

Social Capital, Crime, and Human Nature

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In the present article, a reinterpretation of the concept of social capital is forwarded that incorporates the principles of evolutionary psychology. The authors propose that social capital, from the evolutionary psychological perspective, is any social relationship that, directly or indirectly, helps an individual maximize reproductive success through promoting survival, the acquisition of resources, mating, or the promotion of offspring to sexual maturity. The evolutionary psychology-informed construct of social capital is applied to several theoretical domains in the field of criminology to demonstrate how this perspective can bridge theories on the proximate causes of crime with the “ultimate” causes of human nature and human behavior.

The concept of social capital, as described in the scholarly literature, is incomplete. In the present article, we propose that to fully understand what constitutes social capital and to understand why some relationships are desirable as “capital” and others are not, we must incorporate an understanding of human nature in our conceptualization of this construct. The principles of evolutionary psychology are used here to supply a basic understanding of human nature and to expand the concept of social capital. The broader understanding of social capital, informed by evolutionary psychology, is then used to describe how some theories of criminal activity can be stated with more depth—bringing us closer to the ultimate rather than the proximate causes of antisocial behavior.

WHAT IS SOCIAL CAPITAL?

Coleman (1988) and Bourdieu (1980, 1986) are normally credited with the introduction and promotion of the defined concept of social capital. They

built on an earlier literature that had identified physical capital and human capital. Although there has been some disagreement about the definition of social capital (e.g., Lin, 2001; Paxton, 1999), some elements are quite consistent. Social capital is generally treated as a resource gained by social relationships with other human beings that can be used for a variety of benefits. Several dimensions thought to be associated with one's level of social capital are the overall number of relationships and the type of associations. According to Paxton (1999), relationships must be reciprocal and trusting and involve positive emotion. Granovetter (1973), however, generated a long line of research and debate on the value of "weak ties"—relationships that involve less time, emotional intensity, intimacy, and reciprocity than "strong ties." Granovetter suggested that strong ties provide us with largely redundant information that might be of little use when we are trying to find a job, for example.

The level of social capital is also thought to be associated with the nature of the "contact" person. In research on social networks, relationships with high-status contacts have important benefits. Bourdieu (1986) proposed a multiplier effect between the size of network connections and the volume of economic, cultural, and symbolic capital possessed by each person in that network. Bourdieu also explored other intriguing dimensions that have largely been ignored in subsequent literature—for example, that relationships may be "capital" by the application of a common name (mere association with a prestigious group) and that social capital is never completely independent of the economic and cultural capital possessed by a given agent.

Importantly, social capital, like other forms of capital, is a commodity that can be used to achieve one's ends. This functionality is central to the original definition provided by Coleman and, in fact, is the focus of Lin's (2000) redefinition of social capital as "investment and use of embedded resources in social relations for expected returns" (p. 786).

There is also an enormous literature that assesses the effects of social capital on good life outcomes. Many studies have found beneficial effects of social capital on school attainment (e.g., Coleman, 1988; Furstenberg & Hughes, 1995; Teachman, Paasch, & Carver, 1996), status attainment (see review by Lin, 1999), emotional aid (Wellman & Wortley, 1990), and so forth. Important for our purposes here, there is a burgeoning literature, so far focused primarily in the area of employment and status attainment, that acknowledges that social capital may mean different things and/or have different effects for different people. Its effect on good life outcomes may vary as well.

There is some evidence that women's social networks are subtly different than men's. Various authors cite evidence that the social or business networks of men and women are of similar size—or, where different, men's networks are larger. Although sex differences in the character of social networks have

not been examined in great depth, it appears that women's networks are composed of a larger proportion of kin than men's networks are (e.g., Campbell, 1988; Moore, 1990). Moore (1990) found that this relationship held even controlling for a series of structural factors. It is important to point out that our understanding of male/female differences in social networks is not complete due to limited measurement employed in these studies—none really delve into the quality and character of social relationships within networks that certainly could be different for men and women.

Because of the effect of social capital on good life outcomes, and differences between men and women in employment and status, the dynamics of personal networks for men and women are of interest. Research suggests that personal networks may be different for women and men. Moore (1990) found that full-time employment reduced the number of kin ties named by women but not by men. It appears that having a young child is related to reduced network range and size for women but not for men (Campbell, 1988; Munch, McPherson, & Smith-Lovin, 1997) and that the benefits of network size may be present for men but not for women (Burt, 1998). Renzulli, Aldrich, and Moody (2000) found that female "nascent entrepreneurs" (persons seriously trying to start a business) may be disadvantaged by the higher proportion of kin in their networks. Lin's (2000) summary suggests that even when males and females have relatively equal social capital, they still have different status outcomes.

SOCIAL CAPITAL AND HUMAN NATURE

So, it appears that the relationship between social capital and good life outcomes has resulted in some empirical puzzles. For example, why do women have more kin in their social networks, and why does social capital lead to increased status attainment for men more so than for women? We propose that what is missing from these discussions of social capital and what it gets us are responses to the ultimate questions: What do humans want? Why do humans want to do anything in the first place? and Why do humans want capital? If we have a better understanding of human motivation, we can better understand the nature of social capital and its effect on behavior. Coleman (1988) tried to unify the sociological view, where the actor is governed by social constraints, with the view from economics, where the actor is self-interested, but did not explain what it means to be self-interested and why human beings live in groups in the first place. Lin (2001) argued that our transactions with other humans are "rational"—but did not credibly explain what we seek from them, why so few of us do without them, and why we seek out some and avoid others. Lin did propose that human beings need "trust,"

but the reason is that without it, societal functioning would cease. This implies that humans have some innate interest in the well-being of society, which contradicts theory and research in modern evolutionary biology. Others, such as Putnam (2000), point out that social capital is used to benefit “our own interests”—but do not explain what those interests are. Portes (1998) argued that consensus is growing that “social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures” (p. 6), but again, what do human beings see as “benefits”?

We believe that a more complete understanding of social capital, which would include an understanding of human nature and the motivation of all behavior, would help to organize and enlighten this line of research and give it a firmer base in the laws of human behavior. Furthermore, we believe that it will help elucidate the connection between social capital and crime. Before we propose our integration of these principles and concepts, we will first provide a background discussion of evolutionary psychology and its principles.

EVOLUTIONARY PSYCHOLOGY AND SOCIAL RELATIONSHIPS

Evolutionary psychology seeks to discover the collection of evolved psychological mechanisms that constitute “human nature” (Kanazawa, 2001a). According to evolutionary psychology, evolved psychological mechanisms, like other physical adaptations, were developed over millions of years in the African savanna where humans lived during the course of their evolution to our present genetic manifestation (often referred to as the environment of evolutionary adaptedness [EEA]). Like the many visible physical adaptations that occurred during this time (opposable thumb, etc.), the brain also evolved to its current physical form. Less physically evident and certainly less understood, “psychological mechanisms” also evolved: adaptations related to thinking, learning, memory, and the like that enabled *Homo sapiens* to survive and reproduce. Although it is fairly difficult for the non-brain scientist to equate psychological mechanisms with opposable thumbs, Kanazawa (2001a) aptly pointed out, “There is nothing special about the brain as a human body part” (p. 1134).

What kinds of psychological mechanisms are most likely to have evolved? First, it is clear that characteristics associated with survival would have been perpetuated. This might explain fear responses to heights and snakes, for example. But survival alone would not have been adequate for all the characteristics that have been selected. This is because survival alone does not ensure the passing on of the genetic code that specifies a given characteristic—mating does. Therefore, characteristics associated with successfully acquir-

ing and keeping mates would be more important than characteristics associated with mere longevity. Finally, psychological mechanisms associated with other behaviors that increased reproductive success (RS), such as resource acquisition and competitiveness in males, are also likely to have been perpetuated.

Furthermore, because of the differential nature of mating and child rearing between the sexes in mammals, anthropological evidence of a clear division of labor between men and women in the ancestral world (Hrdy, 1999), and the prominence of mating success in the natural selection process (G. F. Miller, 2000), we expect there to be some distinctions between the psychological mechanisms that have developed in human males and females. Although this premise has long been anathema to those who emphasize cultural determinants of human behavior, we point out the indisputable differences in appearance and reproductive organs in males and females and propose that it is not a very great leap to acknowledge that males and females may also have evolved some differences in psychological structures. In particular, we will emphasize here differences in sociability.

Research on cognitive abilities supports sex differences in language and communication and spatial reasoning skills (Geary, 1998). Important here, research indicates that there are sex differences in a variety of social behaviors, including maintenance of personal space (Mitchell, 1981), strength of social ties in middle age (Mitchell, 1981), cooperation (Maccoby & Jacklin, 1974), sensitivity to verbal communication (Geary, 1998), and distress related to events in the lives of others (Hayes, 1991). Earlier, we discussed research on social networks that suggests that women have more kin in their personal networks than men do (and there is evidence to suggest that this sex difference is a result of innate preferences) (Kanazawa, 2001b).

But sex differences in behavior could be due to differential socialization practices, and their existence does not establish that anatomical differences exist in the brain. Unfortunately, research on brain anatomy and neurophysiology is in its infancy, and it has not established conclusively that innate differences in psychological structures exist between men and women. Nevertheless, the possibility or even the strong likelihood of brain differentiation is not in dispute (Blum, 1997). Androgens, male testicular hormones, are responsible for the masculinization of the body, and neurons, the building blocks of the brain and central nervous system, possess receptors that bind to those hormones (Breedlove, 1994), suggesting that sexual differentiation of the central nervous system is possible. There is also some evidence of sexual dimorphism in the central nervous system. Wilson (1993) pointed out some of the many neurological manifestations that vary between males and females, and Breedlove (1994) cited research on dimorphism in rat and song-

bird brains and on human brain weight, motoneurons, and brain lateralization that all support some sex-based differentiation (though Breedlove carefully pointed out that “we do not know conclusively whether any of the sexual dimorphisms in the human brain are present at birth” [p. 400]). Discussing the complexity of this matter in depth is beyond the scope of this article, but it is relevant to point out that no behavior is strictly the result of environment or biology (Breedlove, 1994)—the recent emphasis on brain plasticity in research suggests that the brain affects behavior, which in turn affects the development of the brain, which affects future behavior.

SOCIABILITY IN HUMANS

We hypothesize that both males and females may have developed psychological mechanisms that favor the establishment and maintenance of social relationships with other human beings. Certainly, if we look at the ecology of human beings on the planet, we find that the vast majority live in close proximity to other humans, in spite of crime, traffic, and many urban complaints associated with crowding. It is likely that human survival in the EEA was dependent on cooperation among humans, and those who disliked or failed to cooperate with other humans probably died out. We further hypothesize that the psychological mechanisms involved take the form of neurochemically mediated emotional responses to social cues that result in pleasurable feelings from positive interactions with others, depression in response to the absence of others (e.g., loneliness), and anxiety when conflict arises with other humans. There is strong experimental evidence that both men and women derive positive emotions from successful exchanges with others (Lawler, Thye, & Yoon, 2000; Lawler & Yoon, 1998). However, we expect such responses to be more intense under most circumstances in women than in men. We base this prediction on the logic that prenatal, perinatal, and postnatal survival for mothers and babies probably depended on getting help from others more so than did survival for males during the period when the brain was evolving. Those who were more interested in social relationships, sensitive to the feelings of others, and so forth were likely to have an advantage in obtaining such help.

Direct studies of neurochemical responses to social stimuli are few, but what little evidence exists does not contradict the possibility that (a) humans are possessed of psychological structures that predispose them to sociability and (b) such structures vary between men and women. Numerous researchers have documented mechanisms of emotion and reward systems in the brain (e.g., Derryberry & Tucker, 1992; Routtenberg, 1978/1990) and have begun to locate those systems (see also George et al., 1995). There is some evidence

that the brain responds to social stimuli differentially than it does to other stimuli—though few social stimuli have been tested. De Haan and Nelson (1999) cited evidence that the visual recognition system in humans responds differentially to faces, for example, as compared to other objects, and Halligan (1998) suggested that the recognition of facial expressions is handled by a common process that deals with all emotions. The inability to accurately assess facial expressions in others has been seen in persons with brain diseases and brain damage (Halligan, 1998; Mandal, Asthana, & Maitra, 1998).

There is limited evidence that responses to social stimuli are emotional in nature (Lane, Reiman, Ahern, Schwartz, & Davidson, 1997) and that social events, thought to be emotional in nature, can have dramatic long-lasting effects on the neurochemistry of the developing mammalian brain. For example, Mlot (1998) described a study where rats put in solitary cages after weaning were later frenzied and overexcited in response to food. Maternally deprived rats had dull reactions similar to those in human mood disorders. There were also neurochemical differences in the rats—*isolation-reared rats* had higher levels of dopamine in certain areas of the brain, and *maternally deprived rats* had reduced levels of serotonin. Mlot also reported that intense mothering had a similarly powerful effect on brain development—*rat pups* who were handled often by people grew up to be less anxious and more resilient, and rats that had particularly attentive rat mothers had more receptors for neurotransmitters that inhibit the activity of the amygdala and fewer for corticotropin-releasing hormone (a stress hormone). Findings by Davidson and Fox (1989) suggest that there are individual differences in responsivity to social stimuli. They found that they could predict crying in response to maternal separation in a sample of normal 10-month-old infants based on brain activity in the right frontal lobe during baseline measures. If sex differences are present in these systems, it is possible for there to be sex differences in responsivity to social cues.

To summarize, although the research on human brain neurophysiology or neurochemistry has not addressed the issue we raise directly, the research we have reviewed does suggest that (a) it is possible for sex differentiation to occur because neurons are responsive to androgens; (b) the brain does regulate emotions, and humans probably have neurochemically orchestrated emotional reactions to social stimuli; and (c) there is some evidence that male and female brains have anatomical differences. If we take into account social research that demonstrates sex differences in behavior and cognition in humans and nonhuman primates, we find a strong basis for making the propositions we make here.

WHY ARE SOME THINGS “CAPITAL”? EVOLUTIONARY PSYCHOLOGY AND THE INTERPRETATION OF SOCIAL CAPITAL

As was pointed out earlier, Coleman, Bourdieu, and other social scientists have provided a very interesting literature on social capital. What they have not provided is a credible explanation of why the social relationships they are measuring constitute “capital.” If we are to understand capital, we must understand what human beings want—if we are to understand what human beings want, we must understand human nature.

We propose here that the ultimate (albeit unconscious) goal of all human behavior is RS. Secondary goals are less direct but are also associated with mating success—survival and avoidance of pain, for example, and for males, competitive resource acquisition. From this point of view, then, capital is anything that helps us achieve these ends. For convenience, we will abbreviate the constellation of motivators and related mechanisms—survival, avoidance of danger and pain, sexual activity, the acquisition of resources, the promotion of our offspring to reproductive age—as RS. From this point of view, a commodity is capital to the extent that it helps an individual enhance RS. Thus, social capital from the evolutionary psychological perspective is any social relationship that, directly or indirectly, helps an individual maximize RS.

We propose that because all relationships are not equal in their ability to enhance RS, and were not in the EEA, humans developed psychological structures that helped them differentiate between social relationships that would be a good resource versus those that would be a liability—in other words, we have some innate ability to detect social capital based on social cues that would have been common in the EEA. We propose that the psychological structures that endure are those that attach more pleasure to social relationships characterized by more capital (as it was in the EEA) and more anxiety at their loss. For example, a complex combination of hormones and response patterns results in attachment between babies and their caregivers. Babies and children probably experience more pleasure from the caregiver relationship and more anxiety at its loss than they do from other relationships. There are also likely to be innate responses to status or talent—evolutionary psychologists have proposed that females prefer high-status mates (Buss, 1989), and males would probably have benefited from high-status “connections” in the ancestral world as they do today and would have sought them out. Such behavior is evident even among chimpanzee males (de Waal, 1982). There may even be innate responses to verbal or body language that indicates trustworthiness, lying, or likely aggression. Beck (1999) suggested

that making quick decisions with regard to whether a person was a friend or an enemy would have had survival value in the ancestral world.

Psychological mechanisms related to assessing, acquiring, and maintaining social capital are not likely to be identical for males and females due to differential selection pressures on the two sexes. Female RS is highly dependent on raising a few children to reproductive age. The genes of females who invest substantially in nurturing their few offspring were probably selected for and passed on, resulting in psychological mechanisms that strongly favor interest and investment in offspring among females. Because they cannot be certain of their paternity, males are thought not to have as strong tendencies toward investment in their children (Trivers, 1972). Instead, males are thought to invest in resource acquisition, important in attracting choosy female mates (Kenrick, Sadalla, Groth, & Trost, 1990). The basic differences survive today, and it is probably no coincidence that women invest more time and energy in raising children than men do and that men invest more of their efforts toward enhancing their status and making money (Pratto, Sidanius, & Stallworth, 1993).

Regarding social capital, we postulate that females, who were smaller and less able to physically defend themselves and who became pregnant and had babies, would have benefited to a great degree in strong social relationships that would have been necessary for food sharing, help during any disability of pregnancy and parturition, and perhaps, raising the baby if the mother died during childbirth. It is reasonable to postulate that females would have developed a strong set of psychological mechanisms that foster the establishment and maintenance of social relationships that would help them with these tasks and difficulties—mechanisms that result in the acquisition and maintenance of this kind of social capital. Males in the ancestral world, who were not likely to experience periods of dependency, were more likely to benefit from food sharing and cooperation related to hunting or mate acquisition. These relationships were less likely to result in dependency and were probably balanced with a sense of competition. Of the psychological mechanisms that are social in nature that are directly related to acquiring mates, male-male cooperation in tasks and detection of anger or aggression are probably the most important for males.

It is also thought that females may have a preference for high-status males (Buss, 1989), so mechanisms associated with detecting status, resources, or parental investment probability in males may be present (as suggested by Wilson, 1993). It is probable that males in the ancestral environment also benefited from higher status acquaintances—the best hunters and the strongest or fastest companions who could be counted on for food sharing, defense, or help in finding mates, perhaps. In short, there would have been

great benefits for detecting if a given person was going to be able to help or hinder one in one's striving for RS in the ancestral world. The genes of those who invested excessive time, energy, or favors on persons who did not reciprocate are not likely to have survived to present day. This is probably why humans possess a special psychological mechanism for detecting cheaters (Cosmides, 1989).

Importantly, there is likely to be an incongruity between our innate mechanisms for assessing, acquiring, and maintaining social capital and what constitutes capital in modern society. Daily life is different now than it was in the EEA for both men and women who live in a variety of climates and social structures across the globe. For example, in contemporary America the division of labor between men and women is not nearly as consistent as it was in the ancestral world, and many women work side by side with men, and many men have taken on more domestic tasks. In modern American culture, middle-class men are expected to share substantially in child care responsibilities. Success in modern society requires skills and personality traits that may not have been necessary in the EEA, and it is a testament to the adaptability of the human psyche that humans can even function in such a vastly different environment than that in which we evolved. Nevertheless, it is likely that some of the evolved psychological mechanisms related to acquisition and maintenance of social capital that humans gained while living on the African savanna are no longer optimal for success in the modern world. For example, characteristics that make women good parents and close friends—characteristics such as becoming anxious when hearing about the problems of friends and acquaintances (Hayes, 1991), heightened sensitivity compared to men of emotional facial cues (Geary, 1998), strong bonding with children, and greater innate interest in and attraction to babies (Hess, 1975)—may not be those that optimize promotions and pay raises in a male-dominated competitive business environment. A female manager may need a promotion or pay raise to send her child to college (which will enhance RS) but not have the natural inclination to compete with coworkers to seek attention for her achievements. It is likely that males, too, face an environment today where their RS is not linked as closely with traits they acquired in the EEA. In modern America, for example, physical strength and aggression will lead to less resource acquisition, not more, under most circumstances. Men who refuse to devote themselves to one woman and put in some parental investment may find themselves childless due to advances in birth control. Therefore, although the specialized, sex-differentiated psychological mechanisms that humans possess to promote the acquisition of social capital may have been highly conducive to survival and mating in the ancestral environment, they may not be as adaptive in modern times.

DOES SOCIAL CAPITAL PREVENT CRIME?: SOCIAL CAPITAL AND CRIMINOLOGICAL THEORY

In a separate article, we have attempted to address how this new interpretation of social capital contributes to the line of research that focuses specifically on social capital. Here, we will discuss some of the many ways that an evolutionary psychological–informed concept of social capital can refine theories in criminology and help us understand empirical findings in the field.

Choice, Social Control, Human Nature, and Crime

Hirschi (1969) proposed that humans are equally predisposed to commit crime and suggested that it is our ties to others and to society that inhibit anti-social behavior. It is easy to integrate Hirschi's proposition with Wilson and Herrnstein's (1985) "choice theory," which posits that humans weigh the net benefits against the net costs of committing a crime and compare them to the ratio of benefits to costs of not committing a crime in making our largely unconscious decision to behave. The potential loss of social bonds could easily be seen as a potential deterrent (cost of committing crime). Thus, the two perspectives can be integrated. What the study of human evolution can add to choice theory is a better sense of what human beings are likely to see as rewarding (benefits) or punishing (costs). Humans are likely to find as rewarding those things that can help enhance RS (survival, mating, promotion of offspring) and, likewise, to experience those things that hinder it as punishing. Like Hirschi, we expect that the potential loss of valued social relationships will be a deterrent to criminal behavior. We also expect that on the whole, females will weigh the potential loss of relationships more heavily than males will—and this is consistent with empirical research (Robbers, 1999). Because deterrence is largely unconscious, we expect that humans will be more deterred from behaving a certain way by the threat of loss of relationships experienced as pleasurable, not necessarily those that are, in fact, most important for their success. We predict that the types of relationships that would have enhanced RS in the EEA will be experienced as more pleasurable than relationships that might increase RS today and that the potential loss of those relationships will have a greater deterrent effect on criminality.

The present concept of social capital, subject to the laws of rational choice outlined by Wilson and Herrnstein (1985), can also unify Hirschi's (1969) control theory with research on deviant peer relations, inspired by Sutherland's (1939) differential association theory. First, we expect most people in

democratic society to be law abiding because there tends to be general agreement regarding the criminal law. By sheer numbers, then, most relationships are between individuals with “prosocial” values. Nevertheless, it was quickly pointed out by Hindelang (1973) and others that some attachments, for example attachments to delinquent peers, did not deter but in fact precipitated delinquency. In fact, Sutherland’s differential association theory had been suggesting this all along, and the correlation between delinquency of friends and delinquency of self is thought to be the most robust finding in the criminological literature (Paternoster & Bachman, 2001).

We argue that relationships with individuals who value antisocial behavior promote crime through the very same process of “choice” because status is enhanced and ostracism is avoided by the commission of criminal behavior. To summarize, we want to associate with others by our nature. We build capital in relationships that we wish to avoid losing. We are this way because having this tendency enhanced our RS in the EEA. Depending on whom we have established relationships with, we will gain or lose social capital by behaving in a manner deemed “criminal” by the larger society, and thus, these relationships will influence the behavior in which we engage. Most of us will not engage in crime because most of our relationships are with people and organizations that do not approve of it.

One further comment is in order. In modern society, committing criminal acts carries more reproductive risks than simply losing valued relationships. For example, being locked up in prison for long periods, obstacles related to the stigma of being a convict, and the risk of being killed in violent conflict are much greater for those involved in criminal activity than those who obey the law. Given these risks, criminal activity is certainly not an “easier” choice than law-abiding activity. This stands in contrast with Hirschi’s (1969) basic premise in *Causes of Delinquency* that we are all potential law violators and his persistent view of criminal behavior as “easy” or more attractive than conventional behavior (see also Gottfredson & Hirschi’s [1990] *A General Theory*). According to our view, because great risks inhere in behavior that is abhorred by the majority of individuals in a society, criminal behavior would be a “last resort” for human beings who are naturally inclined to maintain personal relationships and who avoid taking risks that have unhappy consequences for their RS. In other words, we propose here that the default is in favor of law-abiding, conforming behavior because that is “easier” for humans as a social animal. Removing the assumption that criminal behavior is somehow more attractive or easier than obeying the law helps us explain why most people do not engage in serious crime.

Social Capital as the Tipping Point of "Cultural Deviance"

If human beings are "social" and want to avoid conflict, and tend to be conforming, how is it that deviant subcultures can arise? Writings on "sub-cultural deviance" (Cloward & Ohlin, 1960; Cohen, 1955; W. B. Miller, 1958; Sellin, 1938, as cited by Siegel, 2001) suggest that groups of individuals can form and develop values that are not consistent with mainstream norms—a set of values all their own—that may include favorable views of some deviant or illegal behavior.

Why would they do that? Cloward and Ohlin (1960) suggested that blocked opportunities to achieve legitimate success lead to alternative, illegitimate means of doing so. This characterization of humans in the ecological environment is perfectly consistent with the principles of evolution. In particular, humans seek access to resources associated with RS, and when these are blocked, they will actively seek out alternative means of attaining them even if it entails risks. This is because RS is the ultimate goal of all biological organisms, including humans, and everything else is subordinate to it. We see this in species the world over (witness squirrels working a "squirrel-proof" bird feeder in the yard), and this drive is very strong in humans as well. Crimes "pay" for men with low ability to gain access to the reproductive resources of women—they have nothing to lose by taking chances (Daly & Wilson, 1988; Kanazawa & Still, 2000). Furthermore, it is thought that the criminal justice system, which has little similarity with control systems in the EEA (where secondary parties such as jealous husbands and angry brothers enforced norms), is a less effective deterrent than informal social control because we have no psychological mechanism for recognizing its authority.

Furthermore, because we evolved in small bands of hunter-gatherers and may be "programmed" to relate to small groups of people better than we relate to the many thousands in a large city, it would be natural that families and neighborhoods could develop their own sets of values and standards. If values and rules from the larger society are imposed, and there is general agreement about them, most individuals will probably attempt to abide by the law—at least initially. But as it is recognized that success is not being achieved via the means afforded individuals in a given neighborhood, humans will probably use alternative means to achieve their goals. It may start with one or two people, but the behavior in the ecological system will proliferate as soon as it becomes apparent that the new strategy is successful.

We suggest that even if members of the community generally accept the rules of the larger society, they will also be sympathetic to the frustration of members of their community, and some will even come to accept the new means of obtaining goals as legitimate. At some gut level, it seems human beings do understand human nature. At some point, the balance may be

tipped in favor of committing certain acts—such as insider trading, drug dealing, underage drinking, spanking children—not just because these behaviors have become practical but because other people start doing so in greater numbers, and one finds that social relationships are not jeopardized by performing the behavior. This is the point where social capital tips the balance of social norms in favor of deviance. At some point, social relationships stop being lost and start being enhanced by commission of the behavior, and this is when we have an example of “cultural deviance.” The behavior itself is not inherently good or bad from an evolutionary point of view—though Cohen and others probably saw it that way.

Strain, Social Capital, and Criminality

Merton (1938) recognized that humans have shared “goals,” and evolutionary psychology specifies that human goals are consistent with enhancing RS. If social capital is similar to financial capital in that it has a value that helps one achieve goals, then classical strain theory would see social capital as a means of achieving ends and a lack thereof as a potential source of strain. Studies from evolutionary psychology also suggest that males, in particular, are competitive and will likely strive to attain a little more than what others have. This explains why goals have changed from the desire for food and shelter in the Depression era to the need for cell phones, \$40,000 automobiles, and high-speed Internet connections in the short 60 years since Merton wrote about this matter. Even Durkheim (1897/1994) recognized this, suggesting that nothing in our constitution appears to set limits on our cravings or appetites, “the proof being that they have constantly increased since the beginnings of history” (p. 172).

In their formulations of strain theories, neither Merton (1938) nor Agnew (1992) proposed a physical reason why a lack of “means” causes “strain” or why the emotional experience of “strain” causes crime, but a Darwinian perspective can. We would expect that the emotional response associated with strain is biological in origin. A lack or loss of capital may naturally elicit anxiety, even panic. In the EEA, capital or resources of any kind were associated with survival and RS; those who experienced discomfort at their lack or loss would have been motivated to do something about it and would have been more likely to survive and reproduce. In contrast, those who were nonchalant about their loss of capital did not leave enough offspring to perpetuate their genes. Merton acknowledged that there might be a variety of responses to strain, and this is consistent with our characterization. Although evolution has equipped humans with specific goals—the pursuit of RS and survival—it has not given specific instructions as to which means to employ to pursue the goals, because the most effective means probably differed by environment.

Although we expect males to be more concerned with physical capital such as money, land, or resources than females are, we would expect them to have some concern for social relationships. In addition, we would expect that females would be terribly troubled by a lack or loss of social relationships because of the dire consequences their loss would have had for them and their offspring in the EEA, and the genes of females who were indifferent to such loss are not likely to have remained in the gene pool. One might propose that the disparity in criminal activity between males and females may be due to the increased salience of strain experienced by females at the potential loss of social capital. Research on gender differences in psychology and female criminality do suggest that social bonds are of greater importance to females than to males, and some research is suggestive that social bonds are a greater deterrent for female crime than male crime. For example, Heimer and DeCoster (1999) found that early emotional bonds had a significant indirect effect on later violent delinquency for girls but not for boys. Liu and Kaplan (1999) found that males are more likely to be involved in delinquent activities partly because they have less concern about relationships with teachers and parents. Robbers (1999) found that social bonds mediated the relationship between other types of strain and delinquency for females but not for males.

Human Nature and the American Dream

In *Crime and the American Dream*, Messner and Rosenfeld (1997) focused on “institutional anomie” and emphasized that antisocial behavior is a function of cultural and institutional influences in American society. They argued that an overemphasis on the success goal of the American dream drives people apart, weakens the collective sense of community, and devalues noneconomic roles such as family, school, and community. The important implications are that crime is “antisocial” and that as we care less and less about social relationships, we will become more willing to commit crime. We would like to discuss two matters related to this theory.

First, from an evolutionary point of view, criminal behaviors have no value on a moral scale. We will avoid performing behaviors that cost us RS—and by extension, we will try to avoid behaviors that cost us social capital. However, we will take risks if need be. Messner and Rosenfeld’s assumption of an antisocial, malevolent element in criminal behavior may fit some forms of criminal activity and not others; clearly, some offenders are committing crime because they “give up” their social relationships in favor of material success and are cognizant of “wrongdoing” on some moral level. Other offenders, though, are merely capitalizing on an opportunity to succeed (drug dealers, insider traders). Many offenders have close family ties; see them-

selves as good people, good parents, and good friends; and are not offending because of some antisocial tendency.

Secondly, Messner and Rosenfeld (1997) suggested that it is the economic system that has caused our mania for resource acquisition. By contrast, evolutionary psychology would predict that humans, especially males, would take naturally to the rat race as they strive competitively for resources. How easily humans latched onto capitalism, which is consistent with and exploits this human characteristic, and not communism, which works against it! Messner and Rosenfeld lamented this turn of events and implied that another form of economic system may be amenable to the reinstatement of social bonds and social roles as valued goals in our society. We agree that social and economic systems can influence behavior but warn against the installation of any economic or political system that contradicts human nature. The trick is to discover a system that “goes with the flow” of human nature but does not exacerbate its disruptive tendencies as does our current form of capitalism (Wilkinson, 2001).

RECOMMENDATIONS FOR FUTURE RESEARCH

In response to the common criticism of evolutionary psychology that its empirical propositions are “unfalsifiable,” we list a series of propositions that have been made in this article and that are amenable to empirical testing, then we limit our discussion to three important ones.

Propositions

1. Humans have psychological mechanisms related to sociability, and these are sexually dimorphic, where women are more sociable to their kin and close friends and men are more sociable in situations that allow them to attain greater resources and status. These mechanisms are likely to take the form of neurotransmitter activity in response to social stimuli and experienced as pleasurable emotion or anxiety.
2. Humans are likely to experience the greatest pleasure in response to social cues that signal relationships that constituted the greatest capital in the ancestral environment—namely, those relationships most closely related to RS in the African savanna during the Pleistocene epoch. Similarly, humans are likely to experience the greatest anxiety in response to the loss or threat of loss of such relationships. Humans will experience less pleasure and anxiety related to relationships that constitute social capital in modern times but that are not similar in character to relationships in the EEA. Because of this, the potential loss of the latter types of relationships is likely to be a lesser deterrent to proscribed behavior than the loss or threat of loss of the former types of relationships.

3. The point in time at which performing a behavior in a given society begins to enhance social capital—*increase personal relationships and status among peers for example*—is the point at which we can identify the presence of cultural deviance. Behaviors that continue to harm important social relationships will not proliferate dramatically in any society.
4. Females in the ancestral world benefited (in a reproductive sense) to a greater degree than males did from close personal relationships. Therefore, female nervous system responsivity to social cues is likely to be more intense than that of males for most types of social interaction. Because of this, females will experience more strain in response to negative social relationships than males will. We expect a greater degree of influence of social strain on female criminality than male criminality, and we expect a greater degree of deterrence due to fear of loss of social bonds on females than on males.
5. Human males are more apt to accept a competitive, materialistic economic system than an egalitarian one.

INNATE SOCIABILITY

The best approach to establishing that humans have psychological mechanisms related to sociability and that such mechanisms are sex differentiated is to measure responses to social stimuli in the nervous system. There are several methodologies that could be exploited. First, using electroencephalogram (EEG), positron-emission tomography (PET) scans, and analysis of neurotransmitter activity in the brain, animal models could be used to determine if changes occur in the brain in response to certain social stimuli—such as grooming, presence of other animals, absence of other animals, sounds of other animals emitting cries for help, and so forth.

Human responses to social stimuli could also be tested with EEG, PET, or perhaps measures of neurotransmitters or their metabolites. Stimuli could include the view of human faces with a variety of facial expressions, exposure to auditory stimuli such as yelling or insults, watching a video of someone complimenting the participant, and so forth. Responses could be compared to responses to nonsocial control stimuli, as has been done in some experiments using human faces. To assess if certain types of social relationships are experienced as more “pleasurable” than others, one could attempt direct measures of brain responsivity, or other indicators of neurophysiological response (polygraph for example), and ask participants to rate their pleasure or anxiety in response to each stimulus (though given human participants’ notorious unreliability and inability to accurately describe their unconscious motives and feelings, direct measures of these may be preferable to verbal responses to questions).

ANCIENT VERSUS MODERN SOCIAL CAPITAL AND DETERRENCE

We have proposed here that persons will be deterred from criminal behavior to a greater degree by the potential loss or compromise of relationships with greater social capital than by those low in social capital. We have further proposed that the deterrent effect of potential loss of social capital will be greatest when the relationship in question would have been characterized as high in social capital in the ancestral world because the brain is thought to have innate emotional responses of pleasure and anxiety in response to the dynamics of these relationships. We have pointed out that sometimes relationships that are high in social capital in modern times would not have been so in the ancestral environment, and we suggest that perceptual cues that stimulate positive or negative feelings may not therefore be present in some “important” modern relationships.

To test these propositions, one could compare correlations between participant behavior and participant perceptions of the attitudes of persons in his or her social network toward that behavior. If perceived negative views of the behavior among those who represent high social capital (enhanced RS) correspond to reduced performance of that behavior more so than when the target person represents low social capital, this would be taken as evidence that fear of loss of social capital deters behavior. To test our second proposition, it would be necessary to compare the effects of relationships that would have represented high social capital in the ancestral world to those that represent high social capital today but would not have done so in the ancestral world. We invite evolutionary psychology scholars and anthropologists to propose some comparisons. We will propose a few examples. We expect that in the EEA, the fear of compromising the relationship with one’s mother or primary caregiver would have the greatest deterrent effect on behavior for children. This effect may or may not persist into adulthood. For adult females, we expect that the attitudes of female relatives and friends would have a greater impact on behavior than the attitudes of brothers because having a good relationship with a brother was not as critical to survival. For adult males, we expect that attitudes of adult male coworkers and friends would have strong effects on behavior because male coalition building appears to have been an important feature of the ancestral social structure. Acquiring and keeping mates are also important to both males and females, and it is expected that fear of losing an intimate relationship or of losing a potential mate will have an important impact on behavior. Therefore, both women and men are expected to modify behavior based on its perceived effect on persons of the opposite sex taken to be potential mates (within a reasonable age range,

attractive, etc.). Because of this, we may find strong deterrent effects of perceived attitudes on behavior of female employers on male employees, for example, not because the woman is the boss but because perceptual cues make her a mating prospect. Controlling for characteristics such as age, attractiveness, and sexual availability of persons in the network will be important in this type of research to avoid confounding possible effects of “mating” responses. To understand these dynamics in more detail, it may also be important to assess whether the anticipated nature of the response to the deviant behavior matters—does the participant expect the person to get angry, to have hurt feelings, to think less of the participant, or to withdraw his or her friendship or love, for example? It will also be of great interest to explore the developmental process in the value of various relationships as capital—at what point, for example, will adolescents begin to value the attitudes of potential mates? Will they reach a point where they value potential mates more than their primary caregivers?

STRAIN, SOCIAL CAPITAL, AND SEX DIFFERENCES

Survey research could also be used to determine if males experience more strain at the loss of material capital and females experience more strain at the loss of social capital by asking participants to either rate actual or expected strength of their anxiety in a variety of situations, including the loss or threat of loss of various forms of capital. We would expect males to rate the loss of a wallet full of money as more stressful than females would, females to rate the loss of a sister as more stressful than males would, and data from both to suggest that lack of social capital (trusting relationships with others and acquaintanceship with persons of high standing, status, knowledge, or wealth) to be associated with increased chance of delinquency, but the relationship is expected to be stronger in most scenarios for females compared with males.

CONCLUSIONS

In the present article, we have proposed that a more complete understanding of social capital and its effects can be informed by evolutionary principles. We have touched on the many ways the refined concept of social capital can help integrate and ground criminological thought. We have attempted to elucidate some of the ultimate questions that contemporary criminological theories fail to address: Why do social bonds deter crime? Why do humans adopt deviant values and behaviors so easily? Why have we accepted success goals so readily?

Our observation of the fascinating endurance and consistency of social ties among us, the fact that we always seem to live among other humans in spite of

our frequent complaints about conflicts, traffic, crowding, and violence, has inspired us to ask, “Why do humans always live together?” We have proposed an answer to this question here.

For criminological purposes, we suggest that an understanding of human nature—of the character of our behavior, of why we enjoy the relationships we enjoy, why we experience anxiety in response to some social events, whether we are competitive or cooperative by nature, and what types of rewards are going to be most useful in motivating us—can be exploited to prevent crime. A better understanding of these processes can help inform our theories and make it less likely that we attempt policies that are doomed to failure.

In response to the common criticism that evolutionary psychological theories are purely speculative or empirically unfalsifiable, we have provided empirically testable propositions stemming from our redefinition of the concept of social capital. We believe it is important to ground our scholarly work by connecting it to a search for the “ultimate” causes of behavior—not just the proximate ones. It is not enough to say that Johnny stole the sneakers because he had low self-control, because the advantages of stealing the sneakers outweighed the likely consequences for doing so, or because his bonds to society were weak—we need to know why Johnny wanted the sneakers in the first place.

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