

Evolutionary Origins of Stigmatization: The Functions of Social Exclusion

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A reconceptualization of stigma is presented that changes the emphasis from the devaluation of an individual's identity to the process by which individuals who satisfy certain criteria come to be excluded from various kinds of social interactions. The authors propose that phenomena currently placed under the general rubric of stigma involve a set of distinct psychological systems designed by natural selection to solve specific problems associated with sociality. In particular, the authors suggest that human beings possess cognitive adaptations designed to cause them to avoid poor social exchange partners, join cooperative groups (for purposes of between-group competition and exploitation), and avoid contact with those who are differentially likely to carry communicable pathogens. The evolutionary view contributes to the current conceptualization of stigma by providing an account of the ultimate function of stigmatization and helping to explain its consensual nature.

Positive social contact is essential for psychological and physiological health. People who feel socially alienated or rejected are susceptible to a host of behavioral, emotional, and physical problems, suggesting that human beings may possess a fundamental need to belong (Baumeister & Leary, 1995). Despite people's best efforts to be accepted, however, social rejection is a pervasive feature of social life. Of course, many rejections result from idiosyncratic preferences, inclinations, and goals of one individual vis-à-vis another. However, other instances of social rejection appear to be based on the shared values or preferences of groups of individuals. Through the process of stigmatization, certain individuals are systematically excluded from particular sorts of social interactions because they possess a particular characteristic or are a member of a particular group. Pronounced risk of social exclusion exists for members of diverse groups, such as the mentally ill (Farina & Ring, 1965; Shears & Jensema, 1969), mentally retarded persons (Shears & Jensema, 1969), obese people (Cahnman, 1968; Crocker, Cornwell, & Major, 1993; DeJong, 1980), homosexuals (Shears & Jensema, 1969), psoriasis patients (Ginsburg & Link, 1993; Ramsey & O'Reagan, 1988), epileptics (E. Rodin, Shapiro, & Lennox, 1977), HIV/AIDS patients (Bennett, 1990; Weitz, 1990), cancer patients (Bloom & Kessler, 1994; Stahly, 1988; Wortman & Dunkel-Schetter, 1979), as well as members of a variety of racial, ethnic, and religious groups (Sigelman & Singleton, 1986; Steele & Aronson, 1995).

Definitions and Assumptions

Our goal in this article is to offer a new perspective on the process of stigmatization and the important question of why an inherently social species with a strong need for social acceptance should be so inclined to reject members of its own kind. Most theory and research on the stigmatization process can be traced to Goffman (1963), who defined stigma as "an attribute that is deeply discrediting" (p. 3). According to Goffman, stigmatization is a process of global devaluation of an individual who possesses a deviant attribute. Stigma arises during a social interaction when an individual's actual social identity (the attributes he or she can be proved to possess) does not meet society's normative expectations of the attributes the individual should possess (his or her virtual social identity). Thus, the individual's social identity is spoiled, and he or she is assumed to be incapable of fulfilling the role requirements of social interaction.

Since Goffman's seminal work, three other major perspectives on stigma have been offered. Jones et al. (1984) proposed that a person is stigmatized when a mark (a deviation from a prototype or norm) has been linked to dispositions that discredit the bearer of the mark. Thus, the mark of deviance initiates an attributional process through which people interpret other aspects of a person in terms of the mark and respond to stigmatized individuals on the basis of their stigma at the expense of their individuality. In contrast, Elliott, Ziegler, Altman, and Scott (1982) suggested that stigma is a form of deviance that leads others to judge individuals as illegitimate for participation in an interaction. People may be considered illegitimate interactants because they lack the abilities or skills to carry on an interaction, behave unpredictably or inconsistently, or are a threat to others or to the interaction itself. According to Elliott et al., once a person has been classified as illegitimate for participation in an interaction, he or she is beyond the protection of social norms and, as such, may be excluded or ignored altogether. Most recently, Crocker, Major, and Steele (1998) acknowledged the difficulty of identifying a single defining feature of stigma but suggested that stigmatized people are believed to possess "some attribute, or characteristic, that conveys a

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social identity that is devalued in a particular social context" (p. 505). In their view, stigma arises from one's membership in a group or category that is negatively valued in a specific situation.

A comparison of these conceptualizations reveals an important similarity: Each suggests that stigmatization occurs when an individual is negatively evaluated, be it conceptualized in terms of discrediting, negative attributions; perceived illegitimacy; or a devalued social identity. However, negative evaluations are an inevitable part of social life, and few would argue that situations involving mere negative evaluation are necessarily instances of stigmatization. What, then, transforms negative evaluations, even highly prejudicial ones, into stigmatization?

Assumptions Underlying the Evolutionary Approach to Stigma

To begin to answer this question, we propose a conceptualization of social stigma based on evolutionary considerations that differs in certain respects from previous formulations. Our analysis is predicated on the notion that the process of natural selection leads to adaptations designed to solve the recurrent adaptive problems faced by a particular species during its evolutionary history (Darwin, 1859; Williams, 1966). Furthermore, we assume that the mechanisms that solve these adaptive problems are likely to be extremely specific in their functioning, as specificity of design is necessary for any system that is capable of generating adaptive behavior (Cosmides & Tooby, 1994; Tooby & Cosmides, 1992). Thus, the evolutionary approach suggests that instead of expecting the human mind to be a relatively domain-general learning machine (the overarching and often implicit view of many psychologists), we should expect rather that the mind consists of a large number of distinct information-processing systems, each designed to solve a particular adaptive problem (Tooby & Cosmides, 1992).

We also assume that the social world composed of other members of one's species represents an intricate and complex web of interactions that generates a vast array of potential fitness costs and benefits, requiring extremely sophisticated computational machinery to navigate it successfully (e.g., Whiten & Byrne, 1988, 1997). Because our hominid ancestors lived in social groups during at least the last several million years, we should expect that the human mind contains cognitive systems designed to solve the adaptive problems associated with human beings' social life history (Caporael & Baron, 1997; Caporael & Brewer, 1991, 1995; Cosmides & Tooby, 1989, 1992; Gigerenzer, 1997; Humphrey, 1976).

Taken together, these considerations suggest that there exists a collection of distinct, domain-specific psychological mechanisms that have evolved to solve adaptive problems associated with sociality. We argue that there are a number of systems that are designed to exclude others from social interactions and that they differ from one another in important ways. Together, the behavioral manifestations of these exclusionary mechanisms generate the phenomena that have fallen under the rubric of stigmatization. (See also Archer, 1985.)

These assumptions lead us to shift the analysis of stigma from negative evaluation or discrediting to interpersonal disassociation. Thus, stigmatization occurs

when a shared characteristic of a category of people becomes consensually regarded as a basis for disassociating from (that is, avoiding,

excluding, ostracizing, or otherwise minimizing interaction with) individuals who are perceived to be members of that category. (Leary & Schreindorfer, 1998, p. 15)

On this view, people are stigmatized not simply because they are evaluated negatively or possess a spoiled identity, but rather because they possess a characteristic viewed by society or a subgroup as constituting a basis for avoiding or excluding other people. Thus, stigmatization is based on the shared values and preferences of members of a particular group. Personal rejections based on idiosyncratic preferences would not be considered stigmatization. We argue that many of the characteristics that lead to stigma-based social exclusion are nonarbitrary and derive from evolved adaptations designed to cause people to avoid interactions that are differentially likely to impose fitness costs. Furthermore, because humans everywhere are endowed with the same psychological systems, we should expect cross-cultural similarities in behavior driven by the similarities in underlying psychological architecture.

To integrate the evolutionary approach advanced here with current theorizing, we find it necessary to revisit the often misunderstood issue of the relationship between evolutionary analyses and the information-processing description of human psychology. The ultimate level of explanation in evolutionary terms requires a description of the selection pressures faced by a species during its evolutionary history and the recurrent structure of the environment (physical, social, and so forth) against which natural selection could act to build systems that solved the adaptive problem. The proximate level of explanation includes a description of the adaptations—the specialized functional mechanisms—that evolved to solve these problems, including a description of the operations that a mechanism performs and the elements of the organisms' environment with which the mechanism interacts (Tooby & Cosmides, 1992). Because evolution by natural selection is the only known force by which complex functional biological machinery can come to exist, any nonaccidental functional aspects of a phenotype must ultimately be explained in terms of natural selection (Tooby & Cosmides, 1992). This is not to say every hypothesis in psychology must be about the specific solution to an adaptive problem *per se*. Even so, general psychological processes should eventually be able to be explained in terms of the operation of mechanisms designed to solve adaptive problems.

Functional Explanations

Because the evolutionary approach uses the word *function* in a way that differs from certain other approaches in psychology, we wish to be clear in the way that we are using the term. From an evolutionary perspective, function is defined only with respect to contribution to reproductive success. So, when we refer to the function of an adaptation, we mean the specific way in which the operation of the trait in question contributed to the reproductive success of the bearers of the trait (or the bearer's kin) over the course of evolution, no matter how distal this contribution might have been or what its contribution to reproductive fitness is now (Symons, 1989, 1992; Tooby & Cosmides, 1992).

Note that this usage of the word *function* differs from the folk meaning as well as the meaning used by the majority of psychologists, who use it to refer to the attainment of more proximate psychological goals. For example, the possible functions of stig-

matization discussed below—self-enhancement and system justification—are not functions in an evolutionary sense. Although it is likely (perhaps certain; see Cosmides & Tooby, 1987) that psychological mechanisms function (in our sense) by embodying a design that attempts to accomplish particular proximate goals, a complete biological functional analysis must account for how the attainment of these goals contributed to reproductive success over evolutionary time. It is important to bear in mind that a claim that a psychological system has a particular ultimate function does not necessarily yield any predictions about the current effect of that system on reproduction in modern environments (see Symons, 1987, for a discussion). Instead, it generates predictions about the design features that such a mechanism should possess.

Starting from these assumptions, our plan for this article is as follows. First, we look at the current literature on the functions of stigmatization and social exclusion. Second, we consider some examples from nonhuman animals to give a sense of selection pressures that might lead to adaptations for social exclusion. Third, we propose that human adaptations for sociality include cognitive mechanisms that cause people to be selective in their social interactions. In particular, we argue that human beings possess adaptations that have the function of (a) decreasing the probability of being cheated in a social exchange and avoiding interactions with partners who have little to offer in terms of social gain, (b) maintaining one's group's integrity and exploiting those in subordinate groups, and (c) decreasing the probability of parasitic infection. During this discussion, we attempt to show that stigmatization is, in large part, based on these adaptations, and we point to ways in which different types of stigmatization might be distinguished from one another. Fourth, we highlight predictions of the model and suggest some directions for future empirical work. Throughout, we focus on the manifestation of differences from the point of view of the stigmatizer. Although we believe that there are also specific adaptations designed to respond adaptively to being socially excluded (see Baumeister & Tice, 1990; Leary & Downs, 1995), our central concern is the process of stigmatization per se.

Previous Perspectives on the Function of Stigmatization

Because Crocker et al. (1998) recently presented an excellent and thorough review of this literature, we give here only a brief overview of the most prominent accounts that address the psychological functions of stigmatization. In particular, the most developed theories in this area suggest that people stigmatize others to (a) enhance their self-esteem, (b) enhance their social identity, or (c) justify a particular social, economic, or political structure (Crocker et al., 1998).

Proximate Functions of Stigma

Self-esteem and social identity. Two models focus on the benefits of stigmatization for the identity and self-esteem of the stigmatizer. These approaches suggest that stigmatization is a process of denigrating others in order to put oneself (or one's group) in a psychologically superior position (e.g., Turner, 1982). Viewed from these perspectives, stigmatization is akin to other forms of social comparison and other-derogation that have been attributed to the desire to maintain high self-esteem or a positive

social identity (e.g., Cialdini & Richardson, 1980; Crocker, Thompson, McGraw, & Ingerman, 1987; Oakes & Turner, 1980; Tajfel, Billig, Bundy, & Flament, 1971; Tesser, 1988; Wills, 1981; Wood, 1989).

Self-esteem based theories of stigmatization can be broken down into two corollaries: that (a) discrimination enhances self-esteem, and (b) threatened self-esteem motivates discrimination (Abrams & Hogg, 1988). However, after decades of research on the relationship between self-esteem and discrimination, numerous studies have failed to find evidence for one or both of these corollaries (Abrams & Hogg, 1988; Hogg & Abrams, 1990; Hogg & Sunderland, 1991; Hogg & Turner, 1987; but see Lemyre & Smith, 1985). In particular, the second corollary, that self-esteem acts as a causal variable in discrimination, has received little support (see Rubin & Hewstone, 1998, for a recent review). Self-esteem does seem to play some role in stigmatization from the point of view of both the stigmatizer and the stigmatized, but the link is not a straightforward one (e.g., Crocker & Major, 1989; Crocker & Quinn, 1998; Crocker, Voelkl, Testa, & Major, 1991; Fein & Spencer, 1997; Long & Spears, 1997; Major & Schmader, 1998). Indeed, Hogg and Sunderland (1991) noted that there was "little support for either corollary of the self-esteem hypothesis" but that "the assumption that strategies of intergroup behavior are psychologically guided by a self-enhancement motive remains in place" (p. 52).¹

Most important, viewing stigmatization as a means of maintaining self-esteem or social identity does not easily explain why members of certain groups are stigmatized whereas others are not. People have a broad array of individuals and groups from which to derive their own identity and self-esteem. Social comparison models do not provide a clear account of why particular kinds of groups are prone to stigmatization either within a specific cultural context or cross-culturally and historically. Our view is that although self-esteem and stigma are intertwined in some fashion, these theoretical perspectives do not provide a satisfying account of why individuals discriminate against particular others.

Justification of social structure. The system justification approach of Jost and Banaji (1994) and the social dominance perspective of Sidanius and Pratto (1993) begin with the assumption that people are motivated to justify the social, economic, and political systems in which they live. To do this, members of a society make attributions about deservingness, positive and negative traits, and the worthiness of the members of various social groups on the basis of the current social structure, even when this structure is the result of arbitrary historical processes (Jost & Banaji, 1994). Thus, the roles that members of different groups play are justified by assumptions regarding differences in the characteristics of members of each group that make these role differences reasonable (e.g., Eagly & Steffen, 1984; Hoffman & Hurst, 1990). This view suggests, for example, that people in a particular culture might come to believe that members of a subordinate group are lazy and lack initiative because this belief

¹ See Dawes (1994) for a parallel case in the clinical literature of a tenacious adherence to self-esteem as a causal variable despite a paucity of empirical evidence.

justifies the subordinate group's role as servants or slaves. In this way, intergroup status differences are naturalized and legitimized.

The system justification approaches are appealing because they explain the seemingly paradoxical findings of out-group favoritism by disadvantaged groups, acceptance of negative stereotypes by certain disadvantaged groups' members, and the endorsements of ideologies that seem to run counter to the interests of those who espouse them (for discussions, see Crocker et al., 1998; Jost & Banaji, 1994; Sidanius, 1993). However, whereas these models can account for within-culture consensus regarding stigmatized groups, they have difficulty accounting for cross-cultural and historical commonalities in the stigmatization of particular groups. The fact that some stereotypes—particularly ones about sexual roles, the handicapped, and the diseased—are so consistent across cultures and history seems to suggest that something more than an arbitrary sociocultural process is at work (Brown, 1991; von Hentig, 1948; Winzer, 1997). Furthermore, although these models could in principle account for stigmas with meaningful social, political, and economic implications (such as the stigmatization of racial minorities), they do not easily explain stigmas that have no such implications, such as the stigmas of obesity or mental illness. Finally, from an evolutionary view, finding adaptations designed to work against the individual's interest to benefit the group would be extremely surprising (Dawkins, 1976; Williams, 1966; but see D. S. Wilson & Sober, 1994).

Dimensions of Stigma

Some theorists have addressed the functions of stigma by examining variables that mediate the severity with which people are stigmatized. Two accounts of the dimensions of stigma have been particularly influential. Frable (1993) proposed two primary dimensions—danger and visibility—as critical mediators of peoples' reactions to stigmatized others. Jones et al. (1984) presented a more detailed scheme in which they identified six critical dimensions of stigma: concealability, course, disruptiveness, aesthetic qualities, origin, and peril.

Both accounts suggest that visibility–concealability is a crucial factor: The more visible a stigmatizing condition, the greater its (negative) impact on interactions. If a nonstigmatized individual cannot detect the stigmatizing condition in the other, he or she may treat that person no differently than anyone else. (Even so, knowledge of one's own hidden stigma may change the way that one behaves, possibly affecting one's interactions and others' perceptions [Devine, Evett, & Vasquez-Suson, 1986; Frable, Blackstone, & Scherbaum, 1990; Kleck & Strenta, 1980; Word, Zanna, & Cooper, 1974]). Furthermore, in the case of physical stigma (e.g., deformities, skin diseases, missing limbs), less conspicuous conditions have less of an impact on the perceiver and the interaction than highly visible ones (e.g., Frable, 1993).

However, although visible marks often lead to stigmatization, the direction of causality is occasionally reversed: Those who are stigmatized are sometimes forced to bear a visible mark denoting their discredited status. Examples of this include the Jews in Nazi Germany, who were forced to wear stars of David on their clothing to identify themselves; Untouchables in India, on whom various clothing proscriptions are forced (Mahar, 1972); and Nathaniel Hawthorne's character Hester Prynne, who was made to wear the scarlet letter *A* as a consequence of her adulterous act.

Controllability (which Jones et al., 1984, discuss in terms of origin and course) refers to how the stigmatizing attribute came to be and the degree to which it can be changed. Individuals with stigmatizing conditions that are perceived as preventable sometimes suffer more social censure than those who are perceived to be helpless victims. Indeed, the extent to which a mark is perceived to be under the control of the victim correlates with negative attitudes and behaviors toward the individual (Crandall, 1994, 1995; Crandall & Biernat, 1990; Crocker et al., 1993; Pullium, 1993; M. Rodin, Price, Sanchez, & McElligot, 1989; Weiner, Perry, & Mangnusson, 1988).

Even so, conditions that are out of the control of the target can still lead to harsh stigmatization. For instance, some data suggest that perceptions of control do not significantly mediate reactions to those who are mentally ill or physically disabled (Albrecht, Walker, & Levy, 1982; Mehta & Farina, 1997). Even AIDS patients who contracted the disease through blood transfusion, presumably something beyond their control, are nevertheless stigmatized (Sheehan, Lennon, & McDevitt, 1989), although less so than patients who are perceived to be responsible for contracting the illness through intravenous drug use or homosexual intercourse (Pullium, 1993). Even more telling, however, is the profound stigmatization of members of racial and ethnic groups and low-ranking members in hereditary caste systems who clearly cannot control their social group membership. These facts suggest that, although controllability might be important in certain cases of stigma, it is not always a relevant factor.

Jones et al. (1984) defined a third important factor, disruptiveness, as "that property of a mark that hinders, strains, and adds to the difficulty of interpersonal relationships" (p. 46). As in the case of concealability, the direction of causality of this variable is unclear. Some individuals, such as some people with mental disorders, are indeed rejected because they disrupt the normal course of social interactions (e.g., Baron-Cohen & Bolton, 1993; Jones et al., 1984). However, Ickes (1984) found that the stigma attached to race disrupted interracial social interactions, suggesting that stigmatization per se can be disrupting even when the original condition is not.

The final dimensions identified by Jones et al. (1984) were aesthetics and danger (or peril). Everything else being equal, people with conditions that involve more aesthetically displeasing features or connote greater danger are more stigmatized. However, it is not clear how judgments of danger and aesthetics are made, although a great deal of progress has been made in understanding human aesthetic preference in the last decade or so (Grammer & Thornhill, 1994; Orians & Heerwagen, 1992; Singh, 1993; Singh & Young, 1995; Symons, 1995; Thornhill, 1998; Thornhill & Gangestad, 1993). Although it seems reasonable that perceptions of danger should mediate one's reactions to another individual, an account of how people estimate potential danger in an interaction would make this more theoretically satisfying.

In summary, although evidence supports the importance of all of these dimensions, critical exceptions make the dimensional account of stigmatization incomplete. The dimensional accounts may be best thought of as micro-theories that apply to specific stigmatizing conditions under particular circumstances. Evidence can be gathered for each one, but relatively restrictive boundary conditions exist on the circumstances in which they apply. Most if not all of these variables are important for a complete conception of

stigmatization, but a framework is needed in which one can predict when each variable will mediate stigmatization and address the direction of causality of these variables.

Social Exclusion: Nonhuman Evidence

Historians, anthropologists, and political scientists tend to agree that social exclusion is characteristic of human cultures around the world and throughout recorded history (Boehm, 1986; Gruter & Masters, 1986; von Hentig, 1948; Williams, 1997; Winzer, 1997; Zippelius, 1986). Because we argue that the ubiquity of social exclusion in human cultures is due to the existence of specific adaptations for this purpose, we first discuss a small number of examples of exclusion in nonhuman species. In doing so, we hope to establish that adaptations for social exclusion have emerged in other species that faced adaptive problems that might have been similar to those faced by our hominid ancestors. This nonhuman evidence by no means proves that human beings exclude one another for the same reasons. Yet the continuity of evidence across species at least makes the argument plausible. If no other animal showed evidence of anything resembling within-species stigmatization, an evolutionary account would be weakened.

Examples of social exclusion in nonhuman animals are easy to find. At a basic level, territoriality is an expression of social exclusion. Territoriality involves behaviors that exclude other individuals from a particular area and is extremely well documented across many taxa, including fish, birds, reptiles, and mammals (E. O. Wilson, 1980). Territoriality probably serves a number of functions but is likely to exist so that organisms can monopolize resources such as food and mating sites.

Another simple form of social exclusion is the establishment of status hierarchies. In hierarchies, organisms at the top impose an array of restrictions on those at the bottom, limiting their access to food, preferred sites, and mates. Many species have status hierarchies, including various bird species, lions, baboons, and chimpanzees (E. O. Wilson, 1980). The individuals at the bottom of a hierarchy are socially excluded in a way that parallels the phenomenon in humans. Because of some feature of the low-ranking organisms (size, kin group, and so forth), they are denied access to economic and social benefits.

Social ostracism can also be seen at many different taxonomic levels. For example, three-spined sticklebacks, a species of small fish, avoid other sticklebacks if those individuals emit cues indicating that they have been infested by parasites (Dugatkin, FitzGerald, & Lavoie, 1994). Lemurs (Fornasieri & Roeder, 1992), baboons (Harcourt, 1978), and a number of other species (Lancaster, 1986) have all been observed preventing others from joining their social groups or forcing the expulsion of particular individuals.

Chimpanzees provide many examples of social exclusion. Nishida, Hosaka, Nakamura, and Hamai (1995) reported the case of Jiba, a young adult male who chose not to pant-grunt (a signal of subordinate rank) to the dominants in his group. Possibly as a consequence of this behavior, Jiba was attacked by eight members of the troop and expelled, although he eventually returned after a 3-month exile. Goodall (1986) reported a similar case among the chimps at Gombe, in which Evered, a male, was forcibly expelled from his troop by two other males. Also at Gombe were the unfortunate cases of two chimps, Pepe and McGregor, both

stricken with polio. These chimps' awkward behavior, which was attributable to the disease, seemed to frighten other chimps in the group, leading to social isolation and even to violence in the case of McGregor (Goodall, 1986).

Chimpanzee social dynamics can be lethal (Wrangham, 1987). Goodall (1977) reported one incident in which females unfamiliar to the local troop were met with such violence on the part of local males that one of the infants of the foreign females was killed. Within-group conflicts can be just as violent, and occasionally combatants are killed in the process of negotiating status hierarchies (de Waal, 1986, 1992). Finally, some chimpanzees have been observed to patrol the edge of the troop's territory and to attack and kill male chimpanzees from neighboring troops who are found alone (Boehm, 1992; Nishida, Hiraiwa-Hasegawa, Hasegawa, & Takahata, 1985). This kind of behavior is not social exclusion as traditionally understood, but the presence of intergroup competition in these species suggests a strong psychology of discriminate sociality, which we argue lies at the heart of stigma.

These behaviors among nonhuman animals that resemble human social exclusion suggest that similar principles might be at work. Yet these phenomena cannot be explained easily by any of the functional approaches to stigma discussed above. Presumably, sticklebacks do not try to boost their self-esteem by avoiding parasitized others, chimpanzees do not exclude one another to justify a symbolic political structure, and McGregor's assailants did not attack this poor chimp because their social identity was threatened. Of course, different selection pressures shaped the adaptations of different species, and human beings have many adaptations that make them unique. However, these examples illustrate that discriminate sociality is present in many species. We believe that parsimony demands that we consider the possibility that the human psychology of social exclusion might have been molded by selection pressures similar to those that led to the adaptations for the behavior described in these examples.

Evolution and Discriminate Sociality

As pleasant as humans often find interpersonal interactions and relationships, social life has serious negative consequences. As Alexander (1974) put it, "There is no automatic or universal benefit from group living. Indeed, the opposite is true: there are automatic and universal detriments, namely, increased intensity of competition for resources, including mates, and increased likelihood of disease and parasite transmission" (p. 328). Many of the most important advances in evolutionary theory in the last several decades have come from explaining sociality—why members of a species associate with one another, often in surprisingly intricate and complex ways (Alexander, 1974; Axelrod, 1984; Axelrod & Hamilton, 1981; Trivers, 1971, 1972; W. D. Hamilton, 1964; D. S. Wilson, 1975).

With every species, and particularly social ones, conspecifics represent both important potential fitness opportunities as well as potential fitness costs. The opportunities include direct fitness benefits, such as matings or parental investment, as well as less direct benefits through cooperation to achieve mutual goals. Likewise, potential fitness costs can include direct conflict and violence, competition for scarce resources, communication of infectious diseases, and so forth.

Because of the range of individuals with whom one might interact, a critical adaptive problem that members of a social species face is choosing to affiliate with those individuals who are differentially likely to generate fitness benefits and to avoid those who represent potential fitness costs. Furthermore, because social interactions can take many forms, the interactions one selects should depend on the exact nature of the opportunity or danger. Consider, for example, that one's kin can represent both potential fitness gains and potential fitness costs. A woman who engages in a mutually profitable exchange of goods with a brother can reap economic benefits through gains in trade, but a woman who mates with her brother sustains a heavy fitness cost because of the adverse genetic consequences of inbreeding (Westermarck, 1891/1921; Wolf, 1970).

Hence adaptations for sociality need to be extremely specific in terms of selecting both interaction partners and the types of interactions one is willing to have with these partners. This line of reasoning implies that the mind is likely to consist of a set of separate systems designed for different types of sociality. In particular, it has been suggested that human beings have specific adaptations for (a) kin-directed altruism and cooperation (e.g., Daly, Salmon, & Wilson, 1997), (b) reciprocal altruism or social exchange (e.g., Cosmides & Tooby, 1989, 1992), (c) within-group cooperation for tasks such as defense and hunting (e.g., Hawkes, 1993; Tooby & DeVore, 1987); and (d) within-group cooperation for between-group conflict and competition (Alexander, 1979; Tooby & Cosmides, 1988; van den Berghe, 1981; Wrangham, 1987). Together, adaptations designed for these purposes make human beings an extremely social species.

Because humans possess psychological mechanisms that cause them to seek out others for social interactions, adaptations to avoid the concomitant potential pitfalls of sociality have also likely evolved. We argue that the phenomenon of stigma derives at least in part from the following:

1. Dyadic cooperation: A suite of adaptations designed to cause one to avoid interactions with individuals who are poor partners for social exchange, pose a social cost greater than their potential social benefit, or, perhaps, simply fail to meet any of the criteria for being a potentially valuable social interaction partner.

2. Coalitional exploitation: A suite of adaptations designed to cause one to exclude individuals from reaping the benefits of membership in one's group, particularly if it is a locally dominant one, and to exploit excluded individuals.

3. Parasite avoidance: A suite of adaptations designed to prevent prolonged contact with those who are differentially likely to carry communicable pathogens.

The major point is that in order for sociality to be functional, there must be "brakes" on sociality. An organism that chose to socialize in any way with every other creature it encountered would be a strange one indeed and clearly at a selective disadvantage. We should expect therefore that natural selection would fashion constraints and limits on sociality that cause one to direct one's social efforts in productive ways. We suggest that these brakes, a result of the necessity to be discriminating in one's selection of partners for particular kinds of social interactions, might play an important role in generating the stigma phenomenon.

The Limits on Sociality: The Psychology of Exclusion

Dyadic Cooperation

Only a small number of models explain how adaptations designed to deliver fitness benefits to others can evolve: kin selection (Hamilton, 1964), reciprocal altruism (Axelrod & Hamilton, 1981; Trivers, 1971), and group-based models (Boyd & Richerson, 1990, 1992; Hawkes, 1993; Sidanius, 1993; Tooby & Cosmides, 1988; D. S. Wilson, 1975; D. S. Wilson & Sober, 1994). Because the interactions we are considering apply equally to related and unrelated individuals, we omit here a discussion of kin selection (see Dawkins, 1982, for a treatment). As we examine each of these other models in turn, we show that all of them require strict limits on when and with whom one ought to be willing to engage in social interactions. In this section, we discuss two routes to the evolution of cooperation: reciprocal altruism (Trivers, 1971) and mutual engagement (Tooby & Cosmides, 1996). These two paths might have led to adaptations that cause us to seek out individuals who are good potential social exchange partners and friends, respectively, and to avoid, if not stigmatize, those who are not.

To develop our hypothesis that specific adaptations evolved to prevent runaway sociality, we explore the evolution of reciprocal altruism in some detail. In general, adaptations for the costly delivery of benefits to other individuals at a cost to oneself should not be observed because members of a species who choose not to incur these costs will have an advantage over those that do. However, models of the evolution of cooperation have shown that adaptations that are designed to deliver benefits to others can be selected for under certain conditions (Axelrod & Hamilton, 1981; Trivers, 1971). The first of these models, reciprocal altruism, relies on the economic concept of gains in trade.

Consider a species whose members make their living by hunting. When a successful hunt yields more calories than the organism can efficiently use, an unsuccessful (and therefore hungry) hunter will place a much greater value on the surplus from the successful hunter's kill than the hunter himself.² So, if the successful hunter gives the other individual a share of the kill and the other individual returns the favor at a later time when he or she has had a lucky hunt, both are better off. In essence, this arrangement accomplishes what economists refer to as *consumption smoothing*. If one person occasionally and stochastically acquires resources that have a high rate of diminishing returns (such that the second unit of the resource is less valuable than the first unit), he or she can give the second unit of the resource to another individual, knowing (probabilistically, perhaps) that the giver will receive the value of the resource plus a surplus in return in the future. In this way, one's successful hunt can be stored in the form of social obligations on the part of other individuals (Cosmides & Tooby, 1989).

Because the archaeological record indicates that our hominid ancestors hunted large game, human beings might possess systems designed to generate social exchange that takes advantage of the possibility of reaping gains in trade that hunting allows (Cosmides & Tooby, 1992). However, the evolution of reciprocal altruism requires ancillary systems designed to cause individuals to incur the costs of benefit delivery if and only if the beneficiary is likely

² The masculine pronoun is used here only to avoid awkward constructions such as "himself or herself." We beg the reader's indulgence.

to be willing and able to reciprocate in the future. If this were not the case, altruists would have had a short evolutionary history, replaced by opportunists who could take selective advantage of indiscriminate altruism. So, those individuals who accept benefits but do not reciprocate, cheaters, must be excluded from one's trades (Cosmides & Tooby, 1989, 1992). In a similar manner, individuals who are unlikely to be in the position to repay an obligation should also be excluded. In essence, this requires adaptations that exclude those who are not a good store of social value from trading relationships.

Under certain conditions (such as environments in which the benefits of cheating are very high), merely excluding cheaters from subsequent interactions is insufficient to prevent the replacement of reciprocal altruists with cheaters in a population. In this case, stronger measures are required: punishment. Thus, adaptations designed to inflict costs on cheaters can be critical to facilitating the evolution of cooperation (Boyd & Richerson, 1992; Frank, 1988), and the vast literature on retributive justice suggests that this is indeed an important component of human psychology (Hogan & Emler, 1981; Tyler & Smith, 1998).

So, although social exchange allows for individuals to benefit one another, the adaptations that support this behavior come with constraints. This is the first manifestation of social exclusion: The evolution of social exchange requires a concurrent cognitive system designed to detect cheaters and punish them either by excluding them from future reciprocal relationships or more directly by inflicting costs of some kind. Without this system of exclusion, adaptations for social exchange could not have evolved.

A second pathway to adaptations designed for cooperation is suggested by Tooby and Cosmides's (1996) model of psychological engagement, which attempts to account for the phenomenon of friendship. The model starts with the idea that other people possess skills or attributes that make them more or less valuable to you. In the course of pursuing their own goals, these individuals generate externalities, by-products of their acts that have positive or negative effects on your goals. Those individuals who generate positive externalities are more valuable than those who generate negative (or no) externalities. This structure can lead to adaptations that cause people to seek out individuals who generate positive externalities as well as adaptations that cause individuals to cultivate skills that others find valuable and, moreover, are valuable in a way that others cannot duplicate. Thus, this model predicts that individuals should be motivated to display unique skills and abilities, making them better candidates for generating positive externalities and so more likely to be in demand.³

This model suggests that we should expect to find adaptations that cause people to seek out those who are sources of benefits. This situation sets up a feedback loop by which if Individual A comes to value B, then B now has an interest in A by virtue of the fact that A is interested in promoting B's welfare. Tooby and Cosmides (1996) argued that the operation of these adaptations might be responsible for the process of mutual engagement and friendship.

This process is distinct from reciprocal altruism. Whereas the reciprocal altruism model is driven by the evolution of design features to deliver benefits to others at a cost to the self, the engagement model is driven by the fact that individuals who are pursuing their own goals generate collateral effects on others. The fact that someone has a particular skill set and is working toward

a goal that you share benefits you at no additional cost to that individual. In this sense, this route to cooperation leads to valuation not because of the explicit and reciprocal exchange of goods or favors, but because individuals come to value one another (for some empirical work bearing on this distinction, see Clark, Mills, & Corcoran, 1989; Clark, Mills, & Powell, 1986).

Tooby and Cosmides (1996) further proposed that everyone has a restricted number of friendship niches. Because one has a limited amount of time and can associate with only a finite number of people, one must select those with whom one affiliates. According to this view, each selection of a friendship or affiliation constitutes a decision to decline other opportunities for affiliation, should they exist. For the present discussion, the important point is that one should expect adaptations designed to fill these friendship niches wisely.

Together, the restrictions on social exchange and friendship niches suggest some conclusions about how one should go about selecting cooperative partners. In particular, three factors seem to make one a candidate for exclusion from cooperative relationships: (a) unpredictable goals and behavior, (b) a known history of cheating, and (c) evidence of little "capital" in the form of social or economic resources.

Unpredictability. Successful trading requires that both participants be able to assign valuations to particular objects or states of the world and recognize that an opportunity for exchange exists. Furthermore, each person must be able to judge how the other values particular states of the world. In addition, they must be able to signal their intention to exchange and detect the other's intention (after Cosmides & Tooby, 1992). In general, these requirements highlight the fact that cooperation requires sophisticated coordination. In turn, coordination requires the ability to predict the actions of another individual. In the social realm, prediction of others' actions is based on inferences about their intentions (Dennett, 1987). By inferring the beliefs and desires of other individuals, we are able to generate predictions about their likely future behavior.⁴

When is attributing beliefs and desires problematic, inhibiting the computation of intentions? In general, this situation occurs when an individual's behavior violates certain societal norms, one's behavioral schemata, or, more generally, one's expectations. Some of the mentally ill, for example, behave in unpredictable ways (Goffman, 1963; Hayward & Bright, 1997; Jones et al., 1984), and their likely future actions cannot be inferred from the usual cues that signal people's intentions. This fact might explain in part why the mentally ill are often seen as "unpredictable, dangerous, and untrustworthy" (Mehta & Farina, 1997, p. 405).

³ These ideas may sound familiar to psychologists. James (1890/1983) is well known for his comments about the importance of being thought competent at very specific abilities, and both the self-evaluation model (Tesser & Campbell, 1982) and optimal distinctiveness theory (Brewer, 1991) share important conceptual elements with the engagement model.

⁴ See Baron-Cohen (1994, 1995) and Leslie (1987, 1994) for research on the so-called Theory of Mind Mechanism, a hypothesized set of dedicated information-processing devices that use various (often nonverbal) cues emitted by a social partner to judge that individual's beliefs, desires, or intentions.

Indeed, unpredictability has in the past been used in the diagnosis of mental illness (Carson, 1969).

There may be other cases in which inferring intentions is difficult. Those who make obvious fitness errors, behaving in ways that are vastly discrepant from our expectations about fundamental aspects of human behavior, might raise red flags regarding their suitability as relational partners. For example, if individuals prefer mating with others who are not of the "correct" age, sex, or species, these preferences might be so baffling that one might believe that one cannot accurately infer their intentions and predict their behavior. In a similar manner, perceiving others engaging in self-destructive behaviors, such as attempting suicide (Lester, 1996) or failing to avoid disgusting objects (e.g., feces), might have the same effect. Of course, as societal expectations change, certain behaviors may become more or less understandable and "normal," thereby changing what is considered deviant or discrepant (Archer, 1985).

Whereas some norms exist to guard the individual interests of group members (see below), other relatively arbitrary norms of fashion and behavior signal one's understanding of and ability to follow the social conventions in a particular context. Failure to follow these norms indicates either that one is unable to follow them, suggesting a deficiency of some kind, or that one is unwilling to follow them, suggesting a social agenda different from that of other group members. That is, whereas some norm violations might make inferring another's intentions difficult, other violations might afford accurate attributions of beliefs and desires that indicate intentions that are contrary to one's own interests. In the case where intentions are difficult to infer, we predict a desire to avoid the dyadic cooperative relationships discussed above. In the case where a violation implies malevolence, we would predict a different, possibly stronger reaction tied to the perception of how dangerous the individual is.

Poor prospects. Another class of individuals who make poor social exchange partners and poor candidates for occupying friendship niches are those who have little to offer that has the potential to enhance one's well-being. Someone who currently lacks and is unlikely ever to have anything of value to trade is obviously a poor candidate for reciprocal altruism. Given the finite nature of friendship niches, one should not want to spend one's affiliation time with those who have little value to offer in terms of skills or economic and social resources, especially if other options are available (see also Neuberger, Smith, & Asher, 2000).

Individuals with poor prospects might include those who give cues that they are financially poor (Phelan, Link, Moore, & Stueve, 1997), infirm (Susman, 1994), or elderly (e.g., Hill, von Mering, & Guillette, 1995); those with very few social connections (Lau & Gruen, 1992); and so forth. People who are obviously poor are often shunned in affluent societies, and homeless individuals—who clearly lack economic and social capital—are among the most stigmatized (Phelan et al., 1997). Note that this is not a statement about the value of these individuals but rather a claim that certain cues associated with the inability to furnish future social benefits might activate systems that induce one to systematically exclude these individuals from certain types of cooperative interactions.⁵

These arguments suggest that one's reaction to the poor prospect should depend on one's current state. For example, an individual with many open niches might be more likely to include a poor prospect in a new niche. In contrast, as an individual's niches get

more full, a prospective new partner would have to excel on some dimension to be considered a good bet.

Cheaters. Recall from the discussion of social exchange that in order for adaptations for reciprocal altruism to evolve, subsystems must exist that detect cheaters and lead to their exclusion from further interactions (Cosmides, 1989; Cosmides & Tooby, 1992). Cheaters, in this sense, are individuals who take benefits without paying the mutually agreed on cost. In general, those individuals whom one believes have a history of cheating should be excluded from the types of interactions characterized by the social exchange and engagement models.

Perceptions of cheating, whether violations of explicit social exchanges or of the social norms that guide social exchange, might contribute to stigmatization on the basis of what Goffman (1963) referred to as "blemishes of character." Thus, criminals, ex-convicts, con artists, and the like are widely stigmatized and avoided. If it is true that adaptations for desiring punishment exist because of their role in facilitating reciprocal exchange, then perceptions of cheating, unlike the case of poor prospects, should lead to the desire for retributive justice (e.g., Skinner, Berry, Griffith, & Byers, 1995), rather than mere avoidance.

The social exchange model has implications for the role of control in the stigmatization process. In particular, it suggests that a focal issue in attributions of control might be the extent to which the individual is perceived to be acting to obtain benefits, either directly, through the satisfaction of one's wants or needs, such as food (Crandall, 1994, 1995), chemically rewarding substances (Carlisle-Frank, 1991), or sexual appetites (e.g., Whitley, 1990), or indirectly, through the attainment of proximate goals. In contrast, in cases in which there is no benefit to the individual, as in the cases of stigmatizing conditions such as Alzheimer's disease and paraplegia, attributions of control and responsibility are generally not made (Weiner et al., 1988).

Summary. We have suggested that adaptations for cooperation have been shaped by selection pressures associated with the possibility of gains in trade (reciprocal altruism) and the generation of externalities by other people in one's social environment (engagement). Furthermore, we suggested that the quality of a particular individual as a candidate for trading or friendship relationships depends on the perceived likelihood that the person is willing and able to engage in a reciprocal cooperative relationship. This probability, in turn, depends on how well one can infer another's beliefs, desires, and intentions; how likely the other person is to

⁵ Note that perceptions of others' prospects presents something of a paradox: Those who are in relatively poor shape might actually be good candidates for offering aid because one's help is extremely valuable to them, meaning that one is delivering a high marginal benefit for a low marginal cost, optimal conditions for social exchange. One might speculate that up to a point, you should want to help a poor person (which might explain the emotion of pity), but once a certain critical threshold is reached past which the individual is unlikely ever to recover from their plight, one's aid is unlikely to yield returns and further help is wasted effort. This idea might help explain why, for example, stigmatization is positively related to perceptions of seriousness of mental (Norman & Malla, 1983) or physical (Bishop, Alva, Cantu, & Rittiman, 1991; Crandall & Moriarty, 1995; Leary, Rapp, Herbst, Exum, & Feldman, 1998) illnesses (see Tooby & Cosmides, 1996, for a discussion).

cheat in social interactions; and the social and economic prospects of the individual.

In brief, we propose that one important component of stigmatization is the rejection and distancing of oneself from those who fail to qualify as good dyadic cooperators. Furthermore, although we would predict that in general those who are perceived as unpredictable or unable to reciprocate would simply be avoided (the mentally ill, the homeless), we would predict that the desire to inflict sanctions should be restricted to cheaters, those who have taken benefits without paying appropriate costs (e.g., criminals).

Coalitional Exploitation

We move now from considering adaptations for sociality on the small scale of dyadic cooperation and friendship to the broader and perhaps more complex issues of within-group cooperation and between-group competition. Our thesis is relatively straightforward. We argue that there are specific adaptations that are designed to cause individuals to desire to belong to groups (e.g., Baumeister & Leary, 1995; Baumeister & Tice, 1990) and, under certain conditions, to systematically exclude and exploit members of other social groups (Sidanius & Pratto, 1999; Tooby & Cosmides, 1988). From this premise, we argue that certain instances of stigmatization can be understood as cases of out-group discrimination and exploitation.

This view of group psychology contrasts with explanations that suggest that phenomena associated with the social psychology of groups, such as stereotyping (e.g., Hamilton & Sherman, 1994; Hamilton, Stroessner, & Driscoll, 1994) and in-group bias (e.g., Tajfel & Turner, 1986; Turner, Hogg, Oakes, Reicher, & Wetherall, 1987), are byproducts of general cognitive systems for categorization. Although categorization effects undoubtedly occur, more specific cognitive systems are needed to explain the rich and intricate dynamics associated with human group interactions. We similarly reject claims that processes of kin selection and reciprocal altruism are sufficient to explain the human tendency to form competitive groups (e.g., Rushton, 1989; van den Berghe, 1981). Genetic similarity models, which are based on the principles of kin selection, face extreme theoretical difficulties (Dawkins, 1979; Tooby & Cosmides, 1989), and formal game theoretic models that support the evolution of cooperation in two-person interactions (e.g., Axelrod, 1984) do not generalize straightforwardly to interactions among more than two individuals (Boyd & Richerson, 1988).

Instead, we favor the view that human group psychology has been shaped by selective forces beyond those involved in categorization and dyadic cooperation. In broad terms, two types of models explain the evolution of cooperation in groups: those that emphasize within-group cooperation per se (Caporael, Dawes, Orbell, & Van de Kragt, 1989; Boyd & Richerson, 1992; Wilson & Sober, 1994) and those that emphasize within-group cooperation for the purpose of between-group competition (Alexander, 1979; Eibl-Eibesfeldt, 1979; Sidanius & Pratto, 1999; Tooby & Cosmides, 1988; Wrangham, 1987). The first set of models holds that groups composed of cooperators would have had a reproductive advantage compared with groups of noncooperators, whereas the second set suggests that adaptations for within-group cooperation were selected because of their utility in exploiting members of

other groups or, more generally, individuals who were outside of the group.

Evolutionary scenarios that emphasize between-group competition seem more plausible than those that emphasize only within-group cooperation. First, on theoretical grounds, accounts that rely on groups replacing one another without direct conflict rest on group selection models. This article is not the forum to address this extremely contentious division among evolutionary biologists (e.g., Dawkins, 1989; Wilson & Sober, 1994), but this debate raises doubts about models that rely on group selection. Furthermore, proponents of both sides of the debate admit that the conditions under which group selection is an important evolutionary force are quite restrictive. Second, observations of a variety of group-level phenomena provide *prima facie* evidence that group psychology is inherently competitive. Research on group processes consistently shows that considering oneself as a member of a particular group leads to discriminatory, competitive, and, in extreme cases, violent behavior toward the members of other groups (Campbell, 1965; Insko et al., 1987; Rabbie & Horwitz, 1969; Schopler et al., 1993; Sherif, 1966; Sumner, 1906; Tajfel et al., 1971; but see Brewer, 1999).

If the intergroup competition models of the evolution of cooperation are correct, we should expect human sociality, in terms of people's affiliation with groups, to be a double-edged sword. That is, we believe that human beings possess a complex coalitional psychology, a set of domain-specific cognitive systems that are designed to foster cooperation within a group for the purpose of exploiting those who are not part of the group (Tooby & Cosmides, 1988).

Hence, we should expect human beings to be designed to desire to become part of particular groups and value membership in them (Baumeister & Leary, 1995; Baumeister & Tice, 1990; Buss, 1990; Tajfel & Turner, 1986). Furthermore, by virtue of membership in a particular group, especially one that is in a dominant position and able to exploit other individuals, one should be motivated to exclude other individuals from joining one's group, thereby limiting the number of individuals among whom resources need to be divided (Lewin, 1948; Sidanius, 1993).⁶ Most important, membership in a potentially cooperative group should activate a psychology of conflict and exploitation of out-group members—a feature that distinguishes adaptations for coalitional psychology from other cognitive systems. These features seem consistent with findings that out-groups are perceived as competitive (e.g., Fiske & Ruscher, 1993), that people tend to be more competitive in group contexts than when acting alone (e.g., Insko et al., 1987), and, more generally, that intergroup conflict is such a common feature of human affairs cross-culturally and historically (e.g., Campbell, 1965; van den Berghe, 1981).

Thus, like adaptations for social exchange, the psychology of cooperative group interactions is in no way a blank slate of sociality. Indeed, if adaptations for within-group cooperation are designed for between-group competition, then the psychology of

⁶ This motivation might help to explain the origin of ideologies such as the so-called one drop rule—the notion that having even a distant ancestor who was a member of an undesirable group is enough to disqualify one from membership in the locally dominant group (Daniel, 1996; Hirschfeld, 1996).

inclusion and cooperation requires a concurrent psychology of social exclusion and discrimination.

The ideas we are presenting here resemble Sidanius and Pratto's (1999) social dominance theory, which holds that humans naturally form hierarchical groupings, that intergroup conflict is an expression of this tendency, and that hierarchical grouping is an evolved strategy. However, whereas Sidanius suggested that the behavior of those in the lower-ranking, oppressed group can be understood as a subcomponent of a population-level metastrategy, we prefer an account that can be understood at the genic rather than the group level of selection.

We are similarly not endorsing a realistic conflict model that suggests that intergroup relations are necessarily driven by the competition for resources (Bobo, 1983; Campbell, 1965; LeVine & Campbell, 1972; Sherif, 1966; see also Neuberg et al., 2000). Instead, we are suggesting that real conflicts for reproductive resources in the past have led to a psychology that is designed to form groups, exploit members of other groups, and cope with potential exploitation at the hands of members of other groups (Tooby & Cosmides, 1988). So, for example, our view suggests intergroup competition might well be present even when no meaningful resources are at stake, whereas a realistic conflict model would not (Sidanius & Veniegas, 2000).

Within-group cooperators. The success of between-group aggression over evolutionary time no doubt depended on the ability and willingness of a group's members to work together to achieve common goals. For this reason, we should expect that psychological mechanisms exist that cause people to be selective about the groups they join and about the individuals who they allow to join their groups (e.g., Buss, 1990). One wants a group to contain good cooperators: those who are competent, able to advance the interests of the group, and willing to sacrifice their own individual interests in favor of group interests (after Baumeister & Tice, 1990). Thus, people generally want to exclude those who defect against the group, violating the group rules that preserve the interests of individual group members. So those who violate property rights, aggress against group members, fail to share the costs and risks of group membership, and so forth are likely to be targets of exclusion (Buss, 1990; Neuberg et al., 2000). Indeed, punishment or banishment of defectors may be critical for group cooperation to evolve (Boyd & Richerson, 1992).

Exploitation: The stigma of the subordinate group. Whereas exclusion of poor cooperators and those who pose contagion risks is about avoiding particular individuals and interactions to prevent possible fitness losses, group-based stigmatization is fundamentally about reproductive exploitation of the subordinate group and reaping potential fitness gains. In particular, Tooby and Cosmides (1988) argued that adaptations for between-group conflict are designed specifically for the purpose of exploitation of the reproductive females of the subordinate group by the males of dominant groups (a notion that fits well with Sidanius & Pratto's, 1999, ideas about sex differences in intergroup conflict and his Iron Law of Andrarchy; see also Pratto, Sidanius, & Stallworth, 1993; Sidanius & Veniegas, 2000). This argument predicts that one interaction that should not be avoided is matings between the males of dominant groups and the females of subordinate groups. This prediction would not hold for those females who are stigmatized for other reasons, including because they give cues that they carry contagion (see below).

Is there evidence for this phenomenon? Unfortunately, the history of warfare, from the Bible to the Greeks to modern times, is replete with examples of individuals from the victorious group raping or abducting (or both) the women of the losing coalition (Chagnon, 1968; Johnson & Earle, 1987; van den Berghe, 1981; see Bloom, 1995, for additional examples). Modern examples are especially horrific, and hundreds of thousands of women have been raped by invading soldiers during the wars of this century, including World War II and the conflicts in Rwanda, Yugoslavia, and Kuwait.⁷ In stark contrast, when men of a subordinate group engage in sexual relations with a member of the socially dominant group, even if it is consensual, the response from the dominant group members tends to be extremely harsh (Sidanius, 1993; Sidanius, Levin, & Pratto, 1998).

A second way in which the stigmatization process might be distinctive in the context of intergroup aggression is that members of advantaged groups should systematically exclude out-group members from economic and societal benefits. These benefits might include access to resources, the means of attaining resources, and, more generally, the social benefits provided to the members of the dominant group. So, whereas identifying someone as a poor cooperator might activate systems designed to avoid proximity and reciprocal relationships, identifying someone as an out-group member might lead to a broader desire for socioeconomic exclusion (see Sidanius, 1993, for support for this idea).

From a more general standpoint, the stigmatization process that derives from the coalitional psychology described here should operate in the context of individuals who are construed to be members of particular social groups as opposed to merely possessing some personal feature or attribute (Lewin, 1948; Rabbie & Horwitz, 1988), an idea that resonates with Goffman's (1963) notion of a tribal stigma. That is, we should expect the features of intergroup competition to be engaged in cases where a collection of individuals is represented as having mutual interests and interdependence (e.g., Hamilton, Sherman, & Lickel, 1998; Lewin, 1948). This is not to say that coalitional psychology cannot be engaged by the least hint of the possibility of confluence of interests, as the vast literature on minimal groups highlights (Tajfel et al., 1971; Tajfel & Turner, 1979).

Features unique to coalitional psychology. According to our analysis, stigmatization that is based on out-group membership should differ from the stigma of being a poor cooperator (discussed above) and the stigma of being a contagion risk (discussed below).

⁷ The sexual exploitation of the women of the subordinate group by the males of the dominant group is not limited to times of war. In India for example, Untouchables are considered unclean, their very presence, let alone touch, considered polluting and thus to be strenuously avoided. Nonetheless, Indian men of higher castes are willing to have sexual intercourse with Untouchable women, either forcibly (e.g., Kamble, 1982) or consensually. The dread of pollution seems to be set aside when it comes to women's sexuality. Mahar (1972) described an interview with a man of a dominant local caste (the Rajput) who had an Untouchable mistress: "When asked to explain how he reconciled this liaison with his quite orthodox views on polluting powers of Untouchables, the gentleman replied that he felt no qualms as he had never accepted so much as a glass of water from her hands" (p. 18).

The mechanisms underlying coalitional psychology are likely to be deployed when people perceive themselves as members of a meaningful and potentially cooperative group. In contrast, we do not expect that coalitional psychology is activated in the context of other kinds of stigmatizing conditions, such as mental illness, obesity, or physical deformity. This idea might go some of the way to explaining why in-group favoritism is not observed among groups such as the obese (Crandall, 1994) and the mentally ill (Hayward & Bright, 1997) but is observed among low-status groups that constitute a coalition (Brewer & Campbell, 1976). When coalitional psychology is engaged, we expect phenomena such as in-group favoritism and competitiveness.

The cues that someone is a member of a different coalition are likely to be extremely variable. Members of cooperative groups tend to differ in their language, speech patterns, clothing, cultural rituals, and so forth. Any of these features, subject to the vagaries of cultural and historical processes, might lead to the activation of coalitional psychology and the concurrent systems that are designed to exploit and prevent exploitation by members of other groups. (See Sidanius & Pratto, 1999, and their discussion of arbitrary sets. See also Sidanius, Levin, Rabinowitz, & Federico, 1999.) The cues that differentiate the relevant categories in one's social world must be learned through experience over the course of development, and there is evidence of domain-specific cognitive mechanisms designed for exactly this purpose (Hirschfeld, 1994). In modern environments, one cue that is often used is racial variation between groups. In our analysis, racial cues do not differ substantively from other cues, such as language or dress—they are simply one way that people distinguish coalitions, often for the purpose of exploitation.

It should be noted that there are reasons that those at the bottom of a hierarchy might choose to accept their position even to the point of espousing views that work against their interests. It might be the case that the same processes that operate at the level of individuals within a hierarchy operate at the level of group hierarchies. Consider an organism low in the pecking order and the fate of a mutation in this organism that caused it to reject the hierarchy and behave like a high-ranking member. Recall the plight of Jiba the chimp, who declined to show submission and was severely punished for this indiscretion (Nishida et al., 1995). Consider also an experiment by Rohwer (1977) who artificially raised the rank of certain Harris's sparrows by altering their coloration (which signals a bird's ranking) to determine why these birds do not cheat and claim higher ranks. These pretenders were, with only one exception, assaulted by the legitimate upper-echelon birds, suggesting that trying to live above one's station is a risky proposition (see also Dufty, 1989; West, King, & Eastzer, 1981).

These examples illustrate the principle that the function of adaptations that generate status hierarchies is to allow those at the top to enforce their differential consumption of fitness benefits. Low-ranking members who attempt to live outside this context often suffer. A parallel argument might apply to group membership in the context of the intergroup conflict model of the evolution of within-group cooperation. Indeed, historically, many dominant groups have taken extremely harsh measures against members of subordinate groups that were considered "uppity" because they took benefits that the dominant group thought they did not deserve (see Sidanius, Levin, & Pratto, 1998, for examples). The costs of rejecting one's group's hierarchical status (unless and until revolt

is perceived to be possible) might help to explain phenomena such as "false consciousness" (Jost & Banaji, 1994) and the endorsement of "legitimizing myths" by subordinate groups (Sidanius, 1993).

Summary. We have argued that the evolution of adaptations for group-level cooperation generated a coalitional psychology that came with concomitant adaptations for between-group conflict, creating simultaneously a psychology of cooperation and exclusion. The psychology of exclusion was driven both by a selection pressure to incorporate maximally cooperative members into the group as well as a selection pressure to exploit nongroup members. This analysis suggests that members of dominant groups can be expected to exploit excluded individuals opportunistically, with the sexual exploitation of women of subordinate groups by males of dominant groups being particularly likely.

Parasite Avoidance

Whatever the origins of psychological mechanisms that cause members of a social species to spend time in proximity to one another, a critical problem that must be solved is how individual members can avoid or fight off the parasites that are communicated from one host to another (Alexander, 1974; Poulin, 1991; E. O. Wilson, 1980). Although parasites may play a critical role in the evolutionary process (Hamilton, 1980; Tooby, 1982), they have received little attention in terms of their power to drive human psychological adaptations. In recent years, a growing number of researchers have begun to focus on parasites and their effects, particularly in the area of mate selection and human aesthetics (Gangestad & Buss, 1993; Thornhill, 1998; Thornhill & Gangestad, 1993).

Because discussion of parasites is not common in psychology, we begin this section by briefly discussing the problem of parasites, the effects they can have, and how infested organisms can be distinguished from noninfested ones. Next, we discuss some non-human evidence for adaptations designed to minimize the transmission of parasites. Finally, we discuss the possible features of psychological systems designed to cause people to avoid conspecifics who are infested and discuss evidence that lends credence to the proposal that humans have adaptations to avoid parasitized others.

Parasites are essentially small predators. They may take the form of viruses, bacteria, or more complex organisms, such as insects or worms. They move from one host organism to another, using the host's energy to reproduce and eventually colonize other hosts. Because parasites specialize in exploiting the particular biochemical makeup of their hosts, transmission of parasites is most likely between biologically similar organisms. So from the point of view of parasite avoidance, a good strategy is to avoid those who are most similar to oneself, namely conspecifics and members of closely related species. Thus, the threat of communicable pathogens creates a tension between selection pressures for sociality and selection pressures for parasite avoidance.

Parasites can have a number of effects on their hosts, many of which lead to deviations from the organism's normal (healthy) phenotype, with more virulent parasites more likely to lead to more severe deviations (Hamilton & Zuk, 1982; Milinski & Bakker, 1990; Møller, 1990). These deviations come about for three reasons (after Ewald, 1980). First, parasites can cause damage that

disrupts an individual's symmetry; creates marks, lesions, or discoloration of body parts; and causes behavioral anomalies as a consequence of damage to muscles or muscle control systems (Hubschman & Stack, 1992; Møller, 1990; Thornhill, 1992; Thornhill & Gangestad, 1993). Second, the presence of parasites might activate antiparasite systems (e.g., Dugatkin et al., 1994). For example, birds infested with lice court less and groom more than parasite-free ones (Clayton, 1990). Last, some parasites manipulate their hosts in order to increase their spread by inducing coughing, sneezing, the excretion of fluids, and so forth. Because increasing virulence results in faster host mortality and thus less time for the pathogen to spread to a new host, adaptations to manipulate hosts are more likely as virulence increases. A well-known example of host manipulation is the case of the rabies virus, which reduces canines' ability to swallow and increases its probability of biting, which act together to increase the spread of the virus (Ewald, 1980).

Hosts, of course, have antiparasite defense systems, such as physical membranes that present a barrier to a potential parasite, biochemical defenses, or behavioral strategies, such as grooming, preening, and avoiding places where parasites are likely to be (e.g., Clayton, 1990). Another defense is to avoid those individuals in a population who are differentially likely to be carrying parasites. Parasite detection systems can take advantage of the effects that pathogens have on their hosts to use deviation from normal appearance as a cue to parasitic infection. For instance, several species are capable of detecting when other members of their species are parasitized and prefer to mate with those who are not (Clayton, 1990; Hamilton & Zuk, 1982; Møller, 1990; Pomiankowski, 1989), a fact that seems to hold in the case of human mating (Grammer & Thornhill, 1994; Low, 1990; Shackelford & Larsen, 1997). As discussed above, three-spined sticklebacks avoid individuals who are parasitized, even outside the mating context (Dugatkin et al., 1994).

However, parasite detection systems must face the problem that the relationship between parasite infestation and visible cues is not perfect for two reasons. First, there is some variability in the effects parasites have on their hosts (Ewald, 1983, 1995). Second, and more important, every individual deviates from the species-typical design to some extent as a result of factors such as injury or genetic noise. This variability creates a signal detection problem. The cost of a miss—thinking someone who is parasitized is not—can be very high, resulting in debility or death. On the other hand, mistaking imperfections resulting from other causes for parasite infestation is problematic, as too many false positives will exclude a large number of individuals as interaction partners, a large cost in the context of the potential gains through social exchange, friendship, and coalition formation.

What then should antipathogen adaptations look like? First, we should expect human beings to have information-processing systems that are good at detecting correlates of parasite infestation. This fact might have led to the evolution of systems that regard deviations from the local species-typical phenotype to be ugly or unattractive (Symons, 1979) because these deviations were correlated with the danger of parasitic infection (Thornhill & Gangestad, 1993). In this way, many human aesthetic preferences may be systems designed to protect us from harm. As Thornhill (1998) eloquently put it, "Beauty experiences are unconsciously realized avenues to high fitness in human evolutionary history. Ugliness

defines just the reverse" (p. 544). The human capacity for detection of symmetry (e.g., Bruce & Morgan, 1975) and the corresponding aesthetic preference for it (Grammer & Thornhill, 1994) might be important components of this system.

These preferences for features such as symmetry, unblemished skin, and other reliable correlates of health should be reliably developing features of the human psyche. This argument is paralleled by one in the literature on preparedness and phobias, which suggests that humans (and other animals) easily develop fears to cues of fitness threats that were repeatedly present during human evolution, such as snakes and insects (Öhman, Fredrikson, Hugdahl, & Rimmö, 1976; Seligman, 1970, 1971; Siddle, Bond, & Friswell, 1987). Similar to our view of parasite avoidance systems, this view holds that the relative ease with which phobias to certain types of dangers are acquired is due to the existence of domain-specific learning mechanisms designed to keep people away from these dangers. The issue is far from settled (Davey, 1995; Lovibond, Siddle, & Bond, 1993; McNally, 1987), though it is interesting to note that systems designed to fear spiders and other insects are probably also antiparasite adaptations.

A second feature of adaptations to avoid parasitized others would be a desire to avoid physical contact with, or even close proximity to, potentially parasitized individuals. As a corollary, the detection of a diseased individual should cause one to prefer not to engage in tasks that require close physical contact or the possibility of the exchange of bodily fluids.

Third, because of the possible cost of misses, the system should be biased toward false positives (see Haselton & Buss, 2000, for a discussion). This bias might take the form of reacting to relatively scant evidence that someone is infested but requiring much stronger evidence that someone is free from infection.

This view makes a number of predictions. First, it predicts that cues to the presence and severity of disease should correlate with desires to physically distance oneself from and avoid physical interactions and contact with potentially parasitized individuals and anything that has come in contact with that individual (Bishop et al., 1991; Kleck, 1969; Kleck, Ono, & Hastorf, 1966; Mooney, Cohn, & Swift, 1992; Navon, 1996; Stephens & Clark, 1987; Worthington, 1974). Second, it predicts a pattern of errors in judgment consistent with a bias toward false positives as opposed to misses. Seemingly irrational decisions with respect to knowledge that someone is infected with AIDS, or even cancer, might be manifestations of the operation of these hypervigilant systems (e.g., Mooney et al., 1992; Rozin, Markwith, & Nemeroff, 1992; Trinkaus & Chow, 1990). Similar irrational judgments have been observed (a) in the context of participants' unwillingness to ingest food items that resemble potentially hazardous items, even when the participants know the items are perfectly safe and sanitary (Rozin & Fallon, 1987; Rozin, Fallon, & Mandell, 1984), as well as (b) in the context of phobias (Seligman, 1971). Third, it predicts that the etiology of the contamination should be relatively unimportant in mediating individuals' reactions to a diseased other. That is, if an individual is perceived as a contaminant risk, the origin of the contaminant should not influence one's choices about physical interaction (e.g., Sheehan et al., 1989).

The social and physical isolation of individuals who project cues of being diseased has a long history. In the Bible, Moses and Aaron are given extremely specific and detailed instructions with regard to detecting and handling those with various skin disorders

that were placed into the general category of "leprosy." In particular, lepers were to be isolated, and contact with their clothing and so forth was to be avoided. People with skin diseases such as psoriasis are similarly stigmatized today (Fava, Perini, Santonastaso, & Fornasa, 1980; Ginsburg & Link, 1993; Ramsey & O'Reagan, 1988). History and literature provide many other examples of individuals who are systematically excluded or distanced because of deviations from species-typical design in terms of either their bodies or their behaviors (von Hentig, 1948; Winzer, 1997).

An obvious test case for the contagion hypothesis is to consider the stigmatization process in the context of HIV and AIDS, the preeminent contagious disease of the last two decades. There can be little doubt that AIDS carries a significant and harsh social stigma (e.g., Crandall & Coleman, 1992). Indeed, in an eerie reminder of leprosy, Herek and Capitanio (1998) found that more than a third of the respondents in their survey indicated that people with AIDS should not be allowed in society, and many indicated a strong desire to avoid physical interaction with them.

During the 1980s and early 1990s, attitudes toward and stigmatization of people with AIDS were presumed to be in large measure due to its association with moral transgressions, namely drug use and homosexual behavior (Herek & Glunt, 1988; Katz et al., 1987; Pryor, Reeder, Vinacco, & Kott, 1989; Sheehan et al., 1989; Sontag, 1989). A great deal of evidence certainly accumulated that attitudes toward homosexuality played an important role in attitudes toward people with AIDS (Herek, 1990; Pryor, Reeder, & McManus, 1991; Pryor et al., 1989).

However, this "symbolic" view of attitudes toward people with AIDS has been challenged. Results of experiments by Crandall (1991) and Fish and Rye (1991) suggested that the stigma of homosexuality leads to a desire for symbolic social distance, whereas the stigma of AIDS leads to a distinct desire for physical distance. Similar results were obtained by Bishop et al. (1991), who found that "willingness to interact with a disease victim was strongly related to the contagiousness of the disease but only weakly related to its association with homosexuality" (p. 1877; see also Pullium, 1993). These results resonate with findings that people try to put physical distance between themselves and AIDS patients but not homosexuals (Mooney et al., 1992).

More recently, Crandall, Glor, and Britt (1997) generated data that further call into question the symbolic aspects of the people with AIDS stigma. One of the most interesting findings is that attitudes toward homosexuality correlate with rejection of amputees as well as people with AIDS, suggesting that people who hold negative attitudes toward gay men and lesbians may have a lower threshold for disease avoidance, a possibility alluded to by Bishop et al. (1991). Other data indicated that desire for social distance was predicted by instrumental concerns, leading to the conclusion that, in contrast to stigmatizing conditions that constitute symbolic threats, "the more important threat with respect to AIDS in particular is the instrumental threat of contagion, sickness, and mortality associated with the illness" (Crandall et al., 1997, p. 115). These findings are supported by data from Herek and Capitanio (1998) that suggest that people's strategies for avoiding people with AIDS are correlated with their beliefs about contagiousness.

We are not suggesting that homosexuals are not stigmatized on the basis of symbolic and social factors. Rather, we are suggesting that many behavioral reactions to AIDS (and other diseases) can be

understood as the result of adaptations designed for parasite and disease avoidance. Homosexuals might be stigmatized for other reasons, discussed above.

In summary, we have proposed that there are domain-specific cognitive systems designed to detect the correlates of parasite infestation and guide the individual away from physical interactions with potential contagion risks. Cues to parasite infestation include deviations from the species-typical design in terms of physical appearance and movement. Parasite detection systems might be biased toward false positives because of the high potential costs of misses.

Universal Psychology, Specific Design

The Consensual Nature of Stigma

As we noted at the outset, stigmas are consensually defined. Not only do the members of a particular group mostly agree regarding who is and is not stigmatized, but they can typically articulate this shared belief. As Crocker et al. (1998) noted, most existing theories of stigma do not easily explain its consensual nature. The evolutionary approach, however, helps to show not only why members of a particular group tend to agree regarding who ought to be stigmatized, but also why many stigmas manifest themselves in most, if not all, cultures.

First, to the extent that members of a particular group (or even an entire society) share certain goals and beliefs, they will tend to agree regarding the kinds of individuals who are to be avoided because they are poor exchange partners, friends, members of cooperative groups, or health risks. Of course, a great deal of socialization is involved in the cultural transmission of stigmas, particularly with regard to the acquisition of social group markings (Hirschfeld, 1996), but socialization is assisted by the existence of adaptations designed to help the individual avoid certain kinds of interaction partners.

Second, some "marks" evoke stigmatization in virtually all cultures. People with highly disfiguring and unsightly diseases are universally shunned and have been throughout history (Winzer, 1997). Cheaters, those who take benefits without paying the appropriate costs, have similarly been subject to censure, from the biblical commandment barring theft to the modern cross-cultural ubiquity of exchange relationships and moral intuitions concerning the punishment of defectors in the context of both dyadic and group-level defection. Last, the exploitation of the out-group by the dominant in-group has, unfortunately, been a part of social dynamics for as long as records have been kept of human interactions (e.g., Bloom, 1995). These universals in stigmatization are easily explained by an evolutionary approach.

We wish to stress that the evolutionary view should not be construed to suggest that stigmatization is genetically determined or inevitable. The difference between our view and that of other researchers does not lie in the idea that cognitive mechanisms are biological or innate; for example, theories based on self-esteem must, in the end, be rooted in innate motivations or, at minimum, innate knowledge acquisition structures. Rather, our proposal is that the systems that underpin stigmatization are domain-specific and designed to solve particular adaptive problems, in contrast to more domain-general accounts of stigma's origins.

Furthermore, the claim that these mechanisms are domain-specific is not a claim about how easy or hard changing behavior

is going to be. Parents help contagious children, superordinate goals unify rival groups, and political institutions emerge to enforce egalitarian ideals. Any given cognitive system's operation is subject to the countervailing forces of other mechanisms. Of course, some systems might be more easily deactivated than others, but it is our belief that understanding the design of each cognitive system is a critical step in discovering how to effect change.

Distinguishing Among Stigmas

The approach we advocate here suggests that different stigmatizing conditions will engage distinct affective and cognitive systems, which will in turn lead to the deployment of different behavioral strategies that should differ in important ways. That is, the form of exclusion a stigmatized individual suffers should depend on the stigmatized category into which he or she falls. We present here a very brief discussion of some predictions regarding possible affective and behavioral responses to the different categories of stigma derived from our model as well as a discussion regarding the different roles for variables that might mediate the severity of stigmatization in the different cases.

From the standpoint of evolutionary psychology, emotions can be considered to be the differential activation of cognitive systems designed to guide the organism to adaptive behavior (Tooby & Cosmides, 1990), and we suspect that the three different stigmatizing conditions discussed here evoke three of the small number of so-called basic emotions (Ekman, 1992). In the case of the stigma associated with coalition membership, because this system is designed for intergroup competition, we expect these stigmas (race, nationality, and so forth) to evoke fear (see Stephan & Stephan, 1985) and probably its concomitant, hate. In contrast, we expect that defectors in the context of dyadic, or group-level, cooperation should elicit anger, an emotion designed to motivate punishment (see Weiner, Amirkhan, Folkes, & Verette, 1987). Finally, we expect cues to being parasitized to evoke disgust, in order to cause the individual to avoid the potential contagion. Given what is known about these emotions, including the distinct physiological responses they evoke (Levenson, Ekman, & Friesen, 1990), it might be possible to distinguish and categorize stigmas on the basis of these effects (see also Neuberg et al., 2000).

The reason for having different systems for solving the different problems associated with social exclusion is that the "correct" (adaptive) behavioral response depends on the reason for exclusion. So it follows that the behavioral reactions elicited by others should depend on the reason for the stigmatization of another individual. Although there are likely to be a large number of differences in the ways that behavior varies as a function of the type of stigmatizing condition, we mention three particularly relevant ones here: avoidance, punishment, and exploitation. We suspect that there are many contexts, economic, political, and social, in which systematic differences can be found. We look forward to explorations in these areas.

Physical distancing is critical in the context of parasite avoidance, and we expect people to try physically to stay away from those who deviate from the normal human species-typical morphology. Of course, we would expect individuals to have concerns for their safety in the presence of known murderers or a large number of individuals perceived to be a part of a rival coalition,

but we would not expect proximity per se to be the issue. People seem willing to come into close contact for antagonistic purposes in the context of rival coalitions or for sexual contact in the case of males from the dominant group with respect to females from the subordinate group.

The desire for physical distancing or avoidance arising from disgust differs from the more active desires to ostracize or inflict harm, which characterize the other two stigmatizing conditions. In particular, adaptations associated with social exchange must include the motivation to refuse to deal with or punish those who violate social contracts or the norms that protect group members' interests (Boyd & Richerson, 1992). The desire for ostracism and punishment should be restricted largely to cases of a violation of a contract or rule, rather than simple unsuitability as an interaction partner. However, this motivation is clearly strong, and people routinely endure costs to punish those who are perceived to have violated a social contract even when they do not expect an interaction to continue (Bolton & Zwick, 1995).

Beyond avoidance, ostracism, and punishment lies exploitation—not merely imposing costs on others, but extracting benefits from them. We expect this kind of behavior to be particularly associated with coalitional stigmas. Groups of various sorts have extracted labor from subordinate groups, and, as discussed above, although our model predicts that someone stigmatized because of cues to parasitic infection is unlikely to be attractive as a sex partner (see Meyerson, 1948, for some relevant data), we expect that females of rival coalitions will be considered viable sexual partners, either consensually or coerced. From a more general standpoint, we expect exploitation to be characteristic of intergroup relations across many economic and political contexts. We do not think it is an accident that social groups that fit with our conception of coalitions have been specifically barred from economic and political opportunities over the course of history.

Our analysis also points to differing roles for mediating variables depending on the reason for the stigmatizing condition. First, we would expect that control is particularly relevant in the context of dyadic cooperation (Weiner et al., 1987) but considerably less so in the context of the other stigmatizing conditions. Note that this is a claim about the role that control plays in any one individual's stigmatizing of others. Our model makes no predictions and, in fact, is silent on individual differences in the extent to which different people place differential weight on the importance of control (Crandall et al., 1997; Katz & Hass, 1988).

Second, we would predict that visibility will play a causal role in the severity of the stigmatization process in cases in which antiparasite adaptations are activated. We do not predict that visibility will make much of a difference in the other cases except insofar as one has insufficient information to place someone in the relevant category (i.e., it is not known that someone is a thief, murderer, and so forth). As noted earlier, other stigmatizing conditions can cause people to force others to advertise their stigmatized status so that it cannot be concealed.

Third, we predict that disruptiveness will have a causal role particularly in the case of those for whom beliefs and desires are difficult to compute, as with some of the mentally ill. Along these lines, Jones et al. (1984) suggested that "disruptiveness is related to the degree to which the mental patient's behavior is unpredictable and deviates from what is expected" (p. 47; see also Lemert, 1951; Phillips, 1964; Yamamoto & Dizney, 1967). For the other

stigmatizing conditions, we believe that disruption of the interaction is an effect of the stigmatization that derives from one of the other systems.

An important mediating variable that we have not discussed in this analysis is peril, or danger. We agree that peril or danger is likely to apply in the context of many stigmatizing conditions, but we believe that it is important to distinguish *why* others are considered dangerous and how people make these judgments. The nature of the danger is clearly important: One's response to a dangerous other is going to differ if one is facing someone who gives cues that he or she is contagious compared with someone who obviously has hostile intentions. In this sense, the role of danger depends on the reason for stigmatization, and, similarly, the factors influencing perceptions of dangerousness will depend on the type of stigmatizing condition.

Not all of these predictions are unique, but what distinguishes the evolutionary view from others is that stigmatizing conditions are not treated in unitary fashion. Thus, the most important prediction of the model is that different phenomena should be consistently associated with conditions that fall into each category. Other models, such as those based on self-esteem, for example, do not obviously yield predictions that differ from one stigmatizing condition to another. The typology presented here should also hold for stigmatizing conditions across cultures, which provides another avenue by which different components of the model can be tested. Historical or cross-cultural examples in which these predictions are contradicted would constitute serious challenges to the model proposed here.

Sex and Obesity

Before concluding, we would like to acknowledge that our discussion has ignored two conditions that have received a great deal of attention: the stigma of being female (e.g., Deaux & LaFrance, 1998) and the stigma of obesity (Crandall, 1994; Crocker et al., 1993; Miller et al., 1995; Quinn & Crocker, 1998; Rush, 1998). This omission is not because we consider these issues unimportant, but rather because we feel that "stigma" is a misnomer in the case of being female, and because obesity does not fit neatly within our classification scheme.

Males and females represent different potential fitness costs and benefits to members of each sex. As a result, we should expect distinct adaptations for social relations with men versus women (e.g., Darwin, 1871). Heterosexual mate preference is the most obvious example of this distinction, but more generally, psychological systems are likely to be tailored to manage interactions differently with males and females in a number of contexts. These differences in cognitive mechanisms might lead to systematic and relatively stable differences in how males and females are treated in any given society, but we do not feel that these differences, as undesirable as they may be, reflect stigmatization as we have conceptualized it. That is, gender is rarely consensually regarded as a characteristic that should lead to interpersonal disassociation but is, of course, a characteristic that leads to systematic differences in interpersonal interactions. We do not take it to be the role of a theory of stigma (at least in the way we have defined it) to account for these differences.

We acknowledge that it is a weakness of our model that it does not account easily for the intense stigmatization suffered by the

obese. For the moment, we remain agnostic on how best to classify the stigma of being overweight within the context of the scheme proposed here. At minimum, it seems unlikely that the obesity stigma is tied to coalitional psychology. We look forward to further theoretical refinements in this area.

Conclusion

The general thrust of the arguments advanced here is that the process of stigmatization revolves around the exclusion of particular individuals from certain types of social interactions. In this analysis, we have largely ignored the psychological states of the person being stigmatized, including his or her attributions, self-esteem, attitudes, and achievement outcomes, all of which have played prominent roles in stigma research. We have similarly neglected the threats that stigmatized individuals face and the strategies that they use to cope with these threats. (Readers who are interested in a comprehensive review of the literature regarding the consequences of stigmatization are referred to Crocker et al., 1998.) We will not try to redress this omission because it would take us far from our primary focus. Instead, we consider here briefly how the evolutionary approach fits in with the extant stigma research.

Our evolutionary analysis of stigma is an attempt to specify the ultimate level selection pressures that might have faced human beings during the course of evolution. We have been less explicit about the design of the mechanisms that natural selection produced to solve these problems, but we believe that identifying the selection pressures represents a critical first step. We have tried to give a flavor of the information in the environment to which we would expect psychological systems to be sensitive (such as cues to parasitic infestation) and the decision rules that might be deployed in response to these cues. However, a complete description of the design features of these systems and the ways in which they interact represents a formidable task, requiring more intense consideration of each specific selection pressure and empirical work to determine the nature of the systems designed to solve the problems of sociality.

With some few exceptions, psychologists investigating the nature of social exclusion have been indifferent to ultimate or evolutionary considerations. Sidanius (1993) is an exception, but his reliance on group selection to bridge the gap between the ultimate and proximate levels is unsatisfying because group selection processes are likely to be extremely constrained in the conditions that allow for their operation. Other exceptions include those interested in questions of mating, where decisions to mate with one individual preclude the possibility for mating with another, at least temporarily (e.g., Buss, 1994; Kenrick, Groth, Trost, & Sadalla, 1993; Kenrick & Keefe, 1992), and certain discussions of people's need to avoid social exclusion (Baumeister & Leary, 1995; Leary & Downs, 1995).

Although evolution is likely to fashion mechanisms that are specifically suited to solving a particular problem, various systems operate in the same organism, requiring the simultaneous activation and deactivation of systems in dynamic fashion. Consider the tension between mechanisms designed to deliver benefits to kin and systems designed to avoid parasites. It is clear that human beings deliver succor to ill relatives, and the willingness to do so is probably mediated by decision rules that take into account

genetic distance and probability of contagion in a complex manner. As Crocker et al. (1998) discussed in detail, stigmatization often involves considerable ambivalence on the part of the stigmatizer. As they noted, this ambivalence may arise when people hold competing values, such as when one's egalitarian belief that all people are equal conflicts with one's negative attitudes toward members of a particular group. Our analysis raises the possibility that this ambivalence occurs because of two competing adaptations (as in the case of dealing with diseased relatives). Additional empirical work will be required to discover how tensions among competing systems are resolved.

Another complication emerges because of the human capacity for metaphor (Lakoff, 1980; Lakoff & Johnson, 1980). In a certain sense, metaphor blurs distinctions that one might otherwise see in a modular, domain-specific system (e.g., Mithin, 1996) and clouds our analysis to some extent. So, for example, there seems to be a relatively deep connection between the psychology of contagion and moral impurity (Haidt, Rozin, McCauley, & Imada, 1997; Rozin, Lowery, & Ebert, 1994), eroding the line between parasite stigmas and social exchange stigmas. In some cases, those perceived guilty of a moral violation (a social exchange stigma) are construed as tainted or diseased in some way (Rozin, 1990).⁸ We see the task of dissecting the representational systems that underlie stigmatization and the links among them as a potentially interesting and important direction for future research.

From an empirical standpoint, the arguments advanced here make some practical suggestions. In particular, additional measures of social distancing are required to fully assess the multifaceted nature of stigmatization. Although we acknowledge that self-esteem and performance variables can be informative, eliciting preferences for the kinds of interactions that people prefer to avoid might prove to be enlightening. In addition, care should be taken to investigate a breadth of stigmatizing conditions so that differences and similarities in the reactions they evoke can be clarified and systematized.

⁸ There are, however, clearly limits to the behavioral implications of metaphor, as indicated, for example, by the willingness of males of the dominant Indian culture to engage in sexual relations with Untouchables, believed to be ultimately defiling and polluting.

References

- Abrams, D., & Hogg, M. A. (1988). Comments on the motivational status of self-esteem in social identity and intergroup discrimination. *European Journal of Social Psychology, 18*, 317-334.
- Albrecht, G. L., Walker, V. G., & Levy, J. A. (1982). Social distance from the stigmatized. *Social Science and Medicine, 16*, 1319-1327.
- Alexander, R. D. (1974). The evolution of social behavior. *Annual Review of Ecology and Systematics, 5*, 325-383.
- Alexander, R. D. (1979). *Darwinism and human affairs*. Seattle: University of Washington Press.
- Archer, C. (1985). Social deviance. In G. Lindzey & E. Aronson (Eds.), *Handbook of social psychology* (Vol. 2, 3rd ed., pp. 743-804). New York: Random House.
- Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.
- Axelrod, R., & Hamilton, W. D. (1981). The evolution of cooperation. *Science, 211*, 1390-1396.
- Baron-Cohen, S. (1994). How to build a baby that can read minds: Cognitive mechanisms in mindreading. *Cahiers de Psychologie, 13*, 513-552.
- Baron-Cohen, S. (1995). *Mindblindness: An essay on autism and theory of mind*. Cambridge, MA: MIT Press.
- Baron-Cohen, S., & Bolton, P. (1993). *Autism: The facts*. Oxford, England: Oxford University Press.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.
- Baumeister, R. F., & Tice, D. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology, 9*, 165-195.
- Bennett, M. J. (1990). Stigmatization: Experiences of persons with acquired immune deficiency syndrome. *Issues in Mental Health Nursing, 11*, 141-154.
- Bishop, G. D., Alva, A. L., Cantu, L., & Rittiman, T. K. (1991). Responses to persons with AIDS: Fear of contagion or stigma? *Journal of Applied Social Psychology, 21*, 1877-1888.
- Bloom, H. (1995). *The Lucifer principle*. New York: Atlantic Monthly Press.
- Bloom, J. R., & Kessler, L. (1994). Emotional support following cancer: A test of the stigma and social activity hypotheses. *Journal of Health and Social Behavior, 35*, 118-133.
- Boehm, C. (1986). Capital punishment in tribal Montenegro: Implications for law, biology, and theory of social control. *Ethology and Sociobiology, 7*, 305-320.
- Boehm, C. (1992). Segmentary "warfare" and the management of conflict: Comparison of East African chimpanzees and patrilineal-patrilocal humans. In A. H. Harcourt & F. B. M. de Waal (Eds.), *Coalitions and alliances in humans and other animals* (pp. 137-173). Oxford, England: Oxford University Press.
- Bobo, L. (1983). Whites' opposition to busing: Symbolic racism or realistic group conflict? *Journal of Personality and Social Psychology, 45*, 1196-1210.
- Bolton, G. E., & Zwick, R. (1995). Anonymity versus punishment in ultimatum bargaining. *Games and Economic Behavior, 10*, 95-121.
- Boyd, R., & Richerson, P. J. (1988). The evolution of reciprocity in sizable groups. *Journal of Theoretical Biology, 132*, 337-356.
- Boyd, R., & Richerson, P. J. (1990). Group selection among alternative evolutionarily stable strategies. *Journal of Theoretical Biology, 145*, 331-342.
- Boyd, R., & Richerson, P. J. (1992). Punishment allows the evolution of cooperation (or anything else) in sizable groups. *Ethology and Sociobiology, 13*, 171-195.
- Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin, 17*, 475-482.
- Brewer, M. B. (1999). The psychology of prejudice: Ingroup love or outgroup hate? *Journal of Social Issues, 55*, 429-444.
- Brewer, M. B., & Campbell, D. T. (1976). *Ethnocentrism and intergroup attitudes: East African evidence*. New York: Halsted/Wiley.
- Brown, D. E. (1991). *Human universals*. Philadelphia: Temple University Press.
- Bruce, V. G., & Morgan, M. J. (1975). Violations of symmetry and repetition in visual patterns. *Perception, 4*, 239-249.
- Buss, D. M. (1990). The evolution of anxiety and social exclusion. *Journal of Social and Clinical Psychology, 9*, 196-201.
- Buss, D. M. (1994). *The evolution of desire: Strategies of human mating*. New York: Basic Books.
- Cahnman, W. (1968). The stigma of obesity. *Sociological Quarterly, 9*, 283-299.
- Campbell, D. T. (1965). Ethnocentric and other altruistic motives. In D. Levine (Ed.), *Nebraska Symposium on Motivation* (pp. 283-311). Lincoln: University of Nebraska Press.
- Caporael, L. R., & Baron, R. M. (1997). Groups as the mind's natural

- environment. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 317–344). Hillsdale, NJ: Erlbaum.
- Caporael, L. R., & Brewer, M. B. (1991). Reviving evolutionary psychology: Biology meets society. *Journal of Social Issues*, 47, 187–195.
- Caporael, L. R., & Brewer, M. B. (1995). Hierarchical evolutionary theory: There is an alternative, and it's not creationism. *Psychological Inquiry*, 6, 31–34.
- Caporael, L. R., Dawes, R. M., Orbell, J. M., & Van de Kragt, A. J. (1989). Selfishness examined: Cooperation in the absence of egoistic incentives. *Behavioral and Brain Sciences*, 12, 683–739.
- Carlisle-Frank, P. (1991). Examining personal control beliefs as a mediating variable in the health-damaging behavior of substance use: An alternative approach. *Journal of Psychology*, 125, 381–397.
- Carson, R. C. (1969). *Interaction concepts of personality*. Chicago: Aldine.
- Chagnon, N. A. (1968). *Yanomamo: The fierce people*. New York: Holt, Rinehart, & Winston.
- Cialdini, R. B., & Richardson, K. D. (1980). Two indirect tactics of image management: Basking and blasting. *Journal of Personality and Social Psychology*, 39, 406–415.
- Clark, M. S., Mills, J., & Corcoran, D. M. (1989). Keeping track of needs and inputs of friends and strangers. *Personality and Social Psychology Bulletin*, 15, 533–542.
- Clark, M. S., Mills, J., & Powell, M. C. (1986). Keeping track of needs in communal and exchange relationships. *Journal of Personality and Social Psychology*, 51, 333–338.
- Clayton, D. (1990). Mate choice in experimentally parasitized rock doves: Lousy males lose. *American Zoology*, 30, 251–262.
- Cosmides, L. (1989). The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task. *Cognition*, 31, 187–276.
- Cosmides, L., & Tooby, J. (1987). From evolution to behavior: Evolutionary psychology as the missing link. In J. Dupre (Ed.), *The latest on the best: Essays on evolution and optimality* (pp. 276–306). Cambridge, MA: MIT Press.
- Cosmides, L., & Tooby, J. (1989). Evolutionary psychology and the generation of culture, Part II. Case study: A computational theory of social exchange. *Ethology and Sociobiology*, 10, 51–97.
- Cosmides, L., & Tooby, J. (1992). Cognitive adaptations for social exchange. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 163–228). New York: Oxford University Press.
- Cosmides, L., & Tooby, J. (1994). Origins of domain specificity: The evolution of functional organization. In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 85–116). New York: Cambridge University Press.
- Crandall, C. (1991). AIDS-related stigma and the lay sense of justice. *Contemporary Social Psychology*, 15, 66–67.
- Crandall, C. S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology*, 66, 882–894.
- Crandall, C. S. (1995). Do parents discriminate against their heavyweight daughters? *Personality and Social Psychology Bulletin*, 21, 724–735.
- Crandall, C., & Biernat, M. (1990). The ideology of anti-fat attitudes. *Journal of Applied Social Psychology*, 20, 227–243.
- Crandall, C., & Coleman, R. (1992). AIDS-related stigmatization and the disruption of social relationships. *Journal of Social and Personal Relationships*, 9, 163–177.
- Crandall, C. S., Glor, J., & Britt, T. W. (1997). AIDS-related stigmatization: Instrumental and symbolic attitudes. *Journal of Applied Social Psychology*, 27, 95–123.
- Crandall, C. S., & Moriarty, D. (1995). Physical illness stigma and social rejection. *British Journal of Social Psychology*, 34, 67–83.
- Crocker, J., Cornwell, B., & Major, B. (1993). The stigma of overweight: Affective consequences of attributional ambiguity. *Journal of Personality and Social Psychology*, 64, 60–70.
- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, 96, 608–630.
- Crocker, J., Major, B., & Steele, C. (1998). Social stigma. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, 4th ed., pp. 504–553). Boston, MA: McGraw-Hill.
- Crocker, J., & Quinn, D. (1998). Racism and self-esteem. In J. L. Eberhardt & S. T. Fiske (Eds.), *Confronting racism: The problem and the response* (pp. 169–187). Thousand Oaks, CA: Sage.
- Crocker, J., Thompson, L. L., McGraw, K. M., & Ingerman, C. (1987). Downward comparison, prejudice, and evaluations of others: Effects of self-esteem and threat. *Journal of Personality and Social Psychology*, 52, 907–916.
- Crocker, J., Voelkl, K., Testa, M., & Major, B. (1991). Social stigma: The affective consequences of attributional ambiguity. *Journal of Personality and Social Psychology*, 60, 218–228.
- Daly, M., Salmon, C., & Wilson, M. (1997). Kinship: The conceptual hole in psychological studies of social cognition and close relationships. In J. A. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 265–296). Hillsdale, NJ: Erlbaum.
- Daniel, G. R. (1996). Black and White identity in the new millennium: Unsevering the ties that bind. In M. P. P. Root (Ed.), *The multiracial experience: Racial borders as the new frontier* (pp. 121–139). Thousand Oaks, CA: Sage.
- Darwin, C. (1859). *On the origin of species*. London: Murray.
- Darwin, C. (1871). *The descent of man and selection in relation to sex*. London: Murray.
- Davey, G. C. L. (1995). Preparedness and phobias: Specific evolved associations or a generalized expectancy bias? *Behavioral and Brain Sciences*, 18, 289–325.
- Dawes, R. M. (1994). *House of cards: Psychology and psychotherapy build on myth*. New York: Free Press.
- Dawkins, R. (1976). *The selfish gene*. New York: Oxford University Press.
- Dawkins, R. (1979). Twelve misunderstandings of kin selection. *Zeitschrift für Tierpsychologie*, 51, 184–200.
- Dawkins, R. (1982). *The extended phenotype*. San Francisco: W. H. Freeman.
- Dawkins, R. (1989). *The selfish gene* (2nd ed.). New York: Oxford University Press.
- Deaux, K., & LaFrance, M. (1998). Gender. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, 4th ed., pp. 788–827). Boston, MA: McGraw-Hill.
- DeJong, W. (1980). The stigma of obesity: The consequences of naive assumptions concerning the causes of physical deviance. *Journal of Health & Social Behavior*, 21, 75–87.
- Dennett, D. C. (1987). *The intentional stance*. Cambridge, MA: MIT Press.
- Devine, P. G., Evett, S. R., & Vasquez-Suson, K. A. (1986). Exploring the interpersonal dynamics of intergroup contact. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: The interpersonal context* (Vol. 3, pp. 423–464). New York: Guilford Press.
- de Waal, F. B. M. (1986). The brutal elimination of a rival among captive male chimpanzees. *Ethology and Sociobiology*, 7, 237–251.
- de Waal, F. B. M. (1992). Coalitions as part of reciprocal relations in the Arnhem chimpanzee colony. In A. H. Harcourt & F. B. de Waal (Eds.), *Coalitions and alliances in humans and other animals* (pp. 233–257). Oxford: Oxford University Press.
- Dufty, A. M. (1989). Testosterone and survival: A cost of aggressiveness? *Hormones and Behavior*, 23, 185–193.
- Dugatkin, L. A., FitzGerald, G. J., & Lavoie, J. (1994). Juvenile 3-spined sticklebacks avoid parasitized conspecifics. *Environmental Biology of Fishes*, 39, 215–218.
- Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology*, 46, 735–754.

- Eibl-Eibesfeldt, I. (1979). *The biology of peace and war: Men, animals, and aggression*. New York: Viking Press.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6, 169–200.
- Elliott, G. C., Ziegler, H. L., Altman, B. M., & Scott, D. R. (1982). Understanding stigma: Dimensions of deviance and coping. *Deviant Behavior*, 3, 275–300.
- Ewald, P. W. (1980). Evolutionary biology and the treatment of signs and symptoms of infectious disease. *Journal of Theoretical Biology*, 86, 169–176.
- Ewald, P. W. (1983). Host–parasite relations, vectors, and the evolution of disease severity. *Annual Review of Ecology and Systematics*, 14, 465–485.
- Ewald, P. W. (1995). The evolution of virulence—A unifying link between parasitology and ecology. *Journal of Parasitology*, 81, 659–669.
- Farina, A., & Ring, K. (1965). The influence of perceived mental illness on interpersonal relations. *Journal of Abnormal Psychology*, 70, 47–51.
- Fava, G. A., Perini, G. I., Santonastaso, P., & Fornasa, C. V. (1980). Life events and psychosocial distress in dermatological disorders: Psoriasis, chronic urticaria, and fungal infections. *British Journal of Medical Psychology*, 53, 277–282.
- Fein, S., & Spencer, S. J. (1997). Prejudice as self-image maintenance: Affirming the self through derogating others. *Journal of Personality and Social Psychology*, 73, 31–44.
- Fish, T., & Rye, B. (1991). Attitudes toward a homosexual or heterosexual person with AIDS. *Journal of Applied Social Psychology*, 21, 651–667.
- Fiske, S., & Ruscher, J. (1993). Negative interdependence and prejudice: Whence the affect? In D. Mackie & D. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 239–268). San Diego: Academic Press.
- Fornasieri, I., & Roeder, J. (1992). Marking behaviour in two lemur species (*L. fulvus* and *L. macaco*): Relation to social status, reproduction, aggression, and environmental change. *Folia Primatologica*, 59, 137–148.
- Frable, D. E. S. (1993). Dimensions of marginality: Distinctions among those who are different. *Personal and Social Psychology Bulletin*, 19(4), 370–380.
- Frable, D., Blackstone, T., & Scherbaum, C. (1990). Marginal and mindful: Deviants in social interaction. *Journal of Personality and Social Psychology*, 59, 140–149.
- Frank, R. (1988). *Passions within reason: The strategic role of the emotions*. New York: Norton.
- Gangestad, S. W., & Buss, D. M. (1993). Pathogen prevalence and human mate preferences. *Ethology and Sociobiology*, 14, 89–96.
- Gigerenzer, G. (1997). The modularity of social intelligence. In A. Whiten & R. W. Byrne (Eds.), *Machiavellian intelligence II: Extensions and evaluations* (pp. 264–288). Cambridge, England: Cambridge University Press.
- Ginsburg, I. H., & Link, B. G. (1993). Psychosocial consequences of rejection and stigma feelings in psoriasis patients. *International Journal of Dermatology*, 32, 587–591.
- Goffman, I. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice Hall.
- Goodall, J. (1977). Infant-killing and cannibalism in free-living chimpanzees. *Folia Primatologica*, 28, 259–282.
- Goodall, J. (1986). Social rejection, exclusion, and shunning among the Gombe chimpanzees. *Ethology and Sociobiology*, 7, 227–236.
- Grammer, K., & Thornhill, R. (1994). Human (*Homo sapiens*) facial attractiveness and sexual selection: The role of symmetry and averageness. *Journal of Comparative Psychology*, 108, 233–242.
- Gruter, M., & Masters, R. (1986). Ostracism as a social and biological phenomenon: An introduction. *Ethology and Sociobiology*, 7, 149–158.
- Haidt, J., Rozin, P., McCauley, C., & Imada, S. (1997). Body, psyche, and culture: The relationship between disgust and morality. *Psychology and Developing Societies*, 9, 107–131.
- Hamilton, D. L., & Sherman, S. J. (1994). Stereotypes. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 2, 2nd ed., pp. 1–68). Hillsdale, NJ: Erlbaum.
- Hamilton, D. L., Sherman, S. J., & Lickel, B. (1998). Perceiving social groups: The importance of the entitativity continuum. In C. Sedikides & J. Schopler (Eds.), *Intergroup cognition and intergroup behavior* (pp. 47–74). Hillsdale, NJ: Erlbaum.
- Hamilton, D. L., Stroessner, S., & Driscoll, D. (1994). In P. Devine & D. Hamilton, (Eds.), *Social cognition: Impact on social psychology* (pp. 291–321). San Diego: Academic Press.
- Hamilton, W. D. (1964). The genetical evolution of social behavior. *Journal of Theoretical Biology*, 7, 1–52.
- Hamilton, W. D. (1980). Sex versus non-sex versus parasite. *Oikos*, 35, 282–290.
- Hamilton, W. D., & Zuk, M. (1982). Heritable true fitness and bright birds: A role for parasites? *Science*, 218, 384–387.
- Harcourt, A. H. (1978). Strategies of emigration and transfer by primates, with particular reference to gorillas. *Zeitschrift für Tierpsychologie*, 48, 401–420.
- Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology*, 78, 81–91.
- Hawkes, K. (1993). Why hunter–gatherers work: An ancient version of the problem of public goods. *Current Anthropology*, 34, 341–361.
- Hayward, P., & Bright, J. (1997). Stigma and mental illness: A review and critique. *Journal of Mental Health*, 6, 345–354.
- Herek, G. M. (1990). Illness, stigma, and AIDS. In P. T. Costa, Jr., & G. R. VandenBos (Eds.), *Psychological aspects of serious illness: Chronic conditions, fatal diseases, and clinical care* (pp. 103–150). Washington, DC: American Psychological Association.
- Herek, G. M., & Capitano, J. P. (1998). Symbolic prejudice or fear of infection? A functional analysis of AIDS-related stigma among heterosexual adults. *Basic and Applied Social Psychology*, 20, 230–241.
- Herek, G. M., & Glunt, E. (1988). An epidemic of stigma: Public reactions to AIDS. *American Psychologist*, 43, 886–891.
- Hill, R. F., von Mering, O., & Guillelte, E. A. (1995). Adolescence and old age: I. Terminal, problem cultures in American society. *Educational Gerontology*, 21, 275–283.
- Hirschfeld, L. A. (1994). Is the acquisition of social categories based on domain-specific competence or knowledge transfer? In L. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp. 201–233). New York: Cambridge University Press.
- Hirschfeld, L. A. (1996). *Race in the making: Cognition, culture, and the child's construction of human kinds*. Cambridge, MA: MIT Press.
- Hoffman, C., & Hurst, N. (1990). Gender stereotypes: Perception or rationalization? *Journal of Personality and Social Psychology*, 58, 197–208.
- Hogan, R., & Emler, N. P. (1981). Retributive justice. In M. J. Lerner & S. C. Lerner (Eds.), *The justice motive in social behavior* (pp. 125–144). New York: Academic Press.
- Hogg, M. A., & Abrams, D. (1990). Social motivation, self-esteem and social identity. In D. Abrams & M. A. Hogg (Eds.), *Social identity theory: Constructive and critical advances* (pp. 28–47). New York: Springer.
- Hogg, M. A., & Sunderland, J. (1991). Self-esteem and intergroup discrimination in the minimal group paradigm. *British Journal of Social Psychology*, 30, 51–62.
- Hogg, M. A., & Turner, J. C. (1987). Intergroup behavior, self-stereotyping and the salience of social categories. *British Journal of Social Psychology*, 26, 325–340.
- Hubschman, J. H., & Stack, M. A. (1992). Parasite-induced changes in

- chironomus decorus* (Diptera: Chironomidae). *Journal of Parasitology*, 78, 872–875.
- Humphrey, N. K. (1976). The social function of intellect. In P. P. G. Bareson & R. A. Hinde (Eds.), *Growing points in ethology* (pp. 303–317). Cambridge, England: Cambridge University Press.
- Ickes, W. (1984). Compositions in black and white: Determinants of interaction in interracial dyads. *Journal of Personality and Social Psychology*, 47, 330–341.
- Insko, C. A., Pinkley, R. L., Harring, K., Holton, B., Hong, G., Krams, D. S., Hoyle, R. H., & Thibaut, J. (1987). Minimal conditions for real groups: Mere categorization or competitive between category behavior. *Representative Research in Social Psychology*, 17, 5–36.
- James, W. (1983). *The principles of psychology*. Cambridge, MA: Harvard University Press. (Original work published 1890)
- Johnson, A. W., & Earle, T. (1987). *The evolution of human societies: From foraging group to agrarian state*. Stanford, CA: Stanford University Press.
- Jones, E. E., Farina, A., Hastorf, A. H., Markus, H., Miller, D. T., & Scott, R. A. (1984). *Social stigma: The psychology of marked relationships*. New York: Freeman.
- Jost, J. T., & Banaji, M. R. (1994). The role of stereotyping in system-justification and the production of false consciousness. *British Journal of Social Psychology*, 33, 1–27.
- Kamble, N. D. (1982). *The scheduled castes*. New Delhi, India: Ashish Publishing House.
- Katz, I., & Hass, G. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology*, 55, 893–905.
- Katz, I., Hass, G., Parisi, N., Astone, J., McEvaddy, D., & Lucido, D. (1987). Lay people and health care personnels' perceptions of cancer, AIDS, cardiac and diabetic patients. *Psychological Reports*, 60, 615–629.
- Kenrick, D. T., Groth, G. E., Trost, M. R., & Sadalla, E. K. (1993). Integrating evolutionary and social exchange perspectives on relationships: Effects of gender, self-appraisal, and involvement level on mate selection criteria. *Journal of Personality and Social Psychology*, 64, 951–969.
- Kenrick, D. T., & Keefe, R. C. (1992). Age preferences in mates reflect sex differences in human reproductive strategies. *Behavioral and Brain Sciences*, 15, 75–133.
- Kleck, R. E. (1969). Physical stigma and task-oriented interaction. *Human Relations*, 22, 53–60.
- Kleck, R. E., Ono, H., & Hastorf, A. (1966). The effects of physical deviance upon face-to-face interaction. *Human Relations*, 19, 425–436.
- Kleck, R. E., & Strenta, A. (1980). Perceptions of the impact of negatively valued physical characteristics on social interaction. *Journal of Personality and Social Psychology*, 39, 861–873.
- Lakoff, G. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Lakoff, G., & Johnson, M. (1980). The metaphorical structure of the human conceptual system. *Cognitive Science*, 4, 195–208.
- Lancaster, J. (1986). Primate social behavior and ostracism. *Ethology and Sociobiology*, 7, 215–225.
- Lau, S., & Gruen, G. E. (1992). The social stigma of loneliness: Effect of target person's and perceiver's sex. *Personality and Social Psychology Bulletin*, 18, 182–189.
- Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In M. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 123–144). New York: Plenum Press.
- Leary, M. R., Rapp, S. R., Herbst, K. C., Exum, M. L., & Feldman, S. R. (1998). Interpersonal concerns and psychological difficulties of psoriasis patients: Effects of disease severity and fear of negative evaluation. *Health Psychology*, 17, 530–536.
- Leary, M. R., & Schreindorfer, L. S. (1998). The stigmatization of HIV and AIDS: Rubbing salt in the wound. In V. J. Derlega & A. P. Barbee (Eds.), *HIV and social interaction* (pp. 12–29). Thousand Oaks, CA: Sage.
- Lemert, E. M. (1951). *Social pathology*. New York: McGraw Hill.
- Lemyre, L., & Smith, P. M. (1985). Intergroup discrimination and self-esteem in the minimal group paradigm. *Journal of Personality and Social Psychology*, 49, 660–670.
- Leslie, A. M. (1987). Pretence and representation: The origins of "theory of mind." *Psychological Review*, 94, 412–426.
- Leslie, A. M. (1994). Pretending and believing: Issues in the theory of mind. *Cognition*, 50, 211–238.
- Lester, D. (1996). An attributional analysis of suicide. *Journal of Social Psychology*, 136, 399–400.
- Levenson, R. W., Ekman, P., & Friesen, W. V. (1990). Voluntary facial action generates emotion-specific autonomic nervous system activity. *Psychophysiology*, 27, 363–384.
- LeVine, R., & Campbell, D. (1972). *Ethnocentrism: Theories of conflict, ethnic attitudes, and group behavior*. New York: Wiley.
- Lewin, K. (1948). *Resolving social conflicts: Selected papers on group dynamics*. New York: Harper & Row.
- Long, K. M., & Spears, R. (1997). The self-esteem hypothesis revisited: Opposing effects of personal and collective levels of esteem on intergroup differentiation. In R. Spears, P. Oakes, N. Ellemers, & S. A. Haslam (Eds.), *The social psychology of stereotyping and group life* (pp. 296–317). Oxford, England: Blackwell.
- Lovibond, P. F., Siddle, D. A., & Bond, N. W. (1993). Resistance to extinction of fear-relevant stimuli: Preparedness or selective sensitization? *Journal of Experimental Psychology: General*, 122, 449–461.
- Low, B. (1990). Marriage systems and pathogen stress in human societies. *American Zoology*, 30, 325–339.
- Mahar, J. M. (1972). Agents of Dharma in a north Indian village. In J. M. Mahar (Ed.), *The Untouchables in contemporary India* (pp. 17–35). Tucson: University of Arizona Press.
- Major, B., & Schmader, T. (1998). Coping with stigma through psychological disengagement. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 219–241). San Diego: Academic Press.
- McNally, R. J. (1987). Preparedness and phobias: A review. *Psychological Bulletin*, 101, 283–303.
- Mehta, S., & Farina, A. (1997). Is being "sick" really better? Effect of the disease view of mental disorder on stigma. *Journal of Social and Clinical Psychology*, 16, 405–419.
- Meyerson, L. (1948). Physical disability as a social psychological problem. *Journal of Social Issues*, 4, 2–10.
- Milinski, M., & Bakker, T. C. M. (1990). Female sticklebacks use male coloration in mate choice and hence avoid parasitized males. *Nature*, 344, 330–333.
- Miller, C. T., Rothblum, E. D., Felicio, D., & Brand, P. (1995). Compensating for stigma: Obese and nonobese women's reactions to being visible. *Personality and Social Psychology Bulletin*, 21, 1093–1106.
- Mithin, S. J. (1996). *The prehistory of the mind: The cognitive origins of art, religion and science*. London: Thames & Hudson.
- Møller, A. P. (1990). Parasites and sexual selection: Current studies of the Hamilton and Zuk hypothesis. *Journal of Evolutionary Biology*, 3, 319–328.
- Mooney, K. M., Cohn, E. S., & Swift, M. B. (1992). Physical distance and AIDS: Too close for comfort? *Journal of Applied Social Psychology*, 22, 1442–1452.
- Navon, L. (1996). Cultural notions versus social actions: The case of the socio-cultural history of leprosy in Thailand. *Social Analysis*, 40, 95–119.
- Neuberg, S. L., Smith, D. M., & Asher, T. (2000). Why people stigmatize: Toward a biocultural framework. In T. F. Heatherton, R. E. Kleck, M. R.

- Hebl, & J. G. Hull (Eds.), *The social psychology of stigma* (pp. 31–61). New York: Guilford Press.
- Nishida, T., Hiraiwa-Hasegawa, M., Hasegawa, T., & Takahata, Y. (1985). Group extinction and female transfer in wild chimpanzees in the Mahale National Park, Tanzania. *Zeitschrift für Tierpsychologie*, *67*, 284–301.
- Nishida, T., Hosaka, K., Nakamura, M., & Hamai, M. (1995). A within-group gang attack on a young adult male chimpanzee: Ostracism of an ill-manner member? *Primates*, *36*, 207–211.
- Norman, R. M., & Malla, A. K. (1983). Adolescents' attitudes towards mental illness: Relationship between components and sex differences. *Social Psychiatry*, *18*, 45–50.
- Oakes, P. J., & Turner, J. C. (1980). Social categorization and intergroup behaviour: Does minimal intergroup discrimination make social identity more positive? *European Journal of Social Psychology*, *10*, 295–301.
- Öhman, A., Fredrikson, M., Hugdahl, K., & Rimmö, P. (1976). The premise of equipotentiality in human classical conditioning: Conditioned electrodermal responses to potentially phobic stimuli. *Journal of Experimental Psychology: General*, *105*, 313–337.
- Orians, G. H., & Heerwagen, J. H. (1992). Evolved responses to landscapes. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 555–579). New York: Oxford University Press.
- Phelan, J., Link, B., Moore, R., & Stueve, A. (1997). The stigma of homelessness: The impact of the label "homeless" on attitudes toward poor persons. *Social Psychology Quarterly*, *60*, 323–337.
- Phillips, D. L. (1964). Rejection of the mentally ill. *American Sociological Review*, *29*, 679–687.
- Pomiankoski, A. (1989). Choosing parasite-free mates. *Nature*, *338*, 115–116.
- Poulin, R. (1991). Group-living and infestation by ectoparasites in passerines. *The Condor*, *93*, 418–423.
- Pratto, F., Sidanius, J., & Stallworth, L. M. (1993). Sexual selection and the sexual and ethnic basis of social hierarchy. In L. Ellis (Ed.), *Social stratification and socioeconomic inequality: A comparative biosocial analysis* (pp. 111–137). Westport, CT: Praeger.
- Pryor, J., Reeder, G., & McManus, J. (1991). Fear and loathing in the workplace: Reactions to AIDS-infected co-workers. *Personality and Social Psychology Bulletin*, *17*, 133–139.
- Pryor, J. B., Reeder, G. D., Vinacco, R., Jr., & Kott, T. L. (1989). The instrumental and symbolic functions of attitudes toward persons with AIDS. *Journal of Applied Social Psychology*, *19*, 377–404.
- Pullium, R. M. (1993). Reactions to AIDS patients as a function of attributions about controllability and promiscuity. *Social Behavior and Personality*, *21*, 297–302.
- Quinn, D. M., & Crocker, J. (1998). Vulnerability to the affective consequences of the stigma of overweight. In J. K. Swim & C. Stangor (Eds.), *Prejudice: The target's perspective* (pp. 125–143). San Diego: Academic Press.
- Rabbie, J., & Horwitz, M. (1969). Arousal of ingroup–outgroup bias by a chance win or loss. *Journal of Personality and Social Psychology*, *13*, 269–277.
- Rabbie, J. M., & Horwitz, M. (1988). Categories versus groups as explanatory concepts in intergroup relations. *European Journal of Social Psychology*, *18*, 117–123.
- Ramsey, B., & O'Reagan, M. (1988). A survey of the social and psychological effects of psoriasis. *British Journal of Dermatology*, *118*, 195–201.
- Rodin, E., Shapiro, H., & Lennox, K. (1977). Epilepsy and life performance. *Rehabilitation Literature*, *38*, 34–39.
- Rodin, M., Price, J., Sanchez, F., & McElligot, S. (1989). Derogation, exclusion, and unfair treatment of persons with social flaws: Controllability of stigma and the attribution of prejudice. *Personality and Social Psychology Bulletin*, *15*, 439–451.
- Rohwer, S. (1977). Status signaling in Harris sparrows: Some experiments in deception. *Behaviour*, *61*, 107–129.
- Rozin, P. (1990). Social and moral aspects of food and eating. In I. Rock (Ed.), *The legacy of Solomon Asch: Essays in cognition and social psychology* (pp. 97–110). Hillsdale, NJ: Erlbaum.
- Rozin, P., & Fallon, A. E. (1987). A perspective on disgust. *Psychological Review*, *94*, 23–41.
- Rozin, P., Fallon, A. E., & Mandell, R. (1984). Family resemblance in attitudes to foods. *Developmental Psychology*, *20*, 309–314.
- Rozin, P., Lowery, L., & Ebert, R. (1994). Varieties of disgust faces and the structure of disgust. *Journal of Personality and Social Psychology*, *66*, 870–881.
- Rozin, P., Markwith, M., & Nemeroff, C. (1992). Magical contagion beliefs and fear of AIDS. *Journal of Applied Social Psychology*, *22*, 1081–1092.
- Rubin, M., & Hewstone, M. (1998). Social identity theory's self-esteem hypothesis: A review and some suggestions for clarification. *Personality and Social Psychology Review*, *2*, 40–62.
- Rush, L. (1998). Affective reactions to multiple social stigmas. *The Journal of Social Psychology*, *138*, 421–430.
- Rushton, J. P. (1989). Genetic similarity, human altruism, and group selection. *Behavioral and Brain Sciences*, *12*, 503–559.
- Schopler, J., Insko, C. A., Graetz, K. A., Drigotas, S., Smith, V. A., & Dahl, K. (1993). Individual–group discontinuity: Further evidence for mediation by fear and greed. *Personality and Social Psychology Bulletin*, *19*, 419–431.
- Seligman, M. E. P. (1970). On the generality of the laws of learning. *Psychological Review*, *77*, 406–418.
- Seligman, M. E. P. (1971). Phobias and preparedness. *Behavior Therapy*, *2*, 307–320.
- Shackelford, T. K., & Larsen, R. J. (1997). Facial asymmetry as an indicator of psychological, emotional, and physiological distress. *Journal of Personality and Social Psychology*, *72*, 456–466.
- Shears, L., & Jensema, C. (1969). Social acceptability of anomalous persons. *Exceptional Children*, *36*, 91–96.
- Sheehan, E. P., Lennon, R., & McDevitt, T. (1989). Reactions to AIDS and other illnesses: Reported interactions in the workplace. *Journal of Psychology*, *123*, 525–536.
- Sherif, M. (1966). *Group conflict and co-operation: Their social psychology*. London: Routledge & Kegan Paul.
- Sidanius, J. (1993). The psychology of group conflict and the dynamics of oppression: A social dominance perspective. In S. Iyengar & W. McGuire (Eds.), *Explorations in political psychology* (pp. 183–219). Durham, NC: Duke University Press.
- Sidanius, J., Levin, S., & Pratto, F. (1998). Hierarchical group relations, institutional terror, and the dynamics of the criminal justice system. In J. Eberhardt & S. T. Fiske (Eds.), *Confronting racism: The problem and the response* (pp. 136–165). Thousand Oaks, CA: Sage.
- Sidanius, J., Levin, S., Rabinowitz, J. L., & Federico, C. M. (1999). Peering into the jaws of the beast: The integrative dynamics of social identity, symbolic racism, and social dominance. In D. A. Prentice & D. T. Miller (Eds.), *Cultural divides: Understanding and overcoming group conflict* (pp. 80–132). New York: Sage.
- Sidanius, S., & Pratto, F. (1993). The inevitability of oppression and the dynamics of social dominance. In P. M. Sniderman & P. Tetlock (Eds.), *Prejudice, politics, and the American dilemma* (pp. 173–211). Stanford, CA: Stanford University Press.
- Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. New York: Cambridge University Press.
- Sidanius, J., & Veniegas, R. C. (2000). Gender and race discrimination: The interactive nature of disadvantage. In S. Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 47–69). Mahwah, NJ: Erlbaum.
- Siddle, D. A., Bond, N. W., & Friswell, R. (1987). Effects of stimulus content on second-order electrodermal conditioning in humans. *Psychophysiology*, *24*, 439–448.

- Sigelman, C. K., & Singleton, L. C. (1986). Stigmatization in childhood: A survey of developmental trends and issues. In S. Ainlay, G. Becker, & L. Coleman (Eds.), *The dilemma of difference: A multidisciplinary view of stigma* (pp. 185–208). New York: Plenum.
- Singh, D. (1993). Adaptive significance of female physical attractiveness: Role of waist-to-hip ratio. *Journal of Personality and Social Psychology*, *65*, 293–307.
- Singh, D., & Young, R. K. (1995). Body weight, waist-to-hip ratio, breasts, and hips: Role in judgments of female attractiveness and desirability for relationships. *Ethology and Sociobiology*, *16*, 483–507.
- Skinner, L. J., Berry, K. K., Griffith, S. E., & Byers, B. (1995). Generalizability and specificity of the stigma label: A reconsideration twenty-five years later. *Journal of Community Psychology*, *23*, 3–17.
- Sontag, S. (1989). *AIDS and its metaphors*. New York: Farrar, Straus, & Giroux.
- Stahly, G. (1988). Psychosocial aspects of the stigma of cancer: An overview. *Journal of Psychosocial Oncology*, *6*, 3–27.
- Steele, C. M., & Aronson, J. (1995). Stereotype vulnerability and the intellectual test performance of African-Americans. *Journal of Personality and Social Psychology*, *69*, 797–811.
- Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues*, *41*, 157–175.
- Stephens, K. K., & Clark, D. W. (1987). A pilot study on the effect of visible physical stigma on personal space. *Journal of Applied Rehabilitation Counseling*, *18*, 52–54.
- Sumner, W. G. (1906). *Folkways*. New York: Ginn.
- Susman, J. (1994). Disability, stigma and deviance. *Social Science and Medicine*, *38*, 15–22.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Symons, D. (1987). If we're all Darwinians, what's the fuss about? In C. B. Crawford, M. F. Smith, & D. L. Krebs (Eds.), *Sociobiology and psychology* (pp. 121–146). Hillsdale, NJ: Erlbaum.
- Symons, D. (1989). A critique of Darwinian anthropology. *Ethology and Sociobiology*, *10*, 131–144.
- Symons, D. (1992). On the use and misuse of Darwinism in the study of human behavior. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 137–159). New York: Oxford University Press.
- Symons, D. (1995). Beauty is in the adaptations of the beholder: The evolutionary psychology of human female sexual attractiveness. In P. R. Abramson & S. D. Pinkerton (Eds.), *Sexual nature, sexual culture* (pp. 80–118). Chicago: University of Chicago Press.
- Tajfel, H., Billig, M., Bundy, R., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, *1*, 49–178.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–48). Pacific Grove, CA: Brooks/Cole.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. Austin (Eds.), *Psychology of intergroup relations* (2nd ed., pp. 7–24). Chicago: Nelson-Hall.
- Tesser, A. (1988). Toward a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181–227). San Diego, CA: Academic Press.
- Tesser, A., & Campbell, J. (1982). A self-evaluation maintenance approach to school behavior. *Educational Psychologist*, *17*, 1–12.
- Thornhill, R. (1992). Fluctuating asymmetry and the mating system of the Japanese scorpionfly, *Paorpa japonica*. *Animal Behavior*, *44*, 867–879.
- Thornhill, R. (1998). Darwinian aesthetics. In C. Crawford & D. L. Krebs (Eds.), *Handbook of evolutionary psychology: Ideas, issues, and applications* (pp. 543–572). Hillsdale, NJ: Erlbaum.
- Thornhill, R., & Gangestad, S. W. (1993). Human facial beauty: Average-ness, symmetry, and parasite resistance. *Human Nature*, *4*, 237–269.
- Tooby, J. (1982). Pathogens, polymorphism and the evolution of sex. *Journal of Theoretical Biology*, *97*, 557–576.
- Tooby, J., & Cosmides, L. (1988). *The evolution of war and its cognitive foundations* (Institute for Evolutionary Studies Tech. Rep. No. 88-1). Palo Alto, CA: Institute for Evolutionary Studies.
- Tooby, J., & Cosmides, L. (1989). Kin selection, genic selection, and information-dependent strategies. *Behavioral and Brain Sciences*, *12*, 542–544.
- Tooby, J., & Cosmides, L. (1990). The past explains the present: Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, *11*, 375–424.
- Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind* (pp. 19–136). New York: Oxford University Press.
- Tooby, J., & Cosmides, L. (1996). Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. *Proceedings of the British Academy*, *88*, 119–143.
- Tooby, J., & DeVore, I. (1987). The reconstruction of hominid evolution through strategic modeling. In W. G. Kinzey (Ed.), *The evolution of human behavior: Primate models* (pp. 183–237). Albany, NY: SUNY Press.
- Trinkhaus, J., & Chow, M. B. (1990). Misgivings about AIDS transmission: An informal look. *Psychological Reports*, *66*, 810.
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, *46*, 35–57.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871–1971* (pp. 136–179). Chicago: Aldine.
- Turner, J. C. (1982). Towards a cognitive redefinition of the social group. In H. Tajfel (Ed.), *Social identity and intergroup relations* (pp. 15–40). Cambridge, England: Cambridge University Press.
- Turner, J. C., Hogg, M. A., Oakes, O. J., Reicher, S. D., & Wetherell, M. S. (1987). *Rediscovering the social group: A self-categorization theory*. Oxford, England: Blackwell.
- Tyler, T. R., & Smith, H. J. (1998). Social justice and social movements. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 2, 4th ed., pp. 595–629). Boston: McGraw-Hill.
- van den Berghe, P. L. (1981). *The ethnic phenomenon*. New York: Elsevier.
- von Hentig, H. (1948). Physical disability, mental conflict and social crisis. *Journal of Social Issues*, *4*, 21–27.
- Weiner, B., Amir Khan, J., Folkes, V. S., & Verette, J. A. (1987). An attributional analysis of excuse giving: Studies of a naive theory of emotion. *Journal of Personality and Social Psychology*, *52*, 316–324.
- Weiner, B., Perry, R. P., & Mangnusson, J. (1988). An attributional analysis of reactions to stigma. *Journal of Personality and Social Psychology*, *55*, 738–748.
- Weitz, R. (1990). Living with the stigma of AIDS. *Qualitative Sociology*, *13*, 23–38.
- West, M. J., King, A. P., & Eastzer, D. H. (1981). Validating the female bioassay of cowbird song: Relating differences in song potency to mating success. *Animal Behaviour*, *29*, 490–501.
- Westermarck, E. (1921). *The history of human marriage*. New York: Macmillan. (Original work published 1891)
- Whiten, A., & Byrne, R. W. (1988). *Machiavellian intelligence: Social expertise and the evolution of intellect in monkeys, apes, and humans*. Oxford, England: Clarendon Press.
- Whiten, A., & Byrne, R. W. (1997). *Machiavellian intelligence II: Extensions and evaluations*. Cambridge, England: Cambridge University Press.
- Whitley, B. E. (1990). The relationship of heterosexuals' attributions for the causes of homosexuality to attitudes towards lesbians and gay men. *Personality and Social Psychology Bulletin*, *16*, 369–377.
- Williams, G. C. (1966). *Adaptation and natural selection: A critique of*

- some current evolutionary thought*. Princeton, NJ: Princeton University Press.
- Williams, K. D. (1997). Social ostracism. In R. M. Kowalski (Ed.), *Aversive interpersonal behaviors* (pp. 133–170). New York: Plenum Press.
- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin*, *90*, 245–271.
- Wilson, D. S. (1975). A general theory of group selection. *Proceedings of the National Academy of Sciences*, *72*, 143–146.
- Wilson, D. S., & Sober, E. (1994). Re-introducing group selection to the human behavioral sciences. *Behavioral and Brain Sciences*, *17*, 585–654.
- Wilson, E. O. (1980). *Sociobiology: The abridged edition*. Cambridge, MA: Belknap Press.
- Winzer, M. A. (1997). Disability and society before the eighteenth century. In L. J. Davis (Ed.), *The disability studies reader* (pp. 75–109). New York: Routledge.
- Wolf, A. P. (1970). Childhood association and sexual attraction: A further test of the Westermarck hypothesis. *American Anthropologist*, *72*, 503–515.
- Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin*, *106*, 231–248.
- Word, C. D., Zanna, M. P., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology*, *10*, 109–120.
- Worthington, M. E. (1974). Personal space as a function of the stigma effect. *Environment and Behavior*, *6*, 289–294.
- Wortman, C. B., & Dunkel-Schetter, C. (1979). Interpersonal relationships and cancer: A theoretical analysis. *Journal of Social Issues*, *35*, 120–155.
- Wrangham, R. W. (1987). The significance of African apes for reconstructing human social evolution. In W. G. Kinzey (Ed.), *The evolution of human behavior: Primate models* (pp. 51–71). Albany, NY: SUNY Press.
- Yamamoto, K., & Dizney, H. F. (1967). Rejection of the mentally ill: A study of attitudes of student teachers. *Journal of Counseling Psychology*, *14*, 264–268.
- Zippelius, R. (1986). Exclusion and shunning as legal and social sanctions. *Ethology and Sociobiology*, *7*, 159–166.

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Correction to Kuncel, Hezlett, and Ones (2001)

Because of a problem in the transmittal of information, the following changes were not incorporated into the printed version of “A Comprehensive Meta-Analysis of the Predictive Validity of the Graduate Record Examinations: Implications for Graduate Student Selection and Performance,” by Nathan R. Kuncel, Sarah A. Hezlett, and Deniz S. Ones (*Psychological Bulletin*, 2001, Vol. 127, No. 1, pp. 162–181).

On p. 163, it is stated in two places, the second and third complete paragraphs in the left column, that Goldberg and Alliger (1992) meta-analyzed 10 studies. Their study meta-analyzed 27 studies.

On p. 168, it is stated in the fifth complete paragraph that the sample sizes for GRE-V and GRE-Q were 46,615 and 46,618; the sample sizes were 45,615 and 45,618, respectively.

On p. 169, Table 2, Footnote c should read “All study comprehensive exam scores are from the social sciences.”

On p. 172, the sample size for the correlation between year and correlation magnitude for GRE-Q was 1,231.

On p. 173, “(high school grades)” in the fourth paragraph in the left column should read “(college grades).”

On p. 173, it is stated in the last paragraph of the left column, “. . . corrected correlations within the matrix should be positive . . .”; it should read “. . . corrected correlations within the matrix should generalize . . .”

On p. 173, in the last paragraph in the right column, “This provides indirect evidence that compensatory . . .” should read, “. . . This provides indirect evidence that differential compensatory . . .”
