

Discussion

Toward an Evolutionary Forensic Psychology

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ABSTRACT: Most theories of crime have not explored intensively biological and especially evolutionary explanations for criminal behavior. Ellis presents a valuable new perspective that proposes that attention to physiological mechanisms shaped by evolutionary forces can provide insights into the causes of crime and sex differences in the patterns of crime. We discuss other theories and research relevant to Ellis' theory. We also propose that an evolutionary psychological perspective of crime will help to invigorate research and lead to a better understanding of criminality. An integrated evolutionary forensic psychology will help to explain sources of conflict between individuals, situations in which conflict leads to victimization, and victim defenses and coping mechanisms.

Most theories and research of the causes of crime have failed to consider the substantial and relevant explanatory power of evolutionary theory. Darwin's (1859) theory of evolution by natural selection is the uncontested foundation of research examining the behavior of other animal species, but many social scientists have been loath to apply it to humans. Ellis makes an important contribution by demonstrating that evolutionary theory has the potential to offer unique insights into some general patterns of criminal behavior. He offers clear arguments about the relationship between social status and different forms of offending, identifying that parental status and individual status should be treated separately. Ellis also notes that evolution is not the only force affecting criminal behavior. The influence of the environment also is critically im-

portant. As Ellis' discussion of the effects of drug use on status makes clear, although the relative status of parents and their children is correlated positively, environmental influences can trump the heritability of social standing.

Ellis points to the Y-chromosome as the source of some of the genes that lead to sex differences. There is some evidence in support of this hypothesis. Caruth, Reisert, and Arnold (2002), for example, found that XX and XY brain cells in mice differ in phenotype when the genetic sex of the brain is independent of the gonadal phenotype (testes or ovaries). Others also have argued that sex differences could be the result of imprinted genes from one parent that are expressed in the offspring of one sex but not the other (see Burt and Trivers, 2006).

Although we applaud Ellis for his efforts to unite criminology and evolutionary theory, there are some previous evolutionary theories of criminality that he overlooked. Ellis argues that his evolutionary neuroandrogenic (ENA) theory is

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different from previous evolutionary theories because these previous theories did not address property crime. Many scholars have, in fact, presented evolutionary explanations of property crime (e.g., Campbell, 2002; Kanazawa and Still, 2000; Mealey, 1995). In their research on homicide, Daly and Wilson (1988) use homicide as an "assay" of conflict. The logic that is the basis of their theoretical treatment of homicide also can be applied to other outcomes of conflict, such as instrumental violence to obtain resources, including property crimes. Ellis also overlooked Mealey's (1995) work on psychopathy. Many years prior to ENA theory, Mealey (1995) proposed specific evolutionary hypotheses for the origins of psychopathy and patterns of sex differences among psychopaths.

Ellis argues that attaining high status in technologically advanced societies is more likely to be achieved using legal, sophisticated tactics than through a lifetime of criminal offending. Most industrialized nations have formal laws that punish criminal behavior and exhibit a cultural consensus that hinders criminal ascension of social status hierarchies. This is not true in all societies, however, and was likely not the case over much of human evolutionary history. Ghengis Khan, King Niall of the Nine Hostages, Mao Tse Tung, Sadaam Hussein, and many other men that historians judge to be criminals enjoyed astonishing reproductive success until they died or were overthrown. For example, recent research indicates that as many as 1 in 12 Irishmen are direct descendants of warring King Niall (Moore, McEvoy, Cape, Simms, and Bradley, 2006).

There were and are contexts in which behaviors that may be considered criminal are the most direct path to social sta-

tus and dominance, even for individuals who are capable of achieving status through non-criminal behavior in other contexts. For the most part, Ellis does not address whether the adoption of criminal behavior may be context-specific, activated strategically only in circumscribed situations. This may be linked to the absence of discussion in Ellis's ENA theory of the psychological processes that organize and motivate behaviors. An exploration of the context-specificity of behaviors requires the specification of cognitive design features and greater attention to the many and complex factors that contribute to the adoption of criminal and non-criminal strategies to achieve desired goals.

Rather than exploring the psychological foundations of criminal behavior, Ellis focuses on the role of testosterone. Ellis states that, "males whose brains are exposed to the highest levels of testosterone are most likely to become lifetime persistent offenders." This argument, however, is not consistent with much of the literature on the relationship between testosterone and violence (Archer, 1991; Sapolsky, 1998). Sapolsky (1998) argues, for example, that increases in testosterone do not cause aggression, but instead that increases in aggression lead to higher testosterone levels. Even if testosterone is important, as Ellis argues, we also need to explore the design of the psychological architecture that reliably interacts with testosterone and the environment to produce criminal behavior.

EVOLUTIONARY FORENSIC PSYCHOLOGY

We propose that it will be profitable to explore the origins of criminal behavior at a greater level of specificity, using the

explicitly adaptationist approach of evolutionary psychology. Such an evolutionary forensic psychology will be valuable for several reasons. First, adaptationist logic has a firm theoretical basis in well-tested evolutionary theories, such as Darwin's (1859) Theory of Natural Selection and Hamilton's (1964a, b) Inclusive Fitness Theory (see also Haldane, 1955). These and other evolutionary theories provide a powerful set of explanatory tools that researchers can use to integrate existing knowledge about crime and to generate novel hypotheses about the nature of criminal and victim behavior. The core logic of the theories that Ellis proposes are based in previous evolutionary theories. Ellis's Biosocial Female Choice Theory, for example, is essentially composed of the logic of Trivers's (1972) Parental Investment Theory and Darwin's (1871) Theory of Sexual Selection. Ellis's ENA theory adds components of the logic of Daly and Wilson's work (1983, 1988), in which they argue that female preferences for mates who have resources and high status selected for risky male strategies to embody women's desires.

Second, an evolutionary forensic psychological approach can help to identify meaningful categories of criminal behavior. The approach begins with the identification of ancestrally recurrent problems of survival and reproduction. These adaptive problems provided the selection pressures for the evolution of adaptations to solve them. Information about adaptive problems provides the criteria according to which we can carve out topics of study at their natural joints (Buss, 2005). This information also can help to generate hypotheses about the design features of the problem-solving adaptations. Ellis's efforts to place all violent crimes along a continuum of violence may not provide

an accurate conceptualization of violent crime. Each kind of violent crime differs in many qualitative respects that a quantitative continuum cannot capture. The set of adaptive problems for which rape has been argued to be an evolved solution (Thornhill and Palmer, 2000), for example, is non-overlapping with the set of adaptive problems that homicide has been hypothesized to solve (Buss and Duntley, in prep; Duntley and Buss, 2005). Rape and homicide also have radically different outcomes, and the process of selection acts on the fitness-relevant outcomes of behaviors. Similarly, the functions of non-lethal violence may be different from the functions of homicide, and the functions of homicide in different contexts may be largely distinct (Buss and Duntley, 2006; Duntley, 2005; Duntley and Buss, 2005).

The third reason that evolutionary forensic psychology will be valuable in the study of criminal behavior is its utility in specifying how psychological adaptations function to produce both criminal behavior and victim behavior. Daly and Wilson (1988) used the logic of Inclusive Fitness Theory (Hamilton, 1964a, b) to generate the hypothesis that adults have psychological mechanisms that motivate them to discriminate between their stepchildren and genetic children. Genetic children share copies of their parents' genes so should be favored by their parents. Stepchildren, however, do not share genes with their stepparents and consume resources that stepparents could otherwise invest in their own fitness. Daly and Wilson's hypothesis was supported when they discovered that children living with a stepparent in the home are 40 to 100 times more likely to be the victims of abuse and homicide than are children who live with both of their genetic parents (Daly and Wilson, 1988).

One might hypothesize that the threat to the safety of stepchildren, if recurrent over evolutionary time, would have created an adaptive problem for stepchildren and generated selection pressures for the evolution of strategies to avoid becoming the victims of stepparental abuse and homicide (Duntley, 2005). This hypothesis highlights the fourth reason that an evolutionary forensic psychology will be valuable: It may guide us to new insights into the psychologies of the victims of crime. Some evolutionary psychologists who conduct research on crime (Buss and Duntley, 2004, in prep; Duntley and Buss, 2005) have argued that conflict between individuals leads to antagonistic, co-evolutionary arms races between their respective adaptations to best a competitor and to defend against being bested. For example, if an adaptation evolves that motivates people to kill competitors to solve an adaptive problem in a specific situation, this presents a new adaptive problem for people who are likely to be the victims. The new adaptive problem would be a selective pressure for the evolution of strategies to defend against being killed, including avoiding the specific situations that may motivate others to kill. The co-evolutionary arms race does not end there. Evolved defenses against homicide create new adaptive problems for killers and selection pressures for strategies to bypass victims' defenses, which in turn create new adaptive problems for victims, and so on (Buss and Duntley, 2004, in prep; Duntley, 2005).

Knowledge of the role of co-evolutionary arms races in designing the psychologies underlying criminal behavior and victim responses provides unique insights into

both. Criminal behaviors can be thought of as the functional products of psychological adaptations designed to best competitors in contexts of conflict. Victim responses can be thought of as the functional products of adaptations to defend against being victimized, as well as to deal with the consequences of victimization. Hypotheses and evidence about the functions of a criminal behavior in particular contexts can inform hypotheses about the functions of victim defenses and the psychological consequences of victimization.

In conclusion, we applaud Ellis for his efforts to integrate evolutionary theory with research and theory in criminology. We are confident that these efforts, along with the efforts of others, will lead to valuable new insights into the origins, contextual influences, and outcomes of criminal behavior and victim behavior. Although we respect Ellis's efforts, we propose a new paradigm for the study of crime: evolutionary forensic psychology. This evolutionary psychological perspective has a firm theoretical and empirical basis in the biological sciences, including psychology. It can provide the criteria by which to draw meaningful distinctions between different kinds of criminal behavior. An evolutionary forensic psychology will help elucidate the psychological processes that produce criminality. Finally, this new paradigm will provide insight into the psychologies of crime victims. Although evolutionary forensic psychology represents a radical departure from traditional social science research on crime, we are confident that its utility will be demonstrated by the new discoveries it produces.

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