Introduction: The Evolution Revolution

The evolutionary perspective on psychology has the power to fundamentally change how you understand yourself, your fellow humans, and your relationship to the birds, the bees, and your pet dog. Getting a good grasp on this perspective is like turning on a light inside your head: It is both illuminating and exciting. And once people get it—that is, once they understand how to think in evolutionary terms—they never turn back.

Some people are wary when they first encounter the evolutionary perspective on human psychology. Although most educated people now accept Charles Darwin’s theory of natural selection as an explanation of the giraffe’s long neck, the peacock’s multicolored feathers, and the killer whale’s streamlined shape, many are still uncomfortable applying the same logic to the human experiences of love, creativity, and family relationships. Yet the readings presented in this book demonstrate how the evolutionary perspective can shed the same light on human thought and behavior as it has on the behaviors of other species, from earthworms to chimpanzees. Indeed, we challenge any skeptical student to read this collection with an open mind and not emerge with a new level of understanding of human behavior.

One reason for making the effort to understand evolutionary psychology is the power it provides for organizing a host of otherwise disconnected findings. Psychology’s domain ranges from neural firings to word recognition, motor development, fear conditioning, attraction between strangers, and group decision making. One of the common complaints of psychologists, however, has been the lack of a conceptual map—a cohesive paradigm to organize this broad field of topics. Indeed, one of our colleagues, psychologist Peter Killeen, once lamented that psychology needed “its own Charles Darwin”—a grand theorist to pull together all its isolated findings. Killeen was surprised to hear biologist Charles Wolff respond that psychology already had such a person. “Who?” asked Killeen. Wolff’s response was a thought-provoking one: “Charles Darwin.”

Although evolutionary theory has served quite well to integrate the myriad facts about living organisms, its benefits for psychology have not always been well understood. But all that has begun to change during the last few decades, as the evidence for an evolutionary approach to psychology has continued to mount. This evidence comes from a diverse array of findings:

- **Cross-cultural findings.** Viewed through standard ethnocentric lenses, our eyes are drawn to the strange and unusual, the ways in which they are different from us. But beneath the sometimes colorful differences, ours is one species, and our neighbors the world over share certain important ways of behaving, thinking, and feeling (e.g., Daly & Wilson, 1988b; Ekman & Friesen, 1971; Kenrick & Keefe, 1992).

- **Cross-species comparisons.** Findings from different animal species reveal that our species, although unique in some ways, also shares many behavioral and psychological mechanisms with other species. Comparative research has revealed powerful principles—such as inclusive fitness, differential parental investment, and sexual
selection—that can help explain many of the patterns found in animal behavior (Gould & Gould, 1989; Trivers, 1985). Functional analyses have proven essential to understanding why some animals but not others see in color while others do not see at all, why some have dominance hierarchies, and why some have females that are more colorful and competitive than males (Alcock, 2001; Williams, 1996). As the readings in this book demonstrate, such analyses are now being fruitfully applied to human behavior (e.g., Daly & Wilson, 1988a; Pinker, 2003).

- **Behavior genetic research.** Although evolutionary psychologists are more interested in studying how organisms adapt to the natural environment than in exploring the specific mechanics by which genes affect biochemical development, the evolutionary position does rest on the assumption that genetic predispositions can be passed from one generation to the next. Such an assumption was at odds with the so-called blank-slate model once popular in psychology. However, research from studies of twins and adoptees has completely overturned the blank-slate model and suggested that behavioral, affective, and cognitive capacities and predispositions are indeed passed from one generation to the next (Plomin, DeFries, McClearn, & Rutter, 1997; Rowe, 1994).

- **Cognitive psychology and artificial intelligence.** One long-held misconception is that adopting an evolutionary perspective requires embracing a doctrine of blind instincts as well. However, several decades of research in cognitive science has made it feasible to talk about inner “programs” for intelligent and flexible behavior that emerge in appropriate contexts (Barkow, Cosmides, & Tooby, 1992; Pinker, 1997).

Part of the appeal of an evolutionary perspective is its strength as an integrative glue for the scattered field of psychology. But a good theory does more than organize existing knowledge. It also suggests new places for researchers to look. Emboldened by new findings, psychologists have begun to consider how adopting an evolutionary perspective can enhance their research into processes ranging from physiology and sensation to perception and learning and to complex problem solving and group behavior. This collection of readings is a celebration of the fruits of those endeavors.

**Selection of Readings**

In researching readings for this collection, we were both humbled and delighted: humbled by the sheer magnitude of insights and empirical discoveries that have flowed from this endeavor and delighted at the abundance of riches from which to choose. We were reminded of the experience of being an undergraduate student and looking at the university’s delicious menu of course offerings, only to be disappointed by being unable to consume them all in the upcoming semester. In the end, the student settles on a small selection of all those curiosity-inspiring courses, as we have settled on a small selection of intriguing readings on evolutionary psychology.

Our selection of readings was driven by several criteria:

- **We wanted to represent the whole field of psychology.** A great deal of work has been done on social behavior, perhaps because mate choice and intrasexual competition are so central to natural selection. In addition to this work, however, we wanted to
introduce students to the less sensational but equally important applications of evolutionary thinking to other fundamental areas of research in the field: sensation, perception, psychophysiology, learning, memory, cognition, motivation, emotion, language, nonverbal communication, psychopathology, personality, and development.

- **We wanted to expose students to the fundamental principles of evolutionary psychology.** There is a set of core evolutionary concepts to which every student of behavior ought to be exposed, including natural selection, sexual selection, parental investment, kin selection, and life-history theory. A number of readings were chosen because they give particularly clear accounts of one or more of these central theoretical ideas.

- **We wanted to include readings that would be reasonably accessible.** If students enjoy what they read, they will be more motivated to stretch their minds—to learn new concepts and new ways of thinking about problems. Hence, the teacher’s task is often to meet students halfway—to offer material that is interesting enough to motivate the intellectual climb to a higher altitude. We have tried to choose articles that cover the important and sometimes challenging new ideas of evolutionary psychology but that do so in a relatively straightforward and reader-friendly way.

- **We favored shorter articles that emphasize empirical findings over longer theoretical treatises.** Psychology’s strength comes from its relentless pursuit of new empirical discoveries. Research findings are often like parables: memorable cases that serve to illustrate and support broader abstract principles. Although we did include a few review-type papers and articles, we included a slightly larger sampling of readings featuring original empirical results.

- **We leaned toward the “psychology” side of evolutionary psychology.** Evolutionary psychology is an interdisciplinary venture, with tributaries in evolutionary biology, ethology, anthropology, and other disciplines. Other collections of readings deal nicely with basic biological theory, with animal behavior, and with cross-cultural findings (e.g., Betzig, 1997; Caplan, 1978; Sherman & Alcock, 1993). The contributors to the present volume include scientists from several disciplines, using different research methodologies, but these readings feature a relatively larger sampling of experimental studies by psychologists.

**Organization of Readings**

We arranged the readings into the following eleven sections:

**Motivation and Emotion.** The collection opens with a pair of thought-provoking articles on human motivation and emotion. We begin here to underscore the fact that evolutionary psychology is about so-called hot cognition and functional behavior. Unlike the traditional content-free reductionist approach to psychology, which begins by asking how a single neuron fires, the adaptationist approach begins with questions about why we do what we do, think what we think, and worry about what we worry about.

In the first reading, “The Evolution of Happiness,” David Buss (2000) reviews research addressing why people feel happiness in some situations and misery in others. Buss suggests that a more positive psychology would strive to understand the
evolved mechanisms related to mating bonds, friendship, kinship, and cooperative coalitions. In the second reading, “Hunger, Eating, and Ill Health,” physiological psychologist John Pinel and his colleagues Sunaina Assanand and Darrin Lehman (2000) review evidence to support an evolutionary explanation for the epidemic of obesity in modern urban society and to suggest a connection with eating disorders such as anorexia nervosa.

Psychopathology. A consideration of psychopathology follows naturally from the articles on motivation and emotion; thus, the next pair of readings offer a set of evolutionary models of disordered thought and behavior. We placed these articles early in the book because students’ fascination with this topic is the ideal hook to interest them in the more basic research topics.

In “Psychoactive Drug Use in Evolutionary Perspective,” the first reading in this section, Randolph Nesse joins with Kent Berridge (1997) to suggest that psychoactive drugs “hijack” the evolved brain mechanisms designed to inform us of when we have done something that promotes our fitness. In the second reading, “Evolutionary Social Psychology and Family Homicide,” Martin Daly and Margo Wilson (1988a) deal with a particularly nasty form of human pathology, family homicide, reviewing data to suggest that even this maximally disordered behavior can be better understood through the functionalist lens of an evolutionary perspective.

Sensation, Perception, and Physiology. Natural selection shapes not only internal motivational states but also the mechanisms for collecting information from the outside world. Bats, who hunt at night, have poor vision but hearing so advanced that they perceive a sonogram of the midnight world. Bees, who navigate by sunlight, perceive ultraviolet light even on cloudy days. And hawks, who hunt from high in the sky, see with several times the acuity of humans with cones that pick up two additional regions of the visual spectrum.

In an essay called “Hawk-Eyed,” from The Birder’s Handbook, biologists Paul Ehrlich, David Dobkin, and Darryl Wheye (1988) elegantly and succinctly explain how a comparative evolutionary perspective can help us understand the commonality between visual mechanisms in humans and birds. This essay is followed by a classic study, “Natural Categories,” by Eleanor Rosch (1973). She demonstrates that even in the absence of words describing different colors, members of a stone-age tribe from New Guinea seem to perceive the same colors as those individuals who colored in the letters “ROY G. BIV” using giant boxes of distinctly labeled crayons.

Learning. In dismissing the theory of mindless instincts, ethologists such as Niko Tinbergen and Konrad Lorenz demonstrated exquisitely functional interactions between learning experiences and innate predispositions. The first reading in this section, “Biological Boundaries of Learning: The Sauce-Béarnaise Syndrome,” is an essay by Martin Seligman and Joanne Hager (1972a) that helped catapult the evolutionary perspective on behavior into the limelight. They review some of the mounting evidence against the tabula rasa view of learning—evidence originally gathered into their classic edited volume on the biological boundaries of learning (Seligman &
Hager, 1972b). “Illness-Induced Aversions in Rat and Quail: Relative Salience of Visual and Gustatory Cues,” the second selection, was one of the articles in that volume. In it, Hardy Wilcoxon, William Dragoin, and Paul Kral (1971) report that quail, which use vision to locate food, condition nausea more easily to visual cues than to taste, whereas rats, who normally use taste and smell to locate food, show the opposite pattern.

**Memory and Cognition.** Does an evolutionary perspective apply only to simple conditioned responses and sensory processes? No more so than it applies only to simple organisms such as earthworms and planarians. Every reliably replicating feature of every living organism—from a simple sensory neuron to a large, complex human brain—is designed to facilitate its bearer’s survival and reproductive success.


**Language and Nonverbal Behavior.** Among the functions embodied in our large brain are the capacities to communicate using nonverbal cues and complex language. Charles Darwin (1872) collected some of the first data to support his adaptationist theory of human emotional expression, and a century later, Paul Ekman and Wallace Friesen (1971) found additional support for that theory. In their article “Constants across Cultures in the Face and Emotion,” they describe the ability of Neolithic hunter-gatherers from New Guinea to easily recognize emotions expressed by modern Americans. In the second reading, “Language as an Adaptation to the Cognitive Niche,” Steven Pinker (2003) presents logical and empirical evidence supporting his argument that complex language is a naturally selected human capacity exquisitely designed for sharing useful information. Finally, in “Nonverbal Courtship Patterns in Women,” Monica Moore (1985) examines a form of communication by which human females attract potential mates: nonverbal courtship displays.

**Aggression.** Part of differential reproduction is competition within and between groups. In their article “Competitiveness, Risk Taking, and Violence: The Young Male Syndrome” (1985), Margo Wilson and Martin Daly examine fascinating data on status-linked homicides and various risky behaviors by young males in light of evolutionary assumptions about a connection between male competition and sexual selection. In “A Few Good Men: Evolutionary Psychology and Female Adolescent Aggression,” Anne Campbell (1995) examines the possible adaptive significance of age-linked violence in women.
Prosocial Behavior. It wasn’t all tooth-and-claw competition for our ancestors; they probably got at least as much mileage out of cooperating with one another. One of the motors driving cooperation between group members is inclusive fitness. In the first reading in this section, “Nepotism and the Evolution of Alarm Calls,” Paul Sherman (1977) presents data demonstrating that prosocial behavior in ground squirrels, as in humans, is much more likely when the recipients are genetic relatives. This is followed by an interesting article on conflict resolution, “Primates—A Natural Heritage of Conflict Resolution,” by Frans de Waal (2000). De Waal describes how chimpanzees living in the same group kiss and make up after fighting.

Mate Selection. At the center of the game of evolution is differential reproduction. A trip to almost any park on a spring day will reveal several species of birds displaying their plumage and chirping loudly to attract mates. The park visitor with a pair of binoculars would notice two things: First, the males and the females play this game differently, and second, some of them are better at it than others. Likewise for human beings.

The first article in this section is Joseph Shepher’s (1971) classic “Mate Selection among Second Generation Kibbutz Adolescents and Adults: Incest Avoidance and Negative Imprinting,” which presents thought-provoking findings from a study of 2,769 marriages involving second-generation kibbutz residents who were raised from birth in close contact with unrelated members of the opposite sex. The puzzling data, which show no cases of intragroup marriage among these podmates, violate one of the basic maxims of social psychology but make sense in light of an adaptionist framework. The other article in this section, “Evolution, Traits, and the Stages of Human Courtship: Qualifying the Parental Investment Model,” by Douglas Kenrick, Edward Sadalla, Gary Groth, and Melanie Trost (1990), presents data suggesting that men and women differ most when considering short-term sexual partners and least when considering marriage partners.

Mating Relationships. For some species, including most other mammals, courtship is over within minutes of mate selection. Humans, of course, do not just copulate to reproduce; they become involved in relationships—some short term, some lifelong. The three readings in this section explore these relationships from different perspectives.

In the first reading, “Sociosexuality and Romantic Partner Choice,” Jeffry Simpson and Steven Gangestad (1992) explore individual differences in the preferences for exclusive monogamous versus more unrestricted relationships. In the second reading, “Sex Differences in Jealousy: Evolution, Physiology, and Psychology,” David Buss and colleagues Randy Larsen, Drew Westen, and Jennifer Semmelroth (1992) examine sex differences in jealousy in light of the different reproductive resources each sex stands to lose if his or her partner is unfaithful. The third reading in this section, “Evolution and Social Cognition: Contrast Effects as a Function of Sex, Dominance, and Physical Attractiveness,” by Douglas Kenrick, Steven Neuberg, Kristin Zierk, and Jacquelyn Krones (1994), presents an experimental study of men’s and women’s reactions to their own mates after viewing alternatives who are either attractive and/or socially dominant. The results suggest that an evolutionary perspective can help us understand ongoing cognitions about our current mating relationships.
**Child Development and Family Relations.** The human family was probably one of the keys to our ancestors’ success, and that family takes a form that sets us apart from 95 percent of the other mammals. In the first reading, “What Is a Good Mother? Adaptive Variation in Maternal Behavior of Primates,” comparative psychologist Lynn Fairbanks (1993) discusses her research on vervet monkey mothers. Fairbanks notes that maternal investment of care is not a constant but varies in adaptive ways, depending on the social context. The second reading, “Evolution and Developmental Sex Differences,” by developmental psychologist David Geary (1999), is a nice review of Darwin’s concept of sexual selection and its relevance to human development. The fact that boys reach puberty later than girls do, for instance, is a clue that fits with other evidence about the evolved design of our species. Catherine Salmon and Martin Daly (1996) report data on the importance of kin relations, even among modern, urban North Americans, in the final reading, “On the Importance of Kin Relations to Canadian Women and Men.”

These readings were selected to demonstrate the range of application of evolutionary principles in exploring all the domains of behavior. They demonstrate, at a minimum, that an evolutionary perspective can raise interesting questions, lead us to look in new places, and help us see our connections with other humans and other living organisms. Yet the most exciting revelation is this: Most of the work is yet to be done, and most of the discoveries on this frontier have yet to be made.

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