Chapter 11
The Evolution of Culturally-Variable Sex Differences: Men and Women Are Not Always Different, but When They Are…It Appears *Not* to Result from Patriarchy or Sex Role Socialization

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Just like all other sexually reproducing species, male and female humans are more similar than different. Even so, men's and women's psychological traits sometimes differ in important ways, both in terms of typical or average levels (Buss 1989; Del Giudice 2009; Ellis 2011) and in terms of variability (Archer and Mehdikhani 2003; Borkenau et al. 2013; Lippa 2009). Sex differences in numerous traits have been well-established as moderate to large in size[1] and as culturally pervasive. For example, sex differences in negative emotion-related traits have been documented across several meta-analyses (Feingold 1994; Miettunen et al. 2007; Whissell 1996), integrative neuroscientific reviews (Hyde et al. 2008; Stevens and Hamann 2012), and large cross-cultural surveys (Costa et al. 2001; Hopcroft and McLaughlin 2012; Lippa 2009; McCrae and Terracciano 2005; Schmitt et al. 2008; Van de Velde et al. 2010). Using a multivariate approach, Del Giudice et al. (2012) documented across 16 personality traits—ranging from dominance and liveliness to perfectionism and tension—that sex differences in personality are astonishingly large, with only 10% overlap in men's and women's overall distributions.

Beyond sex differences in personality traits, psychologists have uncovered dozens of ways that men and women differ in affect, behavior, and cognition across most cultures (Archer 2014; Browne 1998; Mealey 2000). In one comprehensive review, Ellis (2011) identified 63 psychological sex differences that have been replicated across multiple cultures and at least 10 studies, with not a single replication failure (probably an overly strict exclusionary criterion; see Schmitt et al. 2014). In another wide-ranging review, Archer (2014) reported culturally-pervasive sex differences are reliably found in the assessment of negative emotions (e.g., fear, anxiety, depression), anti-social behaviors (e.g., aggression, violence, criminality), cognitive abilities (e.g., mental rotation, object location,

[1] According to Cohen (1988), effect sizes expressed in terms of the *d* statistic are considered small if 0.20, medium if 0.50, and large above 0.80.

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verbal fluency), personality traits (e.g., agreeableness, neuroticism, sociability), motor activities (e.g., strength, throwing ability, activity level), sexual attitudes and behaviors (e.g., mate preferences, sociosexuality, sexual coercion), and numerous other characteristics such as interest in infants and occupations (see also, Lippa 2005).

The pervasive nature of so many psychological sex differences necessitates serious questions concerning the origin of men's and women's panculturally distinctive psychologies (Brown 1991; Norenzayan and Heine 2005). Among the most likely forces behind culturally ubiquitous sex differences include the specialized design of men's and women's evolved psychological adaptations (Buss 1995; Mealey 2000), universal features of human sex role socialization (which may be generated, in part, by evolved features of gendered sexual psychology; see Maccoby 2000; Pirlott and Schmitt 2014; Williams and Best 1990), and a wide range of other developmental and biocultural factors that produce the profoundly pervasive sex differences exhibited by our species (Geary 1998; Low 2000; Miller and Halpern 2014).

Despite growing evidence that many sex differences are at least partially the result of specially-designed differences in the evolved psychology of men and women (Archer 2014; Buss and Schmitt 2011; Ellis 2011), many contemporary social scientists still assume—in accordance with the Standard Social Science Model (SSSM; see Tooby and Cosmides 1992)—that men's and women's psychological differences, if they exist at all (Hyde 2005), are solely the result of extensive sex role socialization processes and sociopolitical power differentials (Eagly and Wood 1999). As Wood and Eagly (2002) assert, "it is likely that extensive socialization is required to orient boys and girls to function differently" (p. 705). Given this blank slate approach to psychological sex differences, it is unsurprising that social role theorists further assume that sex differences should be conspicuously smaller in cultures with more egalitarian sex role socialization or greater sociopolitical gender equity (e.g., greater representation of women in parliament; see Kasser and Sharma 1999; Wood and Eagly 2002; Zentner and Mitura 2012). Indeed, there can be no more ironclad prediction than the "demise of many sex differences with increasing gender equality is a prediction of social role theory" (Eagly et al. 2004, p. 289).

In this chapter, evidence is marshalled across 21 data sources that directly challenge this foundational assumption of social role theory and, more generally, the SSSM. In fact, most psychological sex differences—in personality, sexuality, attitudes, and cognitive abilities—are conspicuously *larger* in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Even sex differences in physical traits such as height, body mass index, obesity, and blood pressure are larger in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity (Schmitt et al. 2014). In order to explain these counter-intuitive patterns, it is helpful to understand four basic evolutionary perspectives on the generation of psychological sex differences.

Obligate Sex Differences: Culturally Insensitive Sex-Specific Adaptations

There are four basic ways that evolved psychological adaptations generating sex differences across cultures (see Fig. 11.1). The first is for men and women to be adaptively designed to manifest relatively uniform sex differences across cultures. Evolutionary theories such as Sexual Selection Theory (Darwin 1871) and Parental Investment Theory (Trivers 1972) suggest that, as mammals, men and women likely pursue somewhat different mating strategies and at least some of the adaptive design of men's and women's evolved mating psychologies will be robustly manifested across cultures (Lippa 2005; Schmitt 2005a). According to Lippa (2009), sex differences in sex drive demonstrate a particularly persistent and uniform magnitude across all cultures and are entirely unrelated to factors such as degree of sex role socialization and sociopolitical gender equity. Much like human sex differences in physical strength and stature (Deaner et al. 2012; Gaulin and Boster 1985; Puts 2010; Van Damme et al. 2008), it is not the case that all men must have higher sex drives than all women for the sex difference to have resulted from evolved psychological adaptations. Nor must evolved sex differences be present at birth, a common misconception (Voyer et al. 2007; Wood and Eagly 2012). Instead, sex differences in traits such as sex drive and physical strength likely result from obligate sex-specific adaptations consistently generating, on average and to about the same degree, observable sex differences across all cultural forms (or at least across all cultures with similar ecologies; see also Baumeister et al. 2001).

According to the neuroandrogenic theory of psychological sex differences (Ellis 2001), a key mechanism that generates panculturally uniform sex differences is the organizational effect of prenatal sex hormone exposure on the developing human brain (see also Baron-Cohen 2004). In a sweeping review of the literature, Ellis (2011) identified 63 psychological sex differences that are culturally universal and likely result from human males (but not females) experiencing testosterone-related brain masculinization between 12 and 22 weeks of gestation (Archer 2014; Baron-Cohen 2002; Ellis 2011). It is not that all 63 sex differences—ranging from personality traits to work preferences to consuming behavior—are immediately present at birth. Instead, the prenatal masculinization (or not) of the human brain adaptively biases the development of future psychological traits, particularly in terms of risk-taking (Byrnes et al. 1999), sensation-seeking (Cross et al. 2011), and systematizing-versus-empathizing (Baron-Cohen 2004).

Supportive findings of this perspective on sex differences come from studies of girls exposed to male-typical levels of testosterone in utero (compared to their unaffected sisters) developing more male-typical personalities and play behaviors (Alexander et al. 2009; Auyeung et al. 2009). Indeed, prenatal testosterone exposure within normal levels also predicts sexually differentiated childhood behavior in girls and boys (Hines 2006; Udry et al. 1995), including dose-dependent relationships between degree of testosterone exposure and male-typical behavior (Nordenström et al. 2002), results that are not explainable from measured degree of parental sex

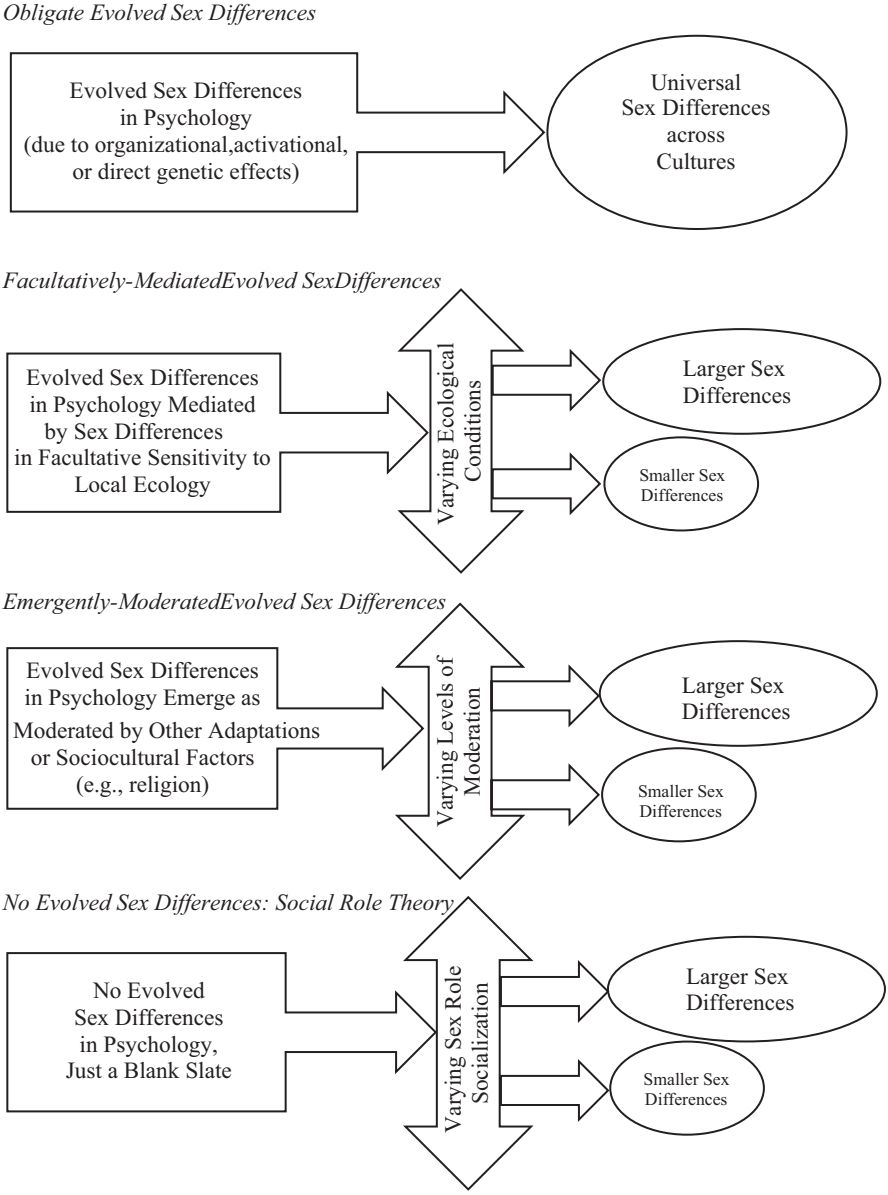

Fig. 11.1 Four approaches to evolved sex difference variation across cultures

role socialization (Pasterski et al. 2005). Further support of neuroandrogenic theory includes findings that girls with gene variants that make them more sensitive to testosterone develop more masculine personalities (with especially strong effects among those girls whose mothers tried the hardest to socialize their daughters to

be highly feminine; Udry 2000) and studies that show gene variants and biomarkers linked to brain masculinization influence transsexualism in predictably ways in adults (Hare et al. 2009; Schneider et al. 2006). In short, the seeds of many psychological sex differences appear to be sewn before birth, with future developmental experiences being shaped by the degree of prenatal neuroandrogenic brain masculinization (Alexander and Wilcox 2012).

Some psychological sex differences are not established before birth, of course, and instead result from activational effects that emerge in early childhood (Del Giudice and Belsky 2010; Ellis 2004) or at puberty (Galambos et al. 2009; Hyde et al. 2008; Ruigrok et al. 2013). From a life history perspective (Kaplan and Gangestad 2005), just as sex differences in body hair, muscle mass, and voice pitch emerge most strongly at puberty (Puts 2010), many psychological sex differences may be designed to emerge most strongly with the onset of such factors as ambulatory exploration (Silverman et al. 2007) or mating effort (Burke et al. 2014). Other psychological sex differences may result from direct genetic effects in which specific genes outside the sex chromosomes function differently in the brains of men and women (Becker et al. 2007; McCarthy and Arnold 2011; Ngun et al. 2011; Trabzuni et al. 2013).

Regardless, compared to the "ethnographic hyperspace" of all possible sexual cultures one can imagine (Cronk 1999), it appears some psychological adaptations in men and women are obligate enough to generate persistent and relatively uniform psychological sex differences across all cultures (Brown 1991; Gaulin 1997; Karremans et al. 2010; Lippa 2010). Of course, even obligate sex differences are not immutable, as there always exists a continuous interplay of biological and environmental factors that can alter the degree of human sexual differentiation. Sometimes the size of psychological sex differences is variable as a direct result of specially-designed psychological adaptations. That is, sometimes evolution generates culturally-variable sex differences by design.

Facultatively-Mediated Sex Differences: Differential Sensitivity to Local Conditions

A second way evolution generating sex differences across cultures is for men and women to be specially designed with differentially-sensitive facultative adaptations. For instance, men's and women's adaptations may be specially designed to be differentially sensitive to local ecological information. Sometimes men are adaptively designed to be more sensitive to ecological conditions, at other times women are designed to be more sensitive (see Baumeister 2000; Ellis 2004; Schmitt 2011). Critically, it is the differential sensitivity of men's and women's adaptations, combined with varying local ecologies, that facultatively mediates variation in size or degree of psychological sex differences across cultures (see Fig. 11.1).

The notion that evolved biology may be specially designed to anticipate that ecological variability is a foundational component of phenotypic plasticity

(Gomulkiewicz et al. 1995; Pigliucci 2001; Stearns and Koella 1986). Across species, phenotypic plasticity has been implicated in strategies of predator avoidance, physical polymorphisms, the timing of developmental experiences, and alternative reproductive tactics (Kelly et al. 2012; Via et al. 1995). For example, depending on the type of plant a certain caterpillar feeds on, its physical structure changes to match its surroundings (Whitman and Agrawal 2009). Similarly, some species of grasshopper facultatively alter their color depending on local ecology. Grasshoppers in darker ecologies grow a dark body, whereas grasshoppers in green ecologies grow a green body (Burtt 1951). Any differences between green and dark grasshoppers are not genetic differences; they represent the same genome facultatively responding in a mediated way to ecological variation (Nettle 2009).

In humans, phenotypic plasticity (Hughes et al. 2003), Life History Theory (Geary 2002; Kaplan and Gangestad 2005), and the related concept of "evoked culture" (Tooby and Cosmides 1992) have generated a wealth of findings on the adaptive effects of ecological variability on human psychology (Ellis et al. 2009; Del Giudice and Belsky 2010; Griskevicius et al. 2011; Nettle 2009). For example, Gangestad et al. (2006) has shown that both men's and women's long-term mate preference adaptations for health, attractiveness, and intelligence in potential mates are facultatively evoked in cultures with high pathogens. In the realm of mating adaptations, local pathogen levels appear to facultatively mediating a culture's level of polygyny (Low 1990), fertility rate (Guégan et al. 2001), sociosexuality levels (Schaller and Murray 2008), expressed mate preferences (DeBruine et al. 2010; Moore et al. 2013), and degree of parental care (Quinlan 2007).

In this view, human psychological adaptations may be built in a way that generates predictable patterns of cultural variability, but not in an agnostic blank slate way. Instead, human psychological adaptations are designed to pay specific attention to particular sources of ecological information and generate specially designed, highly functional, sex-specific forms of behavior (Gangestad and Simpson 2000; Hartung 1985; Hill et al. 2014; Lancaster 1994; Marcinkowska et al. 2014; Schmitt and Rohde 2013).

Schmitt et al. (2003) found that men are generally higher in dismissing attachment and this sex difference is nearly universal across cultures, but not always (Del Giudice 2011). Sex differences in dismissing attachment become negligible in cultures with high ecological stress (such as having high pathogen levels), in part, due to women's psychology being specially-designed to be more sensitive to stressful ecological contexts (see also Belsky 2012; Schmitt 2011). In other words, both men's and women's attachment psychology reacts to stressful ecologies with greater dismissing attachment, but it is more adaptive for women's "dismissing reaction" psychology to respond more strongly. This greater sensitivity in women's psychology results in women's dismissing attachment levels becoming nearly as high as men's in stressful ecological contexts. From a facultatively-mediated perspective, human cultures—including the degree of sex differences in human cultures—can be both evolved and variable.

Emergently-Moderated Sex Differences: On the Freedom to Express Sex-Specific Psychology

A third way evolution can generate psychological sex differences across cultures for men and women to be adaptively designed to manifest psychological sex differences across cultures (in either obligate or facultative forms), but the full expression of those sex-specific adaptations is moderated by other factors (Massimini and Delle Fave 2000). One example of emergently-moderated sex differences comes in the form of biological suppression. Biological suppression involves the nondevelopment of an adaptation that is normally present in the species.

A prime instigator of adaptation suppression in humans may be the potent cultural factor of religion. For example, the eighteenth century religious sect called the Shakers abolished the practice marriage, insisted upon complete sexual celibacy, and eradicated nearly all physical contact between men and women (Foster 1981). As a consequence, the adaptive expression of most, if not all, evolved sex differences in mating psychology that was greatly suppressed in Shaker culture. Another potent factor in the emergently-moderated suppression of sex differences is ecological stress. For instance, although sex differences in height are largely obligate across cultures, they can be emergently suppressed in cultures with especially poor nutrition and extremely stressful ecological conditions (Guégan et al. 2000; Gustafsson and Lindenfors 2008; Katzmarzyk and Leonard 1998; Nettle 2002). As Gaulin and Boster (1992) noted in their review of sex differences in stature across 155 human societies, "substandard nutrition could cause individuals to fall short of their genetically set growth potential, and, importantly, males seem to be more sensitive to such developmental perturbations than females" (p. 474). Hence, in high stress ecologies sex differences in height can be attenuated.

Another instance of emergently-moderated or suppressed sex differences comes from the "mismatch" perspective in evolutionary psychology (Crawford 1998; Nesse and Williams 1994). Evolutionary mismatch perspectives explain psychological variation across cultures by the degree of mismatch between contemporary environmental conditions and those within which early humans evolved—namely, hunter-gatherer environments (Brown 1991; Tooby and Cosmides 1990). When contemporary environments are different from hunter–gatherer environments in critical ways, the adaptive development of innate psychological sex differences can be suppressed (Schmitt et al. 2008). It is also possible, though, for contemporary environments to accentuate evolved sex differences in an emergently-moderated way.

An illustrative example of the emergently-moderated sex differences approach can be found in cross-cultural studies of human values. Schwartz and Rubel (2005) documented that most sex differences in expressed personal values emerge more strongly in nations with egalitarian sex role socialization and greater sociopolitical gender equity. They note that men and women may have evolved sex differences in certain values (e.g., men's mating psychology may have evolved to value power, achievement, and hedonism more than women; whereas women's tendency toward child-rearing may have evolved to value benevolence and universalism more than men). They

speculate that "Increased independence and equality of women in the labor force may encourage them to express distinctive values rather than to accommodate their values to those of their husbands" (p. 1023). In their view, it is possible that in cultures with egalitarian sex role socialization and greater sociopolitical gender equity, men and women are freer to express their evolved, sex-specific psychological adaptations. As they noted in 2009, egalitarian sex role socialization and greater sociopolitical gender equity could "permit both sexes to pursue more freely the values they inherently care about more." (Schwartz and Rubel-Lifshitz 2009, p. 171). It is not that humans are adapted to anticipate this freedom and have special design features that facultatively respond to it, instead it is the case that sex differences in values may be obligate (or perhaps facultative) and the degree of psychological sex difference is an emergently-moderated response this to freedom (see also, Barber 2014).

Noting differences between mediation and moderation effects has led to conceptual advances in social psychology (Baron and Kenny 1986). A key conceptual difference between the facultatively-mediated adaptation approach and the emergently-moderated approach outlined here is that the facultatively-mediated approach views cultural variation in psychological sex differences as adaptive and design-specific—facultative adaptations are designed to interact with only certain ecological factors and to generate only certain functional outcomes. In contrast, the emergently-moderated approach views cultural variation in psychological sex differences as a domain-general byproduct of extraneous factors (Barber 2014). It is possible these moderating extraneous factors involve evolved psychological adaptations, such as adaptations for the generation of religion (Kirkpatrick 2011; Weeden and Kurzban 2013). Moreover, there may be some factors that biologically intensify, rather than suppress, psychological adaptations, such as religions intensifying adaptions involving violence and sexuality (Keller 1990; Sela et al. 2014) and bifurcated sex roles intensifying adaptations that normally generate merely small to moderate psychological sex differences (see Pirlott and Schmitt 2014).

The key conceptual point is that the facultatively-mediated approach, but not the emergently-moderated approach, views cross-cultural variation in sex differences as resulting from adaptations specially-designed for properly generating those very sex difference variabilities. In the emergently-moderated approach, cross-cultural variation in sex differences is merely a functionally-disruptive side effect of some other factor. Finally, there can exist combinations of these first three evolutionary explanations of sex differences, such as obligate sex differences that are emergently-moderated in certain contexts (e.g., height differences suppressed by poor nutrition), facultatively-mediated adaptations that are emergently-moderated in certain contexts (e.g., mate preference differences suppressed by religion), and so forth. For instance, although the variation appearing in local sex ratios is strongly associated with shifts in men's and women's sexuality (Guttentag and Secord 1983), it remains unclear which sex differences in sexuality are facultatively versus emergently responding to local sex ratios (Hudson and Den Boer 2004; Lazarus 2002; Marlowe and Berbesque 2012; Pedersen 1991). Only by clearly specifying the precise mechanisms—obligate, facultative, and emergent—will researchers be able to fully explain the connections between human sex ratio variation and psychological sex differences.

Social Role Theory: Sex Differences Drawn on a Blank Slate

A fourth way psychological sex differences might be generated across cultures is through domain-general learning combined with sex role socialization. According to social role theory, most psychological sex differences result from exposure to sex role socialization, a process whereby a culture defines and enforces the appropriate ways of thinking, feeling, and behaving for men and women (Eagly 1987; Ruble and Martin 1998). For some social role theorists, the motivated origin of these sex roles primarily involves men's patriarchal attempts to subjugate and control women (Dworkin 1987; MacKinnon 1982; Rudman et al. 2013) and the privileging of men via androcentrism (Bem 1993). For others, evolved physical differences between the sexes create pancultural divisions of labor which, in turn, generate emergent sex roles (Alesina et al. 2013; Wood and Eagly 2002). Regardless, it is assumed by social role theorists that sex roles are the most direct cause amongst all observed *psychological* differences between men and women—with the only innate psychology of men and women presumed, by default, to consist of a single blank-slated domain-general learning mechanism (Katz 1995; Kitzinger 1994).

As a consequence, assuming that sex roles are the sole cause of sex differences, social role theorists expect that when men and women occupy more similar roles, sex differences will erode (Eagly and Wood 1999; Wood and Eagly 2002). Without extensive sex role socialization, in this view, there would be no observable psychological sex differences. Indeed, Wood and Eagly (2002) have specifically argued that "it is likely that extensive socialization is required to orient boys and girls to function differently" (p. 705) and Eagly et al. (2004) have asserted the "demise of many sex differences with increasing gender equality is a prediction of social role theory" (p. 289). Thus, the social role approach unambiguously predicts that psychological sex differences will be attenuated or even eliminated in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity (Bem 1993).

Measuring Psychological Sex Differences, Sex Role Socialization, and Sociopolitical Gender Equity Across Cultures

Evaluating these four perspectives—obligate, facultative-mediation, emergent-moderation, and social role—on how psychological sex differences vary (or not) across cultures is the focus of this chapter. Utilizing findings on sex differences across dozens of large cross-cultural studies, 21 sources of evidence are presented suggesting psychological sex differences that can be simultaneously evolved and variable across cultures. Moreover in most cases, evidence suggests counter-intuitively so that sex differences emerge more strongly in cultures with egalitarian sex role socialization and greater sociopolitical gender equity.

National indicators of sex role socialization and sociopolitical gender equity come in two basic forms. First, there are many international organizations that rate nations along dimensions related to sex role socialization and sociopolitical gender equity (see Else-Quest and Grabe 2012; Hyde 2012). Perhaps the most commonly used metric among this form estimating sociopolitical gender equality is the Gender Empowerment Measure (GEM) of the United Nations (Wood and Eagly 2002). The GEM is a composite index measuring gender inequality in three basic dimensions of empowerment—economic participation and decision-making, political participation and decision-making, and power over economic resources. Also in this category of national gender equity indicators are the Gender Gap Index of the World Economic Forum, the Gender Gap Index of Social Watch, and the Standardized Index of Gender Equality (SIGE; Dijkstra 2002).

The second basic type of indicator of sex role socialization and sociopolitical gender equity comes from cross-cultural studies that provide direct assessments of individual attitudes toward gender equality, women's freedom, and women's place in family and work. Based on these individual responses, researchers generate overall national averages along gender equity-related dimensions. Examples of this form of national gender equity include attitudes toward gender equality from nationally-representative attitude surveys (Inglehart and Norris 2003), surveys of hostile and benevolent sexism (Napier et al. 2010), and surveys of sex role ideology (SRI; Schmitt et al. 2014). Schmitt et al. (2014) reported in a 58-nation study that there are very high correlations among both type of measures, with the progressive SRI correlating positively with both the United Nations' GEM, $r(56) = .65$, $p < .001$, and the nationally-representative indexes of gender equality attitudes (Inglehart and Norris 2003), $r(30) = .76$, $p < .001$. In this chapter, reviewed findings will generally refer to how national levels of psychological sex differences are related to both types of indicators.

Evaluating Social Role Theory's Ability to Explain the Size of Sex Differences Across Cultures

According to the SSSM and various social role theories of sex differences, men's and women's psychological differences are solely the result of extensive sex role socialization processes and sociopolitical power differentials (Eagly et al. 2004; Eagly and Wood 1999). As a result, social role theorists assume that sex differences should be conspicuously smaller in cultures with more egalitarian sex role socialization or greater sociopolitical gender equity (Kasser and Sharma 1999; Wood and Eagly 2002; Zentner and Mitura 2012). Several data sources are relevant for evaluating this empirical claim, including sex differences in self-reported Big Five personality traits.

Big Five Personality Traits Several studies have found pervasive sex differences in Big Five personality traits, with women typically scoring higher in agreeableness

and neuroticism (Feingold 1994). Social role theory predicts that sex differences in all Big Five personality traits will be smaller in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. Several studies have evaluated this prediction. In almost every instance, the observed pattern of sex differences across cultures strongly disconfirms social role theory's predictions.

For instance, in one of the earliest and largest studies of sex differences in personality across cultures, Costa, Terracciano, and McCrae (2001) found in most countries women were higher on the extraversion facet of warmth, agreeableness, neuroticism, and the openness facet of feelings, whereas men scored higher on scales measuring the extraversion facet of assertiveness and the openness facet of ideas (see also Lynn and Martin 1997; McCrae 2002; Weisberg et al. 2011). In direct disconfirmation of social role theory, Costa et al. (2001) reported that sex differences in most Big Five personality traits were larger in egalitarian cultures where women have more equal opportunities with men (McCrae 2002). Both in self-report and other-report data, Asian and African cultures generally showed the smallest sex differences, whereas European and American cultures—where the egalitarian sex role socialization and sociopolitical gender equity indexes were generally higher—showed the largest differences (McCrae and Terracciano 2005).

In 2008, Schmitt and his colleagues reported findings from a cross-cultural study of sex differences across 55 nations of the International Sexuality Description Project ($n = 17{,}637$). Based on responses to the Big Five Inventory (Benet-Martínez and John 1998), women reported higher levels of extraversion, agreeableness, conscientiousness, and neuroticism than men across most nations. Overall, more egalitarian sex role socialization and greater sociopolitical gender equity were associated with larger sex differences in personality. The same pattern of findings also has been replicated in a large cross-cultural study by Lippa (2009), further disconfirming sex role theory.

In a study of 58 nations called the International Sexuality Description Project-2 (ISDP-2; Schmitt et al. 2014), data were collected from a more diverse set of cultures than previous studies, including samples from several Northern European nations with relatively high levels of gender egalitarianism (e.g., Denmark, Finland, Iceland, and Norway) and several new samples from less egalitarian nations (e.g., Colombia, Ecuador, Nigeria, and Swaziland). Men's and women's nation-level personality traits were related to Sex Role Ideology (SRI as directly measured in the ISDP-2), an index of gender equality attitudes from a nationally-representative study (Inglehart and Norris 2003), the Standardized Index of Gender Equality (SIGE), the Gender Empowerment Measure (GEM), and other indicators of sex role socialization and sociopolitical gender equity across this more diverse set of nations. Schmitt et al. (2014) reported across nearly all Big Five traits that egalitarian sex role socialization and greater sociopolitical gender equity were associated with larger sex differences in personality.

Overall, women generally score higher than men on measures of extraversion (Schmitt et al. 2014). As noted in Table 11.1, increasing levels of egalitarian sex role socialization and greater sociopolitical gender equity are generally associated with

Table 11.1 Social role theory and predictions about the effects of sociopolitical gender equity on sex differences across cultures

Trait	Effects of increasing sociopolitical gender equity on sex differences across cultures	Social role prediction
Traits typically higher in women		
Extraversion	Gender equity increases extraversion, more so in women—sex differences widen	Disconfirmed
Agreeableness	Gender equity increases agreeableness, more so in women—sex differences widen	Disconfirmed
Conscientiousness	Gender equity increases conscientiousness, more so in women—sex differences widen	Disconfirmed
Neuroticism	Gender equity decreases neuroticism, more so in men—sex differences widen	Disconfirmed
Love	Gender equity increases love, more so in women—sex differences widen	Disconfirmed
Resources mate preference	Gender equity decreases preferences for resources, more so in women—sex differences narrow	Confirmed
Intimate partner violence	Gender equity decreases intimate partner violence, more so in men—sex differences widen	Disconfirmed
Spatial location ability	Gender equity increases spatial location ability, more so in women—sex differences widen	Disconfirmed
Crying	Gender equity increases crying, more so in women—sex differences widen	Disconfirmed
Depression	Gender equity decreases depression, more so in men—sex differences widen	Disconfirmed
Benevolence values	Gender equity increases benevolence values, more so in women—sex differences widen	Disconfirmed
Empathetic occupation preference	Gender equity unrelated to empathetic occupation preference, sex differences relatively stable	Disconfirmed
Traits typically higher in men		
Openness	Gender equity unrelated to openness, sex differences relatively stable	Disconfirmed
Machiavellianism	Gender equity decreases Machiavellianism, more so in women—sex differences widen	Disconfirmed
Narcissism	Gender equity decreases Narcissism, more so in women—sex differences widen	Disconfirmed

Table 11.1 (continued)

Trait	Effects of increasing sociopolitical gender equity on sex differences across cultures	Social role prediction
Psychopathy	Gender equity decreases psychopathy, more so in women—sex differences widen	Disconfirmed
Social dominance orientation	Gender equity unrelated to social dominance, sex differences relatively stable	Disconfirmed
Dismissing attachment	Gender equity decreases dismissing attachment, more so in women—sex differences widen	Disconfirmed
Sociosexuality (SOI) overall	Gender equity increases sociosexuality, more so in women—sex differences narrow	Confirmed
SOI "enjoy casual sex"	Gender equity increases sociosexual "enjoy casual sex," more so in men—sex differences widen	Disconfirmed
Attractiveness mate preference	Gender equity decreases attractiveness preference, more so in women—sex differences widen	Disconfirmed
Self-esteem	Gender equity unrelated to self-esteem, sex differences relatively stable	Disconfirmed
Subjective well-being	Gender equity unrelated to subjective well-being, sex differences relatively stable	Disconfirmed
Height	Gender equity increases height, more so in men—sex differences widen	Disconfirmed
Body mass index/obesity	Gender equity increases body mass index and obesity, more so in men—sex differences widen	Disconfirmed
Blood pressure	Gender equity increases blood pressure, only in men—sex differences widen	Disconfirmed
Spatial rotation ability	Gender equity increases spatial rotation ability, more so in men—sex differences widen	Disconfirmed
Occupation preference	Gender equity unrelated to systematic occupation preference, sex differences relatively stable	Disconfirmed

increases in extraversion among both men and women, but the increase is greater among women, leading to wider sex differences in nations with higher gender equity. This is not always the profile of sex difference variation across cultures. However, in most cases, higher levels of egalitarian sex role socialization and greater sociopolitical gender equity are linked with larger sex differences in extraversion across cultures, in direct contradiction to social role theory.

Women also score higher in agreeableness and conscientiousness than men. Increasing levels of egalitarian sex role socialization and greater sociopolitical gender equity are generally associated with increases in agreeableness and conscientiousness among both men and women, but increases are greater among women, leading to wider sex differences in nations with higher gender equity. Neuroticism is also higher in women than men across cultures. Increasing levels of egalitarian sex role socialization and greater sociopolitical gender equity are generally associated with lower neuroticism among both men and women, but the decrease is greater among men, leading to wider neuroticism sex differences in nations with higher gender equity. Men are slightly higher in openness to experience, but this sex difference is unrelated to gender equity. Nonetheless, because social role theory predicts sex difference to be smaller in nations with more egalitarian sex role socialization and greater sociopolitical gender equity, social role theory is disconfirmed by this finding, as well (see Table 11.1).

Dark Triad Personality Traits Several studies have found sex differences in Dark Triad personality traits, with men typically scoring higher in Machiavellianism, Narcissism, and psychopathy (Foster et al. 2003; Jonason et al. 2009; McHoskey 2001). Social role theory predicts that sex differences in Dark Triad personality traits will be smaller in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. The ISDP-2 empirically evaluated these predictions of social role theory (Schmitt et al. 2014). In almost every instance, the observed pattern of sex differences across cultures strongly disconfirmed social role theory's predictions (see Table 11.1).

For example, Schmitt et al. (2014) found that both men and women are lower in Machiavellianism in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effect on women, $r(46) = -0.48$, $p < .05$, was much stronger than the effect on men, $r(46) = -0.19$. As result, the degree of sex difference in Machiavellianism was wider or larger in magnitude in nations with more egalitarian sex role socialization and greater sociopolitical gender equity (e.g., the effect size of national sex differences in Machiavellianism correlated positively with national GEM scores, $r(46) = 0.57$, $p < .001$. As an illustration, larger sex differences in Machiavellianism were found in high egalitarian cultures such as Netherlands ($d = 0.63$), Iceland ($d = 0.61$), New Zealand ($d = 0.60$), and Denmark ($d = 0.55$). Smaller sex differences in Machiavellianism were found in less egalitarian cultures such as Ethiopia ($d = -0.09$), Malaysia ($d = -0.10$), Bangladesh ($d = -0.17$), and Swaziland ($d = -0.19$). Very similar cross-cultural results were observed for sex differences in the Dark Triad traits of Narcissism and psychopathy. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in Dark Triad traits strongly disconfirmed sex role theory.

Social Dominance Orientation Sex differences in social dominance orientation have been documented such that men report significantly higher social dominance orientation than women (Sidanius et al. 2000; Sidanius and Pratto 1999). Generally, these sex differences have been found to be invariant across cultures. Schmitt et al. (2014) assessed social dominance orientation across 54 nations of

the ISDP–2 and found neither men's nor women's reported social dominance levels were related to egalitarian sex role socialization or greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in social dominance orientation strongly disconfirmed sex role theory.

Romantic Attachment Styles Sex differences in adult romantic attachment have been documented such that men report significantly more dismissing attachment levels than women (Bartholomew and Horowitz 1991; Del Giudice 2011). The finding of sex differences in dismissing romantic attachment seems to fit with social role theory, in that men are often socialized to be less emotional, less nurturing, and less willing to connect with others (Bem 1993). However, Schmitt et al. (2003) found sex differences in dismissing attachment were larger in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in dismissing attachment strongly disconfirmed sex role theory.

Love Sex differences in love have been documented such that women report significantly higher levels of many love styles and emotional investment tendencies than men (Bailey et al. 1987; Hendrick and Hendrick 1995; Schmitt and Buss 2000). Schmitt et al. (2009) found both men and women report higher levels of emotional investment in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on women were more profound, leading to larger sex differences in emotional investment in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in emotional investment strongly disconfirmed sex role theory.

Sociosexuality Sex differences in sociosexuality (i.e., attitudes toward having sex without commitment) have been documented such that men report significantly more unrestricted or permissive sociosexuality than women (Lippa 2009; Schmitt 2005b; Simpson and Gangestad 1991; see also Petersen and Hyde 2010). Schmitt (2005b) found both men and women reported higher sociosexuality in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on women were more profound, leading to more moderate sex differences in sociosexuality in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. Lippa (2009) replicated these results in a 53-nation study, concluding "although culture moderated the magnitude of sex differences, it was never the case that culture eliminated these sex differences, which remained quite powerful overall, despite the presence of significant cultural main effects and interactions" (p. 644). Even so, as noted in Table 11.1, cross-cultural patterns of sexual differentiation in sociosexuality strongly confirmed sex role theory.

Sociosexual—Enjoy Casual Sex with Different Partners Sex differences in sociosexuality item "I can imagine myself being comfortable and enjoying 'casual' sex with different partners" have been documented such that men report significantly more enjoyment of casual sex with different partners than women (Schmitt et al. 2014). Schmitt et al. (2014) found both men and women report higher enjoyment of

casual sex with different partners in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to *larger* sex differences in enjoyment of casual sex with different partners in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in enjoyment of casual sex with different partners strongly disconfirmed sex role theory.

Why the difference between the cross-cultural patterns of overall sociosexuality and the cross-cultural patterns with the item "enjoy casual sex" with different partners? According to Sexual Strategies Theory (Buss and Schmitt 1993), among those men and women who pursue a short-term sexual strategy, it is expected that men will seek larger numbers of partners than women (Schmitt et al. 2004). When women engage in short-term mating, they are expected to be more selective than men, particularly over genetic quality of short-term mates (Thornhill and Gangestad 2008). As a result, when more egalitarian sex role socialization and greater sociopolitical gender equity "set free" or release men's and women's short-term mating psychology, it can be expected that the specific item "enjoy casual sex with different partners" taps the release of men's evolved short-term mating psychology more than women's evolved short-term mating psychology.

Mate Preferences for Resources Sex differences in long-term mate preferences for cues to resource provisioning ability have been documented such that women report significantly more desire for long-term mates with status and resources than men do (Buss and Schmitt 1993; Ellis 1992; Feingold 1992; Li et al. 2002; Sprecher et al. 1994). Eagly and Wood (1999) found both men and women report less desire for long-term mates with resources in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on women were more profound, leading to smaller sex differences in the desire for long-term mates with resources in nations with more egalitarian sex role socialization and greater sociopolitical gender equity (see also Kasser and Sharma 1999; Zentner and Mitura 2012).

Specifically, Eagly and Wood (1999) found in one of four statistical tests that nations with greater sociopolitical gender equity had smaller sex differences in "Good Financial Prospects" preferences. In a recent replication, Zentner and Mitura (2012) found sex differences in "Ambition" shrink from a moderate effect size (d=−.65) in lowest gender equity nations to a still moderate effect size (d=−0.48) in highest gender parity nations (see Schmitt 2012). Similar results were found for sex differences in desires for Social Status (d=−0.31) and Good Financial Prospects (d=−0.55). Across only the highest gender equity nations, the average sex difference |d| was 0.42 which places sex differences in long-term mate preferences for resources in the 81st percentile of all meta-analytically documented psychological sex differences (Hyde 2005). Thus, although these results are consistent with social role theory, the results do not suggest sex differences in resource preferences eliminated in high equity cultures. Additionally, Gangestad et al. (2006) demonstrated the ability of social role theory to explain sex differences in resource preferences

is negated after controlling for ecological factors. Even so, as noted in Table 11.1, cross-cultural patterns of sexual differentiation in the desire for long-term mates with resources at least partially confirmed sex role theory.

Mate Preferences for Attractiveness Sex differences in long-term mate preferences for cues to beauty and youth have been documented such that men report significantly more desire for physically attractive long-term mates than women do (Buss and Schmitt 1993; Buss 1989; Feingold 1990; Li et al. 2002; Lippa 2007; Wheatley et al. 2014). These sex differentiated mate preferences have been documented in studies of real-life personal ads, online dating choices, and actual marital choice; in studies of older adults and nationally representative samples; and in studies of the outcomes of these preferences on patterns of jealousy, mate retention, and fertility (for a review, see Schmitt 2014). These sex differences also have been shown to vary in adaptive ways across cultures (Gangestad et al. 2006).

Zentner and Mitura (2012) found sex differences in preferences for physical attractiveness increase from a small effect size ($d = 0.24$) in lowest gender equity nations to a moderate effect size ($d = 0.51$) in highest gender parity nations (see Schmitt 2012). Schmitt et al. (2014) also found sex differences in long-term mate preferences for physical attractiveness are largest in nations with more egalitarian sex role socialization and greater sociopolitical gender equity, particularly because women, but not men, reduce their desire for physical attractiveness in long-term mates within egalitarian sex role socialization and greater sociopolitical gender equity nations. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in long-term mate preferences for attractiveness strongly disconfirmed sex role theory.

Self-Esteem Sex differences in self-esteem have been documented such that men report significantly higher self-esteem than women (Kearney-Cooke 1998; Kling et al. 1999). In the ISDP-2, Schmitt et al. (2014) found both men and women report higher levels of self-esteem in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to larger sex differences in self-esteem in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in self-esteem strongly disconfirmed sex role theory.

Subjective Well-Being Sex differences in subjective well-being have been documented such that men report somewhat higher subjective well-being than women, though this is mainly due to women's heightened negative affect responsivity (Fujita et al. 1991) and differences are often negligible after controlling for other demographic factors (Diener et al. 1999; Lucas and Gohm 2000). Even so, in the ISDP-2 Schmitt et al. (2014) found both men and women report higher levels of subjective well-being in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects of egalitarian sex role socialization on men were more profound, leading to larger sex differences in subjective well-being

in nations with more egalitarian sex role socialization. The effects of greater sociopolitical gender equity on men and women were similar, leading to no association between sociopolitical gender equity and sex differences in subjective. As noted in Table 11.1, these cross-cultural patterns of sexual differentiation in subjective well-being strongly disconfirmed sex role theory.

Intimate Partner Violence (IPV) Sex differences in IPV have been documented such that women report significantly higher perpetration of IPV than men (Archer 2000; Magdol et al. 1997). For example, Archer (2000, 2006) analyzed reports of IPV across more than 70 nations, finding that women self-report perpetrating IPV more than men do. Examining sex differences in the Conflict Tactics Scale (Straus 1979, 2008), Archer found more women than men perpetrated most acts of IPV. In the ISDP-2, Schmitt et al. (2014) also examined sex differences in perpetration of IPV using a self-report measure (Dobash et al. 1998), finding both men and women report lower levels of IPV in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects of egalitarian sex role socialization on men were more profound, leading to larger sex differences in IPV in nations with greater sociopolitical gender equity and more egalitarian sex role socialization. As noted in Table 11.1, these cross-cultural patterns of sexual differentiation in IPV strongly disconfirmed sex role theory.

Height Sex differences in height have been documented such that men are taller than women across all cultures (Gaulin and Boster 1985; Lippa 2009), a difference that likely has been consistent since 150,000 years ago or even earlier (Ruff 2002). In the ISDP-2, Schmitt et al. (2014) found both men and women report taller height in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to larger sex differences in height in nations with more egalitarian sex role socialization and greater sociopolitical gender equity (see also, Lippa 2009). As noted in Table 11.1, cross-cultural patterns of sexual differentiation in height strongly disconfirmed sex role theory (cf. Touraille 2013).

Body Mass Index (BMI) and Obesity Sex differences in body mass index and obesity have been documented such that men are often slightly higher on these characteristics than women (Eveleth and Tanner 1990; Pasco et al. 2012). In the ISDP-2, Schmitt et al. (2014) found both men and women report larger BMI and obesity rates in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to larger sex differences in BMI and obesity in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in BMI and obesity strongly disconfirmed sex role theory.

Blood Pressure Sex differences in blood pressure have been documented such that men have higher blood pressures than women (Hottenga et al. 2005). Schmitt et al. (2014) found men report higher blood pressure in nations with more egalitarian sex role socialization and greater sociopolitical gender equity, whereas women's blood

pressure is unrelated, leading to larger sex differences in blood pressure in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in blood pressure disconfirmed sex role theory.

Spatial Rotation Ability Sex differences in spatial rotation ability have been documented such that men have better spatial rotation ability than women (Silverman et al. 2007; Silverman et al. 1996; Voyer et al. 1995). In a large cross-cultural study, Lippa et al. (2010) found both men and women report better spatial rotation ability in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to larger sex differences in spatial rotation ability in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in spatial rotation ability strongly disconfirmed sex role theory.

Spatial Location Ability Sex differences in spatial location ability have been documented such that women have better spatial location ability than men (Silverman et al. 2007; Silverman et al. 1996; Voyer et al. 2007). In a large cross-cultural study, Silverman et al. (2007) found men's and women's spatial location abilities were unrelated to egalitarian sex role socialization and sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in spatial location ability disconfirmed sex role theory.

Crying Sex differences in crying behavior have been documented such that women cry more than men (Becht et al. 2001; Lombardo et al. 2001; Santiago-Menendez and Campbell 2013; van Hemert et al. 2011; Vingerhoets and Scheirs 2000). Evaluating national data from van Hemert et al. (2011), Schmitt et al. (2014) found both men and women report crying more in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on women were more profound, leading to larger sex differences in crying behavior in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in crying behavior strongly disconfirmed sex role theory.

Depression Sex differences in depression have been documented such that women have nearly twice the rate of depression as men (Fischer and Manstead 2000; Hopcroft and McLaughlin 2012; Nolen-Hoeksema 2001). Hopcroft and McLaughlin (2012) found both men and women report lower rates of depression in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on men were more profound, leading to larger sex differences in depression in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in depression strongly disconfirmed sex role theory.

Values Sex differences in values have been documented such that women report higher levels of benevolence and universalism values, whereas men report higher

levels of power, achievement, and hedonism values (Schwartz and Rubel 2005; Schwartz and Rubel-Lifshitz 2009). Schwartz and Rubel (2005) and Schwartz and Rubel-Lifshitz (2009) found both men and women report higher benevolence in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. However, the effects on women were more profound, leading to larger sex differences in benevolence in nations with more egalitarian sex role socialization and greater sociopolitical gender equity. Similar findings were observed for sex differences in universalism, power, achievement, and hedonism. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in values strongly disconfirmed sex role theory.

Occupational Preferences and Interests Sex differences in occupational preferences and interests have been documented such that men report significantly more interest in systematic, thing-oriented professions and women report significantly more interest in empathetic, people-oriented professions (Konrad et al. 2000; see also Nettle 2007; Su et al. 2009). Lippa (2010) found across 53 nations that men's and women's occupational preferences are entirely unrelated to egalitarian sex role socialization and greater sociopolitical gender equity. As noted in Table 11.1, cross-cultural patterns of sexual differentiation in occupational preferences disconfirmed sex role theory.

Nation-Level Covariates as Alternative Explanations The highly consistent pattern of sex differences getting larger in nations with more egalitarian sex role socialization and greater sociopolitical gender equity could be explained by forces that statistically overwhelm the power of social role theory to explain sex differences. For instance, sex role socialization and sociopolitical gender equity are highly correlated with wealth, prevalence of education, and overall human development of nations. Schmitt et al. (2014) noted that after controlling for these and other factors, virtually all of the above findings that disconfirmed social role theory still emerge. Indeed, many of the counter-intuitive associations between sex differences and sociopolitical gender equity *increased* after controlling for potential covariates. For instance, the finding that sex differences in neuroticism were larger in nations with more progressive sex role ideology was intensified after controlling for gross domestic product of nation. The same was true for links between sex differences in neuroticism and the gender gap index, the gender equality index, and the SIGE. Future research should examine multiple control variables in ways that allow for a more complete evaluation of these alternative explanations (see Nettle 2009).

Reference-Group Effects as Alternative Explanations Guimond et al. (2007, 2008) have suggested that sex differences in self-reported personality traits are suppressed in less progressive nations because of reference-group effects. That is, men and women may compare themselves only to their own gender when completing surveys in less progressive cultures, but in more progressive nations men and women compare themselves to everyone, resulting in more accurate sex differences in nations with egalitarian sex role socialization and greater sociopolitical gender equity (Biernat et al. 1991). If true, this has dire implications for gender similarities theory (Hyde 2005).

It would suggest that the moderate to large sex differences commonly observed in more progressive Northern European nations are "truer" estimates of psychological sex differences (after all, men and women are comparing themselves to everyone, not just their own gender), whereas in more traditional cultures researchers are merely observing masked versions of what, according to social role theory, must be incredibly larger sex differences in personality (Lukaszewski et al. 2013). Finding that so many sex differences in psychology range from large in egalitarian nations to extremely large in more traditional cultures would provide strong refutation of gender similarities theory (Hyde 2005). According to Fischer (2010), Lippa (2009), and Schmitt et al. (2014), such a perspective is unlikely for several reasons.

First, if reference-group effects were masking sex differences in traditional cultures, researchers should observe smaller standard deviations in men's and women's distributions in traditional cultures compared to more progressive cultures (where men and women compare themselves to everyone). Empirically, this is typically not the case (Fischer 2010; Lippa 2009; Schmitt et al. 2014). Second, if reference-group effects were the driving force behind counter-intuitively larger sex differences in egalitarian nations, researchers should observe all survey items are equally effected by reference-group effects. Again, this is not the case empirically (Fischer 2010; Lippa 2009; Schmitt et al. 2014). Third, if reference-group effects were the driving force behind counter-intuitively larger sex differences in egalitarian nations, researchers should observe both men and women are equally biased in their responses. Again, this is not the case (Fischer 2010; Lippa 2009; Schmitt et al. 2014).

An additional limitation of reference-group effects for discounting the robust disconfirmation of social role theory in this review is that many of the findings reviewed earlier transcend of the reference-group limitations of self-report methods. Reference-group effects cannot explain the finding that sex differences in height, BMI, obesity, and blood pressure are larger in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Reference-group effects cannot explain the finding that sex differences in tested spatial rotation and spatial location abilities are larger in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Such measures represent fair "common rule" tests of social role theory (Biernat et al. 1991), and in nearly every case social role theory was strongly disconfirmed.

Additional Psychological Traits to Consider Not all psychological sex differences have been measured across large numbers of nations in a way that allows researchers to relate the size of nation-level sex differences to indicators of sex role socialization and sociopolitical gender equity. It is possible that additional psychological traits will be discovered, measured, and documented as sexually differentiated across cultures that either support or further refute social role theory. Given the reviewed findings here, researchers should probably expect the vast majority of future research findings that will refute social role theory.

In addition, there are some psychological traits that do not typically show sex differences, on average, but still relate to sex role socialization and sociopolitical

gender equity in interesting ways. For instance, although sex differences in the high-end distribution of math scores can be substantial (Halpern et al. 2007), mean-level sex differences in math ability have been shown to be minimal (Hyde et al. 1990; Hyde and Mertz 2009). In one of two cross-cultural datasets, Else-Quest et al. (2010) found no significant links between the size of a nation's mean-level sex difference in math and indicators of global sociopolitical gender equity. However, in another dataset they did find some links. Importantly, the size of a nation's sex difference in math was most closely associated with national indicators of women being given greater access to education and research jobs, with such indicators having positive associations with women's (more so than men's) math scores. The precision with which Else-Quest et al. (2010) identified this potential sociological source of psychological sex difference is laudable and informative, but their overall findings did not provide broad sweeping confirmation of social role theory.

Evaluating Life History Theory as a Facultative Mediator of Sex Differences Across Cultures

According to evolutionary psychologists who take life history approaches (Ellis et al. 2009; Geary 2002; Kaplan and Gangestad 2005), many human psychological adaptations are facultatively designed to attend to particular sources of ecological information and generate specially-designed, highly functional forms of behavior. As a result, many aspects of human culture—including the magnitude or degree of sex differences across human cultures—can be both evolved and variable. In particular, ecological stress is thought to have a profound effect on men's and women's psychology, and does so in a slightly different way in men and women.

According to Psychosocial Acceleration Theory (Belsky 2012; Belsky et al. 1991), in stressful ecological contexts, both men and women are thought to facultatively pursue a faster life history strategy composed of psychological traits including dismissing attachment, anti-sociality, short-term temporal orientations, and prolific short-term mating. Many of these traits display a sex difference such that men are higher in the trait than women. Because the effects of ecological stress are thought to be more profound among women on many of these traits (Ellis 2004), researchers often expect smaller sex differences in high stress cultures (Schmitt 2011). As shown in Table 11.2, based on measures of national pathogen stress (Fincher and Thornhill 2012) and responses to personality scales across multiple studies, eight psychological traits relevant to Psychosocial Acceleration Theory followed the predicted pattern of sexual differentiation across cultures, including sex differences in love, resource mate preferences, Narcissism, psychopathy, social dominance orientation, dismissing attachment, attractiveness mate preferences, and self-esteem. Four traits disconfirmed this theory, including sex differences in agreeableness, Machiavellianism, sociosexuality, and sociosexual enjoy casual sex (see also, Schmitt 2005b).

Table 11.2 Life history theory and predictions about the effects of local ecology on sex differences across cultures

Trait	Effects of ecological stress on sex differences across cultures	Life history prediction
Traits typically higher in women		
Agreeableness	Ecological stress increases agreeableness in men and women—sex differences stable	Disconfirmed
Love	Ecological stress decreases love, more so in women—sex differences narrow	Confirmed
Resources mate preference	Ecological stress increases resources preferences, more so in women—sex differences widen	Confirmed
Traits typically higher in men		
Machiavellianism	Ecological stress decreases Machiavellianism, more so in men—sex differences narrow	Disconfirmed
Narcissism	Ecological stress increases Narcissism, more so in women—sex differences narrow	Confirmed
Psychopathy	Ecological stress increases psychopathy, only in women—sex differences narrow	Confirmed
Social dominance orientation	Ecological stress increases social dominance orientation, only in women—sex differences narrow	Confirmed
Dismissing attachment	Ecological stress increases dismissing attachment, more so in women—sex differences narrow	Confirmed
Sociosexuality (SOI) overall	Ecological stress decreases sociosexuality, more so in women—sex differences widen	Disconfirmed
SOI "enjoy casual sex"	Ecological stress decreases "enjoy casual sex" in men and women—sex differences stable	Disconfirmed
Attractiveness mate preference	Ecological stress increases attractiveness preferences, more in women—sex differences narrow	Confirmed
Self-esteem	Ecological stress increases self-esteem, only in women—sex differences narrow	Confirmed

Evaluating Religiosity as an Emergent Moderator of Sex Differences Across Cultures

As noted earlier, religion may be an especially potent "emergent moderator" of psychological adaptations in men and women across cultures (e.g., Kirkpatrick 2011; McCullough et al. 2012; Mealey 1985). Some researchers expect most religions will suppress psychological adaptations involving short-term mating, and do so more

Table 11.3 Religion's emergently-moderated sex differences across cultures

Trait	Effects of religiosity on sex differences across cultures	Suppression prediction
Traits typically higher in women		
Agreeableness	Religiosity increases agreeableness, more so in men—sex differences narrow	Confirmed
Love	Religiosity decreases love, more so in women—sex differences narrow	Confirmed
Traits typically higher in men		
Machiavellianism	Religiosity decreases Machiavellianism, only in men—sex differences narrow	Confirmed
Narcissism	Religiosity decreases Narcissism, only in men—sex differences narrow	Confirmed
Psychopathy	Religiosity decreases psychopathy, only in men—sex differences narrow	Confirmed
Social dominance orientation	Religiosity decreases social dominance orientation, more so in men—sex differences narrow	Confirmed
Dismissing attachment	Religiosity increases dismissing attachment, more so in women—sex differences narrow	Confirmed
Sociosexuality (SOI) overall	Religiosity decreases sociosexuality, more so in women—sex differences widen	Disconfirmed
SOI "enjoy casual sex"	Religiosity decreases "enjoy casual sex" in men and women—sex differences relatively stable	Disconfirmed

to women's than men's short-term mating psychology (Baumeister and Twenge 2002). In addition, religion might enhance psychological adaptations having to do with prosociality and reduce antisociality (Fincher and Thornhill 2012; Weeden and Kurzban 2013), and do so more in one sex than the other. As shown in Table 11.3, based on measures of religiosity and personality in the ISDP-2, seven psychological traits followed this pattern, including sex differences in agreeableness, love, Machiavellianism, Narcissism, psychopathy, social dominance orientation, and dismissing attachment. Two traits disconfirmed these predictions, including sex differences in sociosexuality and sociosexual enjoy casual sex.

Conclusion

Only a few decades ago, parental socialization of children was thought to be a primary force in the constructivist shaping of children's psychological traits (Bruner 1986; Fosnot 1996). Today, psychologists know from genetically-informative

designs that children's genes often evoke parental behaviors that only appear to be socializing factors (Kagan 1999), and shared genes among biological parents and their children account for much of the ostensible association between parental behavior and childhood personality (Krueger and Johnson 2008; Plomin 2008). Psychologists no longer place most of the blame for children's personality traits and mental health outcomes on parental socialization (Harris 1998; Maccoby 2000). In a similar manner, new knowledge from cross-cultural research suggests that sex role socialization may no longer be to blame for most patterns of psychological sex differences across cultures (see also, Udry 2000). Instead, evolved combinations of men's and women's obligate, facultatively-mediated, and emergently-moderated psychological adaptations may better account for sex differences across cultures.

In this chapter, evidence was marshaled across 21 data sources that evaluated the foundational assumption of social role theory that psychological sex differences directly result from sex role socialization and that, as consequences, psychological sex differences will be smaller in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Empirically, sex differences in most psychological traits—in personality, sexuality, attitudes, and cognitive abilities—are conspicuously *larger* in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Even sex differences in many physical traits such as height, obesity, and blood pressure were shown to be larger in cultures with more egalitarian sex role socialization and greater sociopolitical gender equity. Three alternative evolutionary perspectives on sex differences—obligate, facultative-mediation, and emergent-moderation—appeared to better explain the universal and culturally-variable sex differences reliably observed across cultures.

From an evolutionary perspective, it would be remarkable if men and women have not evolved at least some differences in psychological design. Indeed, as Vandermassen (2011) has noted, "that human males and females should have evolved to be psychologically identical, for example, is a theoretical impossibility, and, indeed, turns out to be untrue" (p. 733). At this point, it is perhaps unscientific to assert absolutely no sex-specific psychological adaptations exist in humans (Buss and Schmitt 2011; Kenrick et al. 2010), yet many social scientists continue to assert this is so (Winegard et al. 2014). One reason behind the extreme popularity of the SSSM's sex difference denialism is that magnitude of many sex differences noticeably varies across cultures. Because this variation is in a few cases linked to sex role variation in ways consistent with social role theory across cultures (e.g., mate preferences for resources), some researchers have spotlighted these few peculiar cases and advanced all-encompassing theories about the primary causal force of sex roles in generating psychological sex differences across cultures (Eagly and Wood 1998; Wood and Eagly 2002). In this chapter, the legitimacy of social role explanations as the sole source of psychological sex differences has been called into serious question (see also Udry 2000). In most cases, the cross-cultural evidence has directly refuted patriarchal social role explanations of sex differences. Social role theory, as a theory that purportedly explains the degree of psychological sex differences across cultures, should probably be considered a scientific dead end. At the very least, psychological science needs other perspectives to explain the sweeping patterns of culturally variable sex differences documented in this chapter.

Evolutionary perspectives take a different and ultimately more profitable approach to understanding the relationship between culture and sex differences in psychology (Campbell 2002). First, evolutionary psychology perspectives offer mechanisms for why cultural universals *and* cultural variations exist in sex differences (see Pirlott and Schmitt 2014). For example, Gangestad et al. (2006) explained that universal sex differences in mate preferences for physical attractiveness are universally generated by evolved sex-specific psychological adaptations, but these mechanisms are also facultatively mediated by local ecology—if environments have high pathogen prevalence, then mate preferences for physical attractiveness are adaptively enhanced. If the local environment has low pathogen prevalence, then adaptive desires de-emphasize physical attractiveness in potential mates.

Second, evolutionary psychology perspectives offer explanations of cultural *change* (Mesoudi et al. 2006). When levels of pathogen prevalence shift within a culture, the corresponding emphasis on physical attractiveness should shift in that culture, as well. Moreover, the degree to which pathogens affect the adaptations one sex more than the other would explain why the size of sex differences varies across cultures. Thus, evolutionary perspectives on phenotypic plasticity and evoked culture such as Gangestad et al. (2006) possesses the ability to explain pancultural universals and facultative variations, something very much missing from SSSM accounts of culture and sexuality (Maccoby 2000). It is not the case that all aspects of culture will be subject to evolutionary explanations, at least in terms of genetic evolution (see Brown et al. 2011). Still, by combining genetic and cultural levels of evolution in sophisticated ways—utilizing obligate, facultatively-mediated, emergently-moderated, and social role approaches—more complete and scientifically fruitful understandings of psychological sex differences will prosper.

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