

Research Dialogue

Fundamental motives: How evolutionary needs influence consumer behavior

Vladas Griskevicius^{a,*}, Douglas T. Kenrick^b

^a University of Minnesota, USA

^b Arizona State University, USA

Received 4 March 2013; received in revised form 13 March 2013; accepted 16 March 2013
Available online 28 March 2013

Abstract

Can we better understand modern consumer behavior by examining its links to our ancestral past? We consider the underlying motives for consumption and choice from an evolutionary perspective. We review evidence that deep-seated evolutionary motives continue to influence much modern behavior, albeit not always in obvious or conscious ways. These fundamental motives include: (1) evading physical harm, (2) avoiding disease, (3) making friends, (4) attaining status, (5) acquiring a mate, (6) keeping a mate, and (7) caring for family. We discuss how, why, and when these motives influence behavior, highlighting that many consumer choices ultimately function to help fulfill one or more of these evolutionary needs. An important implication of this framework is that a person's preferences, behaviors, and decision processes change in predictable ways depending on which fundamental motive is currently active. We discuss how consideration of evolutionary motives provides fertile ground for future consumer research, while also helping build bridges between consumer behavior, evolutionary biology, and other social sciences.
© 2013 Society for Consumer Psychology. Published by Elsevier Inc. All rights reserved.

Keywords: Evolutionary psychology; Motivation; Decision making; Consumer behavior

Introduction

At first blush, the choices made by modern consumers seem to have everything to do with contemporary culture and little to do with human nature. Our cave-dwelling hunter–gatherer ancestors did not shop at the Apple Store, Saks Fifth Avenue, or Wal-Mart. They did not face decisions about whether to drive a green Prius or a red Porsche, which brand of children's car seat to put into their vehicle, or whether to use that car to commute to a mansion in the suburbs or a bungalow near downtown. They did not have to worry about whether mouthwash X makes their breath smell medicinal, or whether detergent Y might leave a ring around their collars, let alone if they are taking on too much or too little risk with the retirement package in their 401(k) account. But we will argue that the choices made by modern consumers are nevertheless strongly connected to the same motivations that drove our ancestors' choices about everyday decisions.

The study of consumer behavior presents an ideal avenue for gaining insight into underlying human motivations. How different people allocate their limited resources in different circumstances can tell us a great deal about which needs people prioritize. Conversely, an understanding of evolutionary needs can provide insight into consumer preferences and decision processes. Why, for example, some people happily spend their hard-earned money on ultra-expensive luxury goods with no survival benefit, or why people make seemingly irrational choices by seeking to avoid losses rather than acquire gains. An evolutionary perspective offers a powerful new framework with a host of implications for theory and research in consumer behavior.

We examine the motivational underpinnings of consumer behavior from the perspective of the Fundamental Motives Framework (Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Kenrick, Neuberg, Griskevicius, Schaller, & Becker, 2010). This framework maintains that humans have inherited psychological adaptations for solving a set of specific ancestral social challenges. These fundamental challenges include: (1) evading physical harm, (2) avoiding disease, (3) making friends,

* Corresponding author.

E-mail address: vladasg@umn.edu (V. Griskevicius).

(4) attaining status, (5) acquiring a mate, (6) keeping that mate, and (7) caring for family. This framework has been empirically fruitful in generating novel hypotheses about how fundamental motives influence basic psychological processes such as attention and memory as well as behaviors such as altruism and aggression (e.g., Ackerman et al., 2009; Becker et al., 2010; Griskevicius, Tybur, et al., 2009; Griskevicius et al., 2007; Maner, Miller, Moss, Leo, & Plant, 2012; Maner et al., 2005; Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010). Initial forays into examining how fundamental motives influence consumer behavior and decision-making have also been fruitful (Griskevicius, Goldstein, et al., 2009; Kenrick & Griskevicius, 2013; Li, Kenrick, Griskevicius, & Neuberg, 2012; Saad, 2007; Sundie et al., 2011), but most of the implications have yet to be explored.

Here we lay out the fundamental motives framework and its implications for consumption and choice. We discuss how, why, and when evolutionary motives might shape behavior, highlighting how many consumer choices may ultimately function to help fulfill one or more of these evolutionary needs. Before discussing the framework and each motive in greater detail, we briefly review the core features of the evolutionary perspective on which it is based.

Distinguishing proximate and ultimate motives

An evolutionary perspective asserts that all living organisms evolved to behave in ways that gave those organisms an evolutionary advantage. This implies that modern humans are endowed with psychological mechanisms that incline them to process information and make decisions in ways that have enabled our ancestors to survive, thrive, and replicate (for an overview of the assumptions underlying an evolutionary perspective on psychology, see Confer et al., 2010). From this perspective, cognition, motivation, and behavior are inherently intertwined—they are parts of adaptive systems designed to solve recurrent ancestral problems.

To understand how those systems work, it is essential to ask questions about their *ultimate function*: What problem might a given psychological system have helped human beings solve in order to survive and reproduce successfully? When asking questions about a behavior's function and its causes, it is paramount to recognize a critical distinction between proximate and ultimate causes (Tinbergen, 1963). Consider a simple example. Let's say a colleague just bought a triple-chocolate fudge brownie, and you want to know the reason behind her purchase. So you ask her: "Why did you buy that?" She might simply respond "I was hungry." If she were feeling more analytical, she might mention that she loves the taste of chocolate and couldn't resist the delectable scent of a warmly baked brownie. This kind of explanation for behavior is known as a *proximate* explanation. The word proximate here is related to the word proximity. These causes point to relatively up-close and immediately present influences—to what people are presently feeling or thinking.

Proximate reasons are important, but they tell only the surface part of the story. Proximate reasons don't address the

deeper question of why brownies taste good to humans in the first place. Understanding the deeper reasons for preferences and behavior requires an ultimate explanation. *Ultimate* explanations focus not on the relatively immediate triggers of a behavior, but on its evolutionary function. In the brownie case, humans have psychological mechanisms that respond positively to the sight, smell, and taste of foods rich in sugars and fats. These mechanisms exist because an attraction to such calorie-dense foods helped our ancestors obtain calories and survive in an environment that was often scarce in calories. So whereas the *proximate* reason your friend bought a brownie may be because she was hungry for brownie, the *ultimate* reason is because a desire for sugary and fatty foods helped solve the critical evolutionary challenge of survival.

Sometimes the ultimate and proximate reason for a behavior might be closely connected. In the brownie case, the proximate reason (feeling hunger) is directly connected to the ultimate function of obtaining calories to survive. But most of the time, the connection between proximate and ultimate reasons will not be that clear. Consider, for example, why birds migrate each year. The proximate reason birds migrate is because days get shorter; day length is the immediate cue that triggers the motivation to begin the bird's journey. But the ultimate reason for bird migration has nothing to do with day length. Instead, the ultimate reason birds migrate is because the locations of the best food sites and the best mating sites change with the seasons.

Like other animals, human beings do not need to consciously know the connections between the proximate triggers of their behavior and the ultimate reasons behind those behaviors. In fact, people are especially poor at recognizing the ultimate reasons for their actions (Barrett & Kurzban, 2006; Kenrick, Griskevicius, Neuberg & Schaller, 2010; Tooby & Cosmides, 2005). But an important insight from an evolutionary perspective is that behavior has *both* proximate and ultimate causes. People often have multiple motives for a behavior, even if they are not always aware of the ultimate reasons for their choices. For example, a person can be consciously motivated to buy a sporty luxury car because its expensive leather interior and peppy acceleration makes him feel good (a proximate reason), *and at the same time* be non-consciously motivated to buy that luxury car because owning such a car can increase his desirability as a potential mate and thereby enhances his reproductive fitness (an ultimate reason) (Griskevicius et al., 2007; Sundie et al., 2011).

Consumer researchers, like most social scientists, have typically been concerned with proximate motives for behavior. At the proximate level, people behave one way rather than another because they want to feel good. People strive to experience pleasure, happiness, or satisfaction, and to avoid pain, sadness, or frustration. But an evolutionary perspective highlights that there is a deeper level of explanation rooted in the adaptive function of behavior. This is a useful lens through which to look at motivation because while there could be innumerable proximate motives for behavior, there is a much smaller set of ultimate evolutionary functions that behavior might serve. The key question, to which we turn to next, is what are the most common evolutionary functions of behavior?

The fundamental motives framework

When people think about “evolutionary success,” they may think only about survival and reproduction. Although these are important, there are a number of distinct evolutionary challenges that had to be surmounted to achieve reproductive success. Like all other animals, at a base level our ancestors needed nourishment and shelter. But because humans are intensely social animals, we also faced a set of central and recurrent social challenges (Ackerman & Kenrick, 2008; Kenrick, Li, & Butner, 2003; Kenrick, Griskevicius, et al., 2010). These fundamental ancestral challenges included: (1) evading physical harm, (2) avoiding disease, (3) making friends, (4) attaining status, (5) acquiring a mate, (6) keeping a mate, and (7) caring for family.

Those humans who became our ancestors were the ones who protected themselves from enemies and predators, avoided infection and disease, got along with the other people in their tribe, and gained the respect of those tribe-mates. They also successfully acquired a reproductive partner, probably established some type of bond with that person, and if all went well, cooperated with their partner in caring for their needy and relatively helpless offspring. Those humans who were successful in solving these critical challenges enhanced their fitness and became our ancestors. Those who were less successful at these goals failed to become anyone’s ancestors. Given the important implications that these challenges have had for reproductive fitness and human evolution, they can be considered “fundamental” (Kenrick, Neuberg, Griskevicius, Schaller & Becker, 2010).

Each ancestral challenge is qualitatively different. The things a person must do to successfully charm a potential mate are different from the things one does to avoid a predator or care for a baby. A good solution to one evolutionary problem may be incompatible with the solution to another problem. For example, approaching a new person at a social gathering can help solve the challenge of making friends but increase the likelihood of catching an infectious disease. The qualitative differences between different evolutionary challenges are important, because they suggest that the brain has not evolved to simply make choices that maximize the chances of eventually reproducing. Instead, brains evolve to solve evolutionary challenges rather than evolving to be a general-purpose problem-solver (Alcock, 2009; Barrett & Kurzban, 2006; Tooby & Cosmides, 1992). For example, birds have one memory system for remembering food location, a different memory system for remembering mating songs, and yet a different system for remembering things that made them sick (Sherry & Schacter, 1987).

A large body of scientific evidence—from anthropology, cognitive science, human development, neuroscience, and social psychology—finds that humans possess different psychological systems for managing different evolutionary challenges (e.g., Barrett, 2012; Bugental, 2000; Fiske, 1992; Lieberman, Tooby, & Cosmides, 2007; Maner et al., 2012; Saad, 2007; Tybur, Lieberman, & Griskevicius, 2009). For example, even seemingly general psychological processes such as “learning” follow very different rules depending on the evolutionary content that is being learned (Garcia & Koelling,

1966; Ohman & Mineka, 2001; Wilcoxon, Dragoin, & Kral, 1971). Humans not only use different brain systems for remembering language, faces, and emotional stimuli (Gazzaniga, 1987; Sperry, 1968), but a wealth of evidence suggests that human beings have a specialized psychological system for avoiding infectious disease, a different system for evading physical danger, and yet different systems for solving other evolutionary challenges (Neuberg, Kenrick, & Schaller, 2011). This body of research on animals and humans suggests that the brain is not one all-purpose tool, but is instead more like a Swiss Army knife (Cosmides & Tooby, 1994). Just as a Swiss Army knife has a set of different tools for solving different problems such as opening bottles or cutting rope, the mind has different psychological systems and sub-systems for solving different evolutionary challenges (see Barrett and Kurzban (2006) for a thorough discussion).

The fundamental motives framework maintains that the specific ancestral social challenges faced by humans map onto fundamental motivational systems that function to help solve each challenge. The implications of fundamental motives for consumption and choice can be summarized by three central tenets of the framework.

Tenet #1: A fundamental motive can be activated by external or internal cues

A fundamental motive can be activated or primed by external or internal cues indicating threats or opportunities related to a specific evolutionary challenge (Kenrick, Griskevicius, et al., 2010). For example, the mate acquisition system can be activated by interacting with a desirable member of the opposite sex, or by being in the same room with such a person, being exposed to an image involving such a person, or merely imagining a desirable romantic encounter. The system can also be activated when a person is confronted with a decision that concerns potential mates, as opposed to a decision that pertains to family, status, disease, affiliation, or danger.

A fundamental motive can also be triggered by internal cues, such as hormonal fluctuations. For example, women’s mate acquisition system can be triggered during the ovulatory phase of the monthly menstrual cycle (Gangestad & Thornhill, 2008). During the several-day period of peak fertility, women experience a stronger desire to acquire a mate. This leads women to pay more attention to men (Anderson et al., 2010), dress in sexier outfits (Durante, Li, & Haselton, 2008), purchase more alluring clothing and product accessories (Durante, Griskevicius, Hill, Perilloux, & Li, 2011; Saad & Stenstrom, 2012), and earn more in tips from male customers (Miller, Tybur, & Jordan, 2007). Because women are rarely aware that ovulation influences their behavior, ovulatory effects highlight the critical distinction between proximate and ultimate reasons for behavior discussed earlier. While the proximate reason ovulating women seek to wear alluring outfits may be because ovulation leads women to feel more adventurous, the ultimate reason ovulating women seek to wear alluring outfits is because such behavior functions to help acquire a mate.

Tenet #2: The currently active fundamental motive shapes preferences

When a fundamental motivational system has been activated, it produces a specific set of consequences for attention, memory, cognition, and preferences (Kenrick, Neuberg, et al., 2010; Neuberg, Kenrick, & Schaller, 2010). This coordinated cascade of responses functions to solve the ultimate problem associated with the currently active system. For example, the activation of the mate acquisition system leads a person to prefer and seek products that facilitate achieving the ultimate need of acquiring a mate, as in the case of ovulating women. An important implication of the fundamental motives framework is that a person's preferences can change quite dramatically depending on which motivational system is currently active. This is because what constitutes adaptive behavior to further one ultimate need may be very different from—and sometimes even completely opposing to—what is adaptive to further another. For example, activating the self-protection system leads people to conform and follow the masses (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006). When this motive is active, such as when watching a crime-filled television program, people are more attracted to products advertised as best-selling and popular, while being less attracted to the same products when they are advertised as unique and different (Griskevicius, Goldstein, et al., 2009). Like wildebeests in the presence of a leopard, cues of physical threat motivate people to be part of a larger group. In stark contrast, activating the mate acquisition system leads people to want to stand out from the crowd. When this motive is active, such as when watching a romantic or sexy program, people are more attracted to products advertised as unique and different, while being repulsed when the same products are advertised as popular or best-selling (Griskevicius, Goldstein, et al., 2009). Like animals on the prowl for a mate, cues of the opposite sex motivate people to stand out. The important implication of the fundamental motives framework is that the same person might make different—and sometimes entirely inconsistent—choices depending on which fundamental motive is currently active.

Tenet #3: The currently active motive guides decision processes

Just as fundamental motives can alter preferences, they can also alter decision-making processes—how one goes about maximizing his or her preferences. This tenet has important ramifications for understanding the nature of decision biases and errors. Whereas such seemingly irrational tendencies have traditionally been viewed as design flaws in the mind, an evolutionary perspective suggests that many of our biases and errors may instead reflect design features (Haselton & Nettle, 2006; Haselton et al., 2009; Kenrick & Griskevicius, 2013).

Consider loss aversion, the tendency for people to weigh losses more heavily than equivalent gains (Kahneman & Tversky, 1979). Whereas this tendency is traditionally viewed as irrational, an evolutionary perspective suggests that loss aversion may be an adaptive bias that helped humans solve survival-related ancestral challenges. Consistent with this idea, activating the self-protection system makes people particularly loss averse

(Li et al., 2012). When motivated to protect themselves from danger, people are especially concerned about losses. In contrast, activating the mate-acquisition system leads loss aversion to vanish (Li et al., 2012). In fact, triggering the motive to attract a mate for men can cause this bias to reverse itself, leading gains to loom larger than losses.

In summary, the fundamental motives framework highlights that the activation of a fundamental motive shapes preferences and decision-making processes. But predicting which preferences and which specific array of biases a person will exhibit in a given situation requires understanding of the workings of each motivational system. We turn to this issue next.

Fundamental motives, consumption, & choice

In this section we discuss the fundamental motives. As summarized in Table 1, we consider how each motive is triggered, review findings pertaining to consumer behavior, and discuss some of the rich possibilities for future research. The table also highlights some of the key theories from evolutionary biology and evolutionary psychology most relevant for each motive. Although detailing every evolutionary theory is beyond the scope of this paper, it is important to note that the study of the evolutionary functions of behavior is rooted in a rich inter-disciplinary network of theories.

1. Self-protection

Although our human ancestors faced many dangerous predators, fellow humans have been perhaps the most dangerous threat throughout most of history. Criminologists examining skull fragments from earlier human societies, and anthropologists studying other human groups, have found that homicide was quite prevalent in ancestral societies. In fact, our ancestors lived in groups with homicide rates that would make inner-city Detroit or Los Angeles look tame by comparison (Pinker, 2011).

Our ancestors were those that survived, and to do so they relied on a well-developed self-protection system that persists in modern humans (Neuberg et al., 2011). Our self-protection system is activated by cues indicating physical danger, such as angry expressions, snakes and spiders, scary movies or news reports, strange men, or simply being in the dark (Ackerman et al., 2006; Becker, Kenrick, Neuberg, Blackwell, & Smith, 2007; Ohman & Mineka, 2001; Schaller, Park, & Mueller, 2003). Activation of this system attunes people to information suggesting they might be in danger, making people more vigilant and paranoid. For example, when people see an out-group man with a perfectly neutral facial expression, a self-protection motive leads them to see that man as being angry and therefore more threatening (Maner et al., 2005).

A self-protection motive spurs people to seek safety and make safe choices. Activating this motive leads people to take fewer risks (Lerner & Keltner, 2001), prefer the status quo (Jost & Hunyady, 2005), and, as mentioned earlier, be particularly averse to losses (Li et al., 2012). It also promotes a “strength in numbers” response, motivating people to band together with

Table 1
Fundamental motives, their triggers, and example behavioral tendencies.

Evolutionary motive	Cues triggering system	Examples of behavioral tendencies	Key theories or ideas
<i>Self-protection</i> Evade physical danger to remain safe	Possibility of physical danger: <ul style="list-style-type: none"> • Angry faces, outgroup males • Darkness, loud noises • Interacting with threatening person 	<ul style="list-style-type: none"> • Increased aversion to losses • Increased tendency to conform • Decreased risk-seeking 	Phobia preparedness (Ohman & Mineka, 2001) Life history theory (Ellis et al., 2009) Functional projection (Maner et al., 2005) Error management theory (Haselton & Nettle, 2006)
<i>Disease avoidance</i> Avoid infections to stay healthy	Potential presence of pathogens: <ul style="list-style-type: none"> • Coughing, sneezing, foul smells • Dirtiness, deformity, foreignness • Interacting with sick person 	<ul style="list-style-type: none"> • Become more introverted • Seek “clean” and familiar products • Avoid used products 	Behavioral immune system (Schaller & Park, 2011) Adaptations for disgust (Tybur, Lieberman, Kurzban, & DiScioli, 2013) Darwinian gastronomy (Sherman & Billing, 1999) Incest avoidance (Westermarck, 1921)
<i>Affiliation</i> Form and maintain cooperative alliances	Friendship threat or opportunity: <ul style="list-style-type: none"> • Social rejection, loneliness • Concerns about fairness • Interacting with friends, coworkers 	<ul style="list-style-type: none"> • Seek products to connect with others • Susceptibility to word-of-mouth • Seek reviews for others’ opinions 	Reciprocal altruism (Trivers, 1971) Social contract theory (Cosmides, 1989) Indirect reciprocity (Nowak & Sigmund, 1998) Altruistic punishment (Fehr & Gächter, 2002)
<i>Status</i> Gain and maintain respect and prestige	Status threat or opportunity: <ul style="list-style-type: none"> • Competition, success • Prestigious people or objects • Interacting with rivals 	<ul style="list-style-type: none"> • Seek products that signal prestige • Seek exclusive, up-to-date features • Increased prosocial choices 	Intra-sexual selection (Andersson, 1994) Costly signaling (Zahavi, 1975) Dominance vs. prestige (Henrich & Gil-White, 2001) Social dominance theory (Sidanius & Pratto, 1999)
<i>Mate acquisition</i> Acquire a desirable romantic partner	Desirable members of opposite sex: <ul style="list-style-type: none"> • Sexy images, products • Romantic stories • Interacting with potential mate 	<ul style="list-style-type: none"> • Increased male impulsivity, risk-taking, & conspicuous consumption • Increased public altruism by females • Male nonconformity and creativity 	Inter-sexual selection (Andersson, 1994) Differential parental investment (Trivers, 1972) Strategic pluralism (Gangestad & Simpson, 2000) Ovulatory shift hyp. (Thornhill & Gangestad, 2008)
<i>Mate retention</i> Foster long-term mating bond	Relationship threat or celebration: <ul style="list-style-type: none"> • Anniversary, reminisce old times • Interloper, wandering eye • Interacting with spouse/partner 	<ul style="list-style-type: none"> • Seek gifts to foster relationship • Women’s attention to other women’s attractiveness • Men’s attention to other men’s status 	Attachment theory (Bowlby, 1969) Strategic interference theory (Buss, 1989) Mate guarding (Buss, 2002) Jealousy adaptations (Buss, Larsen, Westen, & Semmelroth, 1992)
<i>Kin care</i> Invest in and care for family and kin	Family or vulnerable others: <ul style="list-style-type: none"> • Vulnerable babies and children • Suffering family members • Interacting with family members 	<ul style="list-style-type: none"> • Increased trust of others • Increased nurturance • Increased giving without expectation of reciprocation 	Kin selection/inclusive fitness (Hamilton, 1964) Parent–offspring conflict (Schlomer, Del Giudice, & Ellis, 2011) Trivers–Willard hypothesis (Trivers & Willard, 1973) Paternity uncertainty (Platak & Shackelford, 2006)

similar others, both physically and in their tastes and choices (Griskevicius, Goldstein, et al., 2009; Kugihara, 2005; Van Vugt, De Cremer, & Janssen, 2007). When asked to indicate whether people prefer Mercedes-Benz or BMW cars, for example, a self-protection motive leads people to choose the same brand that the majority of others prefer, regardless of which brand it is (Griskevicius, Goldstein, et al., 2006). Similarly, when evaluating works of art in an online chat room, people in a self-protective state are particularly swayed by the opinions of others.

There are large markets in consumer goods designed to appease people’s concerns about physical threat, including fences, door locks, alarm systems, motion detectors, and guard dogs. But while some products and services function to directly fulfill a need for safety, activating a self-protection motive is likely to influence many aspects of consumer behavior, such as by altering product and brand preferences. For example, a self-protection motive might lead people to seek products and brands associated with safety. Consumers might choose a Volvo (a brand associated with safety) over a Toyota, even if the Toyota is superior on most dimensions. And when purchasing the car, a self-protection motive might increase people’s willingness to pay more for extras that enhance safety

such as all-side airbags and emergency roadside assistance service. A self-protection motive may also alter preferences beyond safety, such as by leading people to seek brands that are perceived as more trustworthy. For instance, people might prefer products made by established brands rather than brands with less credibility, even if the product offered by the established brand is inferior.

A self-protection motive is also likely to alter the nature of decision biases. Given that a sense of threat is associated with not wanting to draw attention to oneself (Griskevicius, Goldstein, et al., 2006), this motive might lead people to be more susceptible to the compromise effect (Simonson, 1989), making people even less likely to choose extreme options. Similarly, the self-protection system may decrease people’s desire for novelty and variety, leading them to stick with options that have been effective in the past. Understanding how the self-protection system alters preferences and decision making presents a plethora of novel hypotheses that await testing.

2. Disease avoidance

Biologists estimate that infectious diseases have put important selection pressure on the human species (Gangestad & Buss,

1993). For example, large portions of the European population were decimated by the Bubonic Plague, and up to 75% of the native North American population was wiped out by diseases brought over by Europeans (Dobson & Carter, 1996). The more recent Spanish flu in 1918 killed between 40 and 100 million people worldwide (Olson, Simonson, Edelson, & Morse, 2005), and the World Health Organization estimates that 15 million humans currently die each year from infectious diseases such as influenza, tuberculosis, and AIDS.

One result of this ever-present pathogen threat has been the evolution of a physical immune system to fight off infection. Another has been the evolution of a psychological “behavioral immune system” that helps us avoid infection in the first place through our behaviors (Schaller & Park, 2011). This psychological disease-avoidance system is activated by cues suggesting the presence of pathogens, such as sneezing and coughing, foul odors, or skin lesions or abnormalities (Ackerman et al., 2009; Miller & Maner, 2011). The system can also be triggered by having Westerners think about people from exotic and faraway places such as Sri Lanka and Ethiopia. In fact, merely seeing someone who might be sick can trigger our biological immune system and increase inflammation (Schaller, Miller, Gervais, Yager, & Chen, 2010).

A disease avoidance motive spurs people to behave in ways designed to thwart pathogen transmission. For example, people exposed to a bacterial odor increase their intentions to purchase and use condoms to avoid sexually transmitted disease (Tybur, Bryan, Magnan, & Caldwell Hooper, 2011). Similarly, hearing people cough or seeing others wear face masks increases hand-washing (Fleischman et al., 2011). When the disease avoidance system has been primed, people become more socially avoidant, including becoming more introverted and less tolerant of foreigners (Mortensen et al., 2010; Schaller & Park, 2011). On the other side of the coin, prejudices against foreigners can be reduced by reminding people of a recent flu shot, or having them clean their hands with an antiseptic wipe (Huang, Sedlovskaya, Ackerman, & Bargh, 2011).

Activating the disease avoidance system does not simply produce general avoidance. For example, women primed with pathogen concerns are actually *faster to approach* highly attractive and symmetrical men—features that have been historically associated with lower pathogen loads and increased resistant to disease (Cantú, Beall, Griskevicius, Simpson, & Schaller, submitted for publication).

A disease avoidance motive also spurs people to seek familiar foods and avoid those of foreign origin, unless those foods are sealed in airtight packaging (Li, White, Ackerman, Neuberg, & Kenrick, under review). Merely seeing an ad for a pharmacy can activate this motive, increasing people’s willingness to pay for products that are brand new rather than used (Huang & Ackerman, submitted for publication). And this motive can also be triggered by exposure to products that elicit some level of disgust, such as feminine products, which can cause consumers to avoid the seemingly “contaminated” products sitting nearby on a store shelf (Morales & Fitzsimons, 2007).

Just as the mate acquisition system can be activated through internal cues such as ovulatory hormones, the disease

avoidance system can also be activated through pregnancy hormones. Activation is highest during the first trimester of pregnancy, when the developing fetus is particularly susceptible to serious developmental problems if the mother gets sick. It is precisely during this time when women not only avoid novel foods that might contain pathogens, but they also become more xenophobic (Navarrete, Fessler, & Eng, 2007).

Many products function to directly fulfill a disease avoidance need. People aim to limit the spread of disease by buying tissues, soaps, sanitary wipes, and bug sprays, and entire supermarket aisles carry remedies for preventing disease. But like a self-protection motive, a disease avoidance motive is likely to influence preferences and choices in broader ways. Consider how self-protection versus disease avoidance motives might influence choices in the hospitality industry, such as where people vacation, which airline they fly on, and which hotel they stay at. Whereas a self-protection motive might lead people to place special value on safety (e.g., prioritizing the safety of a foreign travel destination, flying on the safest airline, and staying in the most well-lit and reputable hotel), a disease avoidance motive might lead people to place special value on cleanliness. For example, disease avoidance might spur people to travel to non-exotic and nearby locations such as Americans choosing to visit Canada versus Peru, and perhaps driving rather than flying to avoid contagious diseases that could be picked up in airports. Indeed, one study found that concerns about swine flu led to noticeable decreases in air travel, particularly among populations most concerned about disease (Hamamura & Park, 2010).

A disease avoidance motive might not only lead people to take domestic vacations, but might even lead people to pay premiums for products that are made domestically rather than in exotic foreign countries. And concern about disease might lead people to place special value on “natural” goods. People might seek out clothing made of natural fibers and increase their willingness to pay for pricy foods that don’t contain synthetic additives. Most of the novel hypotheses about how the disease avoidance system influences consumer behavior await testing.

3. Affiliation

Although some animals spend most of their lives as hermits, humans have always lived in groups. To survive successfully, our ancestors needed to form coalitions and get along with other people (Hill & Hurtado, 1996; Lancaster, 1978). Having allies and friends provided a natural insurance policy against starvation, enabling people to pool their risk to make it through tough times. Friends also teach one another valuable skills, provide support, and can team up to achieve tasks too big for an individual.

The affiliation system continues to be valuable today, and we invest heavily in building and maintaining our friendships (Baumeister & Leary, 1995). The affiliation system is activated by cues of old friends, potential new friends, or being part of a group. For example, this motive is primed when an old college roommate sends you a Christmas card, when you’re thinking about inviting a neighbor for dinner, or when your coworker picks up the tab for lunch. The affiliation system is also triggered when

friendships are threatened, such as when a person is socially rejected. The affiliation system attunes people to information about acquaintances who might make good friends, whether we are being accepted, rejected, or cheated by those people, and whether we are getting along with the friends we do have.

An affiliation motive promotes the reinforcement of existing friendships and spurs behaviors to make new friends (Maner, Nathan DeWall, Baumeister, & Schaller, 2007). In contrast to a disease avoidance motive that leads people to become more introverted and treat social contact as a cost, an affiliation motive leads people to become more outgoing and treat social contact as a benefit. For example, people with an affiliation motive spend more money on products that could be enjoyed together with other people rather than consumed alone (Mead, Baumeister, Stillman, Rawn, & Vohs, 2011). An affiliation motive can also promote gift-giving, particularly by leading people to purchase gifts that might run counter to their own identities to fulfill the desires of the intended recipient (Ward & Broniarczyk, 2011).

Many products and services function to fulfill an affiliation need, including those that directly increase contact with friends such as Facebook and smart phones with unlimited minutes for talking and texting. But an affiliation motive is likely to have powerful influences on a variety of product categories that can less directly help one to make new friends or maintain existing social relationships, including clothing, cosmetics, and consumer electronics. For example, an affiliation motive might lead people to especially seek brands and styles that help them fit in. People concerned with affiliation may also be more susceptible to word-of-mouth information, which helps inform them what their peers might think of particular products.

Activating the affiliation system may also alter decision biases and errors. Consider the classic framing effect, which shows that framing the same exact options as a loss versus a gain leads people to behave irrationally by drastically altering their choices (Tversky & Kahneman, 1981). The classic research on framing involved a hypothetical problem concerning 600 people, where research participants made choices between how many people they could save. Yet our ancestors rarely encountered groups this size, and instead tended to live in bands of fewer than 100 people. Given that the affiliative network for our ancestors would have almost always been less than 100 people, what happens when people are presented with the same classic framing problem but it involves fewer than 100 people? Research finds that when the problem involves groups of people the size of an ancestral band, the framing effect disappears (Wang, 1996). People appear to no longer behave irrationally when the size of the group constitutes the natural size of an affiliative network. Although more research is needed, the fundamental motives framework presents many fruitful directions for testing how engaging different evolutionary motives may alter people's biases and decision-making processes (Ermer, Cosmides, & Tooby, 2008; Kenrick & Griskevicius, 2013).

4. Status

As a group-living species, humans not only desire to affiliate; they also seek to gain status in their groups. Being respected by

others has always brought a host of benefits, and this did not start with human beings. Dominant baboons get first crack at food and the best spot at the watering hole, and dominant male chimps get to mate with the most desirable females (Sapolsky, 2005). The benefits of status continue to apply among modern human beings. People with higher status have greater interpersonal influence, more material resources, higher self-esteem, and better health (Marmot, 2004). Wearing a high-status brand-name shirt versus an unbranded shirt even increases compliance with person's requests and the likelihood of being hired for a job (Nelissen & Meijers, 2011).

The status system is triggered by cues of dominance, prestige, or competition, such as accomplishments, rivalries, or highly-regarded products or people. This system can also be activated when people are deprived of status or power (Rucker & Galinsky, 2009). Activation of the status system attunes people to where they stand in the hierarchy, and increases people's tendency to value associations with high-status people and objects, while cutting off association with those lower-ranked. Meanwhile, this system leads people to regard other people's disrespect as especially costly.

As in other animals, one route to achieving status for humans is through dominance—overpowering others and forcing deference. Activating a status motive increases aggressive behavior (Griskevicius, Tybur, et al., 2009), and leads people to seek physically larger and more imposing products (DuBois, Rucker, & Galinsky, 2012). However, a more common route human beings use to attain and maintain status is through prestige—freely conferred deference (Cheng, Tracy, Foulsham, Kingstone, & Henrich, 2013; Henrich & Gil-White, 2001). Accordingly, a status motive leads people to pay more for luxurious and prestigious goods (Ivanic, Overbeck, & Nunes, 2011; Rucker & Galinsky, 2008), which are to be displayed to others (Berger & Ward, 2010; Han, Nunes, & Drèze, 2010). For example, after an important achievement, people are more motivated to show-off their increased status by seeking products that can be displayed to others (Griskevicius, Shiota, & Nowlis, 2010). When prestigious goods are unattainable, a status motive can lead people to purchase counterfeit products (Wilcox, Kim, & Sen, 2009). And once status has been obtained, people exhibit behavior designed to preserve their status (Maner, Gailliot, Butz, & Peruche, 2007), such as by prioritizing personal goals over group goals (Maner & Mead, 2012).

The desire for status is not all about selfishness and indulgence. This is because status in a group can be enhanced through self-sacrifice (Hardy & Van Vugt, 2006). People across cultures are known to engage in what's known as competitive altruism, whereby individuals compete for status through prosocial behaviors (Roberts, 1998; Van Vugt, Roberts, & Hardy, 2007). Among the indigenous communities of Pacific Northwest America, for example, tribal chiefs compete to see who can give away the most resources, with the most benevolent individual gaining the most status (Cole & Chaikin, 1990). Accordingly, activating a status motive can lead people to spend more money on others than on themselves (Rucker, DuBois, & Galinsky, 2011). Likewise, a status motive can lead people to choose inferior, but

environmental “green” products because doing so can enhance people’s prosocial reputations (Griskevicius, Tybur, & Van den Bergh, 2010).

While people pursue status directly through luxury products and premium brands, status motives are likely to have broader implications. For example, activating a status motive might lead people to become less price-sensitive. Because being cheap is generally associated with lower status, increased concern about status might lead people to be less concerned about price. Activating a status motive might also alter biases and errors in judgment. Consider the well-established overconfidence bias—people’s seemingly irrational tendency to have an overly high assessment of their own abilities. Research finds that being overly confident can function to enhance one’s status, as when groups select leaders based on their perceived confidence rather than their actual competence (Johnson & Fowler, 2011; Anderson, Brion, Moore, & Kennedy, 2012). This suggests that activating a status motive might lead people to become especially overconfident, whereas activating another fundamental motive such as self-protection might produce more accurate judgment—or perhaps even reverse this well-documented human bias.

5. Mate acquisition

Even if people manage to avoid danger and disease while getting others to like and respect them, it would count for naught in evolutionary terms if they did not manage to find someone willing to help them transport their genes into the next generation. But for any social animal, including *Homo sapiens*, the challenge of mating involves a variety of behaviors that at first glance might appear completely unrelated to mating.

The mate acquisition system is triggered by the presence of real or imagined potential mates. This motive can be stimulated by sexy or romantic ads, movies, or television shows. When this motive is activated, people are attuned to information about the desirability of others as romantic partners and their own desirability.

In contrast to a self-protection motive that leads people to want to blend in, a mate acquisition motive leads people to want to be noticed. But while both men and women want to stand out to acquire a mate, they often seek to draw attention to themselves in different ways. For men, these motives increase willingness to spend on luxury products (Griskevicius et al., 2007). Men exposed to mating cues pay more attention to status goods (Janssens et al., 2011) and choose more conspicuous and expensive brands (Sundie et al., 2011). Men in this state also become more creative (Griskevicius et al., 2006), charitable (Iredale, Van Vugt, & Dunbar, 2008), manipulative (Ackerman, Griskevicius, & Li, 2011), socially dominant (Campbell, Simpson, Stewart, & Manning, 2003), heroic (Griskevicius et al., 2007), and independent (Griskevicius, Goldstein, et al., 2006). For example, when asked to indicate whether they prefer Mercedes-Benz or BMW cars, this motive led men to choose the opposite brand from what the majority of others prefer, regardless of which brand it was (Griskevicius, Goldstein, et al., 2006).

The mate acquisition system also alters men’s decision-making, leading them to become less loss averse (Li et al.,

2012), more risk-seeking (Baker & Maner, 2008; Knutson, Wimmer, Kuhnen, & Winkielman, 2008), and more impulsive (Wilson & Daly, 2004). For example, touching a piece of women’s lingerie led men to prefer small but immediate rewards over considerably larger but later gains (Van den Bergh, Dewitte, & Warlop, 2008). Similar results are found when the mate acquisition system is triggered by variations in sex ratio—the relative proportion of males to females in a given social context (Durante, Griskevicius, Simpson, Cantu, & Tybur, 2012). When women are scarce, men are willing to do more to secure a mate, such as by saving less money and being more willing to use credit cards for immediate purchases (Griskevicius et al., 2012).

Like for men, the motive to acquire a mate leads women to want to stand out. But women seek to stand out in different ways than men. For instance, this motive leads women to advertise their beauty and youth (Kenrick & Keefe, 1992; Wiederman, 1993). Women across the world expend a great deal of time, energy, and money choosing clothes, accessories, and shades of make-up that enhance their attractiveness. In fact, whereas activating a mate acquisition motive doesn’t lead women to become brazenly risky like men, there is one telling exception: Women will take more risks if it enhances their appearance (Hill & Durante, 2011). Women with a mate acquisition motive are more willing to take diet pills and tan their bodies to enhance their appearance, even when they know that doing so can cause cancer.

A mate acquisition motive also leads women to become more cooperative (Griskevicius, Goldstein, et al., 2006) and more helpful (Griskevicius et al., 2007). Women in a romantic frame of mind are more supportive and more likely to go along with the group, and they’re also eager to assist other people in need. But this veneer of benevolence doesn’t mean that mating-minded women are less competitive. Rather, the competition involves being the nicest, the most supportive, and the most helpful.

Numerous consumer goods and services are designed to fulfill people’s mate acquisition need, including the billion-dollar online dating industry and other industries such as cosmetics, grooming, and gym memberships. But this motive is likely to have more general influences on consumer tendencies. For example, a mate acquisition motive might increase preference for variety, leading people seek larger numbers of options of various products. And given that a mate acquisition motive is associated with standing out, it might also amplify the desire for novelty. People with this motive might quickly become bored with their products, seeking to be the first to try a new experience or own a brand new product.

6. Mate retention

For 95% of all mammals, mating is a short-term affair that ends after copulation (Geary, 2000). But for humans and a few other mammals such as gibbons, enhancing reproductive fitness involved a second mating challenge—retaining that mate. The challenge of keeping a mate is very different from that of finding a mate. A great deal of time, effort, and money go into maintaining relationships, including spending time and money

on presents and anniversaries, managing potential conflicts over sharing resources and child care, as well as managing the dangers of other people who might want to steal one's partner away. And even when consumers are making choices only for themselves, their decisions are nevertheless often implicitly or explicitly shaped by their relationship partner (Simpson, Griskevicius, & Rothman, 2012).

The mate retention system involves positive behaviors designed to maintain current relationship bonds, as well as behaviors design to manage threats of potential romantic competitors (Campbell & Ellis, 2005). Mate retention motivation is activated by cues that celebrate or threaten a long-term relationship, such as reminiscing about the relationship, noticing that an anniversary is coming up, or catching a potential rival eyeing your partner. This motive spurs people to behave in ways to ensure the solidarity and functioning of their long-term romantic relationships. For example, it leads people to seek preservation of their current relationships by showing increased love and care for their current partner (Buss & Shackelford, 1997; Saad & Gill, 2003). People motivated to retain their mate likewise tend to devalue alternative potential romantic partners (Lydon, Fitzsimons, & Naidoo, 2003).

A mate retention motive leads people to guard their mate from potential rivals (Maner, Gailliot, Rouby, & Miller, 2007). Whereas a mate acquisition motive leads people to be more attentive to attractive members of the opposite sex (Maner et al., 2005), a mate retention motive leads people to be more attentive to attractive members of the same sex, who represent potential threats to the relationship (Maner, Miller, Rouby, & Gailliot, 2009).

Mate retention has some intriguing ramifications for luxury spending. Recall that conspicuous consumption is triggered by a motive to acquire a mate in men, but not in women (Griskevicius et al., 2007; Sundie et al., 2011). Yet women account for more than half of spending on lavish goods in the U.S. (D'Arpizio, 2011). What might be an evolutionary function for women's conspicuous consumption? Recent evidence suggests that women might use luxury products to signal to other women that her romantic partner is especially committed to her (Wang & Griskevicius, submitted for publication). This means that flaunting designer handbags and pricey shoes might help women deter romantic rivals from poaching their relationship partner. In fact, findings show that activating a mate retention motive not only led women to seek luxury products, but that this conspicuous display was effective at decreasing other women's intentions to poach a "taken" romantic partner (Wang & Griskevicius, submitted for publication).

More broadly, the fundamental motives framework raises several interesting questions about the common notion that "sex sells." Whereas traditional perspectives suggest that sex in advertising mainly functions to draw attention to and create positive associations between a product and a sexy spokesperson, the fundamental motives framework highlights that sexy ads can also influence preferences and behavior by activating mating-related motives. Accordingly, sex is likely to be much better at selling some things than others. For example, selling discount products using sex might actually lead men to avoid those

products, since men in this state seek to show off their wealth. And the notion that there are two separate mating systems—mate acquisition and mate retention—suggests that there are specific instances when sex will sell to men versus women. Whereas women are normally turned off by gratuitous sex in advertisements that activate a mate acquisition motive for men, presenting sex in the context of a retaining a relationship may be effective for women, such as when a sexy man is shown giving an expensive watch to that special woman in his life (Dahl, Sengupta, & Vohs, 2009).

7. Kin care

The ultimate reason parents bond with one another is because it is good for the offspring. Studies of traditional societies, similar to those in which humans evolved, show that children without both parents are less likely to survive; and if they do survive, they don't fare as well as those with two investing parents (Geary, 2000; Hill & Hurtado, 1996). In the modern world, people continue to expend immense amounts of time, energy, and financial resources to care for family and raise their children. In the U.S., for example, it costs an average of \$205,960 to \$475,680 to raise just one child—and that figure does not include college tuition (Lino, 2010).

The kin care system is activated around family members, especially by children who are vulnerable or in need (Glocker et al., 2009; Sprengelmeyer et al., 2009). The system can also be triggered by cues of similarity, living together, common goals, and even fictive kinship terminology such as "brotherhood," "sisterhood," or "our company is one big family" (Lieberman et al., 2007; Park, Schaller, & Van Vugt, 2008).

The kin care system is not what leads us to have children (the mate acquisition system takes care of that by motivating us to have sex). Instead, a kin care motive spurs people to behave in ways to ensure that individuals in need receive proper care and attention. The kin care system facilitates nurturing behavior (Glocker et al., 2009; Sherman, Haidt, & Coan, 2009), motivating a willingness to sacrifice oneself to help others, especially if those others are one's relatives (Burnstein, Crandall, & Kitayama, 1994). It motivates people to provide others with social support (Kivett, 1985), physical protection (Daly & Wilson, 1988), and financial support (Smith, Kish, & Crawford, 1987). For example, when a person plays an economic game with a stranger while only seeing the stranger's photo, the player is more trusting of the stranger with money when the stranger's photo has been morphed with the player's (DeBruine, 2002). Because cues of physical or attitudinal similarity trigger associations of genetic relatedness (Park & Schaller, 2005), giving money to the other person morphed with your own image is, from the perspective of evolutionary inclusive fitness, like benefitting a long lost relative.

Many products and services are geared at helping to fulfill the need for kin care, including diapers, baby bottles, sippie cups, toddler clothes, toys, and babysitters, followed by choices of bigger clothes, bigger toys, summer camps, bicycles, and then decisions about college tuition, perhaps contributions to a child's wedding and honeymoon, and then the various product choices made in buying gifts for grandchildren. Thus far, little

research has examined the influence of a kin care motive on behavior. Given the universal importance of family throughout our evolutionary history, it is likely that activating kin care will produce many unique effects on consumer preferences and decision making process.

Roadmap for future research

The fundamental motives framework highlights that people everywhere have the same ultimate motives. From Afghanistan to Zimbabwe, all humans have evolved motivations to evade physical harm, avoid disease, make friends, attain status, acquire a mate, keep that mate, and care for family. These deep-seated ancestral motives continue to shape modern consumer preferences and decision-making, albeit not always in obvious or conscious ways. A core implication of the framework is that the same person might make different—and sometimes entirely inconsistent—choices depending on which fundamental motive is currently active. Although this framework has been empirically fruitful in generating many novel hypotheses about basic psychological processes and social cognition, the overwhelming majority of empirical implications for consumer behavior and decision-making have yet to be tested. Future research is poised to investigate the many ways in which fundamental motives influence preferences, choices, biases, errors, and many other phenomena central to consumer behavior.

Although all humans possess the same evolutionary motives, the strength and workings of each motive are expected to differ across individuals as a function of several key factors. These include a person's (1) current life stage, (2) biological sex, (3) individual differences in life history strategy, and (4) culture. We next consider how these moderating factors might influence the workings of fundamental motives and explore possibilities for future research.

Fundamental motives and life stage

An evolutionary perspective highlights that organisms proceed through three distinct stages across the lifespan: (1) a *somatic* growth stage lasting from birth to puberty, (2) a *mating* stage lasting from puberty until parenthood, and (3) a *parenting* stage that (for humans) includes grand-parenting. Because each life stage is associated with solving distinct evolutionary challenges, different motivational systems come online at different life stages. The self-protection and disease avoidance systems come online early in the somatic stage. But the affiliation system comes online only toward the end of the somatic stage, when children first become concerned with making friends. The inflow of testosterone at the beginning of the mating stage marks the emergence of the mate acquisition and status systems. Finally, the mate retention and kin care systems only come online fully only after a person attracts a mate worth keeping and begins to care for offspring (see Kenrick et al., 2010, for additional discussion of the development of motives over the lifespan).

Because individuals need to solve specific evolutionary challenges during each life stage, preferences and behavior are likely to change in systematic ways as a function of life stage. For example, to the extent that men's conspicuous consumption functions to help solve the evolutionary challenges of status and mate acquisition (Griskevicius et al., 2007; Sundie et al., 2011), we would expect that men have the strongest desire for flashy luxury products in the mating stage. This desire for conspicuous luxuries should decrease as men age and become parents. But if an older man finds himself back on the mating market (and hence back in the mating stage), his desire for conspicuous luxury products may increase once again.

People may also be differentially sensitive to specific fundamental motives in different life stages. Given that mate acquisition, status, and affiliation motives are particularly important during the mating stage, for example, these motives might be most easily activated and exert the most powerful influences for teenagers and young adults. By contrast, self-protection and disease avoidance motives may be weaker for teenagers and young adults, who are in the business of seeking mates and states. Since attracting mates and gaining status are often associated with seeking out danger, this suggests that appeals to safety and health aimed toward teenagers might actually increase *unsafe* and *unhealthy* behavior. By contrast, appeals to safety and health are likely to be more powerful for individuals in the parenting stage, who are likely to be more concerned about staying alive and healthy to raise their offspring.

Surprisingly little research has considered changes in consumer behavior across the lifespan. The fundamental motives framework provides a fruitful theoretical foundation for examining how, why, and when consumption tendencies and decision making change across the lifespan.

Fundamental motives and biological sex

An evolutionary perspective highlights that males and females of a given species are likely to share important similarities and have important differences. For example, human males and females have historically solved some evolutionary problems such as disease avoidance in similar ways, meaning that the sexes are expected to differ little when it comes to their psychology of avoiding pathogens. But males and females have historically solved other evolutionary problems, such as mate acquisition, in very different ways, suggesting that the sexes are likely to differ in predictable ways when it comes to mating.

Many behavioral sex differences are rooted in the biological sex difference of minimum parental investment (Kenrick, Sadalla, Groth, & Trost, 1990). In any mammalian species such as humans, reproduction requires females to biologically invest more than males. Whereas females must *at minimum* carry an energetically hungry fetus for several months and then nurse it afterwards, males do not. Instead, males have historically contributed to successful reproduction in other ways. This sex difference in parental investment produces a universal sex difference in mate preferences. Whereas women place more value on men's resources, men place more value on women's cues to fertility,

such as attractiveness and youth. One implication is that men should be more interested in products that display their wealth and ability to obtain resources, whereas women should be more interested in products that advertise their youth and attractiveness.

Higher parental investment by females also means that females will be choosier about which males will suffice as mates, especially if the male might not stick around to contribute any resources. As a consequence, males have to compete more vigorously to be selected as mates by a choosy female. This suggests that males should generally be more willing to take risk and more strongly discount the future, especially when doing so could attain status or a mate.

Surprisingly little research has considered systematic similarities and differences in men's and women's consumer behaviors. Here too the fundamental motives framework, and an evolutionary perspective more broadly, provide a theoretical foundation for examining how, why, and when men and women should differ—and should be similar—in their consumption tendencies and decision-making.

Fundamental motives and individual differences in life history strategy

Not all people are the same. An evolutionary perspective highlights that many important individual differences between people are linked to the person's *life history strategy* (Ellis, Figueredo, Brumbach, & Schlomer, 2009; Griskevicius et al., 2013). Across species, life history strategies vary on a fast–slow continuum. Some individuals follow faster strategies and others follow slower strategies.

Life history strategies are related to important differences in mating. Fast strategists start puberty at earlier ages, have sex at earlier ages, and have more sexual partners. By contrast, slow strategists tend to start puberty at later ages, have sex later in life, and have fewer sexual partners, preferring monogamous relationships. But fast and slow strategies are also associated with vastly different psychologies and orientations to decision making. Whereas fast strategists tend to be short-term opportunists and take immediate benefits with little regard for long-term consequences, slow strategists tend to be long-term planners who delay immediate gratification to increase future payoffs (Griskevicius, Tybur, Delton, & Robertson, 2011; Griskevicius et al., 2013).

Because fast and slow strategists systematically differ in their psychological orientations, activating specific fundamental motives may produce different responses for individuals following fast versus slow strategies. For example, a mate acquisition motive leads most people to seek luxury products. But fast and slow strategists might seek very different types of luxury products. Fast strategists might desire flashy luxury goods, seeking loud brands and readily visible goods such as bright sports cars. By contrast, slow strategists might desire inconspicuous luxury products, seeking quiet brands and products that attract less attention such as a white luxury sedan. Overall, future research is poised to examine how, why, and when fundamental motives produce varying effects as a function of a person's life history strategy.

Fundamental motives and culture

The effect of fundamental motives on behavior is expected to differ as a function of culture (Kenrick & Gomez-Jacinto, *in press*). Consider that a mate acquisition motive is likely to lead men and women across cultures to want to stand out. But how a given individual will seek to stand out will undoubtedly be influenced by culture. For example, whereas men in some cultures might seek to display wealth by engaging in conspicuous consumption, in other cultures they might do so by giving away their material goods.

Culture will also influence the threshold at which different fundamental motives will be activated. Consider that a mate acquisition motive is universally triggered by internal or external “erotic” cues. Yet in parts of Europe explicit sexual imagery is commonplace, whereas such imagery is banned in the Middle East. This suggests that what's considered erotic enough to trigger a mate acquisition motive will likely differ between the two cultures, with a woman's ankle being much more likely to trigger the motive in one culture than in the other.

More broadly, it is grossly erroneous to dichotomize human behavior as being a product of either evolution *or* culture. Just like all behavior is a function of the interaction of genes *and* the environment, preferences and behavior are a product of the interaction of evolved psychological mechanisms and requisite cultural inputs (Gangestad, Haselton, & Buss, 2006; Kenrick, Nieuweboer, & Buunk, 2010; Norenzayan & Heine, 2005).

Conclusion

People everywhere have the same evolutionary needs, and these fundamental needs have a profound influence on people's preferences and behavior. While an evolutionary perspective points to the ultimate reasons for human behavior, it does *not* in any way suggest that proximate reasons are irrelevant or uninformative. Rather, an evolutionary perspective highlights that there are critically distinct and complementary levels of analysis. At the proximate level, consumers seek goals such as novelty, value, self-esteem, meaning, quality, happiness, simplicity, reliability, entertainment, efficiency, identity, and hundreds of other goals. But at the ultimate level, people are often pursuing something very different, even if we're not always aware of what's happening behind the curtain of consciousness. The brain is designed to solve a set of perennial ancestral challenges. The need to solve these deep-seated evolutionary challenges continues to powerfully influence modern product choices and economic decisions. To fully understand the present, it is essential to understand the past. By connecting our modern behaviors to their ancestral roots, we can more clearly see the fundamental motives for why we buy.

References

- Ackerman, J. M., Becker, D. V., Mortensen, C. R., Sasaki, T., Neuberg, S. L., & Kenrick, D. T. (2009). A pox on the mind: Disjunction of attention and memory in the processing of physical disfigurement. *Journal of Experimental Social Psychology*, *45*, 478–485.

- Ackerman, J. A., Griskevicius, V., & Li, N. P. (2011). Let's get serious: Communicating commitment in romantic relationships. *Journal of Personality and Social Psychology, 100*, 1015–1026.
- Ackerman, J. M., & Kenrick, D. T. (2008). The costs of benefits: Help-refusals highlight key trade-offs of social life. *Personality and Social Psychology Review, 12*(2), 118–140.
- Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., Kenrick, D. K., Becker, D. V., Griskevicius, V., et al. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to out-group heterogeneity. *Psychological Science, 17*, 836–840.
- Acock, J. (2009). *Animal behavior: An evolutionary approach* (9th ed.). Sunderland, MA: Sinauer Associates Inc.
- Anderson, C. P., Brion, S., Moore, D. A., & Kennedy, J. A. (2012). A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology, 103*, 718–735.
- Anderson, U. S., Perea, E. F., Becker, D. V., Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., et al. (2010). I only have eyes for you: Ovulation redirects attention (but not memory) to attractive men. *Journal of Experimental Social Psychology, 46*, 804–808.
- Andersson, M. (1994). *Sexual selection*. Princeton, NJ: Princeton University Press.
- Baker, M., & Maner, J. K. (2008). Risk-taking as a situationally sensitive male mating strategy. *Evolution and Human Behavior, 29*, 391–395.
- Barrett, H. C. (2012). A hierarchical model of the evolution of human brain specializations. *Proceedings of the National Academy of Sciences, 109*, 10733–10740.
- Barrett, H. C., & Kurzban, R. (2006). Modularity in cognition: Framing the debate. *Psychological Review, 113*, 628–647.
- Baumeister, R. R., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529.
- Becker, D. V., Anderson, U. S., Neuberg, S. L., Maner, J. K., Shapiro, J. R., Ackerman, J. M., et al. (2010). More memory bang for the attentional buck: Self-protection goals enhance encoding efficiency for potentially threatening males. *Social Psychological and Personality Science, 1*, 182–189.
- Becker, D. V., Kenrick, D. T., Neuberg, S. L., Blackwell, K. C., & Smith, D. (2007). The confounded nature of angry men and happy women. *Journal of Personality and Social Psychology, 92*, 179–190.
- Berger, Jonah, & Ward, Morgan K. (2010). Subtle signals of inconspicuous consumption. *Journal of Consumer Research, 37*(4), 555–569.
- Bowlby, J. (1969). *Attachment. Attachment and loss, Vol. I*, London: Hogarth.
- Bugental, D. B. (2000). Acquisition of the algorithms of social life: A domain-based approach. *Psychological Bulletin, 126*, 187–219.
- Burnstein, E., Crandall, C., & Kitayama, S. (1994). Some neo-Darwinian decision rules for altruism: Weighing the cues for inclusive fitness as a function of the biological importance of the decision. *Journal of Personality and Social Psychology, 67*, 773–789.
- Buss, D. M. (1989). Conflict between the sexes: Strategic interference and the evocation of anger and upset. *Journal of Personality and Social Psychology, 56*, 735–747.
- Buss, D. M. (2002). Human mate guarding. *Neuroendocrinology Letters, 23*, 23–29 (Suppl.).
- Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science, 3*, 251–255.
- Buss, D. M., & Shackelford, T. K. (1997). From vigilance to violence: Mate retention tactics in married couples. *Journal of Personality and Social Psychology, 72*, 346–361.
- Campbell, L., & Ellis, B. J. (2005). Commitment, love, and mate retention. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 419–442). Hoboken, NJ, US: John Wiley & Sons, Inc.
- Campbell, L., Simpson, J. A., Stewart, M., & Manning, J. G. (2003). Putting personality in social context: Extraversion, emergent leadership, and the availability of rewards. *Personality and Social Psychology Bulletin, 29*, 1547–1559.
- Cantù, S. M., Beall, A. T., Griskevicius, V., Simpson, J. A., & Schaller, M. (submitted for publication). *When are women especially attracted to attractive men? Mate preferences in a pathogen prevalent ecology*.
- Cheng, J. T., Tracy, J. L., Foulsham, T., Kingstone, A., & Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige and distinct yet viable avenues to social rank and influence. *Journal of Personality and Social Psychology, 104*, 103–125.
- Cole, D., & Chaikin, I. (1990). *An iron hand upon the people: The law against the Potlatch on the Northwest Coast*. Vancouver: Douglas & McIntyre; Seattle: University of Washington Press.
- Confer, J. C., Easton, J. A., Fleischman, D. S., Goetz, C. D., Lewis, D. M., Perilloux, C., et al. (2010). Evolutionary psychology: Controversies, questions, prospects, and limitations. *American Psychologist, 65*, 110–126.
- 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. (1994). Beyond intuition and instinct blindness: Toward an evolutionarily rigorous cognitive science. *Cognition, 50*, 41–77.
- Dahl, D. W., Sengupta, J., & Vohs, K. D. (2009). Sex in advertising: Gender differences and the role of relationship commitment. *Journal of Consumer Research, 36*, 215–231.
- Daly, M., & Wilson, M. (1988). *Homicide*. New York: Aldine de Gruyter.
- D'Arpizio, C. (2012). *Luxury Goods Worldwide Market Study, Spring 2012 Update*. Bain & Company, (accessed May 15, 2012) <http://www.bain.com/about/press/press-releases/luxury-goods-market-predicted-to-grow-six-to-seven-percent-in-2012.aspx>
- DeBruine, L. M. (2002). Facial resemblance enhances trust. *Proceedings of the Royal Society of London B, 269*(1498), 1307–1312.
- Dobson, A. P., & Carter, E. R. (1996). Infectious diseases and human population history. *Bioscience, 46*, 115–126.
- DuBois, David, Rucker, Derek D., & Galinsky, Adam D. (2012). Super size me: Product size as a signal of status. *Journal of Consumer Research, 38*(6), 1047–1062.
- Durante, K. M., Griskevicius, V., Hill, S. E., Perilloux, C., & Li, N. P. (2011). Ovulation, female competition, and product choice: Hormonal influences on consumer behavior. *Journal of Consumer Research, 37*, 921–934.
- Durante, K. M., Griskevicius, V., Simpson, J. A., Cantu, S. M., & Tybur, J. M. (2012). Sex ratio and women's career choice: Does a scarcity of men lead women to choose briefcase over baby? *Journal of Personality and Social Psychology, 103*, 121–134.
- Durante, Kristina M., Li, Norman P., & Haselton, Martie G. (2008). Changes in women's choice of dress across the ovulatory cycle: Naturalistic and laboratory task-based evidence. *Personality and Social Psychology Bulletin, 34*, 1451–1460.
- Ellis, B. J., Figueredo, A. J., Brumbach, B. H., & Schlomer, G. L. (2009). Fundamental dimensions of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human Nature, 20*, 204–268.
- Ermer, E., Cosmides, L., & Tooby, J. (2008). Relative status regulates risky decision making about resources in men: Evidence for the co-evolution of motivation and cognition. *Evolution and Human Behavior, 29*, 106–118.
- Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. *Nature, 415*, 137–140.
- Fiske, A. P. (1992). The four elementary forms of sociality: Framework for a unified theory of social relations. *Psychological Review, 99*, 689–723.
- Fleischman, D. S., Webster, G. D., Judah, G., de Barra, M., Auger, R., & Curtis, V. A. (2011). Sensor recorded changes in rates of hand washing with soap in response to the media reports of the H1N1 pandemic in Britain. *British Medical Journal Open, 1*.
- Gangestad, S. W., & Buss, D. M. (1993). Pathogen prevalence and human mate preferences. *Ethology and Sociobiology, 14*, 89–96.
- Gangestad, S. W., Haselton, M. G., & Buss, D. M. (2006). Evolutionary foundations of cultural variation: Evoked culture and mate preferences. *Psychological Inquiry, 17*, 75–95.
- Gangestad, S. W., & Simpson, J. A. (2000). The evolution of human mating: Trade-offs and strategic pluralism. *The Behavioral and Brain Sciences, 23*, 573–587.
- Gangestad, S. W., & Thornhill, R. (2008). Human oestrus. *Proceedings of the Royal Society B, 275*, 991–1000.
- Garcia, J., & Koelling, R. A. (1966). Relation of cue to consequence in avoidance learning. *Psychonomic Science, 4*, 123–124.

- Gazzaniga, Michael S. (1987). *Social brain: Discovering the networks of the mind*. Basic Books.
- Geary, D. C. (2000). Evolution and the proximate expression of human paternal investment. *Psychological Bulletin*, 126, 55–77.
- Glocker, M. L., Langleben, D. D., Ruparel, K., Loughead, J. W., Gur, R. C., et al. (2009). Baby schema in infant faces induces cuteness perception and motivation for caretaking in adults. *Ethology*, 115, 257–263.
- Griskevicius, V., Ackerman, J. A., Cantu, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., et al. (2013). When the economy falters do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science*, 24, 197–205.
- Griskevicius, V., Cialdini, R. B., & Kenrick, D. T. (2006a). Peacocks, Picasso, and parental investment: The effects of romantic motives on creativity. *Journal of Personality and Social Psychology*, 91, 63–76.
- Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Cialdini, R. B., & Kenrick, D. T. (2006b). Going along versus going alone: When fundamental motives facilitate strategic (non)conformity. *Journal of Personality and Social Psychology*, 91, 281–294.
- Griskevicius, V., Goldstein, N. J., Mortensen, C. R., Sundie, J. M., Cialdini, R. B., & Kenrick, D. T. (2009a). Fear and loving in Las Vegas: Evolution, emotion, and persuasion. *Journal of Marketing Research*, 46, 385–395.
- Griskevicius, V., Shiota, M. N., & Nowlis, S. M. (2010a). The many shades of rose-colored glasses: An evolutionary approach to the influence of different positive emotions. *Journal of Consumer Research*, 37, 238–250.
- Griskevicius, V., Tybur, J. M., Ackerman, J. A., Delton, A. W., Robertson, T. E., & White, A. E. (2012). The financial consequences of too many men: Sex ratio effects on saving, borrowing, and spending. *Journal of Personality and Social Psychology*, 102, 69–80.
- Griskevicius, V., Tybur, J. M., Delton, A. W., & Robertson, T. E. (2011). The influence of mortality and socioeconomic status on risk and delayed rewards: A life history theory approach. *Journal of Personality and Social Psychology*, 100, 1015–1026.
- Griskevicius, V., Tybur, J. M., Gangestad, S. W., Perea, E. F., Shapiro, J. R., & Kenrick, D. T. (2009b). Aggress to impress: Hostility as an evolved context-dependent strategy. *Journal of Personality and Social Psychology*, 96, 980–994.
- Griskevicius, V., Tybur, J. M., Sundie, J. M., Cialdini, R. B., Miller, G. F., & Kenrick, D. T. (2007). Blatant benevolence and conspicuous consumption: When romantic motives elicit costly displays. *Journal of Personality and Social Psychology*, 93, 85–102.
- Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010b). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, 98, 392–404.
- Hamamura, T., & Park, J. H. (2010). Regional differences in pathogen prevalence and defensive reactions to the “swine flu” outbreak among East Asians and Westerners. *Evolutionary Psychology*, 8, 506–515.
- Hamilton, W. D. (1964). The genetical evolution of social behavior. *Journal of Theoretical Biology*, 7, 1–52.
- Han, Young Jee, Nunes, Joseph C., & Drèze, Xavier (2010). Signaling status with luxury goods: The impact of brand prominence. *Journal of Marketing*, 74, 14–30.
- Hardy, C. L., & Van Vugt, M. (2006). Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin*, 32, 1402.
- Haselton, M. G., Bryant, G. A., Wilke, A., Frederick, D. A., Galperin, A., Frankenhuys, W., et al. (2009). Adaptive rationality: An evolutionary perspective on cognitive bias. *Social Cognition*, 27, 733–763.
- Haselton, M. G., & Nettle, D. (2006). The paranoid optimist: An integrative evolutionary model of cognitive biases. *Personality and Social Psychology Review*, 10, 47–66.
- Henrich, J., & Gil-White, F. J. (2001). The evolution of prestige: Freely conferred status as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior*, 22, 165–196.
- Hill, Sarah E., & Durante, Kristina M. (2011). Courtship, competition, and the pursuit of attractiveness: Mating goals facilitate health-related risk-taking and strategic risk suppression in women. *Personality and Social Psychology Bulletin*, 37, 383–394.
- Hill, K., & Hurtado, A. M. (1996). *Ache life history: The ecology and demography of a foraging people*. Hawthorne, NY: Aldine de Gruyter.
- Huang, J. Y., & Ackerman, J. M. (submitted for publication). Preferences for previously-owned products: The roles of contagion threat and protection.
- Huang, J. Y., Sedlovskaya, A., Ackerman, J. M., & Bargh, J. A. (2011). Immunizing against prejudice: Effects of disease protection on attitudes toward out-groups. *Psychological Science*, 22, 1550–1556.
- Iredale, W., Van Vugt, M., & Dunbar, R. I. M. (2008). Showing off in humans: Male generosity as a mating signal. *Evolutionary Psychology*, 6(3), 386–392.
- Ivanic, A., Overbeck, J. R., & Nunes, J. (2011). Status, race, and money. *Psychological Science*, 22, 1557–1566.
- Janssens, K., Pandelaere, M., Van den Bergh, B., Millet, K., Lens, I., & Roe, K. (2011). Can buy me love: Mate attraction goals lead to perceptual readiness for status products. *Journal of Experimental Social Psychology*, 47, 254–258.
- Johnson, D. D. P., & Fowler, J. H. (2011). The evolution of overconfidence. *Nature*, 477, 317–320.
- Jost, J. T., & Hunyady, O. (2005). Antecedents and consequences of system-justifying ideologies. *Current Directions in Psychological Science*, 14, 260–265.
- Kahneman, Daniel, & Tversky, Amos (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263–291.
- Kenrick, D. T., & Gomez-Jacinto, L. (2013). Economics, sex, and the emergence of society: A dynamic life history model of cultural variation. In M. Gelfand, C. Y. Chiu, & Y. Y. Hong (Eds.), *Advances in Culture and Psychology, Volume 3*, New York: Oxford University Press (in press).
- Kenrick, D. T., & Griskevicius, V. (2013). *The rational animal: How evolution made us smarter than we think*. New York: Basic Books.
- Kenrick, D. T., Griskevicius, V., Neuberg, S. L., & Schaller, M. (2010a). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science*, 5, 292–314.
- Kenrick, D. T., & Keefe, R. C. (1992). Age preferences in mates reflect sex differences in human reproductive strategies. *The Behavioral and Brain Sciences*, 15, 75–133.
- Kenrick, D. T., Li, N. L., & Butner, J. (2003). Dynamical evolutionary psychology: Individual decision rules and emergent social norms. *Psychological Review*, 110, 3–28.
- Kenrick, D. T., Neuberg, S. L., Griskevicius, V., Schaller, M., & Becker, D. V. (2010b). Goal-driven cognition and functional behavior: The fundamental motives framework. *Current Directions in Psychological Science*, 19, 63–67.
- Kenrick, D. T., Nieuweboer, S., & Buunk, A. P. (2010). Universal mechanisms and cultural diversity: Replacing the blank slate with a coloring book. In M. Schaller, A. Norenzayan, S. Heine, T. Yamagishi, & T. Kameda (Eds.), *Evolution, culture, and the human mind* (pp. 257–271). New York: Psychology Press.
- Kenrick, D. T., Sadalla, E. K., Groth, G., & Trost, M. R. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of Personality*, 58, 97–116.
- Kivett, V. R. (1985). Consanguinity and kin level: Their relative importance to the helping network of older adults. *Journal of Gerontology*, 40, 228–234.
- Knutson, B., Wimmer, G. E., Kuhnen, C. M., & Winkielman, P. (2008). Nucleus accumbens activation mediates the influence of reward cues on financial risk taking. *NeuroReport*, 19, 509–513.
- Kugihara, N. (2005). Effects of physical threat and collective identity on prosocial behaviors in an emergency. In J. P. Morgan (Ed.), *Psychology of aggression* (pp. 45–67). Hauppauge, NY: Nova Science.
- Lancaster, J. B. (1978). Carrying and sharing in human evolution. *Human Nature*, 1, 82–89.
- Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, 81, 146–159.
- Li, Y. J., Kenrick, D. T., Griskevicius, V., & Neuberg, S. L. (2012). Economic decision biases and fundamental motivations: How mating and self-protection alter loss aversion. *Journal of Personality and Social Psychology*, 102, 550–561.
- Li, Y. J., White, A. E., Ackerman, J. M., Neuberg, S. L., & Kenrick, D. T. (2013). *We eat what we are: Disease concerns shift preferences for (un)familiar foods*. (under review).

- Lieberman, D., Tooby, J., & Cosmides, L. (2007). The architecture of human kin detection. *Nature*, *445*, 727–731.
- Lino, M. (2010). Expenditures on children by families, 2009 (miscellaneous publication no. 1528–2009). Retrieved from <http://www.cnppusda.gov/Publications/CRC/crc2009.pdf>
- Lydon, J. E., Fitzsimons, G. M., & Naidoo, L. (2003). Devaluation versus enhancement of attractive alternatives: A critical test using the calibration paradigm. *Personality and Social Psychology Bulletin*, *29*, 349–359.
- Maner, J. K., Gailliot, M. T., Butz, D., & Peruche, B. M. (2007a). Power, risk, and the status quo: Does power promote riskier or more conservative decision-making? *Personality and Social Psychology Bulletin*, *33*, 451–462.
- Maner, J. K., Gailliot, M. T., Rouby, D. A., & Miller, S. L. (2007b). Can't take my eyes off you: Attentional adhesion to mates and rivals. *Journal of Personality and Social Psychology*, *93*, 389–401.
- Maner, J. K., Kenrick, D. T., Neuberg, S. L., Becker, D. V., Robertson, T., Hofer, B., et al. (2005). Functional projection: How fundamental social motives can bias interpersonal perception. *Journal of Personality and Social Psychology*, *88*, 63–78.
- Maner, J. K., & Mead, N. (2012). The essential tension between leadership and power: When leaders sacrifice group goals for the sake of self-interest. *Journal of Personality and Social Psychology*, *99*, 482–497.
- Maner, J. K., Miller, S. L., Moss, J. H., Leo, J. L., & Plant, A. E. (2012). Motivates social categorization: Fundamental motives enhance people's sensitivity to basic social categories. *Journal of Personality and Social Psychology*, *103*, 70–83.
- Maner, J. K., Miller, S. L., Rouby, D. A., & Gailliot, M. T. (2009). Intrasexual vigilance: The implicit cognition of romantic rivalry. *Journal of Personality and Social Psychology*, *97*, 74–87.
- Maner, Jon K., Nathan DeWall, C., Baumeister, Roy F., & Schaller, Mark (2007c). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem". *Journal of Personality and Social Psychology*, *92*, 42–55.
- Marmot, M. (2004). *Status syndrome: How your social standing directly affects your health and life expectancy*. London: Bloomsbury.
- Mead, N. L., Baumeister, R. F., Stillman, T. F., Rawn, C. D., & Vohs, K. D. (2011). Social exclusion causes people to spend and consume in the service of affiliation. *Journal of Consumer Research*, *37*(5), 902–919.
- Miller, S. L., & Maner, J. K. (2011). Sick body, vigilant mind: The biological immune system activates the behavioral immune system. *Psychological Science*, *22*, 1467–1471.
- Miller, G. F., Tybur, J. M., & Jordan, B. D. (2007). Ovulatory cycle effects on tip earnings by lap-dancers: Economic evidence for human estrus? *Evolution and Human Behavior*, *28*, 375–381.
- Morales, Andrea C., & Fitzsimons, Gavan J. (2007). Product contagion: Changing consumer evaluations through physical contact with "disgusting" products. *Journal of Marketing Research*, *44*, 272–283.
- Mortensen, C. R., Becker, D. V., Ackerman, J. M., Neuberg, S. L., & Kenrick, D. T. (2010). Infection breeds reticence: The effects of disease salience on self-perceptions of personality and behavioral avoidance tendencies. *Psychological Science*, *21*, 440–447.
- Navarrete, C. D., Fessler, D. M. T., & Eng, S. J. (2007). Elevated ethnocentrism in the first trimester of pregnancy. *Evolution and Human Behavior*, *28*(1), 60–65.
- Nelissen, R. M. A., & Meijers, M. H. C. (2011). Social benefits of luxury brands as costly signals of wealth and status. *Evolution and Human Behavior*, *32*, 343–355.
- Neuberg, S. L., Kenrick, D. T., & Schaller, M. (2010). Evolutionary social psychology. In S. T. Fiske, D. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 761–796) (5th ed.). New York: John Wiley & Sons.
- Neuberg, S. L., Kenrick, D. T., & Schaller, M. (2011). Human threat management systems: Self-protection and disease avoidance. *Neuroscience and Biobehavioral Reviews*, *35*, 1042–1051.
- Norenzayan, A., & Heine, S. J. (2005). Psychological universals: What are they and how can we know? *Psychological Bulletin*, *131*, 763–784.
- Nowak, M. A., & Sigmund, K. (1998). Evolution of indirect reciprocity by image scoring. *Nature*, *393*, 573–577.
- Ohman, A., & Mineka, S. (2001). Fears, phobias, and preparedness. Toward an evolved module of fear and fear learning. *Psychological Review*, *108*, 483–522.
- Olson, D. R., Simonson, L., Edelson, P. J., & Morse, S. S. (2005). Epidemiological evidence of an early wave of the 1918 influenza pandemic in New York City. *Proceedings of the National Academy of Sciences*, *102*, 11059–11063.
- 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.
- Park, J. H., Schaller, M., & Van Vugt, M. (2008). Psychology of human kin recognition: Heuristic cues, erroneous inferences, and their implications. *Review of General Psychology*, *12*, 215–235.
- Pinker, S. (2011). *The better angels of our nature: The decline of violence in history and its causes*. London: Penguin Books.
- Platak, S. M., & Shackelford, T. K. (2006). *Female infidelity and paternal uncertainty*. Cambridge, UK: Cambridge University Press.
- Roberts, G. (1998). Competitive altruism: From reciprocity to the handicap principle. *Proceedings of the Royal Society of London B*, *265*, 427–431.
- Rucker, Derek D., DuBois, David, & Galinsky, Adam D. (2011). Generous paupers and stingy princes: Power drives consumer spending on self and others. *Journal of Consumer Research*, *37*, 1015–1029.
- Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and compensatory consumption. *Journal of Consumer Research*, *35*, 257–267.
- Rucker, Derek D., & Galinsky, Adam D. (2009). Conspicuous consumption versus utilitarian ideals: How different levels of power shape consumer consumption. *Journal of Experimental Social Psychology*, *45*, 549–555.
- Saad, G. (2007). *The evolutionary bases of consumption*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Saad, G., & Gill, T. (2003). An evolutionary psychology perspective on gift giving among young adults. *Psychology and Marketing*, *20*, 765–784.
- Saad, G., & Stenstrom, E. (2012). Calories, beauty, and ovulation: The effects of the menstrual cycle on food and appearance-related consumption. *Journal of Consumer Psychology*, *22*, 102–113.
- Sapolsky, R. M. (2005). The influence of social hierarchy on primate health. *Science*, *308*, 648–652.
- Schaller, M., Miller, G. E., Gervais, W. M., Yager, S., & Chen, E. (2010). Mere visual perception of other people's disease symptoms facilitates a more aggressive immune response. *Psychological Science*, *21*, 649–652.
- Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters). *Current Directions in Psychological Science*, *20*, 99–103.
- Schaller, M., Park, J. H., & Mueller, A. (2003). Fear of the dark: Interactive effects of beliefs about danger and ambient darkness on ethnic stereotypes. *Personality and Social Psychology Bulletin*, *29*, 637–649.
- Schlomer, G. L., Del Giudice, M., & Ellis, B. J. (2011). Parent-offspring conflict theory: An evolutionary framework for understanding conflict within human families. *Psychological Review*, *118*, 496–521.
- Sherman, P. W., & Billing, J. (1999). Darwinian gastronomy: Why we use spices. *Bioscience*, *49*, 453–463.
- Sherman, G. D., Haidt, J., & Coan, J. A. (2009). Viewing cute images increases behavioral carefulness. *Emotion*, *9*, 282–286.
- Sherry, D. F., & Schacter, D. L. (1987). The evolution of multiple memory systems. *Psychological Review*, *94*, 439–454.
- Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. New York: Cambridge University Press.
- Simonson, I. (1989). Choice based on reasons: The case of attraction and compromise effects. *Journal of Consumer Research*, *16*, 158–174.
- Simpson, J. A., Griskevicius, V., & Rothman, A. (2012). Consumer decisions in relationships. *Journal of Consumer Psychology*, *22*, 303–314.
- Smith, M., Kish, B., & Crawford, C. (1987). Inheritance of wealth as human kin investment. *Ethology and Sociobiology*, *8*, 171–182.
- Sperry, R. W. (1968). Hemisphere deconnection and unity in conscious awareness. *American Psychologist*, *23*, 723–733.
- Sprengelmeyer, R., Perrett, D. I., Fagan, E. C., Cornwell, R. E., Lobmaier, J. S., et al. (2009). The cutest little baby face: A hormonal link to sensitivity to cuteness in infant faces. *Psychological Science*, *20*, 149–154.
- Sundie, J. M., Kenrick, D. T., Griskevicius, V., Tybur, J. M., Vohs, K. D., & Beal, D. J. (2011). Peacocks, Porsches, and Thorstein Veblen: Conspicuous consumption as a sexual signaling system. *Journal of Personality and Social Psychology*, *100*, 664–680.
- Thornhill, R., & Gangestad, S. W. (2008). *The evolutionary biology of human female sexuality*. New York, NY: Oxford University Press.

- Tinbergen, N. (1963). On the aims and methods of ethology. *Zeitschrift für Tierpsychologie*, *20*, 410–433.
- Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19–136). New York: Oxford University Press.
- Tooby, J., & Cosmides, L. (2005). Conceptual foundations of evolutionary psychology. In D. Buss (Ed.), *Handbook of evolutionary psychology* (pp. 5–67). Hoboken, NJ: Wiley.
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *The 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, IL: Aldine.
- Trivers, R. L., & Willard, D. E. (1973). Natural selection of parental ability to vary the sex ratio of offspring. *Science*, *179*, 90–92.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, *221*, 453–458.
- Tybur, J. M., Bryan, A. D., Magnan, R. E., & Caldwell Hooper, A. E. (2011). Smells like safe sex: Olfactory pathogen primes increase intentions to use condoms. *Psychological Science*, *22*, 478–480.
- Tybur, J. M., Lieberman, D. L., & Griskevicius, V. G. (2009). Microbes, mating, and morality: Individual differences in three functional domains of disgust. *Journal of Personality and Social Psychology*, *29*, 103–122.
- Tybur, J. M., Lieberman, D., Kurzban, R., & DiScioli, P. (2013). Disgust: Evolved function and structure. *Psychological Review*, *120*, 65–84.
- Van den Bergh, B., Dewitte, S., & Warlop, L. (2008). Bikinis instigate generalized impatience in intertemporal choice. *Journal of Consumer Research*, *35*, 85–97.
- Van Vugt, M., De Cremer, D., & Janssen, D. P. (2007a). Gender differences in cooperation and competition: The male-warrior hypothesis. *Psychological Science*, *18*, 19–23.
- Van Vugt, M., Roberts, G., & Hardy, C. (2007b). Competitive altruism: Development of reputation-based cooperation in groups. In R. Dunbar, & L. Barrett (Eds.), *Handbook of evolutionary psychology* (pp. 531–540). Oxford: Oxford University Press.
- Wang, X. T. (1996). Domain-specific rationality in human choices: Violations of utility axioms and social contexts. *Cognition*, *60*, 31–63.
- Wang, Y., & Griskevicius, V. (2013). *Women's conspicuous consumption and relationships: When Fendi handbags fend off romantic rivals*. (submitted for publication).
- Ward, Morgan K., & Broniarczyk, Susan M. (2011). It's not me, it's you: How gift giving creates giver identity threat as a function of social closeness. *Journal of Consumer Research*, *38*(June), 164–181.
- Westermarck, E. A. (1921). *The history of human marriage* (5th ed.). London: Macmillan.
- Wiederman, M. W. (1993). Evolved gender differences in mate preferences: Evidence from personal advertisements. *Ethology and Sociobiology*, *14*, 331–352.
- Wilcoxon, H., Dragoin, E., & Kral, P. (1971). Illness-induced aversion in rats and quail: Relative salience of visual and gustatory cues. *Science*, *171*, 826–828.
- Wilcox, K., Kim, H., & Sen, S. (2009). Why do consumers buy counterfeit luxury brands? *Journal of Marketing Research*, *46*, 247–259.
- Wilson, M., & Daly, M. (2004). Do pretty women inspire men to discount the future? *Proceedings of the Royal Society B*, *271*(Suppl. 4), 177–179.
- Zahavi, A. (1975). Mate selection—A selection for a handicap. *Journal of Theoretical Biology*, *53*, 205–214.