

Evolutionary Psychology and Feminism

David Michael Buss · David P. Schmitt

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Abstract This article provides a historical context of evolutionary psychology and feminism, and evaluates the contributions to this special issue of *Sex Roles* within that context. We briefly outline the basic tenets of evolutionary psychology and articulate its meta-theory of the origins of gender similarities and differences. The article then evaluates the specific contributions: Sexual Strategies Theory and the desire for sexual variety; evolved standards of beauty; hypothesized adaptations to ovulation; the appeal of risk taking in human mating; understanding the causes of sexual victimization; and the role of studies of lesbian mate preferences in evaluating the framework of evolutionary psychology. Discussion focuses on the importance of social and cultural context, human behavioral flexibility, and the evidentiary status of specific evolutionary psychological hypotheses. We conclude by examining the potential role of evolutionary psychology in addressing social problems identified by feminist agendas.

Keywords Evolutionary psychology · Feminism · Sexual strategies · Gender differences

Introduction

We are delighted with the opportunity to comment on research and essays in the exciting and high-impact

field of evolutionary psychology—a field of research that has revolutionized how we understand human psychological mechanisms and how they interact with social, cultural, and ecological variables to produce manifest behavior. It is also an exciting opportunity to clarify the basic tenets of evolutionary psychology, discuss the interface with feminist scholarship, and address some of the misunderstandings commonly held about work in this field. Dialoguing with other scholars about these issues in this format provides an invaluable opportunity to facilitate future progress in this field.

It is a hallmark of the maturation of the interface of evolutionary psychology and feminist perspectives that *Sex Roles* has devoted an entire special issue to its stock-taking. First, we briefly review some of the main tenets of evolutionary psychology; fruitful dialogue requires being absolutely clear about those foundational tenets, the nature of hypotheses developed according to the framework, and consequently the relevant empirical tests of those hypotheses. Second, we review some historical landmarks of the links between evolutionary psychology and feminism. Third, we comment on the specific contributions to this special issue. We conclude by looking to the future—discussing the broader implications for facilitating a productive interface between these perspectives.

Basic Tenets of Evolutionary Psychology: A Brief Sketch

Evolutionary psychology is a hybrid discipline that draws insights from modern evolutionary theory, biology, cognitive psychology, anthropology, economics, computer science, and paleoarchaeology. The discipline rests on a foundation of

D. M. Buss (✉)
Department of Psychology, University of Texas,
Austin, TX 78712, USA
e-mail: dbuss@psy.utexas.edu

D. P. Schmitt
Bradley University,
Peoria, IL, USA

core premises (Buss 2011; Confer et al. 2010; Tooby and Cosmides 2005):

- (1) Manifest behavior depends on underlying psychological mechanisms, information processing devices housed in the brain, in conjunction with the external and internal inputs—social, cultural, ecological, physiological—that interact with them to produce manifest behavior;
- (2) Evolution by selection is the only known causal process capable of creating such complex organic mechanisms (adaptations);
- (3) Evolved psychological mechanisms are often functionally specialized to solve adaptive problems that recurred for humans over deep evolutionary time;
- (4) Selection designed the information processing of many evolved psychological mechanisms to be adaptively influenced by specific classes of information from the environment;
- (5) Human psychology consists of a large number of functionally specialized evolved mechanisms, each sensitive to particular forms of contextual input, that get combined, coordinated, and integrated with each other and with external and internal variables to produce manifest behavior tailored to solving an array of adaptive problems.

Several key implications follow from these premises. First, human behavior is not, and cannot be, “genetically determined”; environmental input is necessary at each and every step in the causal chain—from the moment of conception through ontogeny and through immediate contextual input—in order to explain actual behavior. Second, underlying psychological mechanisms must be distinguished from manifest behavior. Just as explaining manifest calluses requires identifying underlying cell-producing mechanisms and the environmental input necessary for their activation (repeated friction to the skin), explaining manifest human behavior requires identifying the underlying psychological mechanisms and the environmental input necessary for their activation and implementation. Third, social and cultural inputs are necessary and integral parts of the scientific analysis of all forms of human social behavior. Fourth, evolutionary psychology contends that human behavior is enormously flexible—a flexibility afforded by the large number of context-dependent evolved psychological adaptations that can be activated, combined, and sequenced to produce variable adaptive human behavior.

These basic tenets render it necessary to distinguish between “evolutionary psychology” as a meta-theory for psychological science and “specific evolutionary hypotheses” about particular phenomena, such as conceptual proposals about aggression, resource control, or particular strategies of human mating. Just as the bulk of scientific

research in the field of non-human behavioral ecology tests specific hypotheses about evolved mechanisms in animals, the bulk of scientific research in evolutionary psychology tests specific hypotheses about evolved psychological mechanisms in humans, hypotheses about byproducts of adaptations, and occasionally hypotheses about noise (e.g., mutations).

As in all scientific endeavors, the outcomes of the empirical research necessarily vary from hypothesis to hypothesis. Some will be empirically supported. Some will be falsified. And some will receive mixed support and require modification as the helical interplay between theories and empirical data unfolds. We applaud the efforts of the authors in this special issue who have conducted empirical tests of specific evolutionary psychological hypotheses, ranging from adaptations to ovulation through design features of short-term mating strategies. And we concur with the authors of these articles that the best way to make progress is by using the scientific method to test empirical claims.

An Evolutionary Meta-theory of Gender Differences and Gender Similarities

Evolutionary psychology provides a meta-theory for predicting when and where to expect gender differences and when and where to expect gender similarities (Buss 1995a). Women and men are expected to *differ* in domains in which they have faced recurrently different adaptive problems over human evolutionary history. They are expected to be *similar* in all domains in which they have faced similar adaptive problems over human evolutionary history.

Although the final scientific word is not yet in, we suspect that the similarities outnumber the differences. These include similarities in taste preferences (an exception occurs when women get pregnant and hence face a different suite of adaptive problems), and similarities in habitat preferences (e.g., for resource-rich environments containing places for refuge), similarities in kin investment as a function of genetic relatedness, and similarities in adaptations to avoid the “hostile forces of nature” such as predators, parasites, and other environmental hazards. This sentiment is echoed by Hannagan (2011), who suggests that “What is shared among the genders is a motivation for the elimination of economic or social competitors and the desire for control over events (i.e., ‘politics’)” (this issue).

Mating and sexuality, in contrast, are domains in which women and men are known to have confronted different adaptive problems. For example, unlike men, women have for millions of years faced the adaptive problems of pregnancy and breastfeeding, both of which are metabolically expensive endeavors. Men but not women have faced

the adaptive problem of paternity uncertainty and the risk of misdirected parental investment—adaptive problems incurred as a consequence of internal female fertilization.

Despite domains in which evolutionary psychologists typically predict gender-differentiated adaptations, even within mating women and men face many similar adaptive problems. In long-term mating, for example, both genders face the problem of identifying mates who will commit to them over the extended temporal durations (Buss and Schmitt 1993). Consequently, psychological solutions to the commitment problem, such as seeking signs of love as a commitment device, are expected to be largely similar for women and men (Buss 1988; 2006).

The key point is that the meta-theory of evolutionary psychology is perfectly compatible with the feminist gender similarities hypothesis (Hyde 2005) in domains in which the genders have faced similar adaptive problems, which include most domains of cognitive abilities. And it is also compatible with the empirical meta-analyses conducted by feminist scientists who find that the genders differ profoundly in some domains, such as the desire for sexual variety (Oliver and Hyde 1993) and physical aggression, which is mostly a male form of intrasexual competition (Archer 2009; Eagly 1987). In short, evolutionary psychology does not hold that men and women are from different planets, psychologically speaking. Rather, it provides a sound and nuanced theoretical rationale for predicting domains of similarity as well as domains of difference.

An Historical Perspective on Evolutionary Psychology and Feminism

Historically, feminist scholarship and evolutionary psychology have tended to be entirely separate endeavors, despite focusing on many of the same topics. Both, for example, focus their conceptual lenses on gender differences and their causal origins. Furthermore, sex, power, and social conflict have been key content domains (Buss and Malamuth 1996). Despite the similarities in these foci, the two are in some ways incommensurable. Evolutionary psychology is a scientific meta-theoretical paradigm designed to understand human nature and has no political agenda. Although we are not naïve in thinking that personal politics have no bearing on scientific work, empirical findings show that the private political orientations of evolutionary psychologists are in fact highly variable, and contrary to some claims, are no more conservative or liberal than those of non-evolutionary psychologists (Tybur et al. 2007). Feminism, in contrast, is partly a scholarly scientific enterprise, but also often contains explicitly political agendas (although these differ among feminist scholars, as noted below). In these senses,

the two approaches or disciplines are in some ways overlapping but in some ways incommensurable.

Neither “feminism” nor “evolutionary psychology” is theoretically monolithic. Among feminist psychologists, for example, some such as Hyde have argued that gender differences have been exaggerated and that women and men are much more similar than they are different (e.g., Hyde 2005). In contrast to “similarity feminists,” other feminist psychologists, such as Eagly, have argued that gender differences exist, are consistent across studies, and should not be ignored merely because they are perceived to conflict with certain political agendas (Eagly 1995). “Difference feminists” view those who minimize gender differences as interfering with efforts at attaining gender equality. This is just one dimension among many along which scholars who fall with the broad rubric of “feminism” differ.

Evolutionary psychologists, like feminist scholars, are not univocal in their theoretical positions (see *The Handbook of Evolutionary Psychology*, Buss, 2005a, for a sample of the range of positions). Although all share the view that natural and sexual selection are key causal processes that shaped human psychology, they differ in their emphasis on domain-specific versus domain general adaptations, on the role and importance of individual differences within genders, and on the causal role of culture within the explanatory framework (Buss 2011).

With these distinctions in mind, one can still make a few broad generalizations about the admittedly uneasy history of feminism and evolutionary psychology. In the 1970s and 1980s, feminists tended to show antipathy to evolutionary approaches to psychology (see Vandermassen 2005, for an excellent historical treatment feminist reactions to evolutionary psychology). Some feminists saw evolutionary approaches as antithetical to political goals, such as achieving gender equality. Some expressed concern that if gender differences exist and are evolved, then some might claim that gender differences ‘ought’ to exist, and these theories might therefore be used to oppress women and interfere with achieving gender equality. Some worried that documentation of evolved differences might lead to justification of bad or immoral behavior. If men have an evolved desire for sexual variety, for example, some worried that men would use that scientific finding to justify cheating on their romantic partners (e.g., “I couldn’t help it, dear; my genes for an evolved desire for sexual variety made me do it”). Misunderstandings about the fundamental tenets of evolutionary psychology were common—something historically true in psychology specifically, and in the social sciences more generally (see Park 2007, for persistent misunderstandings in psychology textbooks; see Confer et al. 2010 for a clarification of common misunderstandings).

The beginnings of a rapprochement between feminism and evolutionary psychology began among female scientists who described themselves as both “feminists” and “evolutionists” such as Smuts (1995), Gowaty (1992), and Hrdy (1981). Then in 1996, Buss and Malamuth published an edited book based on a year-long symposium series on sex, power, and conflict held at the University of Michigan that featured evolutionists, feminists, and evolutionary feminists. The book, entitled “*Sex, Power, Conflict: Evolutionary and Feminist Perspectives*,” attempted to bring together leading scholars in an attempt to encourage scholarly dialogue between perspectives previously seen as antithetical. Judging by the citation count (61 according to Google Scholar as of this writing), the book largely failed to have much impact in this attempt at rapprochement. Another edited book based on another symposium series, “*Feminism and Evolutionary Biology: Boundaries, Intersections, and Frontiers*,” by Gowaty 1997, also made little impact (71 Google Scholar citations as of this writing). Another modest effort attempted to use evolutionary psychology to extend a feminist analysis of domestic violence against women (Peters et al. 2002).

The next landmark was the publication in 2005 of the book “*Who’s Afraid of Charles Darwin? Debating Feminism and Evolutionary Theory*,” by Vandermassen (a self-described Darwinian feminist). The story behind this book is interesting, and worth noting. Vandermassen started out her academic career firmly embedded within, and embracing, traditional feminist scholarship. After reading some harsh critiques of evolutionary psychology, her intellectual curiosity led her to read the original sources within evolutionary psychology. This intellectual foray was eye-opening. She reported that many feminist critics had badly distorted the actual arguments made by evolutionary psychologists. She also found, to her surprise and contrary to her view prior to reading these, that evolutionary psychology had much merit, and could actually be used to benefit feminist agendas.

Vandermassen, in the book, takes feminists to task for mischaracterizing evolutionary psychology. And she takes evolutionary psychologists to task for failing to recognize the important contributions made by feminist scholars (see also Vandermassen 2010). She notes that feminists have been prematurely “critical and dismissive of . . . evolutionary psychology” (Liesen 2010, this issue), and makes a powerful argument that evolutionary psychology should not only be embraced by feminist scholars, but that evolutionary psychology also provides a powerful metatheory for feminism. This sentiment has been echoed by Hannagan (2008), who argues that “As Darwinian feminists explain, empirical science based on an evolutionary framework can be a powerful tool for understanding gendered dynamics and power relations . . . This approach is not just good for feminists, it is good social science” (p. 473).

We see this special issue of *Sex Roles* as another milestone, although our evaluation of it is somewhat mixed. On the positive side, it contains some excellent articles that provide accurate depictions and move the science forward. At the same time, some articles and book reviews contain the same errors and misunderstandings that seem stubbornly persistent, despite numerous published efforts to address them (e.g., Confer et al. 2010). We note two below.

Flexibility and Context-Contingency of Human Behavior

Liesen (2010) characterizes evolutionary psychology as having the assumption that “human behavior is not very flexible” and asserts that evolutionary psychologists do not “consider the impacts of environmental variables on female/male behavior and reproductive strategies” (this issue). We, along with Liesen, would object to any theoretical position that viewed human behavior as inflexible or lacking complex environmental contingencies. Fortunately, evolutionary psychology does not subscribe to these views (see basic tenets of evolutionary psychology above). Buss (2003), for example, describes a complex menu of evolved mating strategies, and discusses in depth empirical research on social and environmental variables that influence these mating strategies. A short list of social and environmental variables discussed explicitly for short-term mating alone includes: father absence versus presence during development, transitions between mates, operational sex ratio in the mating pool, pathogens in the local environment, cultural contexts of food sharing, cultural values places on virginity, and various other legal, social, and cultural sanctions (Buss 2003, pp. 93–95; see Schmitt 2005a for results from a massive cross-cultural project that explores these social and environmental variables in depth from an evolutionary psychological perspective). In short, feminists and evolutionary psychologists appear to converge on conceptualizations of human behavior as flexible and context-contingent.

The Origins of Patriarchy

Buss (1996) advanced a hypothesis about the origins of one component of patriarchy. Specifically, he suggested that the *co-evolution* of women’s evolved mate preferences for men with resources and men’s co-evolved mate competition strategies to embody what women want created gender differences in the motivational priority attached to resource acquisition. Men who failed to obtain resources that were part of what ancestral women sought in mates often failed to succeed in mate competition. Men did not place an analogous selection pressure on women. Iterated over time and across cultures, men’s strategies of mate competition led them to vie with other men to acquire the resources

needed to render themselves attractive to women. Liesen (2010) implies that women should not be “blamed” for men’s greater control over resources. We concur: “The inference of blame, however, does not follow from the identification of women’s participation in one aspect of the causal chain” (Buss 1996, p. 308). In short, there is abundant evidence for this evolutionary psychological hypothesis about the origins of the resource-control component of patriarchy. “Women are not passive pawns in men’s game” (Buss and Duntley 1999, p. 53). Notions of “blame” do not logically follow from identifying women’s active mating strategies as components of the causal chain leading to patriarchy, and we would object to anyone misusing this theory to attribute any level of “blame” to women.

Sexual Strategies Theory and the Desire for Sexual Variety

Sexual Strategies Theory provided the first psychological theory of mating to hypothesize an array of diverse mating strategies within the human evolved arsenal. Central to the theory is the temporal dimension of mating, which can range from exceptionally long-term (e.g., life-long committed mating) at one end to brief sexual encounters at the other (Buss and Schmitt 1993). In its original formulation, we viewed Sexual Strategies Theory as an improvement on prior theories of human mating in the following ways: (1) it proposed an array of mating strategies, including short-term mating—a collection of strategies previously omitted from other theories, which had focused exclusively on long-term committed mating (e.g., Eckland 1968; Epstein and Guttman 1984; Murstein 1986); (2) it provided a cogent rationale for the mating goals sought, anchored in evolutionary logic (prior theories of mating, to the extent that they hypothesized strategic goals, failed to provide a rationale for the goals sought); (3) it provided a sound evolution-based rationale for predicting gender differences in some components of mating, and similarities in other components (prior theories of mate presumed psychological monomorphism of mating, and so no gender-differentiated predictions could be generated from them); (4) it proposed that mating was motivated by multiple goals (prior theories has posited single goals, such as equity, exchange, or similarity-seeking); and (5) it proposed that mating strategies were contingent on contextual variables, such as temporal context (prior theories of mating were context-blind, assuming the same mating motives regardless of circumstances).

The original formulation of Sexual Strategies Theory advanced nine core hypotheses and 22 empirical predictions; presented novel tests of many of these predictions; and assembled the then-available evidence for these

hypotheses and predictions. Over the nearly two decades since Sexual Strategies Theory was published, a tremendous volume of empirical evidence has accrued that support various elements of its central tenets (see, e.g., Li et al. 2002; Lippa 2009; Schmitt 2005b; Surbey and Conohan 2000; Sugiyama 2005). At the same time, Sexual Strategies Theory has expanded and become elaborated in many of the ways suggested in the original 1993 proposal. Specifically, it now more fully explains individual differences within gender in mating strategies pursued (e.g., Gangestad and Simpson 2000). It has expanded to encompass a wider array of social, cultural, personal, and ecological variables as they interact with mating strategies (e.g., Gangestad and Buss 1993; Gangestad et al. 2006; Lippa 2009; Schmitt 2005a). And it has delved more deeply into adaptive problems faced by both genders, such as solutions to the problem of commitment in long-term mating (e.g., Buss 2006).

It is within this context that the empirical contributions to this special issue must be evaluated. Three articles in this special issue attempt to provide empirical evidence, some new and some extracted from the existing empirical literature, pertaining to one of the nine hypotheses of Sexual Strategies Theory—that gender differences in minimal levels of obligate parental investment should lead short-term mating to represent a larger component of men’s than women’s sexual strategies. This hypothesis derives straightforwardly from Trivers’s (1972) theory of parental investment, which proposed that the sex that invested less in offspring (typically, but not always males), tends to evolve adaptations to be more competitive with members of their own sex for sexual access to the more valuable members of the opposite sex.

From this general hypothesis, Buss and Schmitt (1993) derived empirical predictions, including four that directly pertain to sex differences in desires for sexual variety: 1) Men will express greater desire for, or interest in, short-term mates than will women, 2) Men will desire larger numbers of sex partners than will women, 3) Men will be willing to engage in sexual intercourse after less time has elapsed than will women, and 4) Men will relax their mate preference standards in short-term mating contexts more than will women. The number of empirical predictions from this hypothesis has more than doubled since 1993, and cross-cultural empirical tests of this body of predictions have provided powerful support for them (e.g., Lippa 2009; Schmitt 2005a, b, c; Schmitt et al. 2003).

To be clear, Hypothesis 1 did *not* imply that women lacked short-term mating strategies. Indeed, one of the key contributions of Sexual Strategies theory was to delineate the important adaptive benefits that may accrue to women from short-term mating. Among those outlined in the original formulation are: (1) access to high quality genes; (2) immediate access to resources; (3) using short-term

mating in the service of long-term mating goals; and (4) a cluster of functions involved in mate switching, such as obtaining “mate insurance,” getting rid of a cost-inflicting partner, and “trading up” to a better partner (Buss and Schmitt 1993, Table 1, p. 207). Sexual Strategies Theory *did* imply that the psychological design of men’s and women’s short-term mating desires would differ in important ways, with one of the largest sex differences evident in expressed desires for sexual variety.

Although the original tests Buss and Schmitt (1993) conducted to evaluate their numerous predictions were limited in scope, substantial evidence was reviewed and additional findings continue to accumulate in support of this hypothesis (Schmitt 2005a; Schmitt et al. 2003; Schmitt and Pilcher 2004). Table 1 summarizes some of

the evidence related to their predictions, such as Clark and Hatfield’s (1989) naturalistic experiments and subsequent replications demonstrating men’s greater likelihood of consenting to sex with a stranger (75% versus 0%), large international studies showing culturally universal sex differences in sociosexuality (Lippa 2009, $d=.74$; Schmitt 2005a, $d=.74$), and Petersen and Hyde’s (2010) meta-analysis documenting robust sex differences in extra-marital sexual behavior ($d=.33$) and in permissive attitudes toward casual sex ($d=.45$). As Petersen and Hyde (2010) noted: “In support of evolutionary psychology, results from both the individual studies and the large data sets indicated that men reported...more permissive attitudes than women for most of the variables...” (p. 21) and “...evolutionary psychology proposes that short-term mating strategies are

Table 1 Empirical findings relevant to evaluating sex differences in desires for sexual variety

Empirical findings	Selected references
Men are more likely than women to engage in extradyadic sex	Atkins et al. 2001; Glass and Wright 1985; Oliver and Hyde 1993; Petersen and Hyde 2010; Thompson 1983; Wiederman 1997
Men are more likely than women to be sexually unfaithful multiple times with different sexual partners	Blumstein and Schwartz 1983; Brand et al. 2007; Hansen 1987; Laumann et al. 1994; Lawson and Samson 1988; Spanier and Margolis 1983
Men are more likely than women to seek short-term sex partners that are already married	Davies et al. 2007; Jonason et al. 2009; Parker and Burkley 2009; Schmitt et al. 2004; Schmitt and Buss 2001;
Men are more likely than women to have sexual fantasies involving short-term sex and multiple opposite-sex partners	Ehrlichman and Eichenstein 1992; Ellis and Symons 1990; Jones and Barlow 1990; Leitenberg and Henning 1995; Rokach 1990
Men are more likely than women to pay for short-term sex with (male or female) prostitutes	Burley and Symanski 1981; Mitchell and Latimer 2009; Symons 1979
Men are more likely than women to enjoy sexual magazines and videos containing themes of short-term sex and sex with multiple partners	Hald 2006; Koukounas and McCabe 1997; Malamuth 1996; Murnen and Stockton 1997; Salmon and Symons 2001; Youn 2006
Men are more likely than women to desire, have, and reproductively benefit from multiple mates and spouses	Berezkei and Csanaky 1996; Betzig 1986; Jokela et al. 2010; Perusse 1993; Stone et al. 2005; Zerjal et al. 2003
Men desire larger numbers of sex partners than women do over brief periods of time	Fenigstein and Preston 2007; McBurney et al. 2005; Njus and Bane 2009; Rowatt and Schmitt 2003; Schmitt et al. 2003; Wilcox 2003
Men are more likely than women to seek one-night stands	Herold and Mewhinney 1993; Spanier and Margolis 1983
Men are quicker than women to consent to having sex after a brief period of time	Cohen and Shotland 1996; McCabe 1987; Njus and Bane 2009; Rowatt and Schmitt 2003; Schmitt et al. 2003
Men are more likely than women to consent to sex with a stranger	Clark 1990; Clark and Hatfield 1989; Greitemeyer 2005; Hald and Høgh-Olesen 2010; Schützwohl et al. 2009; Voracek et al. 2005; Voracek et al. 2006
Men are more likely than women to want, initiate, and enjoy a variety of sex practices	Baumeister et al. 2001; Laumann et al. 1994; Pumine et al. 1994
Men have more positive attitudes than women toward casual sex and short-term mating	Hendrick et al. 1985; Laumann et al. 1994; Oliver and Hyde 1993; Petersen and Hyde 2010
Men are less likely than women to regret short-term sex or “hook-ups”	Bradshaw et al. 2010; Campbell 2008; de Graaf and Sandfort 2004; Paul and Hayes 2002; Roese et al. 2006; Townsend et al. 1995
Men have more unrestricted sociosexual attitudes and behaviors than women	Clark 2006; Lippa 2009; Schmitt 2005a; Schmitt et al. 2001; Simpson et al. 2004; Simpson & Gangestad, 1991
Men generally relax mate preferences (whereas women increase selectivity for physical attractiveness) in short-term mating contexts	Kenrick et al. 1990; Kenrick et al. 1993; Li et al. 2002; Li and Kenrick 2006; Regan 1998a, 1998b; Regan & Berscheid, 1997; Regan et al., 2000; Simpson & Gangestad, 1992; Stewart et al., 2000; Wiederman & Dubois, 1998
Men perceive more sexual interest from strangers than women	Abbey 1982; Haselton and Buss 2000; Henningsen et al. 2006; Sigal et al. 1988

associated with significant gender differences but that long-term mating strategies, especially in adulthood, are associated with a shift toward gender similarities. Results from the current study [meta-analysis] support this theory” (p. 35).

Despite strong theoretical rationale and extensive evidentiary breadth for hypothesized sex differences in desires for sexual variety (Schmitt and Pilcher 2004), several contributors to this special issue question the existence of sex differences in desires for sexual variety (Pedersen et al. 2010; Smiler 2010). One proposed that if the differences do exist, they can be explained by “cultural” moderator variables (Tate 2010). We applaud the authors for conducting empirical studies designed to test predictions from Sexual Strategies Theory for two reasons. First, Sexual Strategies Theory is a scientific theory, and hence must be evaluated by the evidentiary standards of hard empirical data. Second, these articles implicitly provide a powerful refutation of an oft-heard (e.g., in social psychology texts; see Chrisler and Erchull 2010), but scientifically incorrect, claim that evolutionary psychological hypotheses are circular or unfalsifiable. If they were indeed unfalsifiable, then empirical studies such as those in this special issue that purport to falsify them could not be conducted.

Relatedly, Smiler (2010) expresses skepticism for the claim that evolved sex differences in sexual variety exist, since only some men actively pursue multiple sexual partners. Specifically, he states that “Regardless of age group, most men have few partners” and that “only a minority of men engage in this pattern” (Smiler 2010, this issue), referring to number of sex partners and number of wives, respectively. A resolution of these issues becomes apparent when making the critical conceptual distinction between evolved psychological mechanisms and manifest behavior (see above tenets of evolutionary psychology). In polygynous cultures, for example, only a minority of men, by definition, can have multiple wives. Assuming an equal sex ratio in the population, if one man has three wives, then two men perforce must have no wives. Only those men in a status or resource position to attract multiple wives can engage in the marriage practice of polygyny.

Similarly, although many men desire a variety of sex partners, only some men can translate that desire into their actual mating behavior. People can’t always get what they want. Our theory predicts that men who embody what women want will be in the best position to translate their desires into actual mating behavior. And that prediction is robustly supported by multiple investigators using multiple data sources. Men who are high in status, extravagantly generous with their resources, or who are otherwise highly desirable to women tend to succeed in attracting a variety of sex partners (Buss, 2003; Perusse 1993; Thornhill and Gangestad 2008). In short, the fact that not all men can translate a desire for sexual variety into actual mating

behavior is perfectly consistent with the core tenets of Sexual Strategies Theories, as well as with the key distinction between underlying desires and individual’s ability to act on those desires in actual mating behavior.

Pedersen et al. (2010) reiterate their evolutionary psychological theory of human mating anchored in the notion that humans evolved to be pair-bonded long-term maters. They question whether short-term mating strategies have evolved, and suggest instead that these (and other forms of mating) are non-adaptive or maladaptive “byproducts.” Consequently, they contend that there are “relatively few evolved gender differences in mating strategies and preferences” (this issue). We applaud the Peterson work on two grounds. First, it challenges Sexual Strategies Theory by providing a theory of mating that is at least not logically inconsistent with the basic tenets of evolutionary psychology. That is, they suggest that only a subset of psychological adaptations proposed by SST have evolved (those for long-term mating), while denying that other adaptations proposed by SST have evolved (those for short-term mating). Second, they collect original empirical data designed to pit competing predictions from their evolutionary theory with those from SST, rendering resolution of the competing theories a matter of empirical adjudication.

In our view, the issue of whether humans have evolved short-term mating strategies that contain gender-differentiated components must be evaluated by the weight of the large body of empirical evidence. Table 1 presents an abbreviated summary of the empirical evidence (see also Schmitt 2005a; Schmitt et al. 2003; Schmitt and Pilcher 2004). As predicted by SST, men generally relax their standards in short-term mating compared to women. Men are more willing than women to engage in sex with partners outside of their long-term mateship. Men who have affairs, compared to women who have affairs, have them with a larger number of sex partners. Men are overwhelmingly more likely to have sexual fantasies involving multiple short-term partners. The content of men’s pornography consumption, compared to that of women, contains themes of short-term sex with multiple partners. Men are more likely to pay for short-term sex. Men desire a larger number of sex partners over various time intervals. Men tend to seek sex sooner, after a briefer time delay, than women. Men are more likely to respond affirmatively to invitations for sex with strangers of the opposite sex. Men have more positive attitudes toward casual sex. Men are more likely than women to express “regret” about missed sexual opportunities. Men have more “unrestricted” sociosexual attitudes than women. Across the 10 world regions of the International Sexuality Description Project (for methods, see Schmitt et al. 2003), most men, but relatively fewer women, actively seek short-term mates, $\chi^2(1)=242.73, p<.001$ (see Figure 1).

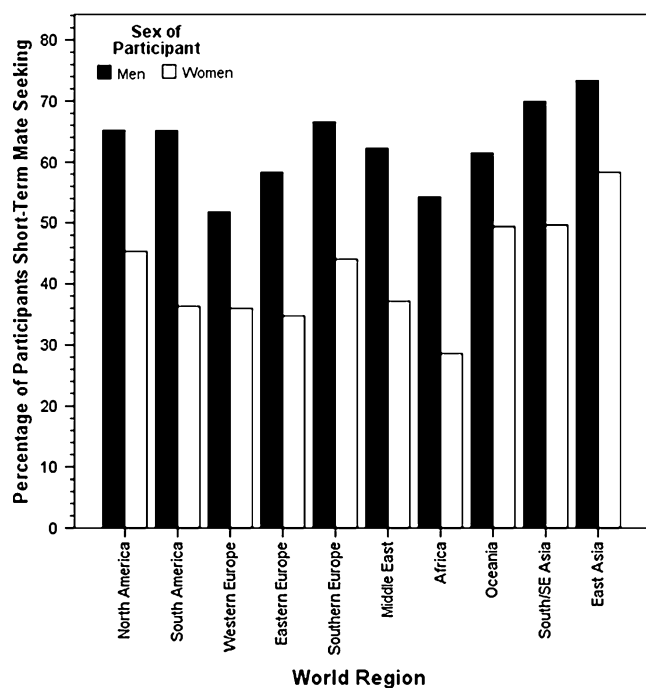


Fig. 1 Gender Differences in Short-Term Mate Seeking Across Cultures. Percentage of participants who reported greater than 1 (not actively seeking) on the Short-Term Mate Seeking scale of the ISDP (Schmitt et al. 2003) across world regions of North America ($N=1,335$ men and $N=2,298$ women), South America ($N=355$ men and $N=402$ women), Western Europe ($N=1,056$ men and $N=1,809$ women), Eastern Europe ($N=1,184$ men and $N=1,512$ women), Southern Europe ($N=475$ men and $N=812$ women), Middle East ($N=488$ men and $N=511$ women), Africa ($N=538$ men and $N=409$ women), Oceania ($N=379$ men and $N=512$ women), South/Southeast Asia ($N=196$ men and $N=270$ women), and East Asia ($N=556$ men and $N=581$ women)

There are, of course, individual differences within gender in all of these variables. Many men and women choose not to act on their sexual desires for a host of reasons, including personal values, social reputation, fear of sexually transmitted diseases, cultural norms, and many others. We see these individual differences as important and worthy of theoretical and empirical exploration, and have been exploring them in our own research. Nonetheless, the weight of the empirical evidence overwhelmingly supports the hypothesis that men and women differ fundamentally in their orientation toward short-term mating. In terms of magnitudes of effects, these gender differences are among the largest ever documented in the psychological literature (Petersen and Hyde 2010). We suggest that the burden of proof must now shift to those who doubt the existence of large and theoretically predicted gender differences, and that all new studies, rather than being viewed in isolation, must be evaluated within the context of this now-massive body of empirical evidence.

Like the other empirical contributions, we applaud Tate (2010) for conducting original empirical research in his efforts to evaluate the evidentiary status of one of the four

predictions from one of the nine hypotheses articulated by Sexual Strategies Theory. We also suggest that he is correct to point out that self-reported biological sex will sometimes fail as a perfect partition of human groups into those possessing XX and XY sex chromosomes. Tate (2010) differs from Petersen and colleagues and from Smiler in accepting that men and women differ profoundly in the desire for a variety of sex partners, but he proposes that this gender difference can be better explained by “non-evolutionary variables” such as sex-role identity than by biological sex per se.

We see several problems with Tate’s position. First, it is important when evaluating mediation that when variables overlap, they are not in fact measuring the exact same concept. The main covariate examined by Tate (2010) was the *degree of femininity* as measured by the Bem Sex-Role Inventory. The fact that this covariate accounts for much of the variance in desires for large numbers of partners is rather trivial and unsurprising. Clearly, women are more likely to than men to have “feminine” psychosocial identities, so the variable is largely redundant with biological sex ($r=+.80$). There is ample evidence that one’s masculinity and femininity are related to sexual strategizing (Cunningham and Russell 2004; Eagly et al. 2009; Fink et al. 2007; Mikach and Bailey 1999; Ostovich and Sabini 2004), suggesting that gender role orientation may serve as a proximate mechanism through which biological sex influences adaptive short-term mating dynamics. A similar problem applies to Perrin and colleague’s claim (2010) that sex differences in loving behaviors are mediated by gender role identity, to Finkel and Eastwick’s (2009) claim that sex differences in romantic desires are due to the “arbitrary social norm” of men approaching women more often in courtship contexts, and to Conley’s (2011) claim that sex differences in sexual receptivity are due to men’s and women’s different perceptions of potential pleasure in having sex with strangers. In each case, the claimed mediators function as proximate mechanisms underlying the evolved gender differences.

More generally, it is erroneous to conclude that a gender difference mediated by a typically gender-linked trait is somehow “cultural/learned” and therefore not “biological/evolved.” Making such a claim is to misinterpret the basic ethological principle of complementary proximate and ultimate levels of causation, and neglects the crucial point that physiological (e.g., hormones), ontogenetic (learning), phylogenetic (evolution), and functional (adaptive) perspectives are all needed for scientifically complete explanations of behavior (Tinbergen 1963). Learning and culture are almost never true alternatives to evolutionary psychology, “...given that cultural ideas are absorbed via learning and inference—which is caused by evolved programs of some kind—a behavior can be, at one and the same time,

‘cultural’, ‘learned’ and ‘evolved’ (Tooby and Cosmides 2005, p. 32).

Given the extant evidence, the odds that sexual selection forged gender differences in human *physical* attributes but not in corresponding gender differences *psychological* attributes is essentially zero (Geary 2010; Okami and Shackelford 2001; Symons 1987). That would be analogous to arguing that evolution fashioned greater upper-body musculature in males, but no corresponding psychological propensities to actually use that strength for functional goals, such as for intrasexual competition, hunting, or warfare (Buss 2005b). Instead, we suggest that sexual selection has sculpted evolved gender differences in human adaptations in domains in which women and men recurrently face different adaptive problems. Gender differences in desires for sexual variety are among the most empirically well-established of these mating adaptations.

The Evolution of Standards of Beauty

Mainstream social scientists over the past century typically have treated beauty as a social construct—one that is almost arbitrarily variable from culture to culture and contains no underlying importance outside of specific cultural contexts (see Jackson 1992, for a historical review of these positions). Evolutionary psychologists began to challenge this dominant view more than 30 years ago (e.g., Symons 1979; Williams 1975). With respect to female attractiveness, the core logic of the evolutionary argument is as follows: (1) A key adaptive problem ancestral males faced involved identifying and preferentially choosing fertile or reproductively valuable mates (males selecting infertile mates left no descendants); (2) this adaptive problem was exacerbated by the evolution of relatively concealed or cryptic ovulation in women (in contrast to chimpanzee females, for whom ovulation is signaled by visible and olfactory estrus cues); (3) standards of female attractiveness evolved to be attuned to recurrently observable cues that were statistically correlated with fertility (Buss 1987; Symons 1979). According to this logic, standards of beauty are predicted not to be arbitrary or “culturally constructed,” but rather anchored in observable cues recurrently available to ancestral males over evolutionary time.

This evolutionary psychological theory of beauty has received an extraordinary level of scientific support over the past few decades, overturning conventional wisdom among social scientists (Sugiyama 2005). Observable cues to youth (e.g., clear skin, smooth skin, facial adiposity, lustrous hair) and cues to health (e.g., absence of sores or lesions), for example, have been robustly documented to be cues to female attractiveness across cultures (Sugiyama 2005). Because a woman’s physical appearance provides a

wealth of information about her fertility, evolutionary psychologists predicted in advance of data collection that men more than women across cultures would value appearance more in long-term mate selection—a potentially falsifiable prediction not made by any prior non-evolutionary theories of human mating (Buss 1987). After this prediction, cross-cultural research involving 37 cultures worldwide discovered that the gender difference in the importance placed on physical attractiveness in mate selection is indeed a human universal (Buss 1989). Subsequent cross-cultural research involving more than a dozen other cultures, including traditional cultures such as the Hadza of Tanzania (Marlowe 2004), have upheld the universality of this gender difference. The universal gender difference in value placed on physical attractiveness is a finding that cannot be explained by social role theory in any of its variants (e.g., Buss and Barnes 1986; Eagly and Wood 1999), although proponents of social role theory attempt to explain away these robust cross-cultural findings with various post-hoc speculations (e.g., Eagly and Wood 1999, p. 419) rather than accepting the evolutionary psychological hypothesis about it for which there is an abundance of empirical evidence.

Building on the evolutionary logic of hypothesized adaptations for beauty, Singh and Singh (2011) summarize arguments and evidence that waist-to-hip ratio (WHR) provides one powerful non-arbitrary cue to health and fertility, and so it too should have evolved to become part of a non-arbitrary standard of female beauty. They highlight the well-documented links between a high WHR and diseases that compromise fertility, such as endocrinological disorders. And they present extensive cross-cultural and historical evidence for the importance of WHR as a key component of female attractiveness.

Not all studies support the WHR hypothesis. For example, some studies find modest cultural variations in the ideal WHR—it seems to be tethered in part to the local range of variation in WHR, which is higher in some cultures than in others. And one eye-tracking study found that men tend to focus on the breasts and buttocks rather than the pelvic region, which calls into question WHR as a central cue to female beauty (see Buss, 2011 for a recent review). Furthermore, some have argued that body mass index (BMI) is a more important determinant of female beauty (Cornelissen et al. 2009), whereas others find that WHR trumps BMI (Perilloux et al. 2010). Although the final empirical word is not yet in, enough evidence has accumulated from dozens of empirical studies to conclude that WHR is indeed a non-arbitrary cue to fertility and is likely to be part of human evolved standards of female attractiveness. How large a part, in comparison with other cues such as BMI, breasts, buttocks, face, and hair remains to be determined. Large-scale comparative analysis of the

relative importance of cues to beauty have not yet been conducted, although one study found that both WHR and breast size contributed to female body beauty (Singh and Young 1995).

The fact that physical attractiveness is so highly valued by men in mate selection, and contrary to conventional social science wisdom is not arbitrarily socially constructed, does not imply that the emphasis placed on it is not destructive to women—a point about which many feminists and evolutionary psychologists agree (e.g., Buss 1996; Wolf 1991; Vandermassen 2005). Many feminist scholars, evolutionary psychologists, and evolutionary feminists concur that the value people place on female beauty is likely a key cause of eating disorders, body image problems, and potentially dangerous cosmetic surgery. As Singh and Singh (2011) and others point out, it can lead to the objectification of women as sex objects to the relative neglect of other dimensions along which women vary, such as talents, abilities, and personality characteristics. Finally, in the modern environment, it seems clear that men's evolved standards of female beauty have contributed to a kind of destructive run-away female-female competition in the modern environment to embody the qualities men desire (Buss, 2003; Schmitt and Buss 1996).

In our view, the key point is that feminist stances on the destructiveness of the importance people place on female attractiveness need not, and should not, rest on the faulty assumption that standards of attractiveness are arbitrary social constructions. Societal change, where change is desired, is best accomplished by an accurate scientific understanding of causes. The evolutionary psychological foundations of attractiveness must be a starting point for this analysis.

Adaptations to Ovulation

Ovulation attains special status within women's reproductive biology because it provides the very brief window (roughly 12–24 h) during women's menstrual cycle during which conception is possible. Conventional wisdom in the field of human sexuality over the past century has been that ovulation is cryptic or concealed, even from women themselves (e.g., Symons 1979). Evolutionary psychologists over the past decade have begun to challenge this conventional wisdom. The challenges have come in two forms—hypothesized adaptations in men to detect ovulation and hypothesized adaptations in women to adjust their mating behavior around ovulation.

Ancestral men, in principle, could have benefited (in reproductive currencies) if they could detect when women ovulated. An ovulation-detection ability would afford men the ability to selectively direct their sexual overtures toward

women when they are ovulating, as male chimpanzees do. And already mated men might increase their mate-guarding efforts when their partners are ovulating. Both strategies, in principle, could have evolved in men. The key question is: Did they? More than 20 years ago, Symons (1987) concluded that such male adaptations to ovulation had not evolved: “The most straightforward prediction I could have made, based on simple reproductive logic and the study of nonhuman animals, would have been that . . . men will be able to detect when women are ovulating and will find ovulating women most sexually attractive. Such adaptations have been looked for in the human male and have never been found . . .” (p. 133).

Although Symons was undoubtedly correct in his assessment of the status of the empirical findings at the time, in the intervening years evolutionary psychologists have come close to reversing his conclusion. Indeed, a dozen empirical studies suggest that men can detect subtle cues to changes that occur in women when they ovulate, and moreover find these cues attractive. They show that men find women's voices, body odors, waist-to-hip ratios, skin tone, and facial features to be more attractive at ovulation compared to the non-fertile phases of the cycle (e.g., Bryant and Haselton 2009; Roberts et al. 2004). Furthermore, there is evidence from two studies indicating that men amplify their mate-guarding efforts when their partners are ovulating (see Thornhill and Gangestad 2008). Although each individual study, of course, can be criticized (something true of all empirical research), and future work may overturn each one of these separate findings, in the aggregate the body of work provides good evidence for psychological shifts at around ovulation. They are consistent with, although do not definitively prove, the hypothesis that men either have adaptations to ovulation or that women experience physical or behavioral changes at ovulation that are detectable by men and seen as sexually attractive. Alternatively, men's attraction to ovulating women could be *byproducts* of men's adaptations for detecting reproductively valuable women in long-term mating contexts, and as such it may not reflect specialized ovulation-detection adaptations. There is nothing entailed in the logic of evolutionary theory or evolutionary psychology that *requires* that males have evolved adaptations to ovulation. But no other theoretical framework furnished plausible hypotheses that led to the search for ovulation effects, pointing to the heuristic value of evolutionary psychology. And no other framework suggests that adaptations to ovulation might have evolved. Whatever the eventual evidentiary status of the competing hypotheses, it is reasonable to conclude that the search for adaptations to ovulation has been a fertile one, yielding fascinating empirical findings.

A second suite of adaptations to ovulation has been hypothesized to have evolved in women—adjusting their

mate preferences. Most prominent has been the “good genes” hypothesis, whereby women shift their mate preferences toward men who possess hypothesized markers of good genes, such as masculine features and symmetrical features (Gangestad and Simpson 2000; Thornhill and Gangestad 2008). Although the reproductive logic underlying the good genes hypothesis is sound, it remains an empirical issue to determine whether women have evolved such adaptations to ovulation. Thus far, Harris (2010) and Peters et al. (2009) have failed to find support for the hypothesis. Harris draws attention to the large sample size in her study, which is indeed larger than most and an admirable feature. Harris also highlights the contrast between her failure to find a preference shift for masculine faces at ovulation and two articles by Penton-Voak and his co-authors (2003; 2004), who do find a preference shift toward masculine faces at ovulation.

A larger body of empirical work not cited by Harris, however, yields a broader empirical basis for evaluating hypothesized female adaptations to ovulation. Specifically, studies have found that women shift their mate preferences at ovulation for more masculine male *faces* and *bodies* (a V-shaped torso; Anderson et al. 2010;) (e.g., Little et al. 2007), as well as more masculine *voices* (e.g., Feinberg et al. 2006; Puts 2005). We refer interested readers to a more comprehensive review of the evidence (DeBruine et al. 2010), which highlights problematic features of the Harris study and suggests that the overall weight of evidence supports the hypothesized female preference shifts at ovulation.

Although a comprehensive review of the weight of the evidence may not support Harris’s conclusion of a lack of an ovulation effect on mate preferences, it is worth noting that this does not imply that we endorse the good genes hypothesis. Indeed, one of us has proposed an alternative evolutionary explanation of the findings—that the ovulation shifts reflect the fact that *women actually become more reproductively valuable at ovulation* (Buss and Shackelford 2008). Since women high in mate value are more exacting in their mate preferences for traits such as masculinity, social status, and resource acquisition potential (Buss and Shackelford 2008), the ovulation effects may reflect a shift in women’s self-perceived mate value rather than a shift in preference for “good genes” markers per se (see also Roney et al. 2010, for a third competing hypothesis). Research within the next decade will undoubtedly resolve both the empirical status of women’s preference shifts at ovulation, as well as which hypothesis best accounts for the patterns of findings.

At this point in time, however, we can draw two conclusions: (1) Evolutionary psychological hypotheses have served an important heuristic function in this domain, guiding researchers to look for ovulation effects that have

been entirely missed by researchers operating without an evolutionary lens; and (2) the weight of the evidence suggests that ovulation effects exist, although they will undoubtedly turn out to be more complex and context-specific than prior research suggests.

The Appeal of Risk Taking in Human Mating

Sylwester and Pawlowski (2010) provide an intriguing evolutionary psychological rationale for why risk-taking (physical, financial, and social) should be preferred in short-term mates more than in long-term mates. This temporal context of mating is pivotal to Sexual Strategies Theory (Buss and Schmitt 1993), but does not appear to be a context considered important within the framework of social role theory (Eagly 1987; Eagly and Wood 1999). As the authors note, “the social structural approach does not offer a clear theoretical picture of what kinds of traits should be preferred by opposite-gender partners in short-term relationships” (Sylwester and Pawlowski 2010, this issue).

Their rationale for a preference for risk-taking in short-term mates is somewhat different for men and women. They propose that risk-taking by men signals ‘good genes,’ an honest and costly signal of genetic quality, and possibly a propensity to be extravagant or generous with resources—qualities hypothesized to be functional components of women’s short-term mating strategy (Buss and Schmitt 1993; Gangestad and Simpson 2000). For women, in contrast, the authors hypothesize that risk taking in women might signal “an easier and less costly target in terms of sexual availability for men pursuing short-term relationships” (Sylwester and Pawlowski 2010, this issue), a position consistent with the evolutionary theorizing about sexual exploitability (Buss and Duntley 2008). For long-term mateships, in contrast, high levels of risk-taking by either sex could endanger a partner’s survival, stability of resource provisions, and consistency of parental investment, and so are hypothesized to be disfavored in these high-investment mating relationships.

The researchers confirmed the predictions regarding the central importance of temporal context in mate preferences for risk-taking, with both genders favoring risk-takers in short-term, but not long-term, mating relationships. Sylwester and Pawlowski’s research supports the predictions from Sexual Strategies Theory (Buss and Schmitt 1993). It also opens the door for future research. In particular, the authors hypothesize, but do not test, the notion that a different functional basis exists for women’s and men’s preference for risk-takers in short-term mating. Future research should examine directly their hypothesis that risk-taking signals sexual exploitability or accessibility when displayed by women. Future research should also attempt to disentangle the

precise basis for women's attraction to risk-taking in short-term sexual contexts. Is the preference an honest signal of good genes? Is it a signal of immediate access to resources? Or do these different functional benefits accrue to different women in different social circumstances?

Although the authors do not discuss the implications of their findings for feminist scholarship, a few speculations may be warranted. First, if their hypothesized functional underpinnings of male mate preferences are correct, they imply that men view women primarily as "sex objects" in short-term mating, but *not* necessarily in long-term mating. Second, they imply that women view men as "success objects" in short-term mating, whether it be in the form of monetary generosity or superior genetic quality. And although women can be construed as viewing men as "success objects" in long-term mating as well, in the sense that they prioritize resources and status, their relative preference for risk-avoiders implies that consistency and reliability of long-term provisioning may be more important than the potential for large, but highly uncertain and variable, resource bonanzas that might be produced by a more risk-taking proclivity.

Understanding the Causes of Rape and Other Forms of Sexual Victimization

Vandermassen (2010) provides an insightful analysis of evolutionary and feminist perspectives on the causal origins of rape. She suggests that evolutionists and feminists have been needlessly antagonistic, and offers several lines of theoretical rapprochement concerning this disturbing phenomenon. At the broadest level, Vandermassen suggests that points of convergence between evolutionary and feminist analyses (recognizing the heterogeneity within each conceptual camp) comport well with those noted by Buss (1996): (1) that in cross-cultural perspective, men tend to control resources and power; (2) that men often control women through resources; (3) that men's control of women often centers on their sexuality and reproduction; (4) that some men psychologically treat women as "property" to be owned, controlled, and used; (5) that men's sexual aggression circumvents women's freedom of choice; and (6) that some women, as well as some men, often mutually participate in perpetuating oppression (Buss 1996, p. 296–299). Vandermassen criticizes both evolutionary psychologists and feminists for not being sufficiently open-minded toward each other's scholarly contributions, and emphasizes that both perspectives can be integrated to formulate a deeper understanding of the disturbing phenomenon of rape.

Beyond these general points, Vandermassen is critical of parts of the Thornhill and Palmer (2000) evolutionary analysis of rape, while endorsing the evolutionary feminist

analysis of sexual coercion advanced by Smuts (1995) (as well as those of other evolutionary feminists, such as Gowaty 1992, and Wilson and Mesnick 1997). Specifically, while she acknowledges the importance and centrality of *sexual* motivation in rape (as do Smuts, Gowaty, Wilson, and Mesnick), which is typically downplayed or disregarded by many feminist scholars, Vandermassen takes Thornhill and Palmer to task for ignoring *anger* and *hostility* toward women as central psychological motivations of (some) rapists. In our view, she correctly credits feminist scholars for highlighting anger, hostility, and hatred in the proximate causal chain leading to some rapes, and some empirical findings support this view. For example, Malamuth (1996) finds empirically that rapists tend to score high on both "hostile masculinity" and "impersonal sexual strategy," and that the confluence of these vectors leads to an increased probability of sexual coercion. Note that these findings highlight both sexual and hostile motivations in understanding the causes of rape, which suggest that both feminist and evolutionary scholars, and particularly evolutionary feminist scientists, have contributed importantly to the causal understanding of sexual coercion.

Vandermassen cites one study that found that 18% of rapists reported "hating" the rape victim. She also suggests that one cause of men's anger occurs because "women provoke ungratifiable sexual desire" in men (Vandermassen 2010, this issue). We suggest that two other possible causes of male anger and hostility should be considered. One is a history of rejection by women, triggered when men aspire to mate with women who are outside of their mate-value range. As Jim Morrison of the Doors noted, "women seem wicked when you're unwanted" (Krieger and Morrison 1967). Second, a subset of men seems particularly prone to the confluence of hostile masculinity and a short-term mating strategy—psychopaths (LaLumiere et al. 2005). Whether psychopathy has evolved as a frequency-dependent strategy, as originally proposed by Linda Mealey (1995) and suggested by LaLumiere and colleagues (2005), is a hypothesis that we think is promising and worthy of further empirical exploration. If correct, even in part, it would aid intervention efforts to reduce the frequency of sexual assault by focusing attention on the subset of males most prone to rape and to commit serial rapes.

Vandermassen also criticizes in detail the Thornhill work that suggests that psychological pain differs among victims of reproductive and non-reproductive age and the counter-intuitive conclusion that women who experience more physical damage report less psychological pain. We concur that the Thornhill study may indeed contain flaws that render its conclusions suspect. And we note that a study from one of our labs (Perilloux et al. 2006) failed to support the Thornhill conclusions. Indeed, we found the opposite—that rape victims who experienced greater physical aggression

at the hands of rapists experienced somewhat more psychological pain.

More generally, we believe that proponents of all theoretical perspectives should keep an open mind about the scientific hypothesis (and it is only that, a hypothesis), that men may have evolved adaptations for sexual coercion. It should go without saying that rape is illegal, immoral, and terribly destructive to women, and should in no way be condoned, whatever the ultimate causes turn out to be. Unfortunately, what should go without saying has to be repeated over and over, since those who advance evolutionary psychological hypotheses are unjustly accused of somehow condoning or excusing rape. The naturalistic fallacy, mistakenly inferring an ought from an is, seems to be a particularly stubborn error committed by critics of evolutionary psychology, despite the many published descriptions of this error (e.g., Confer et al. 2010).

As Vandermassen (2010) points out, the two central contenders for explaining sexual coercion are (1) adaptations for rape, (2) byproducts of adaptations that evolved in non-rape contexts (e.g., desire for sexual variety; male use of aggression for other instrumental goals), or some combination of the two. We concur with Symons's 1979 summary that the then-available evidence was not "even close to sufficient to warrant the conclusion that rape itself is a facultative adaptation in the human male" (Symons 1979, p. 284). We believe that his conclusion is as apt today as it was then. Nonetheless, absence of evidence does not qualify as evidence of absence. Scientists from all theoretical perspectives have a responsibility to uncover the actual underlying causes of rape, even if they turn out to be unpalatable or repugnant. Whatever the flaws inherent in the Thornhill-Palmer book, it is perfectly reasonable for them to advance their two competing scientific hypotheses. It is a gross disservice to current and future victims of rape to prematurely discard either of them.

Lesbian Mate Preferences

The Smith et al. (2010) study of partner preferences among groups of butch and femme lesbians and male and female heterosexuals provides interesting and important findings. At a minimum, the findings highlight the heterogeneity of mate preferences within broad social labels such as "lesbian" or "homosexual." Smith and her colleagues's study is an empirical test of the Bassett et al. (2001) hypothesis that butch lesbians psychologically resemble heterosexual men and femme lesbians resemble heterosexual women due to *in utero* hormone exposure. This hypothesis is properly considered a proximate theory of early exposure to specific hormones (see Ellis 2011, for a detailed theory of hormone exposure *in utero*). Whatever the merits of the Smith and

colleagues study, it does not have direct bearing on the meta-theoretical paradigm of evolutionary psychology, or what they term "evolutionary psychology theory."

Evolutionary psychology is a meta-theoretical paradigm that provides a synthesis of modern principles of evolutionary biology with modern understandings of psychological mechanisms as information processing devices (Buss 1995b; Tooby and Cosmides 1992). Within this meta-theoretical paradigm, there are at least four distinct levels of analysis—general evolutionary theory, middle-level evolutionary theories, specific evolutionary hypotheses, and specific predictions derived from those hypotheses (Buss 1995b). In short, there is no such thing as "evolutionary psychology theory," nor is there "the" evolutionary psychological hypothesis about any particular phenomenon. As noted earlier, there are *competing evolutionary psychological hypotheses* about various phenomena, including rape (e.g., adaptations versus byproduct hypotheses), female sexual orgasm (Buss, 2003), ovulation effects, the functions of flirtation (Frisby et al. 2010), and just about any other phenomenon of interest. So when a scientist tests a specific hypothesis, such as the one advanced by Bassett et al. (2001), it must be evaluated as just that—a test of one specific hypothesis, not a test of "evolutionary psychology theory."

More generally, women with a primary sexual orientation toward their own gender constitute roughly 1–2% of all women (Bailey et al. 1994). We suggest that neither lesbian women, nor individual differences among lesbian women along the "butch" and "femme" dimensions, provide fertile or decisive testing grounds for "evolutionary psychology theory." In our view, findings of mate preferences among butch and lesbian women do not have direct bearing on the meta-theory of evolutionary psychology or on Sexual Strategies Theory.

Discussion

This special issue is an important milestone in identifying potential points of rapprochement between feminist and evolutionary psychological perspectives. At the same time, it also highlights the considerable differences in theoretical perspectives and continuing sources of antagonism, or perceived antagonism, between these two broad perspectives. This discussion focuses on the positive steps that can be taken to improve communication and potential integration of evolutionary and feminist perspectives.

The Importance and Centrality of Social and Cultural Context

Both feminist and evolutionary perspectives highlight the importance of cultural and social context. Although

evolutionary psychology is often depicted as hypothesizing adaptations, and gender differences therein, that are blind to cultural and social influences, these characterizations do not accord with the actual published science of evolutionary psychology. As a concrete example, Buss's (2011) textbook on evolutionary psychology summarizes, in sections entitled "*Context Effects of Women's Mate Preferences*" and "*Context Effects on Short-Term Mating*," scientific evidence on the following social and cultural contextual variables as they influence human mate preferences: (1) Women's personal access to resources, (2) cultural variations in economic inequality, (3) temporal context, (4) individual differences in mate value, (5) father absence during development, (6) step-father presence during development, (7) transitions across the lifespan such as divorce, (8) cultural variations in sex ratio, (9) cultural difference in parasite prevalence, and (10) cultural norms surrounding virginity.

Most evolved psychological mechanisms proposed by evolutionary psychologists are hypothesized to be highly responsive to social, contextual, and cultural influences. Much research empirically tests predictions from these contextual variables. Feminist scholars too emphasize contextual variables, such as cultural variations in economic gender inequality and cultural variations in constraints placed on female sexuality. Scientific progress will be facilitated by moving beyond cartoon caricatures of theoretical positions about these issues.

Flexibility: Psychological Adaptations Versus Manifest Behavior

A continued source of conceptual confusion is the conflation of underlying psychological adaptations with manifest behavior. Evolutionary psychologists, contrary to some portraits of them, contend that manifest behavior is enormously flexible. This flexibility comes from several key sources: (1) psychological adaptations designed to be contingent on social context, (2) differences in the cultural and social environments within which psychological adaptations are activated and constrained, (3) the numerous underlying psychological adaptations that humans possess, which can be activated in various combinations and sequences, and (4) the social and cultural contexts that deactivate the various underlying psychological adaptations.

As a general rule, evolutionary psychologists view manifest behavior as enormously flexible and context-contingent, with the underlying psychological adaptations tending to remain more stable. Although callus-producing mechanisms are relatively stable, they can be activated or deactivated by the variable environments of repeated friction to the skin. Analogously, the male evolved desire for sexual variety is hypothesized to be relatively stable, but

it can be activated or deactivated by variations in cultural and social contexts, (e.g., a surplus of women in the mating pool tends to activate men's short-term mating; a surplus of men tends to activate long-term mating strategies; Pedersen 1991; Schmitt 2005a). Scientific progress will be facilitated by recognizing the key distinction between underlying psychological mechanisms and manifest behavior, and understanding that human behavioral flexibility comes about, in large part, precisely because of the complexity and numerosity of the underlying psychological adaptations (Tooby and Cosmides 1992).

Evolutionary Psychology Versus Specific Evolutionary Hypotheses

As a metatheory, evolutionary psychology provides a paradigm within which a host of hypotheses can and are generated. These hypotheses vary on a number of key dimensions. One is that they range from sound deductions from well-established middle-level evolutionary theories at one end to evolutionarily-inspired hunches at the other end (Symons 1987). Second, they differ in their precision and testability. Third, they differ in the degree to which they have amassed voluminous empirical support, mixed empirical support, or no empirical support.

Some specific evolutionary hypotheses will end up failing by the hard hand of empirical evidence. The kin-selection hypothesis of male homosexuality, for example, receives little empirical support from the studies that have been designed to test it (Confer et al. 2010; but see Vasey and VanderLaan 2010, for suggestive evidence). The hypothesis that women have adaptations to shift mate preferences as a function of the ovulation cycle has received mixed empirical support (DeBruine et al. 2010; Harris 2010), and future research will eventually adjudicate its scientific status. The hypotheses that men have evolved better spatial rotation abilities as a hunting adaptation and women have better spatial location memory abilities as a gathering adaptation have received reasonably solid cross-cultural support (Silverman et al. 2007).

Furthermore, in many domains, there are competing evolutionary hypotheses about the same phenomenon. There are at least five evolutionary hypotheses about the function of the female sexual orgasm (e.g., the Mr. Right hypothesis, the conception facilitation hypothesis, the paternity signaling hypothesis), and one evolutionary hypothesis that argues that it is a functionless byproduct, much like male nipples (see Buss, 2003, for a review of these hypotheses and extant evidence for them). At this point, there is not enough empirical evidence to adjudicate among these competing hypotheses, despite the heated debates this issue has sparked.

More generally, it is important to recognize that, at some level, *all* psychological hypotheses are implicitly or explicitly evolutionary psychological hypotheses. First, no other known causal process has been discovered, other than evolution by selection, that is capable in principle of producing whatever complex psychological mechanisms humans possess. Second, those who do not explicitly invoke evolutionary psychology implicitly assume, unless they are creationists, that selection has fashioned evolved domain-general learning mechanisms (e.g., those that are capable of adopting whatever social role one's culture hands out). One virtue of evolutionary psychology is that these underlying assumptions are made explicit. Scientific progress will be facilitated by the recognition that all social scientists should make their underlying assumptions explicit, and that all psychological hypotheses are implicitly or explicitly evolutionary in nature.

The Evidentiary Status of Sexual Strategies Theory

Sexual Strategies Theory, as originally presented, offered 9 central hypotheses and 22 empirical predictions from those hypotheses (Buss and Schmitt 1993). Three of the articles in this special issue challenge one of those nine hypotheses—that because of large gender differences in obligatory parental investment, men have evolved psychological design features for short-term mating, including a desire for sexual variety, that differ from those of women. As shown above, despite claims made to the contrary, the empirical evidence for this hypothesis is exceptionally robust. Indeed, we suggest that there does not exist another psychological gender difference in the entire field that has accrued so much cross-cultural empirical support from so many diverse methods. At this point in the science, the burden of proof must fall on those who contend that these gender differences do not exist, and those who do so must deal with the entire corpus of empirical evidence rather than cherry-picked fragments of that body of evidence.

More generally, Sexual Strategies Theory has fared quite well empirically, not just in the one hypothesis under consideration, but also, to differing degrees, in all 9 hypotheses and 22 predictions. As explicitly discussed in the article presenting the theory (Buss and Schmitt 1993), we did not consider the theory to be “close-ended,” and discussed several important weaknesses of the theory that we believed warranted greater theoretical and empirical attention. Specifically, we explicitly highlighted three such domains—adaptive problems of mating faced by both genders (e.g., identifying long-term mates with good parenting skills; identifying mates willing to commit to long-term mating); individual differences within-gender in mating strategies pursued (e.g., as influenced by mate

individual differences in mate value), and contextual effects on mating strategies pursued (e.g., operational sex ratio, legal and cultural sanctions, sudden changes in life circumstances, such as divorce or precipitous increase or decrease in mate value). Over the ensuing two decades, dozens of scientists have explored these and other complexities, and in so doing have greatly expanded the explanatory and empirical scope of the original theory (see Buss 2011, for a recent review).

Gender Differences and Similarities

Evolutionary psychology provides a compelling meta-theory of gender similarities and gender differences (Buss 1995a). Just as we expect differences among species when they face different adaptive problems (e.g., prey such as gazelles faces different adaptive problems than predators such as cheetahs), we expect differences between women and men when the genders have recurrently confronted distinct adaptive problems over the long course of evolutionary history. At the same time, we expect women and men to be similar in all domains in which they have confronted similar adaptive problems. Although it is ultimately an empirical issue, we suspect that gender similarities outnumber gender differences. Adaptive problems of food selection, food shortages, habitat selection, predator defense, parasite defense, and social exchange are all problems both genders have recurrently faced. Conversely, because of gender differences in human reproductive biology, such as internal female fertilization and obligatory parental investment, with different fitness payoff matrices linked with different mating strategies, we anticipate that women and men differ in some adaptations to problems of mating. Even within the domain of long-term mating, however, gender similarities abound—for example, both genders must solve adaptive problems such as self-assessment of mate value, identifying partners willing to commit, and retaining a mate over long stretches of time (e.g., de Miguel and Buss 2011).

Consequently, the evolutionary meta-theory shows some affinity with feminist conceptualizations such as the “gender similarities hypothesis” (Hyde 2005) as well as with feminist conceptualizations that postulate gender differences, such as the “biosocial theory” (Eagly and Wood 1999). At the same time, the evolutionary meta-theory differs from those theories in important ways. For example, the evolutionary meta-theory of gender differences postulates that women and men differ in the basic architecture of their evolved psychology around adaptive solutions to gender-differentiated problems of mating. The “biosocial theory” allows for evolved *physical* differences, which then society acts upon to assign social roles, and assumes that the underlying evolved *psychological* architecture of mating is fundamentally sexually monomorphic.

As a consequence, the evolutionary psychological meta-theory makes markedly different predictions from both the gender similarities hypothesis and the biosocial theory in some domains. Sexual Strategies Theory, for example, predicted that women and men differ, on average, in many components of short-term mating—the nature of sexual fantasies, the relaxation of standards, the desire for sexual variety, time elapsed before seeking sexual intercourse, and many others. The weight of the empirical evidence, including cross-cultural findings by researchers who have no vested interest in any particular theoretical stance, robustly confirms these evolution-based predictions (e.g., Lippa 2009). These findings are difficult to reconcile with the gender similarities hypothesis, and comport well with the evolutionary meta-theory, as Hyde acknowledges (e.g., Oliver and Hyde 1993; Hyde 2005). They are also difficult to reconcile with social role/biosocial theory without the addition of post-hoc speculations (Eagly and Wood 1999).

Science and Feminism

The positive outcome for everyone is that evolutionary psychological hypotheses, sex role/biosocial theory hypotheses, and gender-similarity hypotheses all share the scientific virtue of making specific empirical predictions. In this sense, we see this special issue of *Sex Roles* an exceptionally positive sign that the discourse is beginning to move beyond purely ideological stances and toward an increasingly accurate scientific understanding of gender psychology.

We are optimistic that the historically uneasy relationship between feminism and evolutionary psychology can be bridged (e.g., Vandermassen 2005, 2010). We share the view that the mate preferences of one gender can inflict psychological damage on the other, whether it is women being treated as “sex objects” or men being treated as “success objects.” We share the view that gender discrimination in the workplace is morally wrong. We share the view that rape is abhorrent, and policy, anchored in accurate scientific understanding, should be directed at eliminating its occurrence. We share the view that men’s historical control of power and resources, a core component of patriarchy, can be damaging to women in domains ranging from being forced to endure a bad marriage to suffering crimes such as genital mutilation and “honor killings” for perceived sexual infractions.

Although evolutionary psychology is fundamentally a scientific discipline, we see no reason why findings that emerge from it should not be used to solve important social problems. There are positive signs that this is happening. Evolutionary psychology, by providing a deeper understanding of the causes of child abuse, is being used by legal

scholars to inform policies designed to reduce its occurrence (Jones and Goldsmith 2005). Evolutionary psychology, by providing a deeper understanding of the causes of depression, is being used to construct effective psychotherapies to treat a problem that afflicts twice as many women as men (Ilardi et al. 2007). Similarly, we anticipate that scientific findings from evolutionary psychology will be used in the future to reduce social problems ranging from sexual harassment in the workplace to abusive violence in the home (Buss & Duntley, *in press*).

We are not so naïve to suggest that evolutionary psychology provides magic bullets that will suddenly eliminate social problems. But we do suggest that in domains where change is desired, the new science of the mind provides the light and the way.

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