



Nelkin [1992] discussed two separate cases in which the California Supreme Court considered whether to disbar attorneys who embezzled clients' funds. In neither case did the defendants contest the allegations, and in both cases the defendants identified alcohol abuse as the proximal cause of their misconduct. However, in one of the cases, the defendant cited evidence pertaining to genetic predisposition for alcoholism. This defendant was allowed to continue practicing, whereas the other defendant—the attorney who did not cite evidence of genetic predisposition—was disbarred [Cooper Dreyfuss and Nelkin, [1992, p 328]. Other cases similarly suggest that genetic arguments may result in more lenient legal judgments [Feresin, 2009; *R. vs. Luedecke*, 2005].

A nascent research line suggests that attribution of unlawful behaviors to certain genetic conditions can affect the perception of the culpability of the actor. Monterosso et al. [2005] asked participants to evaluate vignettes describing criminal behaviors (e.g. murder) in which the perceived cause of the behavior was either biological or experiential. Offering experiential causes (e.g. the protagonist had a history of abuse), rather than biological causes (e.g. the protagonist had an inherited biological condition), led the participants to evaluate the behaviors as more voluntary and blameworthy, the protagonists attracted less sympathy, and were assigned more severe punishment [see also Phelan, 2005]. The current research extends this investigation to address critical claims with regard to evolutionary psychology and sex crimes.

### **EVOLUTIONARY AND SOCIAL-CONSTRUCTIVIST PERSPECTIVES ON MALE SEXUAL BEHAVIOR**

There is little dispute that there are gender differences in mate selection strategies within Western society. Empirical research clearly indicates that men are more likely to desire multiple short-term mating relationships [for a review see Baumeister et al., 2001] and to display sexual aggression. These sex differences are accepted within both the evolutionary psychology literature [e.g. Allgeier and Wiederman, 1994; Buss, 2007] and the social-constructivism literature [e.g. Travis, 1999; White et al., 2000]. However, these two perspectives explain sex differences in mate selection strategies in divergent ways. Evolutionary psychological theories focus on the implications of behavioral strategies for reproductive fitness (i.e. reproduction of genes) and argue that, in ancestral populations, male and female reproductive fitness was linked to somewhat different behavioral

strategies, with genetic consequences that manifest in the mental circuitry of contemporary human populations. In contrast, social-constructivist theories focus not on the biological bases of human behavior, but instead on contemporary social forces, power relationships, and cultural practices that may give rise to the same phenomena.

Evolutionary accounts of sex differences in sexual behavior have been not only generative and influential but also controversial. Some critiques of evolutionary psychological theories have focused primarily on the science itself [e.g. Wood and Eagly, 2002]. Other critiques have focused less on the science and more on the perceived moral implications. For example, Nelkin [2000] suggested that “Evolutionary psychology is not only a new science, it is a vision of morality and social order, a guide to moral behavior and policy agendas” (p 24). Such critiques suggest that evolutionary explanations for human behavior may be employed by individuals (consciously or not) as justification for undesirable behaviors [e.g. Kimmel, 2003; Rose, 2000].

Although evolutionary psychology focuses on purported adaptations that emerged in the ancestral environment as the source of its predictions, social constructivist theories focus on social and cultural elements. This school of thought typically rejects the assertion that psychological categories, such as gender, exist apart from the context in which they occur or are studied [e.g. Hare-Mustin and Marecek, 1990]. Within the social-constructivist tradition, different elements of the sociocultural context are identified as contributing to gender differences and mating strategies. These theories therefore highlight the diversity and malleability of sexual behavior. For many empirical scientists, a social constructivist perspective may appear unscientific because “its views are sometimes difficult to convey to those trained in a more positivist tradition” [Unger, 2001, p 264]. However, for people (including most laypeople) who are unconstrained by a positivist tradition, social-constructivist theories often provide appealing explanations for sex differences in sexual behavior.

### **GENETIC ESSENTIALISM IN PERCEPTIONS OF SEX-RELEVANT BEHAVIOR**

To what extent might exposure to evolutionary vs. social-constructivist explanations influence laypeople's thoughts and behavior? Dar-Nimrod and Heine [2011] argued that individuals' intuitive understanding of the influence of genetic factors on

behavior (which lies at the center of evolutionary theorizing, but not social-constructivist theorizing) is shaped by a cognitive bias: genetic essentialism.

Research on psychological essentialism demonstrates that people perceive “natural” categories—such as living organisms—as having an underlying, definitive, and unseen nature that makes them what they are [e.g. Gelman, 2003; Medin and Ortony, 1989; Rothbart and Taylor, 1992]. Psychological essentialism appears to be a prevalent cognitive bias, and has been identified among children and adults across a wide range of cultures [Astuti et al., 2004; Gelman, 2003; Gil-White, 2001; Sousa et al., 2002]. Across these contexts, people show a robust tendency to judge category membership as reflecting an immutable underlying essence. The concept of essence is psychologically abstract, and so it has been proposed that people use some sort of “essence placeholder” [Medin and Ortony, 1989, p 184–185] as a surrogate for the unobservable essence. Dar-Nimrod and Heine [2011] argued that in contemporary societies, the concept of genes is frequently used as the placeholder for this essence. A growing literature has begun to examine implications of this genetic essentialism—including implications for exposure to different kinds of scientific explanations (i.e. those that emphasize genetic vs. sociocultural processes) have on individuals’ attitudes and behaviors [Brescoll and LaFrance, 2004; Coleman and Hong, 2008; Dar-Nimrod and Heine, 2006; Monterosso et al., 2005; Williams and Eberhardt, 2008; for a review see Dar-Nimrod and Heine, 2011]. Many of these studies have focused on scientific explanations for sex differences.

Sex is an especially essentialized social category [e.g. Gelman and Taylor, 2000; Haslam et al., 2000; Prentice and Miller, 2006]. One implication is that people may naturally assume a genetic basis for sex differences and sex-relevant behavior. If so, then exposure to genetic explanations for such behaviors (which merely resonate with their default essentialist assumptions) may have little or no influence on subsequent cognitions and behavior, whereas exposure to sociocultural explanations (which undermine their default assumptions) may actually change beliefs and behaviors. Exactly such a pattern of results was reported by Dar-Nimrod and Heine [2006]. Across two studies, women were exposed to a bogus explanation for men’s alleged superiority in mathematics, and then took a math test themselves. Women who were exposed to a genetic explanation performed no better or worse on the subsequent math test than women who reflected on their gender (the control condition). However, women who were

exposed to a sociocultural explanation for sex differences actually performed better, compared with both the control and the genetic explanation condition.

Although the studies by Dar-Nimrod and Heine [2006] imply that people assume a genetic basis for sex differences in the domain of academic performance, other research suggests that default assumptions may vary depending on the specific domain or context. For example, Brescoll and LaFrance [2004] presented participants with fictitious newspaper articles claiming that the ability to identify plants varied according to sex. These articles differed in the explanation they offered for this variation: in one condition, the article provided a genetic explanation, whereas in another condition, it provided a sociocultural explanation. There was also a control condition. The researchers found that exposure to a genetic explanation for sex differences in plant identification increased beliefs that a person cannot change and also inspired stronger endorsement of gender stereotypes, compared with the sociocultural explanation condition. Additional results revealed that under some circumstances, exposure to a genetic account produced results that differed from both the sociocultural explanation condition and the control condition (which produced equivalent results), but under other circumstances exposure to a sociocultural explanation produced results that differed from both the genetic explanation condition and the control condition (which produced equivalent results). These patterns of results suggest that, while there may be a general tendency to assume that some genetic essence underlies sex differences and sex-relevant behavior, this general tendency may be somewhat variable, depending on the specific context.

## OVERVIEW OF EXPERIMENTS

Although prior research has examined the impact of genetic explanations on attitudes and behaviors, no prior work in this area has examined the influence of *evolutionary* explanations—which constitute the specific target of some of the most-heated controversies in the social sciences. The two experiments reported below extend the test of genetic essentialism to include evolutionary psychology theories. To our knowledge, they also provide the first empirical evidence testing a claim that is often made by critics of evolutionary psychology: do evolutionary explanations actually induce men to be more tolerant of sex crimes?

Two studies assessed responses to men who had committed sex crimes. We focus on men as they are overrepresented in sexual violence, and the controversy regarding evolutionary psychological accounts has largely been centered on concerns about how men might respond to these accounts. Both experiments included a manipulation: in one condition, participants were exposed to an evolutionary theory for a relevant sexual behavior. In a second condition, participants were exposed to a social-constructivist explanation for that behavior. A third condition served as a control, allowing for independent assessments of the potential impact of evolutionary and social-constructivist theories. Grounded in the genetic essentialism framework [Dar-Nimrod and Heine, 2011], we hypothesized that exposure to evolutionary etiological accounts will lead to a reduction in negative evaluations and punitive tendencies toward male perpetrators of sexual crimes compared with exposure to social constructivist etiological accounts. We included control conditions in the studies to examine which perspective seem to guide men's default evaluations.

Study 1 examined the impact of this manipulation on judgments of a man arrested for soliciting a prostitute. Study 2 examined their impact of the manipulation on judgments of a rapist.

### Study 1

On the basis of the genetic essentialism framework [Dar-Nimrod and Heine, 2011], we predicted the following: compared with men who read a social constructivist account for males' preference for short-term sexual encounters, men who read an evolutionary account will be less punitive (set a lower bail amount) toward a man who was caught trying to solicit a prostitute (i.e. engage in a short term sexual encounter), controlling for general punitive tendencies (explicated from the amount of bail set for a shoplifter). A control condition was included to indicate which theories seem to be in line with men's default reactions.

**Method.** Fifty-eight men (18–67 year old,  $M$  age = 22.86,  $SD$  = 7.53) were recruited from psychology classes at the University of British Columbia. Following the method used in Dar-Nimrod and Heine [2006], participants first completed what was apparently a GRE-like verbal test that contained two articles, purportedly assessing reading comprehension. One of these articles contained the manipulation. (Disguising the manipulation in the context of a GRE-like test served to reduce the likelihood that participants would perceive a connection between the

manipulation and the dependent measures, and thus helped to eliminate experimental demand as a plausible alternative explanation for differences between conditions.)

In one condition, the article presented an evolutionary explanation (based on differential parental investment) for sex differences in mate selection strategies and sexual behavior. It emphasized the ancestral environment in the explanation. A representative paragraph reads:

Following Darwin's evolutionary theory, passing ones genes to the next generation is the ultimate (yet non-conscious) goal of an organism. The best procreation strategy therefore is not surprisingly very different between men and women. Biologically speaking men would be most successful in passing more of their genes to the next generation by mating with as many women as they can, minimizing their investment in any individual woman. The law of large numbers favours their chances and their share in the next generation gene pool. Women, on the other hand, are heavily invested in each child. Historically they need the provision and protection of a man during the vulnerable time of child rearing in which the child is completely dependent. Women therefore, should be more selective in their choice of partners, searching for those who would stick around and contribute (resources, protection) to the development of the child.

In a second condition, the article explained the same phenomenon from a social-constructivist perspective. It emphasized societal gender inequality. A representative paragraph reads:

The differing distributions of men and women into social roles form the basis for the social structural theory of sex differences. According to the theory, greater power and status tend to be associated with male-dominated roles: Men are used to roles with greater power and status which produce more dominant behavior, and women are used to roles with lesser power and status which produce more subordinate behavior. Dominant behavior is controlling, assertive, directive and autocratic, and involves sexual control. Subordinate behavior is more compliant to social influence, less aggressive, more cooperative, and involves a lack of sexual independence. The theory has been able to demonstrate just how strong the ties between social norms and sexual double standards are.

In societies where women are more strongly suppressed, promiscuous women are shunned by the mainstream and in extreme cases they may be ostracized. In societies where women had made strides towards social equality, on the other hand, women sexual promiscuity (although on average is still frowned upon more than men's due to the yet to be achieved goal of complete equality) is much more accepted and promiscuous women can be idolized and admired (e.g., Madonna, Paris Hilton, Gwen Stephanie). However, most societies are still unforgiving with regards to sexual promiscuity, especially for women.

In the third (control) condition, the article discussed obesity among pets. Immediately after the article, participants were presented with four reading comprehension questions to ensure individuals' exposure to the manipulation.

Next, participants were presented with two bail-setting tasks. For one task, participants set bail for a woman who was arrested for shoplifting (this task was included to reduce suspicion about the purposes of the study and to control for general punitive tendencies). The other task contained the measure of primary conceptual interest: participants set bail for a man (a "John") who was arrested after attempting to solicit sexual services from an undercover police-woman masquerading as a prostitute. The bail they set was to be within the range of \$50–\$1,000. (The full experimental materials for all studies are available online at <http://www.psych.ubc.ca/~heine/sexcrimes.doc>.) Following the experiment, participants were fully debriefed with regard to the study hypotheses.

**Results and Discussion.** Two participants were removed from the data because of chance performance on the reading comprehension questions suggesting that they had not read or understood the manipulation. This left a final sample of 56 participants. (Two additional participants reported some suspicion about the purpose of the study. We report results that include these two participants; effect sizes and statistical significance remain virtually unchanged if suspicious participants are excluded from analyses).

Bail judgments for the "John" were analyzed with a single factor analysis of covariance, with the bail set for the shoplifter as a covariate [which, as expected, was not affected by the manipulation ( $F(2, 53) = 0.33$ , ns), but had a significant effect on the dependent variable]. There was a manipulation effect,  $F(2, 52) = 3.89$ ,  $P < .05$ ,  $\eta_p^2 = .13$  (Fig. 1).

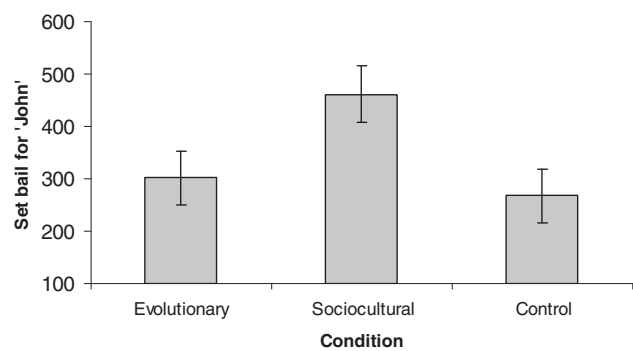


Fig. 1. Amount of bail (in Canadian dollars) participants assign for the release of a "John" after reading a scientific article.

Fisher PLSD post hoc comparisons on the estimated marginal means provided support to our prediction indicating that men in the social-constructivist condition ( $M = \$461.65$ ,  $SE = 52.37$ ) set significantly higher bail relative to men in both the evolutionary condition ( $M = \$301.35$ ,  $SE = 53.64$ ,  $P < .05$ ) and the control condition ( $M = \$267.34$ ,  $SE = 52.37$ ,  $P = .01$ ). The latter two conditions did not differ significantly ( $P > .5$ ). That is, men's bail judgments reveal that they appeared to be unaffected by the evolutionary arguments, whereas they were more punitive toward a "John" following a social-constructivist argument.

This pattern of results suggests that among men, the default theory for male sexual promiscuity may be similar to that offered by the evolutionary explanation that they encountered. Consequently, the social-constructivist account appears to have challenged their default theories, accounting for the finding that men became more punitive toward the John after encountering the social-constructivist account. Alternatively, men might have given harsher punishment to the John in the social-constructivist condition because of social desirability concerns. That is, because the social constructivist account portrayed gender differences in mating strategies as an outcome of gender inequality norms, men might have wanted to distance themselves from such norms. We address this question in Study 2, which examined the impact of a similar manipulation on evaluations of a man who committed rape.

## Study 2

Rape is one of the most viscerally objectionable of human behaviors, and an emotionally charged issue. Much scholarly attention devoted to the origins of rape falls under the aegis of the larger "nature vs. nurture" debate. There are many different social-constructivist accounts of rape [Brownmiller, 1976;

Burt, 1980; Martin, 2003]. These social-constructivist explanations focus on a variety of cultural phenomena that may play a role in predisposing men toward rape, including language [Benedict, 2005], power [Brownmiller, 1976], pornography [Dines, 2005], religion [Adams, 2005], social scripts [Levy, 2005], and even violence in sport [Messner, 2005]. The common thread in all these accounts is the location of the antecedents of rape in contemporary social and cultural environments.

With the emergence of evolutionary psychology, scholars began to introduce biological explanations for the phenomenon [e.g. Barash, 1979]. This trend culminated in the publication of Thornhill and Palmer's [2000] *A Natural History of Rape: Biological Bases of Sexual Coercion*. Building on parental investment theory and sexual selection theory, Thornhill and Palmer speculated that rape may have been adaptive in certain environments, or was a by-product of other adaptations in the realm of male sexual behavior.

Thornhill and Palmer's [2000] book attracted considerable controversy (see, for example, Travis [2003], for an edited volume containing 17 critical papers written in response). The criticism was not confined to the scientific merit of Thornhill and Palmer's work. Many critiques echoed the ideological complaints aroused by evolutionary explanations for sexual behavior more generally. For example, Roughgarden [2004, p 76] referred to Thornhill and Palmer's work as "the latest "evolution made me do it" excuse for criminal behavior," and Kimmel [2003, p 221] argued that: "the book tells us less about "the biological bases of sexual coercion" than the fantasies of those who justify sexual coercion. It's bad science, bad history, and bad politics—or, more accurately, it's bad politics masqueraded as science."

Does an evolutionary explanation for sexual coercion induce men to justify and excuse the behavior of rapists? And what impact might social-constructivist accounts have on men's perceptions of rape and rapists? Study 2 addressed these questions.

We hypothesized that compared with men who read a social constructivist account for rape, men who read an evolutionary account will be: (1) less critical of a date rape behavior, (2) less punitive toward a sexual aggressor, and (3) perceive sexual aggressors as having less control over their sexual misbehaviors. In addition, we predicted that the expected differences in men's assessment of a sexual aggressor's behavior and the punishment they will dole out will be, at least partially, mediated by perceptions of control over sexual aggression.

Following the results from Study 1, we expected men in the control condition to react similarly to men in the evolutionary condition.

**Method.** At the University of British Columbia, 67 men (18–28 year old,  $M$  age = 19.93,  $SD$  = 2.13) were invited to take part in an experiment allegedly designed for "evaluations of sexual content." Upon arrival, they were randomly assigned to one of three experimental conditions. In each condition, they read an article on sexual behavior, the content of which varied across conditions.

In one condition, the article presented an evolutionary explanation for rape (based on arguments presented by Thornhill and Palmer [2000]). A representative paragraph reads:

Although the concept of rape usually brings upon an involuntary aversive reaction when brought to mind, John Archer and his colleagues suggest that rape and associated aggressive behaviors may be adaptive strategies that lead to greater reproductive success in humans and some animal species. According to their research, sexual aggressiveness and forced copulation increases the probability for males to pass their genes to the next generation. This implies that compared to less sexually aggressive males, those that are able to copulate with more women, sometimes through physical force or deception, have a greater chance of achieving the ultimate evolutionary goal – the ability to pass on their genes. Thus rape may be an adaptive strategy – a behavior that ensures the continuation of our genetic makeup.

In a second condition, the article presented a social-constructivist explanation for rape (suggesting that rape results from societal norms that objectify women for example). A representative paragraph reads:

Although honor cultures may explicitly endorse male dominance that can bring about violent and aggressive acts towards women, even rape, other cultures may also be insinuating the acceptance of violent behavior towards women through their reinforcement of the notion that women are subordinate to men. Research done by Martha Burt suggests that we live in a culture that facilitates rape through acts that support the objectification of women as well as violent and sexual transgressions towards them through the media. For example, it has been found that there is a direct correlation between the rate of pornographic magazine circulation and rape, suggesting that

pornography does play a role in conveying a message of support for aggressive behavior towards women.

In the third (control) condition, the article discussed sex relations in the golden years. After reading the article, participants answered several questions about the article to strengthen the cover story. In addition, participants in the evolutionary and social-constructivist conditions were also asked to evaluate the scientific significance of the evidence presented in the article that they had read. Responses to this question were open-ended. A quantitative coding and comparison of these responses (see Results and Discussion, below) allowed us to empirically ascertain whether the evolutionary and social-constructivist explanations for rape were perceived to be equally compelling.

Participants subsequently read a vignette that described a man ("Thomas") who, while on a date with a woman who willingly kissed him, persisted in forcing his sexual desire on her despite her explicit protests and attempts to make him stop (i.e. a date rape). Next, participants completed a questionnaire assessing evaluations of sexually aggressive behavior. Sample items include "How acceptable do you find Thomas's behavior to be?" and "How likely is it for a man to behave as Thomas did in this situation?"

Participants also completed a five-item questionnaire assessing perceptions of a man's control over his sexual urges. Sample items include: "How much conscious control did Thomas have over his actions," and "Rape is an expression of an uncontrolled desire for sex."

Finally, participants were asked what would be an appropriate prison term as punishment for Thomas's act. Responses were expressed in months and/or years, with explicit bounds of 0 (no punishment) and 20 years. Following the experiment, participants were fully debriefed with regard to the study hypotheses.

**Results and Discussion.** Three participants reported some suspicion regarding the purpose of the study. We report results that include all participants. (Effect sizes and statistical significance remain virtually unchanged if suspicious participants are excluded from analyses.)

In a preliminary analysis, we assessed whether the two scientific explanations for rape (evolutionary vs. social-constructivist) were perceived to be equally compelling. Participants' open-ended evaluations of the significance of the scientific evidence presented in the article were coded using a simple coding scheme

that rated their response on a 3-point scale (1 = not scientific at all, 2 = somewhat scientifically significant, 3 = very scientific and significant). Two trained coders rated the participants' answers using this scheme. The interrater reliability for the raters yielded a Cohen's Kappa of .84  $P < .001$  [95% CI (.74, .95)], indicating a substantial level of agreement. Disagreements were solved by deferring to the senior coder. An analysis of variance (ANOVA) indicated no significant differences among men in the different conditions (all  $P_s \geq .3$ ). These findings indicate that, to the extent that evolutionary and the social-constructivist explanations lead to different evaluations of offenders, these differences cannot be attributed to any difference in the perceived scientific persuasiveness of the particular explanations used here.

One set of primary analyses focused on judgments of the extent to which men can control their sexual urges. A composite control index was created as the mean of the five items assessing perceived control (Cronbach's  $\alpha = .64$ ). This index was analyzed with a single factor ANOVA. There was a significant effect of the manipulation,  $F(2, 64) = 7.16, P < .01, \eta^2 = .18$ . As predicted, Fisher PLSD post hoc comparisons showed that men's perceptions of control were greatest in the social-constructivist condition ( $M = 5.36, SD = 1.08$ ), relative to both the evolutionary condition ( $M = 4.21, SD = 1.06, P < .01$ ) and the control condition ( $M = 4.60, SD = 0.89, P < .05$ ). The latter two conditions did not differ significantly ( $P > .15$ ).

A second set of analyses focused on general evaluations of male sexual aggression. The four evaluation items were highly correlated, loaded on a single factor, and a composite index had acceptable internal consistency (Cronbach's  $\alpha = .70$ ). The manipulation exerted a significant impact on evaluations of male sexual aggressiveness,  $F(2, 64) = 3.89, P < .05, \eta^2 = .11$ . Supporting our hypothesis, Fisher PLSD post hoc comparisons revealed that men evaluated sexual aggressiveness most harshly in the social-constructivist condition ( $M = 3.01, SD = 0.72$ ), compared with both the evolutionary condition ( $M = 3.80, SD = 1.00, P < .01$ ) and the control condition ( $M = 3.60, SD = 1.09, P < .05$ ). The latter two conditions did not differ significantly ( $P > .5$ ).

A third set of analyses focused specifically on punitive judgments (the recommended prison sentence for Thomas). Because there was considerable heterogeneity of variances (Levine test:  $F(2, 58) = 14.71, P < .001$ ), a cubic root transformation was applied to reduce this heterogeneity prior to analysis with a single factor ANOVA. There emerged a manipulation effect,  $F(2, 58) = 6.00, P < .01, \eta^2 = .17$ .

Providing support for our hypothesis, Fisher PLSD post hoc comparisons revealed that men were significantly more punitive in the social-constructivist condition ( $M = 1.31$ ,  $SD = 0.78$ ,  $P < .01$ ) relative to both the evolutionary condition ( $M = 0.74$ ,  $SD = 0.52$ ,  $P < .05$ ) and the control condition ( $M = 0.67$ ,  $SD = 0.58$ ,  $P < .01$ ). These latter two conditions did not differ significantly ( $P > .5$ ). For ease of interpretation, Figure 2 presents results on the untransformed variable (mean recommended prison term, in years; statistical analyses on the untransformed variable revealed similar differences to those reported above).

Additional analyses revealed that the effect of the article manipulation on the composite evaluation index was mediated by beliefs about male control over sexual urges. We dummy-coded the manipulation variable contrasting each of the experimental conditions with the control condition. Similar to the ANOVA results, only the contrast between the social-constructivist condition and the control condition significantly predicted evaluations of male sexual aggression ( $\beta = -.28$ ,  $P < .05$ ). When perceived control was added as a predictor, this contrast was no longer significant ( $\beta = -.15$ ,  $t = -1.16$ ,  $P > .10$ ), whereas there was a significant relation between perceived control and evaluation of male sexual aggression, ( $\beta = -.39$ ,  $t = 3.17$ ,  $P < .01$ ). Moreover, with perceived control as an added predictor, variance explained increased from  $R^2 = .108$  to  $R^2 = .231$ ,  $\Delta F(1, 63) = 10.03$ ,  $P < .01$ . A Sobel test corroborated our prediction that perceived control mediated the effect of the Article manipulation on men's evaluation of male sexual aggression,  $z = 1.96$ ,  $P < .05$ , one tailed.

A parallel set of analyses assessed whether the effect of the manipulation on punishment judgments was also mediated by perceived control. The pattern of results was similar to that from the evaluation index, but was not significant (Sobel test  $z = 1.42$ ,

$P < .10$ , one tailed). When perceived control was added as a predictor, variance explained increased from  $R^2 = .171$  to  $R^2 = .212$ ,  $\Delta F(1, 57) = 2.96$ ,  $P < .05$ , one tailed. In this context, the relationship between perceived control and punishment was significant ( $\beta = .22$ ,  $t = 1.72$ ,  $P < .05$ , one tailed).

In summary, there was clear evidence that the article manipulation influenced men's perceptions of male sexual aggressiveness. Compared with a control condition, there was no effect of an evolutionary explanation, but there was an effect of a social-constructivist explanation. Exposure to a social-constructivist explanation led men to judge men to have greater control over their sexual urges, and this in turn led to more negative evaluations of male sexual aggressiveness. Exposure to a social-constructivist explanation also led men to recommend harsher punishments for a male sexual aggressor. The finding that perceptions of control over one's sexual urges mediated the effect of the manipulation on the evaluation of the behavior suggests that control perception, rather than social desirability concerns, generated the increased condemnation of the rape behavior in the social constructivist condition as predicted by the genetic essentialist biases framework [Dar-Nimrod and Heine, 2011].

## GENERAL DISCUSSION

Do scientific theories affect men's evaluations of sex crimes? Across two experiments, the effects were clear and consistent. Consistent with our hypotheses, exposure to evolutionary theories had no observable effect on the way that men think about and evaluate sex crimes; but exposure to social-constructivist theories did have an effect, leading men to respond to sexual offenses more critically and punitively. Additional data (from Study 2) suggest that the latter effect may be mediated by beliefs about men's ability to control their own sexual behavior.

Before considering the implications of these results, it is important to bear in mind several limitations as well. First, the methods assessed responses immediately after exposure to articles articulating scientific theories. It is possible that these effects would not persist over time. Second, the methods do not address the consequences of long-term or repeated exposures to different kinds of scientific theories, nor do they address the possibility that responses in control conditions could themselves result from previous exposure to specific kinds

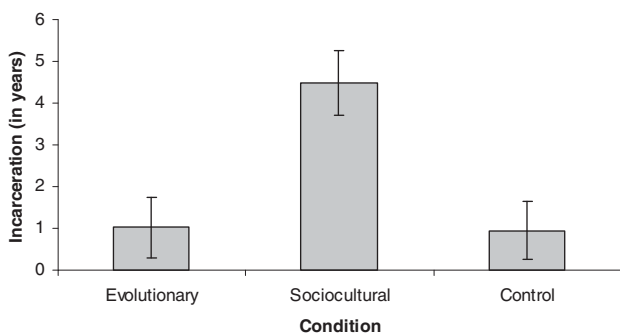


Fig. 2. Punishment of a sexual aggressor in each of three experimental conditions.

of scientific theories (e.g. previous exposure to evolutionary theories of male promiscuity). Third, these methods exposed participants to very specific examples of evolutionary and social-constructivist theories. There are, of course, many different theories within these two broad scholarly categories, and it is possible that exposure to different exemplars of these categories might produce a different pattern of results. Finally, these experiments were conducted on participants drawn from a particular population (Canadian university students), and the results may not be representative of results obtained from people more generally [Henrich et al., 2010]. It will be important to assess whether the effects generalize to other contexts and other populations as well.

Bearing those limitations and caveats in mind, there are nonetheless several interesting conclusions that are implied by these results. Despite the findings that men judged the evolutionary and social constructivist explanations to be equally compelling, only the social constructivist manipulations seem to have affected their evaluations and judgments of sexual misbehaviors. These findings suggest an implicit nativism among men such that they may habitually assume some biological basis for male illegal sexual behaviors. This nativism might be temporarily trumped by exposure to social-constructivist explanations, which appear to imply greater individual culpability [Monterosso et al., 2005]. In both experiments, and in the majority of sex crimes, the men were the aggressors and the women were the victims. Future research may explore how women are affected by exposure to scientific theories which explain women's sexual misbehaviors.

Although these results are generally consistent with the idea that scientific theories have implications of moral and practical relevance, these results are mostly inconsistent with the specific moral criticisms directed against evolutionary psychological theories of sexual behavior. Contrary to the “get-out-of-jail-free-card” criticism summarized by many critics of evolutionary psychology [e.g. Begley, 2009; Buller, 2005], there was no evidence that priming evolutionary theories incline men to justify or excuse male sexual misbehaviors (although it is possible that previous exposure may have contributed to shape their default theories). On the other hand, incorporating information about the potential evolutionary origin of sexual aggression into rape-reduction interventions (as Thornhill and Palmer [2000] suggested) does not seem to garner support from this study either. Instead, men's evaluations of male sexual misbehavior were affected only by social-constructivist theories.

It is likely, however, that social-constructivist theories have this effect not because they are social-constructivist per se, but because they focus attention on causal variables (language use, social norms, etc.) that laypeople recognize as malleable and non-deterministic—and thus imply personal control and culpability. But, in fact (despite misperceptions to the contrary), malleability and nondeterminism are also a hallmark of genetic and evolutionary perspectives on social behavior [Carroll, 2005; Neuberg et al., 2010; Ridley, 2003]. The differential consequences of evolutionary and social-constructivist theories may disappear if people are exposed to and educated about evolutionary psychological theories that explicitly emphasize the highly variable, context-dependent, and decidedly nondeterministic relations between genes and their behavioral consequences.

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