

Evolutionary Perspectives on Consumer Behavior: an Introduction

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ABSTRACT

The human mind is a collection of functionally specialized, content-specific mechanisms that were designed by natural selection to solve the adaptive problems faced by our evolutionary ancestors. Thus, evolutionary analyses can provide insight into the perceptual, cognitive and motivational mechanisms underlying human behavior including consumer behavior. In order to encourage consumer researchers to make greater use of an evolutionary perspective, this paper discusses the basic concepts of evolutionary psychology and briefly describes three illustrative evolutionary theories along with their implications for consumer behavior and marketing.

INTRODUCTION

Humans are animals whose minds have been shaped by natural selection. Consequently, an evolutionary perspective promises to provide insight into human preferences, thought processes and behaviors. In fact, there is a growing body of theory and research in evolutionary psychology already fulfilling that promise. Evolutionary analyses have provided new insights into altruism (Caporael, Dawes, Orbell and van de Kragt 1989; Hoffman 1981), landscape preferences (Orians and Heerwagen 1992), romantic and sexual desires (Buss 1989; Symons 1979), spatial abilities (Silverman and Eals 1992), standards of physical attractiveness (Singh 1993), statistical reasoning (Cosmides and Tooby 1996), and many other aspects of human psychology (see Buss, Hazelton, Shacelford, Bleske and Wakefield 1998; Pinker 1997).

Much of the work in evolutionary psychology is relevant to consumer behavior, but consumer researchers have been slow to embrace this theoretical perspective. The dearth of evolutionary theory and research on consumer behavior is unfortunate, because evolutionary analyses could integrate diverse topics within the consumer literature and connect the field of consumer behavior with other social and biological sciences as well as suggest fruitful new directions for consumer research. This paper provides an introduction to evolutionary psychology and its implications for consumer behavior in an attempt to encourage greater use of this theoretical perspective in consumer research. The paper is divided into two major sections. First, an overview of evolutionary psychology discusses some of the major concepts underlying this theoretical perspective. Then, three illustrative theories within evolutionary psychology are presented along with a discussion of some of their implications for consumer behavior and marketing.

OVERVIEW OF EVOLUTIONARY PSYCHOLOGY

Evolutionary psychology attempts to explain behavior in terms of innate perceptual, cognitive and/or motivational mechanisms that evolved through natural selection as adaptations to ancestral conditions. A clear understanding of this theoretical perspective requires some explanation of the concepts "innate characteristics," "perceptual, cognitive and motivational mechanisms," "evolution through natural selection," "adaptations," and "ancestral conditions." Each of these concepts is discussed in the paragraphs below.

Innate Characteristics

When evolutionary psychologists describe some psychological characteristic as innate they mean that it is a product of human genes. However, they do not mean that the innate characteristic is attributable to one specific gene, is under direct genetic control, is present at birth, is unlearned, is inevitable, or has a high heritability. Innate psychological characteristics are complex and likely to be produced by many genes acting in concert. Those genes produce psychological characteristics indirectly through their effects on the structure and operation of the endocrine, central nervous, and other systems of the body (Tooby and Cosmides 1992).

Innate characteristics may not be present at birth (though they can be); they may develop as the individual matures over time. For example, vision is an innate ability, yet cats are born blind and acquire sight at about ten days after birth. Moreover, being innate does not mean that a characteristic is unlearned or inevitable (Crawford and Anderson 1989). Cats reared in an environment devoid of horizontal lines, for example, do not develop the cortical connections necessary to perceive horizontal stimuli (Blakemore and Cooper 1970). Innate characteristics, such as normal vision, reflect genetically based capabilities that develop under typical ancestral

conditions. Different environmental histories can (and do) affect the phenotypic expression of genetic capabilities. Furthermore, some innate characteristics may be adaptive "if-then" switches that direct development along different paths under the different environmental conditions faced by evolutionary ancestors (Crawford and Anderson 1989). Thus, evolutionary psychologists see genes and environment not as separate and competing determinants of psychological phenomena, but as interacting variables that must be considered together in any evolutionary explanation of the human psyche (Tooby and Cosmides 1992).

Finally, innate characteristics need not have high heritabilities (Crawford and Anderson 1989). Heritability is a measure of within species genetic variability and natural selection is likely to have significantly reduced, or even eliminated, variability in the genes underlying the most fundamental human adaptations. Thus, many innate adaptations may have low, or even zero, heritabilities.

Perceptual, Cognitive and Motivational Mechanisms

In order to survive and reproduce, humans must acquire and process information about their environments in a way that leads to adaptive behaviors. Natural selection has shaped innate psychological mechanisms to perform this task. Evolutionary psychologists refer to these innate psychological mechanisms as "cognitive programs," "Darwinian algorithms," "information processing mechanisms," and "mental organs." Although these psychological mechanisms are embodied in physiological processes, they can be described and studied in perceptual, cognitive and motivational terms that are independent of their physiological embodiment. In fact, evolutionary theory is most fruitfully applied at this "information processing" level of analysis,

because this level of analysis and evolutionary theory both deal with the functions of psychological mechanisms (Cosmides and Tooby 1987; Tooby and Cosmides 1992).

Few would argue that the human mind consists of innate mechanisms that evolved to solve the information processing problems faced by our evolutionary ancestors. More controversial are evolutionary psychologists' claims that these psychological mechanisms are functionally specialized and content specific rather than general purpose and content free (Tooby and Cosmides 1992). However, a large and growing body of research on visual scene analysis, speech perception, locomotion, language acquisition, face recognition and other cognitive phenomena has demonstrated that the information processing demands involved are too complex to be performed by general purpose, content free mechanisms (Pinker 1997; Tooby and Cosmides 1992). In order to perform many of the tasks it performs, the mind must be built of numerous, inter-related, functionally specialized and content-structured mechanisms. Of course, some tasks could be handled by a general-purpose mechanism, but even then, a functionally specialized mechanism could perform the tasks more quickly and efficiently. Evolutionary psychologists are involved in the search for these innate, content-specific mechanisms.

A common view of innate, content-specific, psychological mechanisms is that they are constraints on what an organism can learn or do. Cosmides and Tooby (1987) argue that this view is misleading because it incorrectly "implies that the organism would have a wider range of abilities if the constraint were to be removed" (p. 301). In other words, this view assumes that "unconstrained," or general-purpose, mechanisms exist and are disabled by content-specific mechanisms an unsupported assumption that seems unlikely in light of the inherent weakness of general-purpose mechanisms described above. Rather than being viewed as constraints, innate, content-specific psychological mechanisms should be viewed as enablers. Just as birds' wings

enable flight, rather than constraining other means of locomotion, innate, content-specific, psychological mechanisms enable people to solve survival and reproduction problems in a way that was adaptive for their ancestors (Cosmides and Tooby 1987).

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Evolution through Natural Selection

Darwin's (1859/1958) theory of natural selection describes the only known, causal process not guided by intelligence that is able to create a complex functioning mechanism. The essence of this theory is that random inheritable changes (or genetic mutations) drive the process of evolution while competition for survival and reproduction directs it. Random inheritable changes that aid reproduction (either directly or indirectly by promoting survival) flourish and spread while random inheritable changes that reduce reproduction wane and disappear.

Natural selection is often described as "survival of the fittest," but "reproduction of the fittest" would be more accurate. Survival is important to the process of natural selection only as an enabler of reproduction. In fact, characteristics that imperil survival (like the overly large and heavy antlers of male moose) are sometimes selected when those characteristics help attract a mate. These handicaps attract mates because they are reliable signals of genetic fitness-only the genetically fit could survive with such handicaps. When a characteristic is selected because it attracts mates, the process is a variant of natural selection called "sexual selection."

Darwin thought that natural selection operated on individual organisms. Today, however, we recognize that it also operates on genes-the smallest reproducing biological units. This recognition has given rise to inclusive fitness theory (Hamilton 1964), which postulates that a characteristic will be naturally selected as long as it enhances the reproduction of an individual's

genes as represented in the individual or in others. This theory helps explain the evolution of altruism because altruistic behavior directed at genetic relatives can enhance the reproduction of genes shared with those relatives (i.e., it can enhance "inclusive fitness"). When characteristics that enhance inclusive fitness without enhancing individual fitness are selected, the process is another variant of natural selection known as "kin selection."

Adaptations

Natural selection results in three basic products—adaptations, by-products, and noise. Adaptations are inherited, reliably developing characteristics of a species crafted by natural selection to solve long-term problems faced by ancestral populations during the species' evolution (after Buss, et al 1998; Tooby and Cosmides 1992). By-products are regularly occurring characteristics that do not have an adaptive function of their own, but were selected because they were coupled with adaptations. Noise refers to random characteristics that neither help nor harm reproduction. [See Buss, et al (1998) for a more detailed breakdown and discussion of the products of natural selection.]

Adaptations provide solutions to the recurrent or long-term problems faced by a species during the course of its evolution. Many adaptations, such as the human eye, are efficiently and elegantly designed. However, natural selection rarely designs optimal solutions to problems. Adaptations must be produced from available genetic variation, must coordinate with prior adaptations, and must continuously progress toward greater fitness even when a step backward might permit a better adaptation in the long run (Buss, et al 1988). These and other constraints mean that adaptations often provide satisfactory, but less than perfect, solutions to the problems they were designed to solve.

Solutions to problems are generally regarded as good, so people often think that what is adaptive is good. This is fine as long as people use the term "good" in a narrow, functional sense. However, it is important to point out that adaptiveness has nothing to do with moral goodness. David Hume (1977/1975) pointed out that "ought" statements cannot logically be derived from "is" statements. Thus, any attempts to derive non-native prescriptions from evolutionary psychology represent what is known as "the naturalist fallacy."

Ancestral Conditions

Natural selection is a slow process-complex adaptations take many thousands, if not millions, of generations to evolve. Thus, natural selection creates adaptations only to long-standing problems. Moreover, adaptations can be designed to make use of only those environmental regularities that were constant during the adaptation's selection. In the case of humans, virtually all of our closest evolutionary ancestors lived as hunter-gatherers. Thus, human adaptations are solutions to the long-term problems and conditions of a hunter-gatherer existence (see Tooby and Cosmides 1990). In the modern world, these adaptations may no longer serve the functions they were designed for. Thus, when evolutionary psychologists refer to adaptations, they do not mean to suggest that the characteristics are adaptive in today's environment.

ILLUSTRATIVE EVOLUTIONARY THEORIES

Evolutionary thinkers have produced numerous theories about the perceptual, cognitive and motivational adaptations underlying human behavior and many of these theories are applicable to consumer behavior and marketing. A comprehensive review of these theories is

beyond the scope of this paper (see Barkow, Cosmides and Tooby 1992; Pinker 1997). However, we wanted to illustrate the nature and variety of theories within evolutionary psychology and to demonstrate their relevance for consumer researchers. Therefore, three illustrative, evolutionary theories and their implications for consumer behavior and marketing are discussed in the paragraphs below. These theories deal with neonatal features, habitat preferences, and reproductive strategies.

Neonatal Features

Human infants require a great deal of care and their crying is an annoyance than may provoke violent reactions. Thus, it is plausible that natural selection would have produced an adaptation designed to increase nurturance and decrease aggression toward infants. Konrad Lorenz (1971) suggested that humans have such an adaptation-that the physical features and behaviors of infants are stimuli that trigger innate mechanisms producing affection and nurturing. The specific infantile (or neonatal) features thought to elicit these positive responses are: (1) a head that is large in proportion to the body, (2) a large protruding forehead, (3) large eyes that are set low in the face, (4) bulging cheeks,(5) short, thick limbs, (6) a springy, elastic consistency, and (7) clumsy movements. According to Lorenz, these features elicit affection and nurturance from humans even when present in non-human stimuli. Empirical tests of Lorenz's hypotheses have generally been supportive; people do respond more positively to infantile human and animal forms than to adult human and animal forms (Hess 1970; Stemglanz, Gray and Murakami 1977).

Lorenz (1970) also argued that many dolls, as well as various types of animals that are valued as baby substitutes (such as Pug dogs and Pekinese), "provide clear abstractions - of the

neonatal features". By implication, he suggested that these dolls and pets are adopted and loved because of their infantile features. Some evidence to support this view can be found in the Cabbage Patch Phenomenon of the 1980's (Adler *et al* 1983; Jacob, Rodenhauser and Markert 1987).

In 1983, Coleco Industries marketed a soft-sculptured doll with exaggerated neonatal features-i.e., a large head, rounded cheeks, pudgy limbs and a soft elastic consistency. These Cabbage Patch dolls were so popular that they captured an estimated 10% of the toy market in 1983. By mid- 1986, sales of these dolls and related accessories reached a running total of over one billion dollars. Perhaps most interesting is the fact that many people treated these dolls as if they were real children-buying them Cabbage-Patch Kid magazines, sending them to Cabbage-Patch Kid camp and giving them their own rooms.

One survey of adult women owners of the dolls found that the women attributed the dolls appeal primarily to its appearance (Jacob, *et al* 1987). Thus, the exaggerated neonatal features of the dolls appear to have played a large part in the extraordinary affection and nurturing that these dolls elicited. Interestingly, Coleco was aware of the effects of infantile features on humans and intentionally exploited this feature of the dolls. Its press kit on the dolls included a paper by a psychologist at Brandeis University that described the dolls as releasing the mechanisms that trigger human instincts for nurturing.

Additional, albeit indirect, evidence for the hypothesis that consumers will respond more favorably to baby substitutes the more neonatal features they possess can be found in the evolution of teddy bears. Hinde and Barden (1985) examined the teddy bears in a museum exhibition and found that the bears became more infantile-i.e., developed larger foreheads and shorter snouts-as time progressed from 1900 to 1980. In a similar vein, Stephen J. Gould (1980)

found that Mickey Mouse also developed more infantile features over time. Assuming that this evolution toward baby-likeness is the result of selection pressures reflecting human preferences, then these studies testify to the market appeal of infantile features. However, there is clearly a need for more direct and rigorous tests of the effects of neonatal features on consumer response to pets and dolls. In addition, research is needed to examine the impact of baby-like, product-related characters such as the Pillsbury Doughboy and the Campbell Soup Kids on consumers' perceptions of the products those characters represent.

Habitat Preferences

Environments differ from one another with respect to the quantity and quality of resources like food, water, and shelter that they provide as well as with respect to the presence of predators and other natural enemies. Thus, the choice of an environment in which to live (i.e., a habitat) is likely to have a significant impact on the survival and reproduction of individuals and the gene-types they carry. This suggests that natural selection would favor those members of a species that possessed an innate preference for the types of environments in which the species prospers. Consistent with this evolutionary analysis, biologists have found that a wide variety of vertebrates do display the predicted habitat preferences (Partridge 1978) and that these preferences are displayed even when the animals are raised in a laboratory and have no personal experience with the environments in question (Wecker 1964).

Anthropological evidence suggests that early hominid evolution took place in the tropical continent of Africa. Of the various tropical habitats available to these early hominids, the savanna provided the most hospitable environment because: (1) its grasses, roots, tubers, relatively short trees and grazing animals provided the most readily available food, (2) its open

country afforded the greatest visibility for hunting and for detecting predators, and (3) its predators, who were relatively poor tree climbers, were the most easily escaped (Orians 1980). Thus, natural selection would have favored an innate preference among humans for savanna like environments, especially those also containing plentiful water for drinking and cliffs and caves for shelter (see Kaplan 1987 for additional arguments supporting the evolutionary basis of savanna preference). Consistent with the existence of such an adaptation, research has found that: (1) people express a preference for savanna-like environments-i.e., environments with scattered trees or groups of trees and even or fine ground textures, (2) savanna preferences are stronger among younger people, whose habitat preferences have been less modified by experience, and (3) savanna preferences are fairly consistent across cultures and geographic regions (Balling and Falk 1982; Ulrich 1977).

Many consumer goods and services, such as campsites, golf courses, restaurant tables, hotel rooms, apartments, houses, etc., are valued in part for their settings and/or views. Evolutionary theory concerning human habitat selection suggests that consumers should particularly enjoy settings and views that are savanna-like and that include lakes or rivers. Such settings and views should command higher prices and be in higher demand than other settings and views. Although there is substantial evidence that people do prefer savanna-like scenes that contain water, there is little quantitative research on the market value of such scenes and settings. This is one interesting direction for future research on the evolutionary psychology of consumer behavior.

Reproductive Strategies and Sexual Behavior

Human biology is such that women, as compared to men, bear a disproportionate burden in the production and rearing of children. It is women that must carry the fetus. This means that

women bear greater physical hardship and risk in order to reproduce than do men, that women do not have the same opportunity to abandon their offspring that is available to men, and that women can have fewer offspring than can men. This sex difference in parental investment makes the optimal reproductive strategies of men and women different (Trivers 1972).

The relatively large investment that women must make in each of their offspring suggests that women should be more selective and discriminating in their sexual behavior than are men. Natural selection would have favored innate motivational mechanisms inclining women to limit their sexual involvement to partners with whom they have long-term relationships and prompting women to be discriminating when selecting those partners. Such a sexual behavior pattern would maximize a woman's reproductive success by increasing the likelihood that her sexual partner would stay around and help raise the offspring and by ensuring that her sexual partner had the best possible genetic endowment to pass on to their offspring (Barash 1980; Symons 1979).

The relatively small investment that is required for men to father offspring suggests that men should be relatively aggressive and indiscriminating variety-seekers when it comes to sexual behavior. Natural selection would have favored innate motivational mechanisms inclining men to enter into long-term relationships with mates *and* to seek numerous additional sexual partners outside of those long-term relationships. Such a sexual behavior pattern would enhance a man's reproductive success by increasing the number of offspring he produced, while ensuring that some of his offspring (those produced with the long-term mate) were well cared for (Barash 1980; Symons 1979).

Evidence of the sexual conservatism and discrimination predicted for women and of the sexual aggressiveness and indiscriminating, variety seeking predicted for men is abundant (see Symons 1979 for a review). For example, surveys of sexual behavior in the United States have

found that men are more likely to engage in premarital and extra-marital intercourse than are women and that men have more sexual partners on average than do women (Hunt 1974; Kinsey et al 1953). Many would attribute this sex difference to cultural norms. However, research has found that approximately 83 percent of human cultures condone polygamy (or multiple wives) while fewer than 1 percent condone polyandry (or multiple husbands) (Barash 1982). The overwhelming tendency of human cultures to be polygamous suggests that cultural norms about sex may be genetically based themselves.

The opportunity for sexual stimulation from a variety of opposite-sex persons outside of long-term relationships is available to consumers in the form of pornographic books, magazines and movies as well as in the form of prostitutes and strippers. Evolutionary theory concerning parental investment and sexual behavior suggests that men would value these sexual goods and services more than do women. Reliable data on the consumption of services from prostitutes and strippers is unavailable, but there is data on men's and women's responses to pornography. Kinsey, et al (1953) found that men were much more likely than women to report being erotically aroused by seeing photographs, drawings, or paintings of nudes. More recently, Stauffer and Frost (1976) found that male college students expressed more interest in the centerfold and photo essay in *Playboy* than women expressed in the comparable sections in *Playgirl*. Consistent with this later finding, Sheper and Reisman (1985) found that 42 percent of the readership of *Playgirl* was male (presumably homosexual) while only 26 percent of the readership of *Playboy* and only 19 percent of the readership of *Penthouse* was female.

The data presented above suggest that male consumers have a greater interest in commercial sexual stimuli than do female consumers. Evolutionary theory suggests that this sex difference is innate and that the size of the female market for explicit sexual stimuli is unlikely to

ever equal that of the male market. It also suggests that marketers targeting women with sexual stimuli and services will have to design those stimuli and services to be different from comparable stimuli and services targeted at men. For example, women rarely go to strip clubs by themselves to seek sexual arousal as men do. Instead, they usually go to strip clubs with groups to enjoy a fun-filled, novelty show. This means that strip clubs targeted at women must provide different types of performances, food and beverage offerings, and physical settings than is typical for strip clubs targeted at men (Saltsberg, 1998).

CONCLUSION

Evolutionary psychologists search for links between the adaptive problems faced by our evolutionary ancestors and the perceptual, cognitive and motivational mechanisms underlying our behavior. Some researchers begin with analyses of adaptive problems and ancestral conditions and use their analyses to develop new theories about the psychological adaptations likely to have evolved under those conditions. Others begin with known psychological mechanisms and use reverse engineering to develop theories about the adaptive problems those mechanisms were designed to solve. In both cases, the resulting functional theories are used to gain new insight into the design of the psychological mechanisms and to generate new, testable hypotheses about the operation of those mechanisms in today's environment. This enterprise has been fruitfully pursued in many of the social sciences-i.e., anthropology, criminology, political science, psychology, and sociology-and has helped to integrate those disciplines with one another and with biology. It is our hope that this paper will encourage consumer researchers to join scholars from these other disciplines and to further our understanding of the evolutionary bases of consumer behavior.

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