

Challenging the Dichotomy of Cognitive and Non-Cognitive Values: Feminist Values and Evolutionary Psychology

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Abstract:

Philosophy of science has seen a passionate debate over the influence of non-cognitive values on theory choice. In this paper, we argue against a dichotomous divide between cognitive and non-cognitive values and for the possibility of a dual role for feminist values. By analyzing the influence of feminist values on evolutionary psychology and evolutionary biology, we show how they have cognitive and non-cognitive functions at the same time.

Words: 7258

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1 Introduction

There has been a passionate debate over the roles of non-cognitive values (e.g., moral, political, or cultural values) in the context of justification of scientific theories. The traditional view claims that these values cannot have a relevant, beneficial role because they undermine those aspects of scientific reasoning from which science draws its epistemic authority (e.g., McMullin 1982; Lacey 1999). More recently, several philosophers have challenged this view and claimed that non-cognitive values play a relevant role in the context of justification (e.g., Longino 1990; Rooney 1992; Anderson 1995; Intemann 2005). This paper joins the second camp by demonstrating that a particular kind of non-cognitive values---feminist values---does not necessarily compromise the epistemic authority of science. On the contrary, in some circumstances, they can improve scientific reasoning.

Furthermore, we argue that the dichotomy between cognitive and non-cognitive values does not do justice to the role of values in the context of justification. Traditionally, non-cognitive values are conceived of as a group of culturally determined values whose influence on theory choice¹ is a threat for the objectivity of scientific research. However, in the same way that not all cognitive values promote strictly epistemic goals such as truth and empirical adequacy, not all non-cognitive values have a noxious role in theory choice. In fact, they can exert a legitimate, beneficial influence on scientific research and can take cognitive and non-cognitive roles at the same time. To defend this thesis, we analyze the influence of feminist values on several hypotheses and theories in evolutionary psychology

This paper proceeds as follows: we begin in Section 2 with a discussion of cognitive vs. non-cognitive values in science, where we challenge the traditional dichotomy between these two groups of values. In Section 3, we introduce our case study: the evolutionary explanation of human sexual behavior. In particular, we focus on Sexual Selection Theory, Parental Investment Theory, and Sexual Strategies Theory. In Section 4, we present the feminist critique of this explanation and show how feminist values can lead us to a better assessment of those theories. The final Section 5 summarizes our findings and concludes.

2 Cognitive vs. Non-Cognitive Values: Challenging the Divide

Science pursues the acquisition of knowledge and enjoys a high epistemic authority. Should values play a role in this process? And which values are compatible with good scientific research? Typically, a distinction is made between cognitive and non-cognitive

¹ Throughout the paper, we use “theory choice” as a shorthand for the assessment and selection of theories on the basis of scientific evidence.

values.

The first group of values, *cognitive values*, comprises those values that are constitutive of scientific activity and that are considered the scientists' "shared basis for theory choice" (Kuhn 1977, 357): predictive accuracy, consistency, scope, simplicity and fruitfulness. Not all cognitive values may favor the same theory, and their relative weight may vary across individual scientists. Nonetheless, it is commonly recognized that they are crucial virtues of scientific theories and legitimate assessment criteria in theory choice (see also McMullin 1982).

The second group of values is called *non-cognitive values*. It comprises those values that origin in society as a whole: moral, personal, social, political and cultural values such as pleasure, justice, equality, and honor. Inspired by the influential writings of the sociologist Max Weber (1904/88, 1917/88), many philosophers have defended the view that the assessment of scientific theories should not be affected by non-cognitive values (e.g., McMullin 1982; Lacey 1999; Mitchell 2004). One of the main problems is that in scientific reasoning, non-cognitive values may overrule the scientific evidence and blur the ability of the evidence to point us to the truth. Totalitarian empires in the 20th century, such as the Third Reich or the Soviet Union, show how science can be reduced to a caricature if it is guided by certain political values. Furthermore, non-cognitive values have the potential to oppress diversity and free communication in science. For all these reasons, non-cognitive values are typically considered to be irrelevant and even dangerous in theory choice.

Various philosophers have challenged this view. Helen Longino (1990) emphasizes the role of non-cognitive values in cases of underdetermination of theory by evidence. Moreover, Rudner (1953), Hempel (1965) and Douglas (2000) have argued that non-cognitive values play a legitimate role in theory choice by means of their impact on the assessment of inductive risk. Values can help to deal with uncertainty in scientific reasoning, e.g., by assessing the consequences of a mistaken theory choice. Finally, there is the semantic point that the life sciences, and medicine in particular, are contaminated with social value judgments, e.g., what counts as a disease, what is normal functioning of the human body or the human mind, etc. (Lloyd 1993; Intemann 2001).

These arguments primarily support the claim that we cannot---and should not---eliminate non-cognitive values from the process of theory choice (see also Intemann 2005; Brown 2013; Brigandt 2015). But how can we tell beneficial from noxious non-cognitive values? Recent papers on this question have proposed various criteria, ranging from intrinsic as opposed to instrumental value (Hicks 2014), potential for adoption by all rational agents (Psillos 2015), and degree of empirical support (Goldenberg 2015).

Overall, there is disagreement on how to describe the role of non-cognitive values in

theory choice, and how to distinguish between different kinds of cognitive values. In Section 4, we suggest a new strategy to answering these questions: we argue that time is ripe for abolishing the dichotomy between cognitive and non-cognitive values and to conceive of the cognitive relevance of values as a gradual matter.

To motivate this claim, let us look at cognitive values again. Not all of them are directly related to the truth or empirical adequacy of the favored theory. Douglas (2009, 2013) distinguishes between different kinds of cognitive values: the genuinely epistemic values or 'minimal criteria' (2009, 94) that are directly related to the truth or empirical adequacy of a theory, such as logical consistency and predictive accuracy, and more pragmatic values where such a link is hard to establish.

For instance, simplicity is a value which exemplifies the second category. Kuhn (1977) and McMullin (1982) include it in their list of cognitive values, but McMullin notes a couple of problems, too. First of all, it is vague and at least partially subjective. Second, even when simplicity can be measured in a relatively exact way, e.g., in statistical model selection, it is debatable whether simplicity is a good guide to empirical adequacy (Forster and Sober 1994; Burnham and Anderson 2002). Dependent on the context and the nature of the data at hand, a *ceteris paribus* preference for simpler models need not promote our epistemic goals. Similar claims may be made with respect to cognitive values such as fertility and explanatory power: for example, J.D. Trout (2002) claims that feelings of understanding and explanation are often based on an illusion of explanatory depth unrelated to the truth of a theory.

These examples show the gradations in the epistemic import of cognitive values. What about the other way round? Are there non-cognitive values which are more valuable than others? In this paper, we make a case for feminist values and argue that they fulfill a dual role as cognitive and non-cognitive values. Feminist values are committed to some social objectives---in particular, the emancipation of women in society---, but a specifically feminist perspective on science gains cognitive relevance in at least three different ways: by raising sensitivity to relevant evidence that was neglected due to androcentric bias, by challenging one-sided description of complex phenomena, and by suggesting experimental tests of stereotypical assumptions. This claim shall be defended with respect to feminist values in evolutionary psychology, whose principles we introduce in the next section.

3 Human Sexual Behavior and Evolutionary Psychology

Evolutionary psychology studies human cognition and behavior from an evolutionary perspective. In this view, many psychological traits are adaptations² evolved in our ancestors

² Evolutionary psychology does not aim to provide adaptationist explanations for all traits.

during the era of Pleistocene. These mechanisms helped our ancestors to deal with many adaptive problems, namely problems of survival and reproduction. Although evolutionary psychology is a recent approach, over the past 30 years it has been an extraordinarily prolific source of hypotheses concerning human behavior. It is no exaggeration to claim that evolutionary psychology has revolutionized the study of human behavior. Evolutionary psychologists are aware of this success and propose their approach as a unifying framework for psychological science (Buss and Reeve 2003). Despite this success, many scientists challenge the soundness and reliability of this research by questioning its theoretical principles and methods (Gould and Lewontin 1979; Richardson 2007). More precisely, several scholars criticize a specific line of research that enjoys great popularity within academic and non-academic environments.³ The target of this critique is the inquiry that David Buller calls ‘Evolutionary Psychology’ in capital letters (Buller 2005). This school boasts a group of influential researchers, such as David Buss, Steven Pinker, Leda Cosmides, and John Tooby. In this paper, we analyze the account of human mating suggested by this school, i.e., Sexual Strategies Theory. Such a theory---suggested by the influential psychologists David Buss and David Schmitt (1993)---aims at universal explanations of male and female sexual behavior. Two important evolutionary theories compose the foundation of this account, viz. Parental Investment Theory and Sexual Selection Theory. We explain these theories in turn, beginning with the most time-honored theory: **Sexual Selection Theory**.

Charles Darwin observed that in several species sexes differ in respect to many features, such as size, colors, and behavior. Moreover, since some of these characteristics would not favor the survival of individuals, Darwin thought that natural selection could not explain these features. For instance, Darwin was puzzled by the flashy train of peacocks: how can a peacock survive and defend himself with that iridescent train that makes him more “like a dandy than a warrior”? (Darwin 1871, 43). In order to explain these anomalies, Darwin formulated the theory of Sexual Selection. In this view, individuals look for desirable partners, i.e., partners with good genes and resources. The reason for this hunt is that good partners can provide them with a healthy offspring that can survive. The ‘enigmatic’ features, such as the peacock’s train, indicate the good genes of individuals. Hence, these characteristics help to spread one’s own genes, i.e., they help to solve the adaptive problems of reproduction.

Rather, it formulates explanations involving various products of evolution, such as exaptations and by-products.

³ It should be noted that different evolutionary studies of behavior coexist, such as behavioral ecology and evolutionary anthropology. These lines of research differ with respect to their theoretical tenets and methods. It is beyond the scope of this paper to compare and assess these schools.

Two mechanisms are especially important for sexual selection. First, the members of one sex are involved in intrasexual competition, namely a competition to have sexual access to the other sex. Individuals have evolved features that permit them to win the competition with members of the same sex and to mate, such as the iridescent train of the peacock. Second, the other sex is involved in intersexual selection, also called ‘female choice’. These individuals have certain mating preferences, such as specific color and structure of the peacock’s train. When it comes to human beings, evolutionary psychologists traditionally think that while men are involved in intrasexual competition, women do the intersexual selection.

Robert Trivers formulated the second fundamental theory for the explanation of human mating analyzed in this paper: **Parental Investment Theory**. By specifying “the conditions under which sexual selection would occur for each sex” (Buss 1999/2008, 16), this theory constitutes the basis of Evolutionary Psychology’s account of human mating. Trivers defined parental investment as “any investment by the parent in an individual offspring that increases the offspring’s chance of surviving (and hence reproductive success) at the cost of the parent’s ability to invest in other offspring” (Trivers 1972, 139).

Furthermore, he argued that while one sex invests less in offspring and is involved in intrasexual competition, the other sex invests more and makes the intersexual selection. Triver’s argument hinges on *anisogamy*, namely sexual reproduction that depends on gametes that differ in respect to quantity and size. This asymmetry is central to determine the amount of parental investment. The sex that produces few large, costly gametes invests more in offspring. These gametes are a rare and precious resource and individuals do not want to waste these precious cells. As a consequence, they choose carefully the partner that can assure good use of them. The sex that generates many small, cheap gametes, on the other hand, invests less in offspring and is involved in the intrasexual competition. When it comes to human beings, women produce large gametes, i.e., ova, and men generate small and cheap gametes, i.e., sperm. Hence, traditionally, evolutionary biologists and psychologists claim that women have a greater parental investment than men. Indeed, women are involved in an ‘obligatory’ investment that is indispensable for the survival of the offspring, including nine months of pregnancy and breastfeeding.

On the basis of Sexual Selection Theory and Parental Investment Theory, David Buss and David Schmitt propose an ambitious theory to explain human sexual behavior: **Sexual Strategies Theory** (Buss and Schmitt 1993). Buss and Schmitt claim that human beings have evolved preferences for certain sexual strategies that solve specific adaptive problems. In particular, human beings engage in long-term and short-term strategies. While a long-term strategy aims at long, monogamous relationships, a short-term strategy does not lead to a real

commitment to a romantic relationship. Furthermore, they argue that “men and women have faced different mating problems over human evolutionary history, at least in some delimited domains, and therefore the principles that govern the mating of women and men are predicted to be different in these domains” (Buss and Schmitt 1993, 205).

In particular, Buss and Schmitt argue that the different amount of parental investment leads women and men to prefer divergent sexual strategies. While men are more inclined to short-term mating than women, women look for long-term mating more often than men.⁴ By pursuing long-term strategies, women have solved the adaptive problems connected to their obligatory investment. Buss and Schmitt claim that women's reproductive success is constrained by the resources they can get to ensure the survival of their offspring. Hence, by means of long-term mating, women can find partners that can support them by providing those resources, such as protection and food. Instead, men face their adaptive problem posed by the big quantity of cheap gametes by preferring short-term strategies. That is to say, since men's reproductive success is constrained by the number of women they can inseminate, short-term mating allows them to use their big quantity of gametes and spread their genes.

An astonishing amount of empirical evidence supports the predictions of Sexual Strategies Theory concerning the existence of sex differences in the preference for mating strategies (Buss et al. 1990, Schmitt et al. 2003). Indeed, manifold studies have detected sex differences in the desired number of partners (Schmitt et al. 2003). Furthermore, several studies shows that while women value partners with resources and high status much more than men (Gottschall et al. 2003), men's prefer partners who exhibit signals that are linked to fertility more often than women (Buunk, Dijkstra et al. 2001, Confer et al. 2010).

The account presented in this section assigns an essential role in the evolution of sexual behavior to the amount of parental investment. Feminist criticism has challenged this assumption and provided studies that question the central function of anisogamy to determine the amount of parental investment and the preference for some specific sexual strategies. In the next section, we present this criticism and highlight the beneficial influence of feminist values on the reliability and objectivity of an evolutionary account of human mating.

4 Feminist Critique of Evolutionary Biology and Psychology

Feminist scholars are interested in detecting and fighting forms of oppression of women. When it comes to science, feminists are especially committed to pinpoint the ways in which scientific practice neglects women as an object of research and denies them an active

⁴ These claims are statistical, of course. Buss and Schmitt concede that women and men use both strategies when they lead to benefits.

role in the production of knowledge. In the last decades, a considerable feminist literature has emerged in the fields of sociobiology, evolutionary biology, and psychology. Their critique focuses on the influence of gender stereotypes on evolutionary explanations and is inspired by specific political and social values, such as gender equality. In this section, we present some feminist criticisms of the account described in the third section.⁵

As mentioned in the previous section, Evolutionary Psychology ascribes a fundamental role to parental investment in the evolution of sexual behavior. In this traditional view, women invest more in offspring than men and they solve their adaptive problems related to parental investment through long-term strategies. Several feminist researchers⁶ criticize this analysis of the role of parental investment in the determination of sexual behavior.

We begin with critiques of Sexual Selection Theory. By focusing on the effects of sexual selection on females in various species, the primatologist and anthropologist Sarah Hrdy (1986) has shown the inadequacy of the stereotypical picture of sex roles given by Sexual Selection Theory.⁷ She highlights some of the problematic assumptions of this traditional account:

“Assumptions underlying these stereotypes included, first, the idea that relative male contribution to offspring was small, second, that little variance exists in female reproductive success compared to the very great variance among males, and third, that fertilization was the only reason for females to mate. While appropriate in some contexts, these conditions are far from universal.” (Hrdy 1986, 131)

Hrdy claims that evolutionary theorists have ignored many widespread behaviors, shared by the majority of primate species, that clash with the traditional view of female coyness in mating. For instance, scientists did not collect and analyze data concerning competition among females and concerning promiscuous mating that is not necessary for

⁵ It is beyond the scope of this paper to provide a complete survey of feminist critiques of this account. For a broader analysis, see Gowaty 1997, Fehr 2012.

⁶ To simplify, we use ‘feminist researchers’ and ‘feminist evolutionists’ as synonyms and we refer to feminist scholars who criticize evolutionary biology and psychology but also try to integrate feminism and evolutionary theory. See Vandermassen 2005, Hannagan 2008.

⁷ The study of nonhuman primates constitutes an important source of evidence for evolutionary psychology and biology. Since human beings and nonhuman primates share a common ancestor, evolutionary scientists think that the study of these animals can shed light on the adaptive problems of our ancestors. For a critique of comparative analysis as source of evidence see Buller 2005.

fertilization. One of the reason why they neglected such evidence was that they assumed that being sexually competitive was not advantageous for females (Hrdy 1981/1999, 11). Such a problematic assumption constrained research to analyze females only in the role of mothers and as passive resources available to males (Fedigan 2001, 49). As a consequence, since the traditional account neglects data on the behavior of female primates, it only gives a partial explanation of human sexual behavior and fails to provide an objective and comprehensive picture. Feminist researchers, instead, have provided studies that include primate females' behavior and challenge the stereotypical view of female coyness. As Fedigan argues, feminist primatologists have improved research on sexuality by simply using research questions that consider female sexual behavior. That is, besides studying the sexual behavior of males and their adaptive advantage, feminist researchers began to investigate female sexual behavior. For instance, Hrdy (1981/1999) studied how females compete with other females to gain resources and partners. Meredith Small (1993) analyzed how primate females choose good partners. Moreover, Jeanne Altmann (1974) criticized androcentric sampling practices involved in the study of animal behavior. In particular, she questioned 'ad libitum sampling', i.e., recording anything that attracts scientists' attention. Altmann argues that "with ad libitum sampling, it is rarely possible to determine which differences in data are due to true differences between individuals, age-sex classes, or behavior, and which due merely to biases in sampling" (1974, 236). All in all, androcentric values have contributed to a focus on male behavior and on stereotypical female roles and this has hampered the production of adequate explanations of primates' sexual behavior.

Several primatologists and anthropologists, such as Hrdy (1981/1999) and Fedigan (2001), argue that feminist ideas and values have had a beneficial influence on the work of many researchers by pushing them to challenge orthodox ideas about sex roles generated by cultural stereotypes. Unsurprisingly, the traditional ideas about sex roles turned out to be inadequate. It should be noted that Hrdy does not ascribe this success of feminist research to the gender of the scientists involved. More precisely, she does not claim that female scientists revolutionize the explanations of sexual behavior because of their alleged feminine sensibilities. Rather, she points out the importance of political and social *values*. These values put scientists in a better epistemic position to pinpoint the weakness of a theory. This diagnosis is in line with our claim about the dual role of feminist values in science.

It should be noted that Hrdy and Fedigan critique challenged the account of sexuality developed in primatology, sociobiology, and evolutionary biology. However, the same criticisms are now legitimately raised in evolutionary psychology (Hrdy 1997). David Buss claims that Sexual Strategies Theory admits that both sexes compete and are involved in mate choice (2013, 171). In other words, Buss and Schmitt would not apply the traditional, narrow

version of Sexual Selection Theory that views females as passive, coy individuals. However, feminist evolutionists claim that there is a need to enhance the awareness of gender bias in the application of Sexual Selection Theory (Ah-King 2007). That is to say, the traditional version of this theory still constitutes the ideological framework in which human behaviors are analyzed. Overall, women are still pictured as highly discriminating and sexually coy, and men are still studied as indiscriminating, sexually adventurous individuals.

Feminist researchers also criticize Parental Investment Theory. As previously mentioned, in the traditional view endorsed by Evolutionary Psychologists, males' parental investment is rather small and, in principle, can amount to only one ejaculation necessary for conception. Female investment, instead, is huge and includes pregnancy, breastfeeding, and protection. Hrdy claims that research in primatology shows that males' parental investment is far from being insignificant for the survival of the offspring. For instance, these studies show that in many species, fathers are involved in direct care and protection (Hrdy 1976, 1986). Moreover, Ruth Hubbard has challenged the traditional criteria to measure parental investment and, above all, the role of anisogamy in such a determination (1990). Because of the asymmetry involved in anisogamy, scientists traditionally assume that two aspects are important for the evolution of human sexual behavior. First, females constitute rare resources because of their large, scarce eggs. Second, the energy that women invest in gametes outweighs the energy invested by men in each sperm. Hubbard criticizes this approach to measure this energy. She claims:

“[...] there is no reason to believe that females expend more energy (whatever that means) in the biological components of reproduction than males do. Among mammals, females indeed produce fewer eggs than males do sperm, and females gestate the embryos, but it is not obvious how to translate these facts into energy expenditures. Is it reasonable to count only the energy males require to produce the few sperm that actually end up fertilizing eggs, or should one not count the total energy they expend in producing and ejaculating semen (that is, sperm plus spermatic fluid) throughout their lives (however one would do that)?” (Hubbard 1992 142)

According to Hubbard gamete size does not constitute the full story. An exhaustive evaluation of male parental investment has to take into account several aspects, such as the actual efforts to protect the offspring and the costs of male-male competition. Then, if it is true that males' parental investment turns out to be greater than previously believed, evolutionary psychologists should revise their predictions about men's preference for short-term strategies.

In other words, if feminist research is right in claiming that the traditional determination of the amount of parental investment is faulty, evolutionary psychologists should revise their account of sexual behavior in humans.⁸

In the light of these criticisms, it is unsurprising that also Sexual Strategies Theory, which builds on Sexual Selection Theory and Parental Investment Theory, has come under pressure. This theory predicts some differences between men and women, such as discrepancies in preferences for sexual strategies and number of partners desired. Although Buss and Schmitt claim that cross-cultural data have confirmed the predictions of their theory, feminist researchers have provided several studies that do not support this optimistic assessment. For instance, Perrin et al. (2011) have designed three studies to test the assumption concerning the different desires of men and women in the context of a heterosexual romantic relationship. Findings do not support the differences predicted by Sexual Strategies Theory. By contrast, these studies highlight several similarities in the self reports of men and women concerning the desired loving behavior. They have detected just one clear gender difference: women's greater desire for mutual support and care in a relationship. Pedersen et al. (2011) have tested the hypothesis that men prefer short-term strategies more often than women do and failed to confirm it, obtaining results that are inconsistent with Sexual Strategies Theory. Indeed, their studies show that preferences for long-term strategies are widely shared among men and women.

Andrew Smiler (2011) provides an extensive critique of Sexual Strategies Theory. As mentioned, Sexual Strategies Theory predicts specific differences in the preference for mating strategies. Smiler argues that evolutionary psychologists cherry-pick data to confirm these predictions (2011, 604). On the one hand, they dedicate a deep analysis to the different motivations women and men have for having sex and to the divergent features of partners that women and men find desirable. On the other hand, they do not consider the astonishing amount of data that shows similarities between men and women. These similarities concern the actual number of partners desired and the characteristics of partners that individuals rank as more important (Buss & Schmitt 2003, Buss et al. 1990). It is worth noting that the data showing these similarities are collected by the same proponents of Sexual Strategies Theory. Why do they focus on sex differences and neglect the substantial similarities revealed by their studies? According to Smiler, proponents of Sexual Strategies Theory “selectively focus on only those findings that support their theory and mostly ignore their own findings that might challenge Sexual Strategies Theory” (2011, 604). Obviously, this problem undermines the reliability of Sexual Strategies Theory and its proponents have, sooner or later, to address it.

Moreover, Smiler (2011) notices that evolutionary psychologists claim that both

⁸ For further debate, see Vandermassen (2004, 2005) and Ah-King (2007).

evolutionary and contextual-individual factors are important for determining sexual behavior. Nonetheless, the role of contextual-individual aspects is not seriously considered in Sexual Strategies Theory. Feminist research has been much more sensible to this problem. For instance, Chuck Tate (2011) has developed three studies to investigate the importance and interplay between psychosocial, experiential, and evolutionary factors in the determination of sexual behavior. In particular, she focuses on how these aspects affect the desired number of sexual partners. She found out that some psychosocial variables do influence the desirable number of sexual partners (2011, 649). Hence, Sexual Strategies Theory only gives a partial account of human sexual behavior.

All in all, feminist researchers have formulated compelling arguments against the traditional evolutionary explanation of human mating.

Let us systematize the ways in which feminist values are beneficial for evolutionary psychology. First, feminist values **raise sensitivity to relevant evidence** that was disregarded because of androcentric or other biases. Salient examples include Hrdy's analysis of primates' mating behavior that conflicts with the traditional view of the 'coy female' (1986, 138), and the neglect of similarities in human sexual behavior. This criticism calls for expanding the evidence base for theory choice in order to obtain a more comprehensive picture. Second, feminist values **challenge one-sided descriptions of complex phenomena**, such as anisogamy. Hubbard has pointed out that gamete size is a questionable measure for quantifying parental investment and that theories based on this measure should be regarded with caution. This feminist criticism reveals that scientific theorizing in evolutionary psychology is sometimes based on problematic assumptions in the description of complex phenomena. It also suggests alternative descriptions that may lead to more balanced theorizing. Third, feminist values **suggest experimental tests of stereotypical assumptions**, such as gender differences in mating strategies and attitude toward romantic relationships (Pedersen et al. 2011; Perrin et al. 2011). These studies target stereotypical claims that are often tacitly assumed in evolutionary psychology, but have not been subjected to rigorous test. They contribute to identifying relevant research questions, developing useful experimental designs and to a fair assessment of potentially problematic claims. Moreover, it is worth noting that the feminist critique has pushed the evolutionary account of human mating into a better fulfillment of some cognitive values. For instance, thanks to the influence of feminist research, the external consistency of such an account improved by taking into account the data collected by primatologists. In other words, feminist values have a positive influence on evolutionary psychology by promoting theories that possess relevant cognitive values.

Summing up, the feminist criticisms that we have explained in this section enhance

both the theoretical and the evidential basis of evolutionary psychology. Feminist values actively contribute to the core activity of scientific reasoning---gathering and analyzing scientific evidence, assessing theories on the basis of that evidence---and they do so in a beneficial way that is supposedly reserved for cognitive values. Hence, a dual characterization of feminist values in science as fulfilling both cognitive and non-cognitive functions seems appropriate. Feminist values have a non-cognitive core, that is, the commitment to the emancipation of women, gender equality, freedom of patriarchal oppression, and empowerment of women's lives. But if applied properly, this commitment can improve the reliability of scientific reasoning and contribute to the core aim of science: a sound assessment of theory and evidence. In this view, providing adequate theories of human sexual behavior means doing justice to women and men. In the light of these findings, a sharp distinction between cognitive and non-cognitive values does not do justice to the diversity of roles that values play in scientific reasoning.

One might argue that the same could be said of noxious non-cognitive values such as creationist or racist values.⁹ To the extent that these values promote a critical attitude towards established scientific theories, and detect questionable assumptions, their influence seems as legitimate as the influence of feminist values. However, this analogy misses a crucial difference. Creationist, racist, and feminist values are not on a par with respect to their epistemic commitments. For example, creationist values involve a priori views about the origin of the universe that rule out several astronomical and biological theories from the start. Racist values make similar a priori commitments about differences between human beings. Feminist values are not committed to any such dogmatic theory concerning (the absence of) differences between men and women, or the biological and psychological explanations of human mating. They do not prevent the pursuit of any biological or psychological research program. Rather, they propose a perspective for discussing and criticizing such research programs. To push this point to the extreme, it is compatible with feminist values that science finds, at some point, substantial and robust intelligence differences between men and women. Not that we have any evidence for such a claim: our point is rather that if we found such evidence, feminist values would call for a critical scrutiny of the research method, search for hidden biases, etc. But if the research survived all the scrutiny, feminist scientists would ultimately accept the outcome. As history has taught us, this is a substantial difference to creation science and science guided by racist values (e.g., the Aryan Physics of the 1930s). Thus, while there is no clash between feminist values and scientific research, creationist and racist values constrain the development and improvement of scientific research.

It should be noted that not all feminist values have this positive role. Indeed,

⁹ See Kourany 2010 for similar remarks.

“feminism” is an umbrella term that denotes different and conflicting views, such as equity feminism and gender feminism (Sommers 1994). As Barry Kuhle (2012) argued, while equity feminism is not committed to any dogmatic view on men and women, gender feminism is. That is, gender feminism is committed to a theory that rules out any evolutionary explanations of psychological differences between men and women. By constraining the development of evolutionary explanations, gender feminism's influence on evolutionary psychology is as noxious as the influence of racist values. Equity feminism, on the other hand, does not involve such a dogmatic view. It just asks for a fair treatment of women in evolutionary psychology, i.e., it asks for a careful study of women's psychological traits. Since equity feminism fights sexism, it is involved into a process of political change. Nonetheless, the aim of equity feminism is not formulating a “politically correct” account of human mating. Rather, it aims to do justice to women by fighting bias in evolutionary psychology, and striving for empirically adequate explanations of gender differences. Hence, equity feminism not only does not contrast with evolutionary psychology, but it also improves the reliability of its theories.

Philosophers often propose a single criterion to evaluate the soundness of values and their influence on scientific research (e.g., Hicks 2014, Goldenberg 2015, Psillos 2015). Our case study suggests that things are more complicated: values in science cannot be evaluated without keeping in mind their context of application. Only when we analyze how values contribute to better and more reliable theories in a specific discipline, we can make a judgment on their cognitive import.

5 Conclusion

The goal of this paper was to challenge the dichotomy between cognitive and non-cognitive values and to replace it by a gradual account. From a theoretical viewpoint, this project is motivated by recent distinctions between properly epistemic and secondary cognitive values (Douglas 2013), by challenges of the epistemic relevance of traditional cognitive values (e.g., Burnham and Anderson 2002; Trout 2002), and by arguments that non-cognitive values may have a legitimate, albeit restricted, role in scientific reasoning (e.g., Intemann 2001; Douglas 2009). We have supplemented these theoretical arguments with a case study on evolutionary psychology and the role of feminist values in criticizing certain assumptions and inferences of that research program.

Evolutionary Psychology is an ambitious research program aiming at the explanation of human behavior---and sexual behavior in particular---by means of evolutionary adaptations. It has celebrated some spectacular successes, but it is also based on problematic

assumptions, e.g., the central role of anisogamy and female coyness. Feminist research uncovers these problems and the underlying biases, provides relevant evidence neglected by the traditional view, and suggests studies that subject problematic assumptions to empirical scrutiny. At the same time, feminist values do not constrain scientific research in the problematic manner that is typical of, e.g., racist or creationist values. We have also argued that it is the commitment to particular socio-political values---fighting the neglect of women as an object of study---that enables feminist researchers to voice their criticism and to identify problems for Evolutionary Psychology. For these reasons, our study supports the view that feminist values have a dual role in science: they support a certain political, non-epistemic goal, but they also gain cognitive relevance by improving the reliability of scientific reasoning and by contributing to better theory choice. What counts as a cognitive and a non-cognitive value may therefore be a matter of gradation.

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