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THE EVOLUTION OF ANXIETY AND SOCIAL EXCLUSION

DAVID M. BUSS
University of Michigan

To support the hypothesis that anxiety is a species-typical adaptation to prevent social exclusion, several facts about group living must be explicated: (1) groups provide unusual concentrations of *particular social resources*, some of which aid survival (e.g., protection from nonspecific aggressors) but many of which aid *reproduction* (e.g., pool of potential mates); (2) it is not groups in general that people want to be members of but *particular groups* such as kin groups, those that have power, and those that are similar to oneself; (3) the events that lead to group exclusion (e.g., mate poaching, stealing, cheating, murder) are particular and nonarbitrary, and they typically decrease the reproductive success of particular group members who instigate exclusion; and (4) in addition to reproductive benefits, group living carries costs—an intensification of conflict and competition. Discussion focuses on the standards that must be met before considering anxiety a species-typical adaptation to prevent social exclusion.

Baumeister and Tice (this issue) postulate that anxiety, deriving from a basic human need to belong to groups, is a species-typical adaptation to real or potential social exclusion. Linked to this hypothesis are auxiliary premises about the functions of group living and the functions of anxiety. The postulated link to adaptation is with regard to survival—that group living facilitates survival by offering cooperation with difficult tasks, sharing of survival-related resources, and protection against danger. Anxiety about real or prospective social exclusion is hypothesized to prevent committing acts that might lead to exclusion. Anxiety is also hypothesized to cause an organism to reassess (and hence presumably change) its ongoing course of action. To increase the precision and test-

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ability of this hypothesized adaptation, several facts about group living should be recognized (cf. Nesse, 1990).

GROUPS CONTAIN CONCENTRATIONS OF PARTICULAR REPRODUCTIVE RESOURCES

Although group living undoubtedly aided survival, it is important to recognize that modern evolutionary theory is not centrally about survival. Evolution occurs by differential *reproductive* success, not differential survival success. Characteristics that are positively correlated with reproductive success over evolutionary time evolve by natural selection. It is true, of course, that survival is typically needed for reproductive success, and many adaptations (e.g., fears of snakes, heights, darkness, spiders) facilitate survival. But many adaptations that also impair survival have evolved because they increased reproductive success. The brilliant plumage of peacocks, for example, is energetically costly and increases risks of predation (Trivers, 1985), but it appears to have evolved because it increased male reproductive success by attracting peahens. In humans, many forms of male risk-taking behavior clearly impair survival but apparently evolved because they have led in the past to success at reproductive competition (Wilson & Daly, 1985). The bottom line of evolution by natural selection is differential reproduction. Characteristics can evolve to facilitate survival only inasmuch as they ultimately facilitate, or are needed for, reproductive success.

The structure of modern evolutionary theory forces us to ask: What are the reproductive resources contained in groups? Three obvious reproductive resources are (1) unusual concentrations of potential mates, (2) individuals who share one's genes (e.g., parents, children, siblings, cousins) and toward whom altruism can be directed, and (3) non-kin with whom reciprocal alliances can be formed for mutually beneficial exchange of reproductive resources. Persons excluded from groups and left to their own devices would have extraordinary difficulty finding a mate. Such social isolates could not channel effort toward the survival and reproductive success of genetic relatives. Nor could they secure reciprocal alliances for mutually beneficial resource exchange.

Clearly, groups can facilitate survival as well. They offer protection from groups of marauding males and food from large game that historically could be captured only through cooperative group hunting. But group living also carries survival costs. Many diseases and parasites, for example, are contracted only through exposure to other people. The point is that modern evolutionary theory focuses our attention on the particular re-

productive resources that are linked with group living, not simply on resources that increase survival.

HUMANS SEEK TO BELONG TO PARTICULAR GROUPS

Baumeister and Tice include in their discussion several groups, ranging from dyads (e.g., a mating couple) to those of larger multiple membership. In articulating the functions of group living, it is important to recognize that individuals rarely desire to belong to groups *in general*. Instead, they seek to commune with particular groups—those that carry important reproductive benefits.

Historically, extended kin often formed groups. These groups contained one's parents, children, brothers, sisters, and other genetic relatives toward whom altruistic acts could be directed and from whom altruistic acts could be received. People also seek to belong to groups that have status and power. It is in these groups that reproductively relevant resources are most heavily concentrated—powerful allies and attractive mates. Third, people seek membership with groups that are similar to themselves. In sum, people do not seek group membership in general but rather membership in particular groups that contain valuable reproductive resources.

EVENTS THAT LEAD TO EXCLUSION ARE NOT ARBITRARY

Baumeister and Tice point to three classes of events that can lead to group exclusion: incompetence, deviance, and unattractiveness. These are excellent candidates, and some have already received support in the evolutionary psychology literature. Physical attractiveness in women, for example, is a powerful cue to reproductive value and hence is preferred by men in dozens of cultures that have been studied (Buss, 1989; Symons, 1979). By implication, unattractive women will have greater difficulty finding mates and will in this sense be differentially excluded from mating.[1] Modern evolutionary theory focuses attention on several other reproductively relevant causes of group exclusion. It is probably not by chance that adultery, mate poaching, aggression, and murder are important

1. Although Baumeister and Tice consider dyads such as mateships to be "groups," it will clearly be useful to distinguish among different kinds of groups (e.g., kin groups, groups based on reciprocity, mateships, and so on). Characteristics that lead to exclusion may depend strongly on the nature of the group.

causes of group exclusion. These are all events that impair the survival or reproductive success of particular individuals (or their genetic relatives) within the group, sometimes dramatically so.

More generally, it is important to recognize that it is often particular individuals rather than groups who do the excluding. Individuals sometimes seek to banish their competitors, whether or not those competitors have done anything to harm the larger group. Indeed, the pervasiveness of derogation tactics such as spreading false rumors and calling a competitor dumb, poor, insensitive, selfish, unpopular, unattractive, weak, wimpy, and cowardly (Buss & Dedden, in press) can be regarded as important forms of social exclusion that fall short of outright ostracism.

In sum, the events that lead to social exclusion are not arbitrary. Modern evolutionary theory suggests that they can be explicated by a detailed consideration of the reproductive interests of particular individuals within the group. Events such as mate stealing and murder impair the reproductive success of particular group members and their relatives. Forms of social exclusion by derogation are prevalent among humans. Individuals derogate (and hence attempt to exclude) their competitors, whether or not their competitors have performed actions that hurt the larger group.

GROUP LIVING CARRIES COSTS IN CONFLICT AND COMPETITION

Group living does not bring unalloyed bliss. With group living comes an intensification of conflict and direct competition. With group living comes others who will injure you, steal your cattle, covet your mate, and slander your reputation. In a phrase, other people have become our primary "hostile force of nature" (Alexander, 1987). If reproductive damage can be sustained by being ostracized from the group, it can also be incurred by inclusion in the group.

This leads to the hypothesis that there will be specialized adaptations for dealing with competition and conflict within the group, not just adaptations to prevent being excluded from the group. There is powerful evidence that male sexual jealousy, for example, is not so much about "social exclusion" (Leary, this issue) as about "reproductive exclusion," whereby men attempt to ensure their paternity in potential offspring by guarding their mates and fending off intrasexual competitors (Buss, 1988; Daly, Wilson, & Weghorst, 1982). To take another example, there is strong evidence that humans have evolved specialized psychological mechanisms for detecting "cheaters" in social exchanges, that is, those who take the benefit without reciprocating by paying the cost (Cosmides,

1989). These are particular evolved solutions to two of the hazards of living in human groups.

CONCLUSIONS

It is useful to consider Baumeister and Tice's anxiety–social exclusion hypothesis within the broader context of attempts to identify the functional significance of psychological characteristics. Tooby and Cosmides (1989) provide the following useful guidelines: (1) use evolutionary theory as a starting point to identify the *adaptive problem* that humans had to solve, (2) attempt to determine how those adaptive problems manifested themselves under the conditions of human evolutionary history (i.e., Pleistocene conditions), (3) identify the specific information-processing problems that must be solved if the adaptive function is to be accomplished, (4) identify the candidate models for the structure of potential solutions, (5) eliminate alternative candidate models with experiments and field observation, (6) compare the remaining models against patterns of manifest behavior in current environments.

Because the adaptive problems that humans historically have had to solve were numerous and distinct, the adaptive solutions to these problems are also likely to be numerous and distinct (Symons, 1987; Tooby & Cosmides, 1989). The presence of prepared fears for snakes, heights, darkness, and spiders, for example, suggest highly specialized or domain-specific adaptations to particular adaptive problems. Similarly, the functional analysis of anxiety and social exclusion is likely to proceed more rapidly by identifying the particular reproductive resources that groups provide, the particular groups that people seek membership in, the particular events that typically lead to exclusion, and the particular individuals who instigate expulsion.

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