investigation Criminal Justice Information Services Division arrest rates from 2012, Table 43,⁹ wherein rape, murder, and assault statistics fall out, respectively as follows: (a) rape rate of 1.2% Asian/Pacific Islander versus a combined 97.5% for White/Black, (b) murder rates of 1.2% Asian/Pacific Islander versus a combined 97.6% for White/Black, and (c) aggravated assault rates of 1.6% Asian/Pacific Islander versus a combined 96.9% for White/Black. Importantly, although Asian/Pacific Islanders constitute only an average of 1.33 arrests for rape, murder, and assault in the United States, they comprise 5% of the U.S. population as per the 2010 U.S. Census.¹⁰

In addition, restricted local violence engenders restricted national violence. It is suggestive that China was seemingly first to transcend the bounds of kinship, band, and tribe, to establish empire (Fukuyama, 2011; Gat, 2006), which it did without the facilitative ecological caging effects available, for example, to Egyptian civilizations isolated on a fertile ribbon amidst a sea of sand (Mann, 2012). Restricted mating competition will not necessarily result in less war between groups, but it should reduce small-scale violence among them. The point is most stunningly demonstrated by China, a land more or less constantly dominated by established dynasties since 221 BC, each capable of imposing stable, centralized rule across approximately the same million square kilometers. By comparison, the West unified less than half this territory for less than half this time under the Roman Empire, and thereafter dissolved into fiefdoms, duchies, principalities, and municipalities, some of which only matured into comparatively small states in the 18th and 19th centuries (L. Chang et al., 2011). Concomitantly, Asia has collectively engaged in less warfare, with only 26 recorded major wars within the modern era, specifically between 1648 and 1989, as compared with Europe's 97. Moreover, most Asian military offensives come after 1945 and were waged against European powers, as insularity, starting with Commodore M. C. Perry's coerced opening of Japan in 1854, continued to erode (L. Chang et al., 2011).

Low incidence of violent crime and reduced levels of intra-population warfare is found amid a culture that stresses communion, with individual competition being subordinate to collective action. In this way, Asian cultures seem to better solve what Allport called the *master problem*, namely, the relatively more pronounced subordination of individual interests to societal needs (E. A. Locke, 2011). When one juxtaposes such criminal and military statistics, and the literature describing collectivism, with the evidence of decreased somatic and genital competition reviewed in this article, there is a correlation suggestive of causation. These biological corollaries of collectivism stand in contradiction to the traditions set forth by Lowie, Boaz, Durkheim, and Meade that create "a sharp divide between biological and

cultural evolution, denying that the former had any but the most trivial significance in human affairs" (Alves, 1999; Elsworth, 1999; Gat, 2006, p. 150; Slurink, 1999). Convinced that culture arises *sui generis*, those ethnographers in the tradition of Lowie, might, for instance, explain collectivism by way of Confucianism. In contradiction, the biological perspective herein maintained would consider the Confucian ethics of loyalty as a correlate, rather than as a cause of collectivist communion. Prehistorically evolved biological differences in mating physiology predisposed Asian populations to be receptive to both Confucian values specifically and collectivism generally. In sum, basic traits and characteristics that are largely biologically shaped predispose one to attach value to, adopt, espouse, hold, and champion particular views—views that themselves are erroneously held to be principal causal agents. In consequence, it may be that the evolutionary biologist, comparative psychologist, and behavioral ecologist have as much to contribute to the understanding of cultural variation as do the anthropologist, historian, and sociologist.

To be clear, however, biology does not cause collectivism—at least not in the simple way that the impact of a reflex hammer causes a reflex. The relationship between biology and collectivism could never be so straightforwardly causal because biology and culture combine dynamically, and very likely emergently, in a way that tempers the power of reductionistic explanation. That being said, in the face of these co-occurring biological and cultural differences, it is hard to evade the possibility that collectivist culture is on the leash of the gene. As more and more researchers are now recognizing, greater understanding comes from viewing evolution and culture as reciprocal, together dynamically creating civilization (Lieberman & Gangestad, 2010). In the years since Wilson's dictum, *culture-gene coevolution*, otherwise called *dual inheritance theory* (Alberts, 2012), "has emerged as an influential theory to explain how human behaviour is a product of two complementary and interacting evolutionary processes: genetic and cultural evolution" (Chiao & Blizinsky, 2010, p. 529; Cavalli-Sforza & Feldman, 1981; Lumsden, Wilson, Packing, & Rare, 1981). Moreover, the Wilsonian approach, of which gene-culture coevolution is a sort of general derivative, has more recently been extended specifically to collectivism, with some exploring the genomics of collectivism (Eisenberg & Hayes, 2011; Kim et al., 2011; Way & Lieberman, 2010), while others explore the ecology of collectivism (Van de Vliert, Yang, Wang, & Ren, 2013). Still more research groups are looking to the prevalence and nature of host-parasite interactions (Fincher & Thornhill, 2012; Fincher, Thornhill, Murray, & Schaller, 2008), pathogen prevalence (Fincher & Thornhill, 2008; Murray & Schaller, 2014), neuron-culture interaction (Bender & Ng, 2009; Ng, Han, Mao, & Lai, 2010), and to neutrally based racial differences to explain the origins of collectivism (Chiao, Cheon, Pornpattananangkul, Mrazek, & Blizinsky, 2013; Kim & Sasaki, 2014; Mateo et al., 2013). Many of

these new and innovative explanations have intuitive appeal and might serve the end of finding an ultimate biological precursor of collectivist values. Recognizing that some of these explanations are not mutually exclusive, Van de Vliert and colleagues have attempted to weave several together. It seems that the set of biological differences herein described should take its place among these models as science continues on its newly assumed path toward the construction of a biology of collectivism.

Although compiling and contextualizing data, the present review has been neither exhaustive nor systematic. Before integrating the present model with those described above, more studies should be surveyed, and perhaps undertaken, in search of corroborating or disconfirming evidence for the present thesis. Female behavior and anatomy, only twice or thrice broached herein, should be further explored. Genetic analysis should prove edifying, with special attention given to sexually antagonistic genetic regions (Rice, 1984; Saifl & Chandra, 1999; Stearns & Koella, 2007). Also, forthcoming studies should investigate the significance of extreme 2D:4D digit ratios (Manning, Stewart, Bundred, & Trivers, 2004) and extreme male-biased sex ratios (Garenne, 2002; Lazarus, 2002; Ruder, 1986) among Asian populations. Finally, in addition to simply strengthening the physical and physiological data as advised above, research efforts should be directed toward fundamentally explaining the cause of such data. Though the present model succeeds in chaining cultural diversity to evolved biology, it does not explain the origins of this evolved biology. In this way, the most fruitful line of future research will search for an ultimate evolutionary explanation of the proximate biological differences presented herein. Doing so will entail the (a) review of prehistorical migration patterns, gene flow, inter-cultural conflict, and warring; (b) evolutionary history including founder effects, drift, and history; (c) ecological variables such as rainfall, temperature, soil, and climate; and (d) conducting of a comparative examination of indigenous flora and fauna, most especially parasites and predators.

Notes

1. Although the present article employs the term *race*, it does so, and should be read with the express knowledge that intra-specific variation observed across human populations falls far short of the formal biological use of the term: “. . . a genetically distinct lineage within a species” (Lenski, 2014, p. 730). Templeton (2014) decisively and unambiguously stated that races do not exist within the human population, noting by way of proof, rates of gene flow, and admixture. “There are,” Templeton asserted, “no biological races in humans; indeed, despite our global distribution, we are one of the most genetically homogeneous species on this planet” (Templeton, 2014, p. 807). However, Templeton went on to state that

this finding does not mean that all human populations are genetically identical. Isolation by distance ensures that human populations are genetically differentiated from

one another, and local adaptation ensures that some of these differences reflect adaptive evolution to the environmental heterogeneity that our globally distributed species experiences.

It is in reference to this subtle ecologically induced variation that *race* is presently used.

2. As there is much similarity across racial groupings, so there is much difference within them. Broad categories such as Asian and Caucasian collapse across much genetic, ethnic, and linguistic diversity, falling somewhere between a useful heuristic and an objective division. Problems persist even when descending from super-national to national divisions. Fully one fifth of the human species is Chinese, for example, and within the Chinese people are contained 56 nationally recognized ethnic groupings (Cavalli-Sforza, 1998). Therefore, to say anything about Chinese persons collectively, much less Asian persons collectively, is to collapse across significant diversity, a point which should be duly acknowledged and minded while interpreting this and other racially based reports.
3. Signaling among fireflies is not exclusively used in mating; females, for instance, have been observed to co-opt these bioluminescent signals to attract, and then ingest, males of separate species (Lewis & Cratsley, 2008).
4. Being one of the most diverse orders of life (Farrell, 1998), beetles consequently afford a laboratory for studying the overt and covert forms of mating conflict presently discussed. It seems that species that invest more in overt competition, invest less in covert competition, and the other way around: “the species which had evolved relatively longer horns,” Snell-Rood and Moczek (2013) wrote, “had also evolved relatively shorter copulatory organs, and vice versa” (p. 192).
5. These ratios, and the cross-species means from which they are derived, are calculations presently made from data presented in Table 3.2 of Dixon’s *Primate Sexuality*.
6. It is important to note that rates of sexually transmitted disease (STD) may provide a proxy for rates of sexual behavior, as implied herein; however, intervening factors, such as medical treatments and prophylactic devices, could alternatively account for reported differences in STD prevalence.
7. However, the relaxation of sexual selection that comes of strict monogamy, while it may impart social order and facilitate social harmony, might equally diminish personality variability, innovation, and genius.
8. Rape may be a particularly hard crime to measure. As compared with, for instance, homicide, there are more definitional differences as to what constitutes rape. Also, unlike assault victims, for instance, rape victims are more apt to experience shame and fear stigma, which can function to inhibit reporting, and the sense of shame and stigma may vary by culture, and therefore by nation. In addition, there are sundry other methodological problems that suggest caution in interpreting cross-national rape statistics (Fisher, 2009; Koss, 1996; Lynch, 1996).
9. Federal Bureau of Investigation data were broken down by race, separately reporting on four categories: (a) White, (b) Black, (c) American Indian/Alaska Native, and (d) Asian/Pacific Islander. The reported combined numbers for White/Black crime was calculated by the current researcher by adding, and then dividing, White/Black percentages. These data were retrieved on April 9, 2015, at the following website: <http://www.fbi.gov/about-us/>

cjis/ucr/crime-in-the-u.s./2012/crime-in-the-u.s.-2012/tables/43tabledatadecoverviewpdf

10. U.S. Census data provided the following racial categories: (a) White, (b) Black or African American, (c) American Indian or Alaska Native, (d) Asian, (e) Native Hawaiian or Other Pacific Islander, and (f) Other races. The 5% reported above reflects the addition, by the present researcher, of 4.8% Asian and 0.2% Native Hawaiian or Pacific Islander. This information, referencing Table 1 of a 2010 census brief with an overview on race was accessed on April 9, 2015, at the following website: <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>

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