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Evolutionary Approaches to Group Dynamics: An Introduction

Mark Van Vugt
University of Kent

Mark Schaller
University of British Columbia

An evolutionary perspective offers many new insights in the study of group dynamics. First, groups are an inevitable aspect of human evolution, suggesting that humans have evolved a range of psychological mechanisms to deal with specific challenges of group living. Second, an evolutionary perspective combines and integrates knowledge from different social science disciplines such as psychology, biology, anthropology, and economics to find evidence for group-related psychological adaptations. Third, an evolutionary analysis produces many unique hypotheses about group psychology, showing the promise and generativity of this approach.

AQ: 4

Keywords:

With those animals which were benefited by living in close association, the individuals which took the greatest pleasure in society would best escape various dangers, while those that cared least for their comrades, and lived solitary, would perish in greater numbers.
—Charles Darwin, *The Descent of Man*

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The father of modern evolutionary theory, Charles Darwin, pointed out long ago that group living is an adaptive strategy for species such as humans. Groups are critical to human survival and reproduction. For ancestral humans, groups provided a buffer against hostile environments and facilitated access to many resources that were essential to reproductive fitness. As a consequence, humans may well have evolved a range of psychological mechanisms that promote an attraction to and capacity for living in groups.

Of course, the benefits of group living would not have accrued equally to every member of an ancestral group. The greatest benefits presumably accrued to those individuals who were most adept at availing themselves of the many unique opportunities that group living provides, while avoiding the unique dangers associated with groups. These opportunities and dangers exist in many different, highly distinct social domains (e.g., navigation of status hierarchies, opportunities for reciprocal exchange, finding

mates, communal parental care, disease avoidance). The conceptual implication is that, in response to the many unique prospects and perils of group living, humans may have evolved many unique psychological mechanisms that have profound implications for many different aspects of group dynamics. That conceptual implication yields a practical implication as well: By applying the logical tools provided by evolutionary psychology, we have the potential to strengthen groups and foster beneficial group dynamics.

Consider just one of many potentially useful implications: Among ancestral humans, fitness may have depended crucially upon the sharing of valued resources, such as food; but this created the problem of finding trustworthy partners to share food with. Because it was potentially lethal to share with people unlikely to reciprocate, natural selection processes may have favored psychological mechanisms that facilitate the identification, avoidance, and ostracism of nonreciprocators. There is growing evidence that humans indeed have specialized decision rules for cheater detection and social exclusion (Kerr & Levine, 2007; Kurzban & Leary, 2001). By understanding how and when these mechanisms operate, we may be better equipped to develop interventions that encourage groups—and the people that comprise them—to be more socially inclusive and less prejudiced (Schaller & Neuberg, in press).

AQ: 5

AQ: 11

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Another example is provided by an evolutionary analysis of risk taking among adoles-

cents. It has long been known that young men, in particular, are prone to potentially self-destructive forms of risk taking (e.g., crime, gambling, drug use). Why is this? One evolutionarily informed explanation (buttressed by considerable supportive data; M. Wilson & Daly, 1985) indicates that in ancestral times, risk taking enhanced the social status of young men and made them more attractive sexual partners. A practical implication is that organizations fare better if they acknowledge the greater status sensitivity of young men and try to channel it in socially desirable directions (e.g., competitive altruism; Hardy & Van Vugt, 2006).

Evolutionary Psychology and Group Dynamics

An evolutionary approach to group dynamics begins with the recognition that human psychology (like human physiology) is the product of a long history of biological evolution. It follows, therefore, that conceptual insights of evolutionary biology can, when applied with rigor and care, produce novel discoveries about human psychology. This is demonstrably the case. Evolutionary inquiries not only have provided deeper explanations for the origins of already-recognized psychological phenomena such as phobias and mate preferences but also have produced an impressive array of novel theories, hypotheses, and empirical discoveries about the way the human mind works in contemporary environments.

Within evolutionary psychology, much research has focused on behaviors that have obvious reproductive consequences, such as mating and parenting. As the field grows, the tools of evolutionary inquiry are being applied to a much wider and diverse set of phenomena. Many of these phenomena pertain directly to groups and group dynamics. This is not surprising. As a group-living species, the environment in which our ancestors evolved was primarily social. We therefore expect that many evolved aspects of human psychology are group centered. This is increasingly acknowledged in the literature. For instance, the latest version of the well-known textbook on evolutionary psychology by Buss (2007) devotes considerable space to obviously group-relevant topics such as status, dominance, prejudice, and intergroup relations. Evolutionary approaches are also increas-

ingly prominent in the study of real-world groups in management, business, marketing, law, and health (Barkow, 2006).

Advances in evolutionary psychology, and its applications, may not yet be evident to every researcher interested in groups and group dynamics. Indeed, even enthusiasts of evolutionary psychology may be unfamiliar with many of the new directions that are emerging within this burgeoning field of inquiry. It is for this reason that we have assembled this special issue on evolutionary approaches to group dynamics. The special issue comprises a set of theoretical articles, authored by eminent researchers with joint interests in evolutionary processes and group dynamics. For readers who are new to this method of inquiry, these articles may provide a useful introduction to the field and an illustration of the many useful insights that can emerge by thinking simultaneously about evolution and human groups. For readers who are already familiar with evolutionary psychology, these articles provide a stimulating and diverse sample of the many creative ways in which evolutionary logic is now being applied productively in the study of group processes.

Dunbar discusses the possibility that the human brain evolved in response to a specific set of problems associated with sizes of social groups; he identifies implications of this *social brain* hypothesis for contemporary social interactions and group dynamics. O’Gorman, Sheldon, and Wilson provide an overview of multilevel selection theory—a theory that articulates a means through which groups play a fundamental role in evolutionary processes—and describe important implications for understanding group behavior and group outcomes. Webster addresses the topic of kinship, which is fundamental to evolutionary theory but is relatively neglected in the study of group dynamics. His analysis suggests that kinship plays a non-obvious but important role in many aspects of interpersonal and intergroup aggression. Kerr and Levine speculate about the evolution of a social exclusion detection mechanism in humans. They suggest different ways in which social exclusion may be signaled, with various implications for the psychology of groups. Buss and Duntley consider the potential for exploitation that exists in any social interaction and suggest that humans have evolved strategies to both exploit and avoid being exploited by other

group members. Their analysis produces novel insights about the origins of robbery, rape, and murder and about mechanisms that may help prevent them. Neuberg and Cottrell apply an evolutionary analysis to topics such as person perception, impression formation, and impression management within group settings. The result is a set of novel discoveries pertaining to intragroup trust and cooperation and intergroup prejudice. Finally, Kessler and Cohrs tackle an old topic of considerable importance to the study of groups: authoritarianism. They demonstrate the usefulness of an evolutionary approach to produce novel insights into the underlying psychology of authoritarianism.

Methodological Pluralism and the Benefits of Evolutionary Informed Research

Regardless of whether the reader is an evolutionary novice or an old hand, it is worth bearing in mind that evolutionary psychology represents an enormously diverse set of theories, methods, and analytical perspectives (Gangestad & Simpson, 2007; Scher & Rauscher, 2003). The articles in this special issue reflect this diversity. This conceptual and methodological diversity results, in part, from the fact that evolutionary psychology attracts contributions from scientists with an unusually diverse range of scholarly backgrounds—not only scholars with different kinds of training within psychology but also scholars from biology, anthropology, economics, neuroscience, and other academic disciplines. In addition, this diversity is a functional response to the high evidentiary standards that attend theories and hypotheses in evolutionary psychology (Conway & Schaller, 2002). Truly convincing support for an evolutionary psychological hypothesis about group psychology needs to attest not only to the existence of the predicted psychological phenomenon itself but also to the alleged evolutionary origins for that phenomenon. The first part is relatively easy. The second part is hard and requires input from several behavioral science disciplines.

Barring the unlikely invention of a time machine, it is impossible to collect data in ancestral environments or to empirically track the actual evolution of any alleged psychological adaptation. Instead, evolutionary psychologists must rely on a multitude of other, more indirect, sources of evidence (Schmitt & Pilcher, 2004). Some of these methods—such as the methods of

experimental psychology—are familiar to most researchers of group dynamics. Many researchers are also familiar with mathematical models and computer simulations of group outcomes, and these methods are an important tool in evolutionary psychological inquiries. Consider, for instance, game models of the evolution of cooperation (Nowak & Sigmund, 1998). A third form of evidence emerges from recent advances in neuroscience. Brain imaging studies, for instance, have the potential to provide data attesting to specific physiological structures associated with specific kinds of group-relevant cognition and behavior (Adolphs, 1999; Duchaine, Cosmides, & Tooby, 2001). One recent breakthrough is the discovery that the brain structure governing physical pain, the anterior cingulate cortex, is also implicated in the experience of the pain of social exclusion (Eisenberger, Lieberman, & Williams, 2003). Anthropological and ethnographic databases provide a fourth important kind of evidence, testing the extent to which specific kinds of group-relevant phenomena are universal across human cultures. This kind of evidence is necessary to differentiate between phenomena that are evolutionary adaptations and those that are more superficial, culture-specific manifestations (Norenzayan, Schaller, & Heine, 2006). Finally, cross-species evidence is instrumental in testing speculations about the evolutionary history of any alleged adaptation. Both chimpanzees and humans, for instance, form coalitions to engage in intergroup violence—a finding that implies that the underlying psychological mechanisms may have already been present in the common ancestor from which both humans and chimps descended some 5–7 million years ago (Van Vugt, De Cremer, & Janssen, 2007).

When considered in conjunction, these and other forms of evidence can produce novel insights into many different kinds of group phenomena and their evolutionary origins. The utility of an evolutionary approach becomes apparent to just about anyone who seriously employs such an approach. We speak from personal experience.

Consider, for example, Van Vugt's work on leadership within groups (for details, see Van Vugt, 2006). There are multiple indications that leadership might be a group-specific adaptation. Game-theory models show that leadership is the optimal solution in coordination

games (Browning & Colman, 2004). Leadership has been documented across many different animal species that face functionally similar coordination problems such as group movement (in birds and social insects) and peacekeeping (in nonhuman primates). Among human beings, these kinds of coordination problems result, predictably, in the emergence of leader–follower relations; this occurs quickly and spontaneously across many different situations and cultures. Moreover, the underlying evolutionary logic yields novel hypotheses about the characteristics of leaders that are appealing under different kinds of circumstances. For instance, support for charismatic leadership increases when people are reminded of their mortality (Cohen, Solomon, Maxfield, Pyszczynski, & Greenberg, 2004); when under threat, people prefer taller, physically stronger, and healthier looking leaders—presumably these are reminiscent of an ancestral past in which leaders led by example.

Consider work by Schaller and colleagues on prejudice and intergroup conflict. That the roots of intergroup conflict are evolutionarily ancient is indicated not only by the ubiquity of coalitional conflict across human societies but also in other primate species (Schaller & Neuberg, *in press*). Many contemporary prejudices can be understood as the products of evolutionary selection pressures imposed by the persistent threat of coalitional conflict in ancestral environments. These evolutionary products, in turn, instigate and sustain intergroup conflict in contemporary environments. By pursuing this line of reasoning and its implications, there have emerged many novel hypotheses about specific circumstances under which specific kinds of prejudices are especially likely to be inflamed and specific kinds of interventions that might put out those psychological fires. Many studies have revealed that specific kinds of prejudices are exaggerated by circumstances that, regardless of rational assessments of actual threat, make people feel vulnerable—such as simply being in the dark (e.g., Schaller, Park, & Faulkner, 2003). In an additional study, this evolutionarily informed conceptual approach was applied toward an understanding of ethnic stereotypes and sociopolitical attitudes within the context of the ongoing civil war in Sri Lanka (Schaller & Abeysinghe, 2006). Among other

results, this study identified a very simple intervention that influenced support for a peaceful resolution to the conflict. This last point underscores the fact that when group processes are viewed through an evolutionary lens, the insights that emerge are useful not merely at a conceptual level but at a practical level as well.

Final Thoughts

An evolutionary approach to group dynamics can be fruitful in at least four different ways. First, an evolutionary perspective can provide a more complete understanding of any particular group process. A more complete account inevitably follows from rigorous attempts to forge conceptual linkages between evolutionary processes operating on ancestral populations and psychological processes operating within contemporary groups. The study of human altruism provides one instructive example. There are multiple evolutionary processes through which a capacity for altruism appears to have evolved (e.g., McAndrew, 2002). These different evolutionary processes are likely to be associated with distinct psychological processes as well, each of which may have different and nonobvious implications for the prediction of contemporary behavior. For instance, many people assume that the evolutionary mechanism of kin selection is irrelevant to our understanding of altruism directed toward nonkin. In fact, however, when kin-selection mechanisms are considered in conjunction with the evolution of kin-recognition mechanisms, it becomes clear that this particular evolutionary process may have implications for interactions with nonkin as well. Among the many insights is the finding that people respond more favorably to any group member who happens to be superficially more similar to themselves—and thus more kin-like—in some way (e.g., DeBruine, 2002; Oates & Wilson, 2002; Park & Schaller, 2005).

Second, an evolutionary perspective can help overcome biases and blind spots in the study of groups. For instance, the literature on group decision making is replete with studies documenting deficiencies in decision making such as research on brainstorming, groupthink, and group polarization. A cursory reading of this literature all too easily impels the conclusion that people are poor collective decision makers, but from an evolutionary viewpoint this makes

little sense. D. S. Wilson, Timmel, and Miller (2004) have shown that groups outperform even the most competent individual when cognitive tasks get complicated. An evolutionary perspective can yield more sophisticated, complete, and accurate conclusions about group decision making (Kameda & Tindale, 2006).

Third, an evolutionary approach can be used to deduce many novel hypotheses bearing on traditional group phenomena. For example, working within the domains of social influence and group norm formation, Kenrick and his colleagues have applied evolutionary reasoning toward the deduction of a remarkable number of new hypotheses that are unlikely to have been arrived at through any other means (e.g., Kenrick, Li, & Butner, 2003; Sundie, Cialdini, Griskevicius, & Kenrick, 2006). Among other discoveries, this line of research has revealed that men and women show equally high levels of group conformity under conditions of threat; however, when mating goals are made salient, conformity rates are substantially lower among men than women (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006).

Finally, an evolutionary approach can expand the boundaries of scientific inquiry into group dynamics by opening our eyes to important group phenomena that have previously been relatively ignored or overlooked. Laughter, music, dance, religion, and philanthropy are increasingly being understood as group phenomena (e.g., manifestations of psychological processes that connect individuals to each other in large and diverse groups), and these insights have benefited from evolutionarily informed inquiries (Atran & Norenzayan, 2004; Boyer, 2003; Dunbar, 2004; Hardy & Van Vugt, 2006)

In short, an evolutionary perspective reinforces our awareness that group dynamics are fundamental to the study of human nature. It also provides a set of tools that can be used to understand group dynamics—and thus human nature—more completely. The articles in this special issue attest to those two promises.

References

- Adolphs, R. (1999). Social cognition and the human brain. *Trends in Cognitive Sciences*, 3, 469–479.
- Atran, S., & Norenzayan, A. (2004). Religion's evolutionary landscape: Counterintuition, commitment, compassion, communion. *Behavioral and Brain Sciences*, 27, 713–777.
- Barkow, J. (2006). *Missing the revolution: Darwinism for social scientists*. New York: Oxford University Press.
- Boyer, P. (2003). Religious thought and behaviour as by-products of brain function. *Trends in Cognitive Sciences*, 7, 119–124.
- Browning, L., & Colman, A. (2004). Evolution of coordinated alternating reciprocity in repeated dyadic games. *Journal of Theoretical Biology*, 229, 549–557.
- Buss, D. M. (2007). *Evolutionary psychology: The new science of the mind* (3rd ed.). Boston: Allyn & Bacon.
- Cohen, F., Solomon, S., Maxfield, M., Pyszczynski, T., & Greenberg, J. (2004). Fatal attraction: The effects of mortality salience on evaluations of charismatic, task-oriented, and relationship-oriented leaders. *Psychological Science*, 15, 846–851.
- Conway, L. G. III, & Schaller, M. (2002). On the verifiability of evolutionary psychological theories: An analysis of the psychology of scientific persuasion. *Personality and Social Psychology Review*, 6, 152–166.
- DeBruine, L. M. (2002). Facial resemblance enhances trust. *Proceedings of the Royal Society B*, 269, 1307–1312.
- Duchaine, B., Cosmides, L., & Tooby, J. (2001). Evolutionary psychology and the brain. *Current Opinion in Neurobiology*, 11, 225–230.
- Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt: An fMRI study of social exclusion. *Science*, 302, 290–292.
- Gangestad, S. W., & Simpson, J. A. (2007). *The evolution of mind: Fundamental questions and controversies*. New York: Guilford Press.
- Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Cialdini, R. B., & Kenrick, D. T. (2006). Going along versus going alone: When fundamental motives facilitate strategic (non)conformity. *Journal of Personality and Social Psychology*, 91, 281–294.
- Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin*, 32, 1402–1413.
- Kameda, T., & Tindale, R. S. (2006). Groups as adaptive devices: Human docility and group aggregation mechanisms in evolutionary context. In M. Schaller, J. A. Simpson, & D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 317–341). New York: Psychology Press.
- Kenrick, D. T., Li, N. P., & Butner, J. (2003). Dynamical evolutionary psychology: Individual decision-rules and emergent social norms. *Psychological Review*, 110, 3–28.

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- AQ: 3 Kerr X., & Levine, X. (2007). . *Group Dynamics: Theory, Research, and Practice*, xx, xx-xx.
- McAndrew, F. T. (2002). New evolutionary perspectives on altruism: Multilevel-selection and costly-signalling theories. *Current Directions in Psychological Science*, 11, 79-82.
- Norenzayan, A., Schaller, M., & Heine, S. J. (2006). Evolution and culture. In M. Schaller, J. A. Simpson, & D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 343-366). New York: Psychology Press.
- Nowak, M. A., & Sigmund, K. (1998). Evolution of indirect reciprocity by image scoring. *Nature*, 393, 573-777.
- Oates, K., & Wilson, M. (2002). Nominal kinship cues facilitate altruism. *Proceedings of the Royal Society B*, 269, 105-109.
- Park, J. H., & Schaller, M. (2005). Does attitude similarity serve as a heuristic cue for kinship? Evidence of an implicit cognitive association. *Evolution and Human Behavior*, 26, 158-170.
- Schaller, M., & Abeyesinghe, A. M. N. D. (2006). Geographical frame of reference and dangerous intergroup attitudes: A double-minority study in Sri Lanka. *Political Psychology*, 27, 615-631.
- Schaller, M., & Neuberg, S. L. (in press). Intergroup prejudices and intergroup conflicts. In C. Crawford & D. L. Krebs (Eds.), *Foundations of evolutionary psychology: Ideas, issues, and applications*. Mahwah, NJ: Erlbaum.
- Schaller, M., Park, J. H., & Faulkner, J. (2003). Prehistoric dangers and contemporary prejudices. *European Review of Social Psychology*, 14, 105-137.
- Scher, S. J., & Rauscher, F. (2003). *Evolutionary psychology: Alternative approaches*. Boston: Kluwer.
- Schmitt, D. P., & Pilcher, J. J. (2004). Evaluating evidence of psychological adaptation: How do we know one when we see one? *Psychological Science*, 15, 643-649.
- Sundie, J. M., Cialdini, R. B., Griskevicius, V., & Kenrick, D. T. (2006). Evolutionary social influence. In M. Schaller, J. A. Simpson, & D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 287-316). New York: Psychology Press.
- Van Vugt, M. (2006). Evolutionary origins of leadership and followership. *Personality and Social Psychology Review*, 10, 354-371.
- Van Vugt, M., De Cremer, D., & Janssen, D. (2007). Gender differences in cooperation and competition: The male warrior hypothesis. *Psychological Science*, 18, 19-23.
- Wilson, D. S., Timmel, J. J., & Miller, R. R. (2004). Cognitive cooperation. *Human Nature*, 15, 225-250.
- Wilson, M., & Daly, M. (1985). Competitiveness, risk-taking, and violence: The young male syndrome. *Ethology and Sociobiology*, 6, 59-73.

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