Rape and evolutionary psychology: a critique of Thornhill and Palmer's theory

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Abstract

In this article, we present a critical evaluation of Thornhill and Palmer's [(2000). Rape: a natural history, Cambridge, MA: MIT Press.] evolutionary theory of rape. This theory attempts to explain rape in terms of evolutionary theory and asserts that rape is either directly or indirectly associated with inherited mechanisms that increased our ancestors' reproductive success. We first provide an introduction and overview of some of the fundamental concepts in the field of evolutionary psychology (EP) and then summarize the major elements of Thornhill and Palmer's theory. Thornhill and Palmer offer two main lines of argument in support of their theory — a positive and a negative argument. The positive argument involves the development of an explicit case for the coherency, scope, empirical adequacy, and explanatory depth of their evolutionary account of rape. The negative argument relies upon refuting what Thornhill and Palmer call the "standard social science model" (SSSM) of rape. The present paper advances some general criticisms of Thornhill and Palmer's theory and then specifically addresses both their positive and negative arguments. We conclude that Thornhill and Palmer have not established that their evolutionary theory of rape is a better theory than social science explanations. At best, their argument presents a strong case for the important, but not exclusive, role of biological factors in the etiology of rape and gender relationships. At this point in time, there are too many unanswered questions concerning the nature of the relevant adaptations and the contribution of environmental and cultural factors to conclude that evolutionary theories are sufficient to explain sexual aggression.

Author Keywords: Rape; Sexual aggression; Evolutionary theory;

Article Outline

1. Evolutionary psychology
2. Thornhill and Palmer's evolutionary theory of rape
   2.1. The positive argument: rape as an adaptation or by-product of an adaptation
   2.2. The negative argument: the inadequacy of the social science explanation of rape
3. Critical comments
   3.1. General criticisms
3.1.1. Explanatory scope
3.1.2. Competing theories
3.1.3. The modularity of the mind
3.1.4. Values and rape
3.1.5. Treatment outcome

3.2. Criticisms of the positive argument
3.2.1. Definition of rape
3.2.2. Goodness of fit
3.2.3. Rape motivation
3.2.4. Role of the environment

3.3. Criticisms of the negative argument
3.3.1. Incompatibility with evolutionary theory
3.3.2. Rape motivation
3.3.3. The universality of rape
3.3.4. Naturalism
3.3.5. Metaphysical assumptions

4. Conclusion
References

Why do men rape women? What are the psychological, biological, cultural, and situational factors that predispose some males to sexually assault a woman? Perhaps the answer lies in a rapist's early developmental history, during which he may have acquired distorted beliefs concerning sexuality, in general, and the nature of women, in particular. Alternatively, rape could be construed as a conditional strategy adopted by all men in certain situations to secure sexual access to a female, a product of natural selection. In order to answer the above questions, it is necessary to specify the causal mechanisms underlying this profound social problem (in other words, to develop an explanatory theory). Etiological theories are assumed by every practitioner and provide a map to chart the difficult and complex process of working with sex offenders. We cannot live without such maps, nor can we afford to deny ourselves the opportunity to improve their quality and scope.

In this paper, we critically discuss an influential evolutionary theory of rape developed by Thornhill and Palmer (2000) and systematically outlined in their recent book, A Natural History of Rape. In a nutshell, this perspective attempts to explain rape by appealing to evolutionary theory and the construct of natural selection. The theory states that rape is either directly or indirectly associated with inherited traits that in the distant past increased our ancestors' reproductive success. This theory has attracted a great deal of attention in the popular press and in the wider community, typically negative in nature. The major concerns expressed by individuals are that evolutionary approaches to the explanation of sexual aggression are rigidly deterministic, narrow in focus, and appear to absolve rapists of any responsibility for their abusive behavior. In our opinion, many of these criticisms are misguided and rest upon misunderstandings of evolutionary psychology (EP), in general, and evolutionary theories of rape, in particular. Despite the misdirected nature of much of the above critical comments, we suggest that there are significant problems with Thornhill and Palmer's theory that merit examination.

We first provide an introduction and overview of some of the fundamental concepts in the field of EP and then summarize the major elements of Thornhill and Palmer's theory. Thornhill and Palmer offer two main lines of argument in support of their theory — a positive and a negative argument. The positive argument involves the development of an explicit case for the coherency, scope, empirical adequacy, and explanatory depth of their evolutionary account of rape. The negative argument relies upon refuting what Thornhill and Palmer call the "standard social science model" (SSSM) of rape. We then critically examine the evolutionary theory's core assumptions and determine its overall theoretical coherency. Our aim is to state the main threads of their argument as clearly and simply as possible; we do not attempt to give an exhaustive account of the evolutionary approach to rape.

1. Evolutionary psychology

EP is first and foremost an approach to studying the human mind, and not a content area, such as visual perception, reasoning, memory, or social interaction. It is then "a way of thinking about psychology that can be applied to any topic within it" (Cosmides & Tooby, 2000, p. 1). The evolutionary psychological approach to understanding the mind can best be described by contrasting it with the dominant alternative paradigm in psychology, which Tooby and Cosmides (1992) have referred to as the SSSM. The SSSM of human behavior and cognition posits a brain that has evolved into a content-free, general-purpose learning machine. At birth,
the mind is a virtual tabula rasa, waiting for culture to determine its adult mental organization. In this model, intergroup differences in cultural patterns are emphasized, while biological variables and individual differences are minimized or just ignored. As Tooby and Cosmides state, according to the SSSM “Adult mental organization is socially determined” (p. 26). According to the SSSM, the proper study of Man is in fact the study of culture. The proper role of psychology in the SSSM is the study of socialization, particularly “learning,” since this focus provides an explication of the mechanisms by which cultural processes transmit their cognitive programs to the individual. Ironically, while securing a legitimate place for psychology within the SSSM, this position has meant that psychology has abandoned the study of “human nature.” Tooby and Cosmides comment that “The conclusion that human nature is an empty vessel, waiting to be filled by social processes, removed it as a legitimate and worthwhile object of study” (p. 29).

In contrast to the SSSM, an EP approach to the study of the human mind and human nature strongly disputes the notion of the human mind/brain as a general learning or problem-solving device. Rather, it is argued that millions of years of evolution provided specific environmental challenges that have resulted in specific cognitive mechanisms to meet those challenges through the processes of natural selection and sexual selection. Thus, our minds and their information-processing mechanisms are just as much products of the evolutionary process as our bodies. Moreover, the processes of natural selection and sexual selection will determine a species’ cognitive architecture just as they have determined its wing span or temperature-regulatory mechanisms. As a consequence, the newborn human brain is anything but a general learning device that is programmed by culture. Rather, the mind is believed to be a set of specialized content-rich, domain-specific mental modules (Fodor and Hirschfeld), which operate independently but in a coordinated fashion. To use Tooby and Cosmides’ vivid metaphor, the mind is more like a Swiss-Army knife than a computer operating with a few general-purpose programs. Our minds are constituted out of numerous specialized, domain-specific information-processing mechanisms that have evolved to solve different adaptive problems (Tooby & Cosmides, 1992).

Each of these modules represents an adaptation that has evolved to solve a specific problem facing our ancestors, such as avoiding predators, forming friendships and alliances, selecting mates, and communicating with others. Failure to solve these problems satisfactorily would have lessened an individual's chances of surviving and passing on his or her genes to future generations. Modules are psychological structures or information-processing mechanisms that operate according to specific rules in certain domains, and only when exposed to quite specific information. For example, a predator-avoidance module would function to detect designated predators and instruct individuals to adopt certain strategies to avoid or escape from them. On the other hand, a mate-selection module would help males and females to maximize their chances of finding a suitable mate and producing offspring that survived. Adaptations are not easily identified and evolutionary psychologists use a number of methodological rules to help them to do so in a reliable and valid way (Tooby & Cosmides, 1992). These include demonstrating: (1) that the trait in question has design features that appear to solve an adaptive problem; (2) that these features are unlikely to have risen by chance alone; and, (3) that they are plausibly the product of a module, rather than being the by-product of another module designed to solve a different adaptive problem. In addition, the module or mechanism in question should develop reliably and efficiently in all human beings unless linked to a subgroup, for example, gender-related adaptations. Thus, according to evolutionary psychologists, these are the modules or information-processing mechanisms that are selected for, rather than specific behaviors. It is also important to note that these inherited mechanisms are not necessarily operating at birth. In fact, they may come “on line” at different developmental stages. For example, mate-selection modules only really start to exert a profound influence during adolescence. Additionally, modules are only activated once the relevant environmental conditions are obtained and specific information is available as input to the mechanism. The nature of these inputs may also channel individuals down one of several possible developmental pathways by virtue of its effect on the relevant mechanism. For example, the absence of a father during childhood may result in a male adopting short-term mating strategies and not investing in a permanent relationship (Buss, 1999). Alternatively, being exposed to different levels of “mind talk” may cause individuals to develop different theories of mind (Ward, Keenan, & Hudson, 2000). In a sense, environmental events serve to calibrate a mechanism, thereby setting its threshold of activation and the particular form it takes.

As stated above, not all human capacities are the result of adaptations (Buss, 1999). While some traits have been selected for their capacity to solve problems faced by our ancestors, thereby increasing their chances of reproductive success and survival, others are probably by-products of selected mechanisms or simply represent “noise” or random effects created by mutations or environmental changes. For example, while the ability to develop and speak a language may be an adaptation, our capacity to write is likely to be a by-product of the mechanisms’ generating speech. An example of a physical characteristic produced by noise is the particular shape of a person's belly button (Buss, 1999).
There are two major forms of evolutionary explanations of human traits, ultimate and proximate. Ultimate explanations attempt to identify the function of a given trait or mechanism by determining its role in solving a particular adaptive problem, while a proximate explanation focuses on the nature of the causal mechanisms that underpin its functional role (Buss, 1999). An important strength of EP is that it explains behavior in terms of both ultimate and proximate causes. Thus, in the language of EP, ultimate means all the evolutionary factors that contribute to the development of a psychological mechanism or pattern of behavior. By contrast, proximate refers to the more recent factors involved. Ultimate causes will include such things as the ancestral environment, sexual selection, and natural selection. Proximate causes will include such variables as the person's genes, their developmental history, learning, and environmental stimuli. Symons (1979) comments that ultimate causes explain why an animal exhibits a specific behavior pattern — in ancestral environments, that behavior pattern promoted the reproductive success of the individuals displaying it. Proximate causes, says Symons, explain how animals eventually develop and display specific behavior patterns. Thus, given a certain genetic endowment, the right developmental circumstances, and appropriate contingencies of reinforcement, the pattern of behavior will emerge. Moreover, any comprehensive explanation of a pattern of behavior should invoke both ultimate and proximate causes and suggests how proximate causes might activate the relevant mental mechanisms involved. Consequently, only EP, through its consideration of both ultimate and proximate causes, can provide a comprehensive explanation of patterns of human behavior.

There is converging evidence for the plausibility of EP from a number of sources including philosophy (Fodor, 1983), cognitive psychology (Marr, 1982), neuropsychology (McCarthy and Shallice), neuropsychiology (Zeki, 1993), and cognitive anthropology (D'Andrade, 1995). The EP approach, moreover, argues that the typical environment, which human minds evolved to contend with, is very different from that of modern Western society. As Cosmides and Tooby (2000, p. 13) state:

> The environment that humans — and, therefore, human minds — evolved in was very different from our modern environment. Our ancestors spent well over 99% of our species’ evolutionary history living in hunter–gatherer societies. That means that our forbearers lived in small, nomadic bands of a few dozen individuals who got all of their food each day by gathering plants or by hunting animals...Generation after generation, for 10 million years, natural selection slowly sculpted the human brain, favoring circuitry that was good at solving the day-to-day problems of our hunter–gatherer ancestors — problems like finding mates, hunting animals, gathering plant foods, negotiating with friends, defending ourselves against aggression, raising children, choosing a good habitat, and so on. Those whose circuits were better designed for solving these problems left more children, and we are descended from them.

Finally, it is important to appreciate that modern versions of EP do not share some of the problems evident in sociobiology (Buss, 1999). First, EP should not be confused with genetic determinism or the view that behavior is rigidly determined by our genes with no input from the environment. Second, just because a mental mechanism and the subsequent behavior it generates are the product of natural selection (or a by-product), it does not mean we are unable to modify our actions. Psychological mechanisms are activated by information in the environment and the form they take is directly influenced by the nature of this information. Therefore, changing the content or meaning of such information may result in quite different beliefs, desires, goals, and behavior. Third, despite our minds and bodies being the products of evolution, it does not mean that they are perfectly designed. The process of evolution involves tradeoffs and constraints. Our minds are arguably the product of small changes over time, each of which is constrained by the effects of earlier changes. Gilbert captures this ad hoc development nicely when he comments “Evolution is an incremental process. Only small changes that ‘tinker’ with the current design are possible” (1998, p. 355). Finally, according to EP, we do not consciously or unconsciously attempt to maximize our gene reproduction. Our motives and goals are partially the result of psychological mechanisms selected for their capacity to improve our ancestors survival and reproductive success; they do not lead us to intentionally engage in actions that will result in our genes being passed on to a new generation. The fact that this may occur as a consequence of our actions is fortuitous rather than intentional.

2. Thornhill and Palmer's evolutionary theory of rape

Thornhill and Palmer appear to accept the basic assumptions of EP outlined earlier, for example, a view of the mind as radically modular. They emphasize the biological nature of the mind and are extremely critical of social science explanations of rape that they believe depend on erroneous assumptions about the mind's architecture and functioning (see below). They are, therefore, dismissive of rape theories that emphasize the role of culture and learning in the acquisition of rape-prone traits, arguing that culture is only possible because individuals have evolved capacities that enable them to learn. However, they are also careful to state that many human adaptations may not be currently adaptive; what was once helpful in increasing an individual's
chances of surviving and reproducing may not be so in novel environments. As we will see below, they argue that rape may have evolved to help males circumvent females’ caution when it comes to selecting a mate. This is hypothesized to have created problems for lower-status males and was a major obstacle in ensuring their reproductive success. Thornhill and Palmer argue, therefore, that rape can only really be understood in the context of mate selection and the adaptive problems faced by both males and females in the Pleistocene environment. The act of rape effectively blocks or interferes with females’ core reproductive strategies. A crucial task for the theorist is to identify the adaptation or evolved mechanisms directly or indirectly resulting in rape. This requires correctly identifying the function (ultimate explanation) of rape in the early ancestral environment and the causal mechanisms that currently generate it (proximate explanation). Proximate explanations could include hormonal deviations, the socialization of boys, developmental adversity, or a lack of intimacy skills. The key point is that any explanation referring to proximate mechanisms must be consistent with evolutionary theory and specifically, linked to an adaptation in some way.

Thornhill and Palmer define rape in terms of “…human copulation resisted by the victim to the best of her ability unless such resistance would probably result in death or serious injury to her or in death or injury to others she commonly protects” (p. 150). They develop their evolutionary theory of rape through two distinct lines of argument, one positive and one negative. The positive argument involves the development of an explicit argument for the coherency, scope, empirical adequacy, richness, and explanatory depth of their evolutionary theory of rape. That is where ultimate and proximate explanations are advanced and defended. The negative argument involves refuting what they call the “standard social science” explanation of rape. This argument rests on the implicit (this is not clearly articulated in their book) assumption that since the received social science theory is clearly deficient in a number of important respects, then the only rational option is to embrace an evolutionary perspective. It depends on the reasonable viewpoint that theory evaluation is a comparative process and the fact that a theory contains gaps or logical inconsistencies does not mean it should necessarily be abandoned or rejected. Its value depends on how it compares with its competitors and its overall explanatory depth (Hooker, 1987).

2.1. The positive argument: rape as an adaptation or by-product of an adaptation

Thornhill and Palmer argue for an evolutionary theory of rape on the grounds that human beings are essentially animals and part of the natural world. Therefore, they conclude that all human traits and behaviors are likely to be a product of natural processes and subject to naturalistic or scientific explanation. Since sexual coercion is a human activity, it should be explained naturalistically and given the prominence of evolutionary theory, in terms of natural selection. Thus, an important scientific task involves the identification of the proximate psychological mechanisms underpinning rape.

According to Thornhill and Palmer, a crucial question concerning the evolutionary causes of rape revolves around the issue of whether rape occurs as a consequence of a rape-specific adaptation or as a by-product of other adaptations. They also state that if rape is an adaptation, it is likely to be domain-specific and, therefore, modular in nature. As described above, they accept the modular or Swiss-knife model of the mind and refute the view that human beings only possess a few, domain-general psychological capacities. They argue that an adequate ultimate explanation of rape needs to take into account the mechanisms associated with sexual selection, and claim that males and females faced quite different sexual-selection problems in the Pleistocene period. More specifically, for females selecting a mate was a major decision as they typically invested long periods of time in the upbringing of their young. Therefore, selecting a male who was likely to invest his resources in her children was critical to ensuring their survival. Women evolved to choose their mates extremely carefully and placed a premium on traits such as reliability, kindness, and high status (i.e., access to more resources). Because males were typically more eager to have sex than females, it was possible to choose from a range of possible mates. However, for males, sex was a low-investment activity, all they had to contribute was a small deposit of sperm and a few minutes of their time. In addition, finding a mate was an intensely competitive process with high-quality males likely to dominate the sexual arena and secure exclusive sexual access to females. Therefore, males with the highest status and the most resources were more likely to obtain sexual access to females, thereby increasing the chances that their genes would be passed on and their offspring survive. Males evolved to prefer females who were fertile and, therefore, more likely to conceive. Because fertility is not directly observable, they developed preferences for females with features associated with reproductive success, for example, a youthful appearance. In addition, Thornhill and Palmer argue that males would have most likely evolved to possess intense sexual desires that increased their motivation for sexual experiences and activities. The tendency to seek multiple sexual partners was also facilitated by the fact that because fertilization in females occurs internally, males could never be certain of their maternity. By attempting to have sex with as many women as possible, males thereby increased their chances of reproductive success.
Thornhill and Palmer assert that rape is either an adaptation directly selected for because it resulted in a reproductively advantageous strategy for males, or it is the by-product of other psychological adaptations that were selected for because of their ability to solve adaptive problems. An example of such a mechanism is males’ strong interest in low-commitment sex. The two authors disagree concerning which of these two ultimate explanations of rape is likely to be true, but agree that rape should be viewed as a sexual crime rather than occurring as a consequence of nonsexual motives such as needs for power and control.

In order to establish the hypothesis that rape is an adaptation directly selected for, it is necessary to identify the relevant mechanisms and to account for their selection. Thornhill and Palmer assert that rape is likely to be a conditional strategy only employed when circumstances are judged to be favorable. They suggest that from this perspective, rape represents one of three condition-dependent strategies, along with honest courtship and deceptive courtship. An individual is hypothesized to use rape to secure sexual access to a female only if he believes that the advantages outweigh any disadvantages relative to the other possible strategies. Therefore, rape as an adaptation will not occur under every possible circumstance; rather, only when the circumstances are considered to favor it as a sexual strategy. Several factors are hypothesized to increase the chances of males utilizing rape under conducive conditions, including a lack of physical and psychological resources, social alienation, limited sexual access to females, and unsatisfying romantic relationships. Thornhill and Palmer argue that such circumstances may function as developmental switches that shift males into relying primarily on a rape strategy. Therefore, the combination of inheriting a propensity to engage in sexual aggression, in conjunction with specific environmental conditions, may result in the development (proximate mechanisms) of rape-supportive attitudes and strategies.

If this argument is to be supported, it is necessary to establish that any suggested mechanisms are designed for rape and, therefore, solve an adaptation problem, and develop reliably, efficiently, and economically (Tooby & Cosmides, 1992). Factors that merely allow a male to rape are not necessarily designed for that purpose, for example, the larger size of males. To support the claim that rape is an adaptation, it is essential to identify a proximate mechanism (and account for its utility during the Pleistocene period) that will reliably and efficiently result in sexual aggression when certain environmental conditions are present. It is not enough to argue for the plausibility of such a mechanism in general terms. Thornhill and Palmer consider examples of physical mechanisms in other animals that appear to be rape adaptations such as the natal organ possessed by males of certain scorpion flies. This organ allows males to grasp unwilling female scorpion flies and to forcibly mate with them.

Thornhill and Palmer review a number of possible proximate mechanisms that could conceivably represent adaptations to rape in human males. These include psychological mechanisms that: help males detect potential rape victims; motivate men who lack resources and/or sexual access to rape females; cause males to sexually prefer victims who exhibit certain characteristics such as a younger age; and, patterns of sexual arousal that facilitate rape such as sexual arousal to violence. They conclude after examining the relevant evidence that none of these candidates are unequivocally supported, and that the research data could either be equally well explained by other mechanisms (by-products) or is of insufficient quality to warrant any substantive conclusions. For example, the fact that high-status men sometimes rape females suggests that vulnerability evaluations may be due to a cost–benefit evaluation mechanism that is not specific to rape. Therefore, they concede that at this point there is little evidence to support the strongest form of the evolutionary theory of rape. However, they still view it as a promising theoretical possibility.

Thornhill and Palmer next consider the hypothesis that rape may occur as a by-product of adaptations that evolved to establish sexual access to a consenting partner. They only consider Symons’ (1979) suggestion that the primary adaptations causing rape are males’ greater sexual drive and their predilection to engage in impersonal sex (i.e., be less sexually discriminating). This is nicely captured by the following quote: “the typical male is at least slightly sexually attracted to most females, whereas the typical female is not sexually attracted to most males.” (Symons, 1979, p. 267). According to Symons, rape is a side effect of the adaptations producing this situation, but is not an adaptation itself because none of the evolved mechanisms involved were specifically selected for rape. Thornhill and Palmer assert that while rape may be a by-product of other adaptations, only adaptations associated with sexual behavior are likely to be involved. While they do not unpack this argument, it is reasonable to assume that their acceptance of the modular view of mind means that naturally selected traits and capacities arise in the context of specific problems. Moreover, in the domain of rape, these are likely to reflect sexual issues. To argue otherwise would be to accept that domain-general abilities may result in the use of rape as a tactic in the service of other goals and also suggests some degree of interaction between the mental modules. While all men are hypothesized to possess the relevant adaptations resulting in rape under some conditions, there may be individual differences in their ease of activation. This calibration and setting of threshold values is likely to be the result of specific interactions between the developing individual and their environment. For example, an environment characterized by abuse
and neglect might lead to insecure attachment and an increased tendency to view sex as detached from an intimate relationship (Ward, Hudson, & Marshall, 1996).

2.2. The negative argument: the inadequacy of the social science explanation of rape

In a sense, Thornhill and Palmer's major argument for an evolutionary theory of rape rests on their refutation of rival perspectives, especially what they call the social science explanation of rape. They argue that the dominant theoretical social science perspective on rape utilizes cultural and/or learning factors and that ideology, rather than scientific ideals, guide the advocates of this theory. According to Thornhill and Palmer, this theoretical approach seeks to explain rape entirely in terms of learning in the context of a sexist and patriarchal culture. Culture provides a backdrop of rape-supportive attitudes and values, while specific learning experiences function to entrench the tendency to rape. Thus, males learn to rape. An important corollary of this theoretical perspective is that rape is not thought to be motivated by a desire for sex, but rather expresses needs to dominate and control women (e.g., rape is about power, not sex). Therefore, it is more likely to occur in patriarchal cultures where males are inculcated with negative attitudes towards women and a sense of their own inherent superiority and entitlement. Males are hypothesized to learn to dissociate sexuality from affection and thereby develop preferences for impersonal sex, and also fail to acquire the capacity to be empathic in the context of intimate relationships (Polashek, Ward, & Hudson, 1997).

Thornhill and Palmer state that the social science explanation of rape is ideologically driven, unscientific and has five major flaws. One, the assumptions it makes about human nature are incompatible with current evolutionary knowledge. It assumes that human beings are essentially blank slates at birth with some general learning mechanisms and a few basic drives. They assert that this assumption is mistaken as is the associated view that because human beings are not part of the natural world, they should be studied using quite different methods. A further criticism is that the view that males and females only differ in their nature because of different socialization practices and experiences is false and inconsistent with current evolutionary knowledge. In fact, they suggest culture is crucially dependent on evolved mechanisms that constrain and limit the way the world is interpreted. If human beings are really designed the way social scientists claim, then it is unlikely they could have survived and flourished in the Pleistocene period. For example, undirected sexual desire and violence (shaped completely by learning) would have led to the extinction of the human race.

Second, Thornhill and Palmer assert that the claim rape is primarily motivated by nonsexual needs such as the need to dominate and control is mistaken. While multiple motives may be involved in rape, as in any human behavior, in order to account for the fact that rape involves sexual behavior, it is necessary to refer to sexual motivation. If rape was primarily motivated by nonsexual needs, such as power or control, it becomes unclear why alternate forms of expression were not utilized, for example, physical or emotional violence. It is the theoretician's task to account for the evidence that in rape, such needs become sexualized to some degree. They illustrate this point with the example of males paying money to have sex with a prostitute. The goal is to have sex and payment represents a tactic utilized in the service of this goal; thus, control or power tactics are utilized to achieve the goal of sex.

Third, the claim that men learn to rape and that this occurs in the context of broader cultural values and beliefs is not consistent with cross-cultural data on human rape. Contrary to the view that rape only occurs in cultures characterized by negative attitudes toward women, research suggests that rape is evident in every human society studied so far. In addition, the fact that environmental interventions can decrease the frequency of rape is not inconsistent with an evolutionary perspective; rape is viewed as a conditional strategy that only occurs under specific conditions.

Fourth, Thornhill and Palmer claim that social science explanations of rape cannot explain the occurrence of rape in other species. The fact that rape has been documented in insects, birds, fishes, reptiles, marine mammals, and nonhuman primates indicates it is not simply a function of learning or being exposed to aggressive cultural models. There is no evidence in these species that males are trained to be sexually aggressive.

Their final criticism is directed at the metaphysical nature of social science explanations of rape and, therefore, a lack of substantive scientific support and argument. Thornhill and Palmer identify two core metaphysical assumptions: (1) culture is reified as an abstract entity that mysteriously causes people to acquire certain attitudes and behaviors, and (2) the view that there is a radical dichotomy between the mind and body: mind–body dualism. The claim that sexual arousal may be absent from rape indicates that rape is a symbolic act unrelated to sex, despite an individual having an erection and undergoing specific biochemical and hormonal changes. They conclude that this is clearly mistaken and, therefore, the social science model should
be rejected.

Thornhill and Palmer claim that the social science explanation of rape represents an ideological argument rather than a genuine scientific theory. They speculate that the determination to view rape as an act of power, rather than sex, is driven by the fear that accepting rape has a biological basis, would mean committing oneself to the view that rapists are not responsible for their actions. They consider this response to be a clear example of the naturalistic fallacy, that is, if something is natural, it is intrinsically good.

Thornhill and Palmer conclude that the social science explanation of rape is deeply flawed, and because it constitutes the major alternative to the evolutionary perspective, the only reasonable option is to accept that rape is caused by inherited traits. More specifically, rape may be either an incidental by-product of male's adaptation for the pursuit of casual sex with multiple partners, or it is an adaptation in and of itself. Either way, rape is centered on males evolved sexuality.

3. Critical comments

3.1. General criticisms

Theories provide an explanation of certain phenomena. This may involve specifying the nature of hidden mechanisms that generate the phenomena of interest or integrating a diverse set of findings with a relatively small number of assumptions and ideas (Hooker and Psillos). Human beings are complex organisms and can be studied from a number of quite distinct perspectives, for example, the social/cultural, biological, psychological, and the functional (Durrant, 1998; Hooker and Psillos). Arguably, a comprehensive explanation of human action requires an understanding of each of these distinct levels and the way they interact. For example, a theory of rape that appealed to adversarial attitudes toward women and a range of relevant mental states would need to be consistent with current knowledge about the architecture of the mind and the biological factors underpinning its structure and organization.

Thornhill and Palmer set out to explain the occurrence of rape and a number of phenomena associated with rapists and their victims, for example, why most rapists are male, why most victims are young, and why rape occurs in most cultures. In order to explain rape scientifically, it is necessary to construct a theory that specifies the nature of the causal mechanisms generating the relevant phenomena and to ensure the concepts used in this process are consistent and coherently related (Hooker, 1987). As stated above, Thornhill and Palmer outline two possible types of evolutionary theories of rape. The first perspective stipulates that rape is directly selected for and represents an adaptation; a number of possible mechanisms are considered and rejected. The second possibility is based on the assumption that rape is a by-product of other adaptations and essentially rests on Symons' thesis that the adaptation in question is associated with males' intense sexual drives and tendency to engage in impersonal sex.

3.1.1. Explanatory scope

The fact that we are biological beings and part of the natural world does not necessarily mean that evolutionary explanations are appropriate for all human phenomena. The distinction between explanatory relevance and salience captures this point nicely (Durrant, 1998). Explanatory relevance refers to situations where evolutionary constructs are part of the background in accounting for phenomena, but are not central in providing a specific explanation. For example, while it is true that human beings would be unable to produce works of art if they lacked certain biologically instantiated capacities, such as the ability to recall past events, it does not follow that it is necessary to refer to these abilities when developing theories of creativity. Explanatory salience refers to the situation where such appeals are of direct importance, for example, explaining our capacity to develop language. In this case, understanding the evolutionary origins (ultimate explanation) of language constitutes a crucial step in explaining why we inevitably acquire the ability to speak. Arguably, there are many aspects of our lives where evolutionary explanations may be relevant, but are simply not salient. This includes cultural and social phenomena where it may be more appropriate to develop explanatory theories directly focusing on the appropriate proximate causal mechanisms, for example, social norms and values.

In our view, Thornhill and Palmer do not develop a systematic theory of either type. There is no attempt to systematically specify a set of mechanisms that reliably generate rape and its associated phenomena. Although the idea that rape is an adaptation is considered, all the possible candidates are rejected, or judgement concerning their possible validity deferred. The second possibility that rape is a by-product of adaptations relating to male sexuality is also not systematically explored, or a theory explicitly constructed. Thornhill and Palmer simply present a case for the plausibility of an evolutionary explanation of rape. Their
style of argument is tentative and general. A theory of rape needs to specify the nature of the causal mechanisms in more detail and demonstrate how biological, psychological, social/cultural, and contextual factors interact to result in sexual aggression.

Thornhill and Palmer do not explain in what way rape is a by-product of male sexuality. Symons' hypothesis only really accounts for the tendency of males to be sexually preoccupied at times and does not spell out how intense sexual interest can result in rape. After all, the vast majority of males do not rape women. In order to explain how sexual motivation causes an individual to rape, it is necessary to refer to additional mechanisms, for example, distorted beliefs concerning women or impaired self-regulation skills. Sexual preferences are directed toward specific people or objects and are not simply the product of a diffuse drive. Arguably, developing such preferences requires social learning and subsequent judgements that certain types of sexual practices and partners are desirable. If this is the case, then it is difficult to understand how such factors could emerge in the absence of social values and attitudes that portray women in a negative light or personal experiences that seem to confirm such values. We assert that the hypothesis that rape is a by-product needs to be supplemented with additional ideas that suggest the important role of learning in the context of rape-supportive values and beliefs. Thus, the evolutionary theory of rape is incomplete and requires additional theories focusing on cultural and social factors in order to provide a comprehensive explanation of this phenomenon.

Relatedly, because their argument is essentially general in nature, it suffers from a lack of focus. That is, as stated above, the basic argument is that rape could be an adaptation or a by-product of other adaptations. We suggest that this potentially covers a wide range of possible causes and, therefore, the evolutionary position appears to be consistent with most, if not all, hypotheses advanced by nonevolutionary researchers, including those of a social science persuasion. If this is the case, then it is hard to see what such a perspective contributes to the process of developing an explanation of rape. While Thornhill and Palmer criticize proponents of the standard social science position for advancing hypotheses that are inconsistent with evolutionary theory, their argument is unconvincing (see below). Although it may be true that many social science theorists assume that human nature is flexible and consists of domain-general capacities and a few diffuse drives, they are more typically specific when it comes to those mechanisms hypothesized to cause rape. Adversary attitudes to women, poor conflict-resolution skills, lack of intimacy skills, insecure attachment, mood-regulation deficits, and deviant sexual fantasies are all examples of causal mechanisms that have been linked to rape (Polashek et al., 1997). As far as we can determine, all of these mechanisms could conceivably be by-products of other adaptations or possibly even adaptations themselves. If this is the case, then it is hard to see exactly what an evolutionary theory of rape contributes to the debate on rape other than drawing attention to the fact that our minds may have a common structure, fashioned in the Pleistocene period. If the majority or all of the causal mechanisms advanced by competing theories are consistent with evolutionary theory (i.e., could be by-products of adaptations), then the theory is remarkably contentless at the level of proximate causal mechanisms.

A comprehensive explanation of any human phenomenon is likely to be multifactorial in nature and involve a variety of different causal mechanisms. These may include factors associated with our early evolutionary history as well as cultural, developmental, physiological, and psychological causal mechanisms. Each of these domains arguably represents a distinct level of analysis and offers a unique contribution to the understanding of human behavior. Therefore, rape is likely to be a complex, multifaceted phenomenon requiring different levels of explanations that will ultimately need to be fashioned into a comprehensive theory. The mechanisms (proximate) in each of these distinct domains exert their own causal influence and should not be ignored or minimized. What this line of criticism suggests is that while evolutionary explanations may help to identify the function of a trait, they do not specify the relevant causal mechanisms in detail. This is the job of proximate theories focusing on a number of different, but equally important, factors. Of course, this argument rests on the assumption that rape is a complex, multifaceted phenomenon; the one that we suggest is plausible if the empirical research on the heterogeneity of rapists is taken seriously (see below).

3.1.2. Competing theories

Another general criticism of Thornhill and Palmer's evolutionary theory and the way it is presented is that they fail to adequately consider competing theories of rape. In a rather cavalier fashion, they simply classify all rape theories that posit a central role for cultural and/or learning factors as social science explanations. Some of the specific theories embedded in this broad class are inconsistent with each other, for example, learning and feminist theories. However, in order to make a more telling criticism, we will accept Thornhill and Palmer's rather vague characterization of social science explanations.

As stated above, the only theoretical perspective they address in detail is the social science explanation of
rape. Unfortunately, this is not a comprehensive theory of rape at all and only focuses on a single factor, cultural/social processes. Critically comparing multifactor and single-factor theories is like comparing apples and oranges; they are different types of theory with distinct domains of interest (Ward & Hudson, 1998). Multifactor theories (Level I) attempt to address a wide range of phenomena associated with rape and to construct a comprehensive explanation of rape; the evolutionary theory of rape is an example of a multifactor theory. However, what we have called Level II theories only set out to account for a single factor associated with rape and cannot possibly provide an adequate explanation. Thus, Thornhill and Palmer have no difficulty in demonstrating the lack of scope of such theories and see this as providing increased support for their own position. Our view is that critically comparing such two different types of theory does not establish the superiority of their own theory and essentially misses the mark completely.

There are at least three other competing Level I or comprehensive theories of rape that present a sterner challenge to the evolutionary perspective. These include Marshall and Barbaree's (1990) Integrated Theory, Hall and Hirschman's (1991) Quadripartite Model, and Malamuth's Confluence Model of sexual aggression (Malamuth, Heavey, & Linz, 1993). All of these theories invoke multiple factors in an attempt to provide a broad understanding of rape. These factors include biological, social, psychological, and environmental causes, and contributors to the development of rape proneness in individuals. They explain how early developmental experiences can lead to the acquisition of psychological deficits predisposing an individual to behave in a sexually aggressive manner. For example, Marshall and Barbaree suggest that poor parenting may result in an individual becoming insecurely attached and failing to develop the skills necessary to establish and maintain intimate relationships. In addition, such an individual may become distrustful and suspicious of women's motives and be inclined to react aggressively if suffering romantic disappointment. All three theories are arguably consistent with general evolutionary theory and do not presuppose that learning-alone results create sexual offending vulnerability. For example, Marshall and Barbaree explicitly point to the important role of hormonal levels during adolescence in their etiological theory, and Malamuth argues that a tendency to engage in impersonal sex is one of two pathways that cause a male to rape.

Each of these competing theories is incomplete and suffers from a number of distinct and overlapping problems. For example, Hall and Hirschman do not really adequately address the issue of how personality problems predispose an individual to rape a women, and Marshall and Barbaree fail to adequately explain how intimacy deficits result in deviant sexual interests. Essentially, there is a lack of attention paid to the nature of each causal factor (Level II theory development), or to the way the set of causal factors impact on the process of offending. Each theory represents a theoretical framework with little real fleshing out or integration.

Despite these problems, not one of the above theories argues that rape is simply an expression of anger, power, or a need to dominate and control women. Each presents a subtle and complex picture arguing for a variety of rapists and motives (see below) and the interplay of a number of causal factors in the etiology of rape. For example, Hall and Hirschman hypothesize that rape occurs when affective dyscontrol, deviant sexual arousal, personality deficiencies, and cognitive distortions interact in an appropriate context. Rapists may vary to the degree to which each of these factors predominates and, therefore, the model can be used as a way of creating a rape typology. Therefore, we suggest that Thornhill and Palmer's critique of the social science explanation of rape is at best misinformed and may not succeed against the above comprehensive theories. At worst, it is a critique of a mere caricature of the social science explanation of rape.

3.1.3. The modularity of the mind

While Thornhill and Palmer do not explicitly commit themselves to a strong modular view of the mind (i.e., the mind is entirely comprised of domain-specific modules), they do appear to implicitly endorse such a perspective. They state “…human psychological adaptations are expected to be special-purpose rather than general-purpose…” (p. 19) and add “the brain is much more specialized than is implied by a certain class of social scientists.” (p. 20). Their claim that sexual behavior is largely the result of content bestowing specific modules points to a tacit acceptance of a strong modular model. Thus, they accept that in important domains of human functioning, such as sexuality, our capacities are underpinned by specific modules rather than general-purpose abilities.

However, a number of theorists and researchers have challenged the strong version of the modular thesis and suggested that it is either wrong, or at least seriously incomplete (Davies; Gilbert and Mithen). Certainly, the developmental evidence indicates that children are born with domain-specific capacities, for example, the ability to recognize faces or to develop language skills (Mithen, 1996). It does seem that as children develop, they acquire a range of more general abilities that depend on the integration of information from a number of modules and permit higher level and creative thinking. A strong modular view of the mind has difficulties accounting for creativity, imagination, or analogous thinking in children and adults. Such capacities indicate
that there is some degree of interaction among different modules that enable individuals to integrate different types of information. Davies persuasively argues that "...that it was because humans became able to think and reason about relationships in a multitude of ways...that our advance into culture, art and science was so rapid" (p. 363). The ability to learn how to play the piano requires the integration of a number of different abilities, for example, tactile dexterity, memory for music, spatial perception, and, often, the ability to read music. It is unclear how a mind replete with numerous specialized modules would be able to perform such complex activities (Gilbert, 1998). Related to this, if the mind is composed of specialized, domain-specific modules, it is hard to account for humans' cognitive flexibility. Therefore, research evidence and current theories suggest that while human beings might be born with special-purpose abilities, they also possess domain-general capacities that underpin creativity and cognitive flexibility (Davies, 1996). While this thesis is certainly not universally accepted, it is a mainstream perspective and represents a serious challenge to a strong modular theory of the mind.

If this argument is plausible, then it follows that many types of human actions may be products of general-purpose abilities, including those associated with human sexuality. These general-purpose abilities would function to help frame problems, establish appropriate goals and strategies, and to evaluate the quality of the subsequent behavior. If this is the case, then it also follows that a phenomenon as complex as rape could also be the product (or partially determined by) of these integrating mechanisms. For example, sexual fantasies could be a product of such abilities and be instrumental in causing rape in some situations. Clinical and research evidence indicates that sexual fantasies often precede sexual offences and that these fantasies are characterized by rich and imaginative, narrative structures (Leitenberg and Polashek). They appear to embody important psychological themes and goals and are frequently coherent narratives that effectively tell a "story" or at least a possible or desired one. These fantasies function to frame a possible rape situation and imbue it with meaning. This will include establishing the salience of certain goals and dictating when and how a rape will occur and what it "means" to the individual concerned. Therefore, rape may sometimes be usefully viewed as a symbolic act, where the sexual element is peripheral and the primary motives or causes reflect issues of power, revenge, retribution, or control. Sometimes rape may in fact be an expression of sexual desire, sometimes it may convey other motives, and sometimes rape may reflect a combination of distinct motives and factors. Our psychological flexibility makes these options distinctly possible.

3.1.4. Values and rape

Our psychological complexity also hints at the crucial role that culture and learning play in creating rape vulnerability in some individuals. There is reasonable evidence that rapists demonstrate distorted ways of thinking about women that predispose them to rape, and rationalize their sexual violence; these have been termed implicit theories (Polashek and Ward). These distorted beliefs and attitudes contain a normative element in the sense that rapists attribute values to their victims or potential victims, and also express their own values. Thus, an offender's theory or model of a victim contains a representation of the victim's desires (needs, wants, preferences) and beliefs and attitudes, and frequently involves an evaluation of the victim as an individual. For example, the claim that "women never say what they mean" in conjunction with the claim that they "constantly want sex" suggests an implicit theory emphasizing women's unreliability, unworthiness, and "primitiveness." In this theory, women are construed as always, giving false signals and not really meaning what they say. Their preferences and desires are conceptualized as primarily sexual and their beliefs associated with interpersonal strategies that seek to confuse and frustrate men. Therefore, when women refuse a man's sexual advance, they are not to be taken seriously and, moreover, deserve whatever punishment they get.

The problem for Thornhill and Palmer is that if offenders have cognitive distortions that predispose them to commit rape, and if these distortions imply normative judgements about what women need, desire, and deserve, then this implies that rape cannot be explained entirely naturalistically. To believe that such judgements are an inherent part of an evolved adaptation is to accept that values have a naturalistic basis. This is because a component of rapist's implicit theories are normative and involve references to victims' desires and character ("If women wear short dresses they deserve to be raped"). While Thornhill and Palmer may be happy to accept that values are derived from inherited traits or capacities, it is something that needs to be directly argued for rather than simply assumed (Arnhart, 1998). To avoid the problem it would be necessary to claim that this aspect of etiology (rape myths, cognitive distortions, etc.) is not derivable from male's sexuality, but acquired by acculturation. However, such a move implies that at least some of the causes of rape are nonnatural and the product of social learning. Moreover, if this possibility is accepted, then an explanation of rape can at best be only partially naturalistic and must incorporate values from an individual's culture or some other source.
3.1.5. Treatment outcome

Thornhill and Palmer claim that current social science theories about rape are mistaken and this explains why therapeutic strategies derived from such theories are ineffective. This is simply claimed and no data is presented to support their position. However, an examination of the outcome literature on the treatment of rapists suggests that this argument is incorrect. In their recent book, Marshall, Anderson, and Fernandez (2000) reviewed the literature on treatment outcome in rapists and other sex offenders and concluded that on balance, it is reasonable to accept that treatment is effective in reducing reoffending. One paper they cited in support of this conclusion is a meta-analysis by Hall (1995) of 12 studies that did meet relatively stringent research criteria (e.g., reported recidivism rates, and included data from a comparison or control group). Hall reported a small, but robust, treatment effect with 19% of treated offenders and 27% of comparison or control offenders recidivating during an average of 6.85 years follow-up (Hall, 1995). Cognitive-behavioral and hormonal treatments were associated with a larger effect than behavioral programs, as were studies with higher recidivism base rates and outpatient treatment studies.

A reasonable conclusion from the available data is that treatment can be effective with rapists but less so than with child molesters (Polashek et al., 1997). Despite a number of methodological problems evident in the outcome literature, we believe that there are still grounds for cautious optimism with respect to whether treatment works with rapists. If this tentative conclusion is true then it suggests, by Thornhill and Palmer's own argument, that the social science theories underlying clinical interventions have correctly identified some of the causes of rape. If this is so, then the theories are not simply expressions of ideology nor are they unscientific in nature. Of course, drawing etiological conclusions from treatment effects is a risky strategy as mechanisms of change may be quite different from those responsible for the onset of a problem. However, this line of argument does support the possibility of the relevant theories getting things right and this possibility creates difficulties for Thornhill and Palmer's outright dismissal of what they call social science explanations of rape.

3.2. Criticisms of the positive argument

3.2.1. Definition of rape

Thornhill and Palmer stress that rape is always about sex; other motives or factors only play a secondary role in its etiology. This is partly a function of the extremely narrow way they define rape, in contrast to most commonly accepted definitions. Legal reforms typically have sought to encompass assaults on males by other men and use broader terminology, such as sexual penetration, to include penile–vaginal intercourse as well as cunnilingus, fellatio, anal intercourse, and other bodily intrusions (Searles & Berger, 1987). Because rape is defined by Thornhill and Palmer simply in terms of a vagina–penis penetration, and hypothesized to always be primarily sexually motivated, there is a danger that they are simply begging the question against other explanations. The way they define rape has the effect of narrowing the range of the phenomena to be accounted for and ignoring important examples of sexual aggression.

3.2.2. Goodness of fit

A first critical point concerns the likelihood that rape would have increased males' reproductive success during the Pleistocene period. It seems probable that raping a woman may alternatively have resulted in injury or death of the rapist at the hands of kin or other males (Grubin, 1992). In addition, the fact that rapists often fail to ejaculate during rapes, and may have difficulty maintaining an erection, suggests that as a reproductive strategy rape may have severe limitations (Grubin, 1992). A final consideration is that the development of female countermeasures, such as being sexually unresponsive and not having an orgasm, would arguably further decrease the chances of a male ejaculating and finding the experience sufficiently enjoyable (Harding, 1985). All these possible consequences of rape cast doubt on its status as an adaptation or even as a by-product of other adaptations.

3.2.3. Rape motivation

Thornhill and Palmer hypothesize that rape is always about sex and that even if it only occurs as a by-product of other adaptations, these will always be associated with sexuality. As stated above, the only mechanisms they consider are related to males’ strong sex drive and tendency to engage in impersonal sex. We suggest rapists are an extremely heterogeneous population motivated by quite distinct issues and characterized by different clusters of psychological characteristics. Furthermore, the evidence pointing to multiple motivation
refutes Thornhill and Palmer's claim that rape is essentially about sex and that other needs are of secondary importance.

Most recently, Knight and his colleagues (e.g., Knight and Prentky) have developed an empirically driven classificatory taxonomy based initially on the work of Cohen, Seghorn, and Calmas (1969). Knight, Rosenberg, and Schneider (1985) constructed the Massachusetts Treatment Center: Rape 1 (MTC-R1) system on the basis of what they saw as the most commonly represented rape dimensions; compensatory, impulsive, displaced aggression, and sex-aggression diffusion. This original taxonomy was modified (see Knight & Prentky, 1990) primarily by the addition of a set of second-tier decisions concerning lifestyle impulsiveness; however, the first-tier labels were altered to compensatory, exploitative, displaced anger, and sadistic in order to better represent the constructs involved. Reliability and applicability problems, especially with less serious offenders, resulted in further revision. The latest version, MTC-R3, has altered the construct of lifestyle impulsiveness to the broader one of social competency (Knight & Prentky, 1990). This results in nine types of rapists: opportunistic (with high or low social competency), pervasively angry, sadistic (over or muted), sexual nonsadistic (also with high or low social competency), and vindictive (with moderate or low social competency). Each of these types of rapists possesses distinctive motives and these vary from a desire to punish or control women to simply wanting sex.

This evidence could be plausibly explained in at least two ways, both damaging to Thornhill and Palmer's hypothesis that rape reflects primarily sexual motivation. First, that there are likely to be nonevolutionary causes of rape that originate in individuals' learning histories, a nonevolutionary hypothesis. Second, that there are different types of rape caused by quite distinct evolutionary mechanisms, a different type of evolutionary hypothesis. While rape may be related to sexual factors in many situations; on other occasions, it could be used as a tactic in the service of different goals. For example, rape could represent a means of punishing someone (partner or victim), or a means of establishing the superiority of a particular group (rape as ethnic cleansing), or a way of securing status within a group. It may also occur as a result of individual psychopathology as in the case of sadistic rapists. In short, even if you accept that rape is always associated with adaptations in some respect, these do not have to be sexual in nature. Certainly, this possibility is consistent with the research on rape typologies. Thus, rape may be the by-product of numerous mechanisms, only a few of which are associated with sexual preferences and interests. This viewpoint is also consistent with the broader definition of rape currently favored by researchers, clinicians, and other professionals (e.g., Koss and Muehlenhard). Rape with the use of objects other than the penis, for example, an object, may be a means of humiliating or punishing someone, with little or no sexual desire involved. Therefore, it is certainly possible that some forms of rape may occur as a consequence of adaptations designed to deal with nonsexual adaptive problems, such as status enhancement (rape may be used as a tactic to control subordinates) or interpersonal threats (rape may be used as a tactic to retaliate).

3.2.4. Role of the environment

A final point is that Thornhill and Palmer accept that psychological mechanisms associated with rape and human functioning, in general, are only activated under quite specific circumstances and only if they receive specific information. The experience of individuals in the relevant environments functions to set the threshold of activation and to direct development down one of the available evolutionary pathways. This really does highlight the enormous influence of environmental information and events in the development of mental mechanisms and, therefore, the incompleteness of explanatory models based entirely on evolved psychological adaptations (Durrant, 1998).

3.3. Criticisms of the negative argument

Some of the above criticisms are also relevant to countering Thornhill and Palmer's attack on the social science explanation of rape. These include comparing a Level I with a Level II theory, ignoring the research on the classification of rapists indicating that rape can occur as a consequence of distinct motives, and the limitations of constructing a theory without giving social and cultural factors due recognition. Related to this, they include a plethora of diverse theories under the banner of social science, some of which contradict each other and make quite different assumptions about the mind (see Polashek et al., 1997). We will now address each of Thornhill and Palmer's five criticisms of the social science explanation of rape.

3.3.1. Incompatibility with evolutionary theory

Thornhill and Palmer make the criticism that the social science model's assumptions about human nature are (totally) incompatible with current evolutionary knowledge. This is only true if one accepts the strong modular
version of the mind. According to this thesis, the mind is comprised of numerous domain-specific abilities and no, or very few, general-purpose ones. This is clearly inconsistent with the assumption of most social science theories that learning occurs partly through the operation of general learning abilities. However, a weaker version of the modular theory accepts the existence of general learning mechanisms and, therefore, is not completely inconsistent with social science explanations of rape. Thus, if human beings have general capacities, it is plausible that much of our current behavior may be a function of complex learning, albeit constrained by certain capacity limits (memory, etc.). In addition, the acquisition of language skills, including the ability to use written symbols, writing, may have increased our capacity to be influenced by culture.

3.3.2. Rape motivation

Thornhill and Palmer's second criticism is that social science explanations of rape are mistaken concerning the primary motivation of rape. That is, they claim that rape is always primarily about sex, rather than expressions of power, dominance or control. We have addressed this issue above and argued for the view that rapists vary in their motivations and the degree to which rape is driven by a desire for sex. Therefore, while sex may be the main reason why some rapists sexually assault women, it is not universally so; sex may sometimes function as a tactic in the service of other goals. In fact, Thornhill and Palmer's example of the prostitute illustrates this beautifully. Prostitutes have sex with males because they want the money rather than desiring sex. Sex is a means by which they achieve their primary goal of financial reward. Of course, the same situation holds for male prostitutes as well and may also characterize normal heterosexual relationships on occasions. Sometimes sex is used in the service of other needs or goals.

We suggest that Thornhill and Palmer have confused sexual responsiveness with sexual motivation. A person may be able to perform sexually, achieve an erection, ejaculate, etc., without sexual gratification being his major goal. The examples of prostitutes, male victims of rape, and those everyday situations where males have sex in order to please their partners or because they want to feel loved, in control, or for some other reason, all illustrate this point. We have argued above that the ability of human beings to integrate ideas and information from a number of sources and to produce novel and creative responses may result in sex being a means to express quite different needs. Therefore, rape, like any behavior, can express a number of goals or desires, the achievement of sexual pleasure is only one of these.

3.3.3. The universality of rape

Their third criticism is concerned with the implications of the cross-cultural data on human rape. Thornhill and Palmer conclude from this research that rape is evident in every society studied and is an inevitable consequence of the nature of males. This is of course essentially an empirical question and other researchers have interpreted the evidence quite differently (e.g., Marshall & Barbaree, 1990). We agree that if human beings share a common nature, then it is certainly possible that the tendency for some individuals to rape may be directly or indirectly related to inherited psychological mechanisms. However, as stated above, we doubt whether rape will be completely explained by evolutionary psychological theories and suggest that it will need to be supplemented by sociological and cultural theories. Such additional theories will focus on the way specific social practices, values and beliefs contribute to high levels of rape. For example, Malamuth et al. (1993) have shown that adverse early developmental experiences, such as parental violence and physical and sexual abuse, can lead to the development of an antisocial outlook on male–female relationships. They proposed two interacting pathways that lead to sexual aggression: hostile masculinity and sexual promiscuity. The first pathway reflects the authors' belief that the hostile home environments frequently are associated with the development of various attitudes and personality characteristics, which make coercive behavior more likely, such as a controlling adversarial orientation toward women, where aggressive courtship and sexual conquest are valued achievements. The second path, sexual promiscuity, reflects the overuse of sexuality as a source of self-esteem and potentially leads not only to increased opportunity to use coercive tactics in the pursuit of sexual conquest, but also heightens the likelihood that they will be used. Different cultural practices promote such rape-supportive attitudes and behaviors to a greater or a lesser degree.

3.3.4. Naturalism

Thornhill and Palmer's fourth criticism of the social science explanation of rape is that it does not account for rape in other species. Their assumption is that an appropriate framework for approaching the study of human beings is naturalistic in nature and should stress the common features shared by all living things. Therefore, they assert a theoretical approach that implies methodological dualism is clearly mistaken. That is, where the claim is that human beings are qualitatively different from other living organisms and should be studied using
different methods and assumptions. While we are sympathetic to naturalism, it is clear that there are other ways of conceptualizing the nature of behavioral and social science. These involve quite different views of science and stress the use of interpretative or intentional models of explanation rather than mechanistic ones (Faye, 1999). Our point is that the fact a rival perspective has different metatheoretical assumptions concerning the nature of inquiry is not in itself a reason to dismiss its substantive claims. There are a plurality of viable models of science and they are all worthy of serious consideration (Faye and Hooker). Thornhill and Palmer should either focus their criticisms at the substantive level or engage in a more direct and systematic critique of social scientists' metatheoretical assumptions. Otherwise, they are just as vulnerable to rebuttal as their opponents.

Relatedly, it would seem that Thornhill and Palmer have confused two quite distinct senses of the word "natural." According to Arnhart (1998), the term may refer to the nature of human beings at birth prior to any learning and reflects the idea that "the nature of something is its characteristic or innate condition, what it is if nothing is done to it" (p. 37). Therefore, to argue that rape is a natural phenomenon is to accept that males are born with the proclivity to behave in sexually aggressive ways in certain situations. However, he states that "we also say the nature of something is its characteristic or normal state when it has developed into its mature form" (p. 37). In this second sense of the term, human beings only achieve their natural state if the relevant circumstances occur and are sufficiently facilitative. Thus, rape will only occur if social and cultural circumstances are such that males evolved sexuality is directed toward this end. A theory of rape based on the latter meaning of natural will need to explain how these circumstances contribute to the occurrence of rape and will, therefore, incorporate cultural and social mechanisms into its conceptual structure. We suggest that an adequate theory of rape can only be naturalistic in this sense and that Thornhill and Palmer have erred in dismissing cultural theories as (inevitably) unscientific and without value.

3.3.5. Metaphysical assumptions

The above point is vividly illustrated in their final criticism, namely that the social science approach depends on metaphysical assertions rather than scientific ones and should, therefore, be dismissed as ideological and irrelevant. A first point is that positing cultural theories does not constitute reification, but is simply a question of offering a different level of explanation. From this perspective, theories focusing on cultural variables provide a unique source of understanding and should not be reduced to those centered on psychological or biological capacities (Hooker, 1987). Additionally, we argue that Thornhill and Palmer are confused about the role of metaphysics in science and seem to embrace a narrow empiricist model of science. According to this view, science proceeds by basing theories on facts, restricting theory construction to a minimum, and always linking theoretical terms to observational ones. Anything else is considered to be metaphysical and, therefore, meaningless and unworthy of serious scientific consideration (Hooker, 1987). Contrary to this view, we suggest that all science necessarily involves metaphysical assumptions about the nature of the world and its inhabitants, for example, whether human beings are self-directed, autonomous agents or mechanisms controlled by external factors. While it is true that positing a dichotomy between mind and body is a metaphysical thesis, so is the claim that there is no such gap and that both are composed of the same basic (physical) material. Thornhill and Palmer appear to support the latter view, a form of materialism. Materialism represents the metaphysical doctrine that there is only one kind of basic stuff in the universe, namely matter. In addition, Thornhill and Palmer have commitments to naturalistic views concerning the nature of human knowledge and existence; this is also partly a question of metaphysics. The strength of their criticism really depends whether you believe that dualism or monism is a more satisfactory metaphysical theory. Something they do not directly argue for. Thus, they are vulnerable to the same criticism they direct at those postulating a social science explanation of rape. That is, they simply assume a metaphysical theory without presenting an explicit argument justifying this assumption. Of course, we do not think that scientists should engage in philosophical debate every time they advance a substantive hypothesis about the world. However, Thornhill and Palmer have exposed themselves to this criticism by virtue of their philosophical critique of the social science explanation of rape.

4. Conclusion

In this paper, we have critically evaluated Thornhill and Palmer's evolutionary theory of rape. This perspective attempts to explain rape by appealing to evolutionary theory and asserts that rape is either directly or indirectly associated with inherited traits that increased our ancestors' reproductive success. Overall, we believe that Thornhill and Palmer have not established that the evolutionary theory of rape is a better theory than social science explanations. This is because their positive argument is tentative and incomplete, and their negative argument rebuttable. They have not been able to specify what type of mechanisms directly underpin rape or how rape might be a by-product of other adaptations associated with male sexuality. At best, their argument
presents a strong case for the important, but not exclusive, role of biological factors in the etiology of rape and gender relationships. Evolved psychological mechanisms may partially predispose males to behave in sexually aggressive ways in certain circumstances. However, outlining exactly what these circumstances are requires positing theories that explain how social or cultural factors interact with our natural psychological tendencies. In other words, any evolutionary theory will need supplementing by social or cultural explanations.

At this point in time, there are too many unanswered questions concerning the nature of the relevant adaptations and the contribution of sociological and cultural theories to conclude that evolutionary theories are sufficient to explain sexual aggression.

On a final note, we would like make a plea for a greater degree of theoretical openness and tolerance on the part of all serious researchers seeking to explain rape. At present, both biologically and culturally inclined theorists are prone to dismiss each others' ideas on ideological and spurious grounds. Reductionism, at this point in time, is unlikely to prove fruitful and the complexity of rape suggests that understanding it will require multiple levels of explanation. Rape should not be a battleground for researchers to attempt to establish the superiority of their own point of view.

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