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EVOLUTION, LIFE HISTORY THEORY,
AND PERSONALITY

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The study of personality is central not only to psychology, but also to the social and life sciences. The way individuals perceive, process, interpret, and remember daily events is filtered through the lens of who they are. In the past two decades, evolutionary scientists have turned their attention toward understanding personality. Many of the important ideas and findings from this body of work, however, have not yet crossed over into mainstream theorizing and research in personality psychology. As a consequence, the field of personality has not taken full advantage of one of the most powerful sets of ideas in the social and life sciences—the modern evolutionary perspective.

One can begin studying personality from an evolutionary perspective by asking a *specific* type of “why” question. Consider Joe, a male in his early twenties. Joe is highly extraverted, open to new experiences, uninhibited, and sexually promiscuous. To understand Joe’s personality, a psychologist would generally ask: Why does Joe have this

specific profile of traits? One answer might be that these traits are simply a genetic product of Joe’s mother and father. From an evolutionary perspective, however, this answer is unsatisfactory. For example, it does not address why Joe’s parents—as well as his grandparents—possess the specific personality profiles they do. Instead, the key to understanding personality from an evolutionary perspective is to recognize that individual differences in personality traits are not randomly determined. Personality trait scores, in other words, are not dictated by whimsical genetic reshuffling in each generation. Instead, they are likely to be *adaptive*, meaning that specific clusters of traits may have had historical evolutionary benefits.

The realization that certain personality profiles may be adaptive, however, is only the beginning to the study of personality. After all, if it was evolutionarily advantageous to have Joe’s traits, why doesn’t everyone have them? The reason is that high and low scores on a given trait typically entail potential benefits *and* potential costs. For example, Joe’s trait profile of

being highly extraverted, open to novel experiences, uninhibited, and sexually active is likely to have certain adaptive benefits. This cluster of traits, for instance, may enable Joe to make friends, gain status, and attract romantic partners quickly. But these traits may also carry debilitating costs and liabilities. For example, they might lead Joe to take more physical and social risks, which could result in premature death, social exploitation, or sexually transmitted diseases. The main point is that all trait clusters involve *trade-offs*, and evolutionary approaches seek to explain why and how these trade-offs occur.

Central to an examination of trade-offs is the premise that, although all major personality traits are partly heritable (Bouchard, 2004), a person's standing on a given trait (i.e., high, moderate, or low) is not "pre-programmed" from birth. Rather, a person's standing on a trait emerges partly in response to environmental events. When Joe was born, for instance, he was not "prewired" to be highly extraverted, open to new experiences, uninhibited, and sexually promiscuous. Rather, he was "prepared" to assess and then respond to specific features of his childhood and current environment. Depending on what those features were, Joe eventually came to have a trait profile that was generally well adapted to his local environment, with his genetics being influential but not deterministic. This of course does not imply that Joe consciously chose to adopt a specific personality profile. Rather, adaptive psychological mechanisms led him to eventually adopt a specific profile in response to particular features of his upbringing and current environment.

The primary goal of this chapter is to show how the infusion of evolutionary principles into the field of personality might yield novel and important insights into how and why certain personality traits, and variability on these traits, came to exist. This chapter is divided into four sections. In the first section, we describe hallmark features of an evolutionary approach and outline some of the unique ways in which it can contribute to our understanding of

personality. In section 2, we briefly discuss how circumplex models of personality, which are relevant to an evolutionary perspective, have been applied to explain important facets of social behavior. We then review major evolutionary theories that explain why certain personality traits (e.g., the Big Five) are prevalent across cultures. In section 3, we review evolutionary theories and models that elucidate why variation exists within nearly all major traits and individual differences. In the final section, we combine various models to explain why, from an evolutionary perspective, someone such as Joe possesses the specific trait profile he does. We then propose directions in which future theory and research on evolutionary personality psychology might head.

SECTION 1: KEY FEATURES OF AN EVOLUTIONARY APPROACH

Evolutionary approaches to understanding social behavior are rooted in the seminal work of Charles Darwin (1859, 1871). Darwin proposed that, just as natural selection shapes morphological features such as the design of a bat's wing or a monkey's hand, it also shapes psychological and behavioral tendencies. Bats, for example, have specialized brain mechanisms that analyze the sonarlike echoes of the unique sounds emitted by their prey in order to locate moving prey in the dark. Monkeys, in comparison, have brain mechanisms that are specially designed to analyze binocular color vision, which enables them to gauge distances more accurately while leaping between branches to determine the ripeness of fruit. These examples illustrate how different mental mechanisms have evolved to meet different evolutionary needs.

According to an evolutionary approach, all animals have inherited brains and bodies that are equipped to respond in ways that tend to be *adaptive*—that typically match the unique demands of the environments in which our ancestors evolved, resulting in

greater requirements are shared demands, to solve the encountered evolutionary his

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greater reproductive fitness. Some adaptations are shared by common descent, some are shared by virtue of similar ecological demands, and some are uniquely designed to solve the particular problems routinely encountered by a species during its evolutionary history (Tooby & Cosmides, 1992).

This same evolutionary logic applies to *Homo sapiens* in that natural selection also designed complex human traits such as those involved in the generation and expression of language, emotion, and mating behavior. Just as human morphological features—opposable thumbs, larynxes, noses, and upright postures—have been shaped by evolutionary pressures, humans have also inherited brain mechanisms that are specially designed to solve recurrent problems associated with survival and reproduction. Along with the larynx, for example, humans have also inherited brain mechanisms for learning to communicate and use language. All languages share the same basic universal structure that reflects evolved human mechanisms for language, even if the specific words and sounds of a language differ across cultures (Pinker, 1994).

From an evolutionary perspective, the key question one asks about a physical or behavioral feature is: What might its ultimate adaptive function be? In other words, how might a given trait or behavior have helped our ancestors survive, reproduce, and parent? Consider two types of answers to the same “why” question that a psychologist might ask: When asking why children prefer products containing corn syrup to spinach, one type of answer is that sweet foods taste better and produce more pleasure than spinach. An evolutionary approach, however, would take this a step further and also ask why highly sweetened foods taste good and produce more pleasure than spinach in the first place. In this case, the reason is because humans have inherited a preference for fatty and sweet foods. These kinds of foods, such as meat and ripe fruit, provided our ancestors with much-needed calories in a food-scarce environment, and did so more

effectively than foods lower in fat or sugar (e.g., roots, leaves, or unripe fruit). Thus, the more specific “why” question posed from an evolutionary perspective asks if—and how—a given behavior or trait might be adaptive.

Note that the kind of “why” question asked by an evolutionary approach is not the only type of “why” question that could be asked. For this reason, it is important to distinguish between four distinct yet compatible levels of analysis—evolutionary history, adaptive function, ontogenetic development, and proximate determinants (see Kenrick, Griskevicius, Neuberg, & Schaller, in press; Simpson & Gangestad, 2001; Tinbergen, 1963). Consider the following question: “Why are dominance displays more likely to be witnessed in male than female chimpanzees?” This “why” question can be addressed at four levels of analysis, with explanations at one level usually complementing those at other levels. Although evolutionary scientists are primarily interested in adaptive function, all four levels of analysis inform the evolutionary approach.

1. *Historical* (phylogenetic) explanations consider the ancestral roots of a given trait or behavior in relation to other species. Researchers adopting this approach, for example, might view sex differences in chimpanzee dominance in relation to other primate species or other social mammals (increasingly more distant relatives), noting that males are larger and more competitive in most mammalian species (see Eastwick, in press).

2. *Functional* (ultimate) explanations are concerned with the *ultimate adaptive* purposes of a given trait or behavior. A functional explanation, for instance, might focus on associations between dominance and reproductive success in males and females, noting that dominance is more germane to reproductive success in males than females.

3. *Developmental* (ontogenetic) explanations are concerned with lifespan-specific inputs that sensitize an organism to particular cues. A developmental explanation, for

example, might suggest that maturing male chimpanzees experience hormonal changes during this period in their life, making them more likely to engage in dominance-related behaviors than females.

4. *Proximate* explanations focus on the immediate triggers of a given trait or behavior. A proximate explanation, for example, might note that displays of male dominance are usually triggered by threats from other males, and that such responses to other males' displays are facilitated by higher levels of circulating testosterone.

Sometimes there is a straightforward connection between the different levels of analysis. For instance, the four types of answers to the question "Why do mothers nurse their young?" have clear connections: a *historical* explanation—all mammalian females nurse their young, given the way in which mammals reproduce; a *functional* explanation—infants who are nursed and given nourishment are more likely to survive; a *developmental* explanation—pregnancy produces hormonal and other bodily changes that enable lactation; and a *proximate* explanation—suckling the nipple produces the immediate release of milk in the mother. In other cases, however, clear connections between the different levels of analysis are less obvious. Consider the question "Why do birds migrate each year?" The *proximate* explanation is that birds migrate because days are getting shorter, and the amount of daylight is a cue that triggers migration. The *functional* explanation, however, is that migration increases birds' chances of survival, given that the distribution of desirable food varies seasonally. Individual birds, however, neither observe nor understand the connection between day length and survival. Similarly, with respect to human traits and behavior, evolutionary theorists do not assume that the links between proximate, developmental, functional, and historical levels of analysis will always be direct or obvious (Alcock & Crawford, 2008).

As previously noted, an evolutionary approach begins by asking the "why"

question at the second level of analysis—the functional level concerned with the ultimate adaptive purposes of a given trait or behavior. Evolutionary researchers, however, are not limited to focusing on only one level of analysis. Indeed, much of the power of an evolutionary approach comes from *integrating* research questions and answers along the four levels of analysis, which leads to a more complete understanding of a given psychological phenomenon. Consider once again the case of Joe, who is extraverted, open to new experiences, uninhibited, and sexually promiscuous. To fully understand why and how Joe has this particular combination of traits, we need to consider all four levels of analysis: (1) *Historical*: Do other mammalian species exhibit this type of personality trait profile and, if so, which ones?; (2) *Functional*: What are the adaptive benefits of having these specific traits?; (3) *Developmental*: Are there sensitive periods in childhood that partially determine whether Joe develops these trait patterns in adulthood?; and (4) *Proximate*: What are the environmental triggers—both in childhood and in adulthood—that lead Joe to manifest this constellation of traits? By asking "why" questions at all four levels of analysis, we gain a richer and more nuanced understanding of how and why Joe developed to become the person he is.

SECTION 2: INTERPERSONAL MODELS AND EXPLANATIONS OF WHY PERSONALITY EXISTS

Historically, many facets of interpersonal behavior have been explained by interpersonal circumplex models of personality (e.g., Horowitz, Wilson, Turan, Zolotsev, Constantino, & Henderson, 2006; Leary, 1957). All of these models assume that two broad motivational dimensions have contributed to human survival and reproduction throughout evolutionary history. The first dimension, labeled *communio*, reflects motives associated with developing and maintaining connections, closeness, or affiliation with other people; the second

dimension related to control. Evolutionary theorists have argued that each dimension of personality is related to different aspects of human survival and reproduction. For example, the *communio* dimension is related to the need for social support and affiliation, which are important for survival in a social species. The *control* dimension is related to the need for dominance and status, which are important for reproduction in a social species. The circumplex model of personality (Horowitz, 1971) suggests that these two dimensions are orthogonal, meaning that they are independent of each other. This model has been widely used to explain a variety of human behaviors and personality traits. For example, it has been used to explain differences in social behavior, such as the tendency to form close relationships with others (high *communio*) versus the tendency to be competitive and status-seeking (high *control*). The circumplex model has also been used to explain differences in personality traits, such as the tendency to be warm and affectionate (high *communio*) versus the tendency to be cold and distant (low *communio*). The circumplex model of personality is a useful tool for understanding human behavior and personality. It provides a framework for thinking about the relationship between social behavior and personality traits. It also provides a framework for understanding the evolution of human personality. The circumplex model suggests that the two dimensions of personality have evolved as a result of the need for social support and affiliation (high *communio*) and the need for dominance and status (high *control*). This model has been widely used to explain a variety of human behaviors and personality traits. For example, it has been used to explain differences in social behavior, such as the tendency to form close relationships with others (high *communio*) versus the tendency to be competitive and status-seeking (high *control*). The circumplex model has also been used to explain differences in personality traits, such as the tendency to be warm and affectionate (high *communio*) versus the tendency to be cold and distant (low *communio*). The circumplex model of personality is a useful tool for understanding human behavior and personality. It provides a framework for thinking about the relationship between social behavior and personality traits. It also provides a framework for understanding the evolution of human personality. The circumplex model suggests that the two dimensions of personality have evolved as a result of the need for social support and affiliation (high *communio*) and the need for dominance and status (high *control*).

dimension, labeled *agency*, refers to motives related to one's own influence, dominance, or control over others. Interpersonal theorists have used the core motives that anchor each dimension to interpret an assortment of interpersonal phenomena, ranging from attachment behavior in children and adults, to the establishment of dominance hierarchies, and to courtship behaviors. Interestingly, the more "interpersonal" factors of the Big Five (e.g., extraversion) fit very nicely within the two-dimensional space defined by communion and agency, which are orthogonal dimensions (see Costa & McCrae, Chapter 6). People who score higher on the trait of extraversion, for example, possess motives that are positive with respect to both communion and agency (dominance). Returning to our earlier example, one can conceptualize Joe as someone who is strongly motivated to achieve both contact/connection with other people as well as exert influence/control over them. The more "intrapersonal" dimensions of the Big Five (e.g., conscientiousness, openness to experience) may lead Joe to find other novel ways to act on these two core motives, which define Joe's interpersonal orientation to the social world.

Circumplex models have played important and generative roles in helping personality psychologists predict and understand links between personality traits, motives, and social behavior (see Horowitz et al., 2006). These models, however, were not intended to address other important issues. For example, they do not tackle the deeper "why" questions to which evolutionary approaches seek answers (see above), and they do not fully explain why so much variability exists on so many different personality traits. Several evolutionary theories, however, have been advanced to explain the existence of different personality traits (see Buss, 2009; Nettle, 2006, for reviews). Although these theories vary somewhat in their specific features, all of them share a common assumption: Personality is *adaptive* in the sense that certain traits should have helped our ancestors survive and/or reproduce

more successfully in the social and physical environments in which they lived.

Buss (1991), for example, proposes that the Big Five traits—Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness to Experience—were a critical part of the "adaptive landscape" of our ancestors. According to this view, other humans were probably the most important and salient feature of ancestral environments. Our ancestors, therefore, had to find ways to successfully interact with, respond to, and infer the intentions of other people in order to survive, reproduce, and raise offspring. Consistent with this model, most of the items used to measure the Big Five traits are evaluative adjectives that describe how other people typically think, feel, and behave, especially as potential contributors to or exploiters of group resources (Buss, 1991). This may explain why the Big Five are found in some form in all known cultures: these traits represent five of the most evolutionarily relevant dimensions on which other people had to be assessed in order for individuals to achieve sufficient reproductive fitness in early human groups (Brewer & Caporael, 1990, 2006).

Given this evolutionary perspective on the Big Five, the salience of extraversion may reflect the fact that early human groups were organized hierarchically. To the extent that more extraverted individuals were at or near the top of group leadership hierarchies, it would have been important to identify such people; helping them or working with them might have garnered more resources that could then be shared with friends and coalition partners. The salience of agreeableness could reflect the importance of establishing and maintaining harmonious, reciprocal relationships with other members of early human groups. To the extent that more agreeable people tended to be more trustworthy and better reciprocators, it would have been important to discern who these good potential cooperators were. The salience of neuroticism, by comparison, may have resulted from the chronic costs associated with becoming involved

with emotionally unstable and perhaps less productive individuals.

Extending the "adaptive landscape" notion, MacDonald (1998) hypothesizes that midlevel theories from evolutionary biology may also explain individual differences in certain personality traits. Parental investment theory (Trivers, 1972), for instance, predicts that the sex within a species that initially invests more in offspring (typically females) should be more cautious and discriminating when selecting mates, whereas the sex that invests less in offspring (typically males) should be more risky and competitive. Although human males invest more in their offspring than do males of other mammalian species, human females still have significantly higher obligatory parental investment (Trivers, 1985). Consistent with predictions from parental investment theory, men across cultures tend to score higher than women on traits that are good markers of the behavioral approach system (e.g., extraversion, sensation-seeking, dominance, and risk-taking). Women, by comparison, tend to score higher on measures assessing nurturance and communal orientation. MacDonald argues that these small yet reliable sex differences evolved to facilitate the different reproductive strategies that many women and men enacted during evolutionary history (see also Figueredo et al., 2005).

In summary, an evolutionary approach posits that personality traits are evolutionarily adaptive. This realization, however, sets up a more intriguing question to which we turn next: If certain traits are more adaptive than others, why do personality traits vary from person to person?

SECTION 3: WHY IS THERE VARIABILITY IN PERSONALITY?

If personality is an adaptive feature, one might expect that there would be little if any variation in personality traits (Tooby & Cosmides, 1990). For example, because having two eyes is so highly adaptive for

humans and other mammals, there is no variability in the number of eyes that individuals possess—everyone has two. Individual differences in personality traits, however, show substantial variation, suggesting that we must ask a different evolutionary question: How and why was it adaptive for there to be *variability* in certain personality traits?

Some trait variation is attributable to heritable differences between people. Twin and adoption studies have found that 40 to 55% of the variance underlying major personality traits is heritable, with the remaining variance being due to nonshared environmental effects or measurement error (Bouchard, 2004). Though considerable room remains for environmental influences on personality, the genes-personality link is more complicated—and much more interesting—than previously thought. Specifically, even if a significant portion of a given personality trait is heritable, this does not suggest that the trait is biologically predetermined at birth. As discussed earlier, it is more accurate to think of individuals at birth being "genetically prepared" to take on any of several different personality profiles later in life. Adopting a particular profile does not imply that a person is consciously choosing one personality type over another. Instead, it suggests that a person's adaptive psychological mechanisms are nonconsciously responding to certain features of his or her past and/or present environment. Evolutionary researchers are now trying to identify the factors that lead people to adopt different personality profiles, especially in response to early environmental experiences.

To understand how childhood environments might influence personality, we turn to Life History Theory (LHT). As explained in greater detail below, LHT proposes that an individual ought to adopt a specific personality profile depending on three early environmental factors: (1) Parental Investment (e.g., Is the father present or absent?); (2) Mortality Level (e.g., Is the environment dangerous or safe?); and

(3) Frequency of the local environment similar to c

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(3) Frequency of other personality types in the local environment (e.g., Are my traits similar to or different from other people?).

Life History Theory

Life History Theory (Charnov, 1993; Kaplan & Gangestad, 2005; Stearns, 1992) focuses on how traits arise from specific life experiences encountered at different points of social development. According to LHT, because time and resources are inherently limited, all organisms must make important *trade-offs* in how they divide up and use their resources at any given phase of life. Due to structural and resource constraints, organisms cannot simultaneously maximize each major component of fitness (i.e., survival, reproduction, caring for offspring and kin). As a result, LHT suggests that all organisms have been selected to prioritize the specific life-domain(s) on which current resources are spent. Most relevant for personality, LHT focuses on the specific selection pressures in our ancestral past that should have determined when, and the conditions under which, individuals allocated time, energy, and resources to physical development, growth, reproduction, and parenting.

According to LHT, individuals must make three basic types of trade-offs when "deciding" (nonconsciously) how to best allocate their energy at different stages of their lives: (1) whether to invest effort in current (immediate) reproduction *or* future (delayed) reproduction; (2) whether to invest effort in higher quantity *or* higher quality of offspring; and (3) whether to invest effort in mating *or* parenting. An individual cannot concurrently invest energy into both sides of any trade-off. Consider the trade-off involving investment in current (immediate) reproduction *or* future (delayed) reproduction. Investing in current reproduction means that an individual does *not* invest in future reproduction. In modern Western societies, for example, people who have children as teenagers often do not have sufficient resources (e.g., time, money,

energy) to acquire higher education and job experiences, which they might have had if they delayed reproduction.

It is important to emphasize that organisms (including people) are not necessarily consciously aware of these trade-offs. In other words, individuals do not consciously and carefully deliberate about when and how to make certain trade-offs. Instead, LHT suggests that an organism's motivational systems are calibrated to respond to specific environmental cues. Accordingly, some environments nonconsciously motivate individuals to favor one trade-off decision, whereas others nonconsciously motivate individuals to favor a different decision. In what follows, we review three types of environmental factors that should contribute to the development of specific personality traits or trait profiles.

Personality as a Function of Parental Investment

Inspired by LHT and research on father-absence during childhood (Draper & Harpending, 1982), Belsky, Steinberg, and Draper (1991) developed the first major evolution-based lifespan theory of human social and personality development. This theory focuses on the trade-off between offspring quantity and quality. According to the model, the main evolutionary function of early social experience is to "prepare" individuals for the environments they are likely to inhabit during their lifetime. Certain information gleaned from the early environment should help individuals adopt an appropriate reproductive strategy—one that, on average, increases fitness the best—in their future environments.

Belsky et al. (1991) hypothesize that two developmental trajectories culminate in two distinct reproductive strategies (i.e., personality profiles) in adulthood. One strategy entails a short-term, opportunistic orientation toward relationships, especially to mating and parenting, in which sexual intercourse happens earlier in life, romantic pair bonds are shorter and less stable,

and parental investment is lower. This orientation is geared toward increasing the *quantity* of offspring. The second strategy is characterized by a long-term, investing orientation toward relationships in which sexual intercourse occurs later in life, romantic pair bonds are more enduring, and parental investment is greater. This orientation focuses on maximizing offspring *quality*. A critical prediction of this model, one that distinguishes it from nonevolutionary theories of psychological and behavioral development, is that early rearing experiences should affect when puberty occurs. Specifically, puberty should take place earlier in individuals who develop along the "quantity trajectory" than in those who develop along the "quality trajectory." A growing body of evidence supports the Belsky et al. (1991) model, particularly the early predictors of pubertal timing in girls (see Ellis, 2004; Simpson & Belsky, 2008, for reviews).

Blending ideas from Belsky et al. (1991), Draper and Harpending (1982), and parental investment theory (Trivers, 1972), Ellis and colleagues (1999) hypothesize that fathers assume a special role in the development of girls' reproductive strategies. Whereas Belsky et al. (1991) viewed early father absence as a marker of stress in the family of origin and focused on the quality of mothering and fathering, Ellis (2004) suggests that father absence or stepfather presence may be an important cue of paternal investment, signaling low, unpredictable, or changing levels of paternal investment within families. Recent research has confirmed that there are good empirical and theoretical reasons for *not* treating mothers and fathers as interchangeable agents of influence in understanding how childhood experiences shape reproductive strategies. Greater attention must be paid to the presence of biologically unrelated male figures in the home during development and to the differential influence of maternal and paternal investment (i.e., the quality of parenting by mothers and fathers). Emerging evidence supports the basic tenets of

Ellis' model (see Ellis, 2004; Simpson & Belsky, 2008, for reviews).

More recently, Ellis, Figueredo, Brumbach, and Scholmer (2009) have differentiated two types of difficult early environments: those that are consistently *difficult* or *harsh*, and those that are *unpredictable* (shifting between harsh and benign). According to this model, exposure to consistently difficult/harsh environments leads to receiving more rejecting, punitive, or neglectful care from parents. This, in turn, produces more avoidant attachment styles and unrestricted mating strategies in adulthood, whereby romantic ties are more emotionally distant and impersonal. Exposure to unpredictable (variable) environments, on the other hand, should result in receiving sporadic and unpredictable care from parents. This should culminate in more anxious attachment styles and unrestricted mating strategies in adulthood in which romantic ties are emotionally tempestuous and enmeshed.

In summary, the type of parental investment that children receive ought to shunt them down different developmental and reproductive pathways. Beginning early in life, children should use the type and amount of parental investment they receive to gauge the demands, challenges, and opportunities that may be posed by their later social environments. This, in turn, should shape the specific personality traits and associated reproductive strategies they eventually adopt in adulthood.

Personality as a Function of Mortality Levels

Drawing on LHT, Chisholm (1993, 1996, 1999) claims that the nature of life-history trade-offs should also depend on the environmental factor of local mortality rates. According to Chisholm (1993), local mortality rates should be the pivotal environmental cue that directs people down different developmental and reproductive pathways. When mortality rates are high in a local area, the optimal reproductive strategy is to mate early so that current

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fertility is maximized (Horn & Rubenstein, 1984; Promislow & Harvey, 1990). When mortality rates are low, the best strategy is deferred, long-term reproduction in which fewer children are given better and longer care. Thus, in abundant and safe environments that signal longer life-expectancies, a delayed/high-investment reproductive strategy should increase the total number of descendants across several generations by minimizing the *variance* of surviving offspring within each generation. This, in turn, should decrease the likelihood that an entire generation fails to reproduce.

High mortality rates, which should have been an excellent barometer of the difficulty of local environments during evolutionary history (Chisholm, 1999), should also have resulted in poorer caregiving. Chisholm (1993, 1996) suggests that parental indifference or insensitivity might have been a valid cue of local mortality rates, motivating children to develop appropriate traits and behaviors (e.g., more aggression, less cooperative orientations) that were better suited to increasing fitness in such arduous environments. Low mortality rates, which probably signaled more hospitable environments, should have been associated with better and more attentive caregiving. Sensitive parenting, in other words, may have conveyed to children that premature death was less likely, resulting in different traits and behaviors (e.g., less aggression, more cooperative orientations) that enhanced fitness in more benign environments.

Chisholm (1999) also proposes another personality mediator that might link early childhood experience and adult reproductive strategies—time preference. Time preference, which is related to delay-of-gratification tendencies, reflects the degree to which individuals prefer—or believe they will achieve—their desires either now (immediately) or later (sometime in the future). Individuals who are raised in dangerous or uncertain environments in which waiting for rewards could result in leaving

no descendants should prefer immediate payoffs, even if delayed ones might be superior (Wilson & Daly, 2005). Mounting evidence also supports components of Chisholm's model (see Ellis, 2004; Simpson & Belsky, 2008, for reviews).

In sum, mortality levels in early environments should shunt individuals down different developmental and reproductive pathways. Cues indicative of local death rates may "signal" the need to reproduce earlier versus later in life. These specific cues, gleaned from early social environments, ought to shape the personality traits and associated reproductive strategies that individuals eventually adopt in adulthood.

Personality as a Function of the Frequency of Other Personalities

Another environmental feature that should shape the development of personality traits is the traits of other people, especially potential competitors. When one considers an individual's traits in social isolation (i.e., one person living on an island), possessing a certain set of traits is not necessarily "good" or "bad" in an evolutionary sense. However, when one views those same traits *in relation to* the distribution of traits possessed by other people within the local population, certain traits can increase or decrease in adaptive value. For example, it might be more adaptive for an individual to be highly open to new experiences when 70% of the local population is highly risk-averse. Greater openness may allow an individual to find or create new solutions to problems that impair survival, mating, and/or parenting, which could give such individuals a fitness advantage over their risk-averse counterparts. Greater openness may, however, lose its fitness value if 80% of the local population is risk-takers. Thus, according to frequency-dependency models (see Gangestad & Simpson, 1990), the adaptive value of a trait score depends on its value and base-rate within a population.

One critical insight from evolutionary models of trait variability is that there are

inherent trade-offs in being high or low on certain traits. For example, being high (or low) on any Big Five trait affords both benefits *and* costs (MacDonald, 1995; Nettle, 2006). Greater agreeableness, for example, probably conferred myriad benefits in evolutionary history. It most likely enabled individuals to be more attuned to what others were thinking and feeling, to forge more enduring relationships, and to form stronger ties with coalition partners. However, high agreeableness should also have had some costs, such as the greater likelihood of being cheated by others and not acting on one's self-interest when it was opportune to do so. Less agreeable people would be less likely to reap these benefits, but they also would be less vulnerable to these potential costs. Highly conscientious people might have benefited from paying closer attention to long-term fitness benefits and living longer, but they may have engaged in obsessive thinking, rigid ways of doing tasks, and might have been less inclined to pursue short-term fitness gains. More "open" people may have been more creative and better at attracting mates, but they may also have been prone to psychoses or delusional thoughts. Highly neurotic individuals may have been more vigilant to possible danger and more willing to compete with others for valuable resources, but they also should have been more vulnerable to depression, more stress-reactive, and less likely to have stable relationships. Finally, highly extraverted people might have had more mates, more social allies, and should have been more willing to explore new environments, but they also should have been more prone to physical injuries and tenuous or unstable relationships (see Nettle, 2006, for relevant citations for these claims).

Although natural selection typically removes heritability on traits that are essential to reproductive fitness (Fisher, 1930; Tooby & Cosmides, 1990), there are circumstances in which interindividual variation can be maintained in heritable traits. Nettle

(2006) argues that personality traits can have high heritability and substantial interindividual variability. Especially if a trait is influenced by several genes, it can retain genetic variation even when directional selection forces are powerful (Houle, 1998). For example, if frequency-dependent selection has occurred, traits can have both high heritability (i.e., they have a strong genetic basis) and considerable interindividual variation (i.e., some people are low on the trait, whereas others are moderate or high).

Clear examples of this process are found in the animal literature, where different mating strategies and tactics are enacted by members of the same species (see Nettle, 2006). For example, there is a species of guppy in Trinidad that has heritable variation in behavioral traits linked to their survival in particular local habitats. The most reproductively successful guppies that live in high mountain streams where fewer predators exist are bolder and more aggressive. The most successful guppies that live downstream—where predators flourish—tend to be timid and cautious. When predators are introduced to upstream environments or are moved from downstream ones, these modal behavioral strategies (aggressive vs. cautious) change, with upstream guppies becoming more timid within a few generations and with downstream guppies becoming more aggressive. Nettle (2006) proposes that the same general processes could also be true of people who score high and low on certain personality traits, which may have evolved to facilitate the enactment of different survival and mating strategies in humans.

In sum, the development of personality traits is also likely to be influenced by the frequency of other personality traits within the local environment. More specifically, a person may nonconsciously develop different adult personality traits, depending on the traits of the people with whom she or he interacts across the lifespan.

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SECTION 4: SOCIOSEXUALITY AS AN EXAMPLE OF AN ADAPTIVE CLUSTER OF TRAITS

In this chapter, we have discussed two fundamental points with regard to how personality traits can be viewed from an evolutionary perspective. First, when viewed from an evolutionary lens, certain personality traits may be adaptive in specific environments. Being highly extraverted, for instance, can be advantageous in terms of making friends, gaining status, and attracting romantic partners. The ability to accomplish these goals would have helped our ancestors survive and reproduce. However, despite the adaptive benefits of being high (or low) on a given trait, individuals do not have the same personality profiles. This highlights the second major point of the chapter: An evolutionary perspective also considers *variability* in personality traits as reflecting adaptive trade-offs. Being high or low on extraversion (or other traits), for example, has benefits *and* costs, and there are several different processes by which adaptive variability in personality can be sustained across time (e.g., frequency-dependency processes, life-history processes).

To this point, we have focused on the purported functions of individual personality traits such as the Big Five. However, the evolutionary literature suggests that certain traits may cluster, together in the service of enacting reproductive strategies leading people to adopt unique personality profiles. Because all organisms have evolved to enhance their reproductive fitness, an evolutionary perspective predicts that personality traits should *cluster* around different types of mating strategies. Humans do, in fact, engage in different types of mating strategies (see Buss & Schmitt, 1993; Gangestad & Simpson, 2000). Given that different mating strategies are differentially successful in certain environments, individuals should adopt the mating strategy that, on average, tends to be most successful for their specific environment.

Reproduction, of course, involves much more than merely copulation; it also involves sexual competition to attract mates, courtship rituals, and parenting in the aftermath of mating. Consequently, mating strategies should entail clusters of different personality characteristics that are "applied" to different aspects of reproduction (e.g., attracting a mate, competing with same-sex competitors, parenting children). Recall the case of Joe, a man in his early twenties who is highly extraverted, open to new and exciting experiences, uninhibited, and sexually promiscuous. It is conceivable that these traits "cohere" because they constitute a specific mating strategy, namely a short-term, opportunistic one in which emotional ties with partners are weaker and more fleeting (termed an *unrestricted* strategy; Simpson & Gangestad, 1991a). This mating strategy is related to specific life-history trade-offs discussed earlier, especially those that favor earlier reproduction (rather than delayed reproduction) and offspring quantity (rather than offspring quality). To successfully enact an unrestricted mating strategy, an individual must be motivated to enter new situations and novel environments in order to meet new mates and then captivate and retain their interest. Individuals who adopt an unrestricted mating strategy, therefore, must continually approach the potential rewards offered by novel and changing opportunities, including new mating opportunities. They cannot be inhibited, afraid, or constrained because such tendencies could negate, hinder, or derail interactions with new potential partners. Unrestricted individuals, in other words, cannot be risk-averse or overly concerned about making mistakes that could, on occasion, result in bad outcomes. During evolutionary history, these personality trait clusters should have facilitated the successful enactment of unrestricted mating strategies, given the demands and pressures of the environment in which individuals lived.

A very different personality profile is required to enact a restricted mating strategy successfully. A restricted strategy is a long-term, committed one in which emotional ties with partners are stronger and more enduring (Simpson & Gangestad, 1991a). This strategy is tied to life-history trade-offs that favor delayed (rather than earlier) reproduction and offspring quality (rather than offspring quantity). Individuals who pursue a restricted mating strategy cannot be easily drawn away from current partners and relationships by the lure of attractive but temporary alternative partners. They need to focus on and remain committed to the partners and relationships they have already invested in, assuming that their current partners are satisfactory. Thus, the combination of lower extraversion and higher constraint ought to facilitate the enactment of restricted mating strategies.

These trait clusters have been examined empirically. Gangestad and Simpson (1990; Simpson & Gangestad, 1991b) investigated how scores on the Sociosexual Orientation Inventory (SOI; Simpson & Gangestad, 1991a) correlate with trait scales from Tellegen's (1982) Multidimensional Personality Questionnaire (MPQ) in young, single adults. The MPQ contains several scales that tap different personality traits, including the Big Five. As shown in Figure 5.1, higher scores on the SOI (i.e., having a more short-term, unrestricted mating orientation) load on two higher-order factors: *extraversion* (SOI factor loading = .39) and *lack of constraint* (SOI loading = .47). In other words, people who have a more unrestricted mating strategy tend to be both more extraverted/socially potent and less constrained/inhibited, less harm-avoidant, and poorer at self-regulation. Those who have a more restricted mating strategy, in contrast, are more introverted and more constrained. These results are consistent with previous research by Eysenck (1976), who found similar connections between sexual attitudes/behaviors and personality traits.

This leads us back to the case of Joe. Why, from an evolutionary perspective, does Joe have the specific profile of traits he does? The answer may be that this cluster of traits is the set that is "best suited" for Joe in order to compete for and attract mates, to successfully interact with others, and to parent, given his developmental history along with his current life circumstances. According to the Belsky et al. (1991) model, for example, Joe is likely to have been raised in a conflict-ridden home by parents who had an unstable relationship and did not invest considerable time or effort into parenting him. He may have learned from an early age that he had to be self-sufficient, he had to compete with others and take risks in order to gain attention and "get ahead" in life, and he could not get too close to others without becoming vulnerable or being taken advantage of. Joe's early experiences, in other words, shunted him down an unrestricted pathway. And the specific profile of personality traits that he developed should facilitate the successful enactment of his unrestricted mating strategy.

Interestingly, the two higher-order factors shown in Figure 5.1 roughly map onto two biologically based systems that underlie personality. Greater extraversion, which entails a mixture of communal and agentic motives, is believed to facilitate action and produce positive affect (emotion), reflecting the *approach* motivational system. Greater constraint is believed to inhibit action and produce negative affect, reflecting the *avoidance* motivational system (Cacioppo & Berntson, 1994; Lang, 1995; Panksepp, 1998). Gray (1990) has demonstrated that individual differences exist on both of these dimensions—one that promotes behavior and positive affect (the Behavior Activation System), and one that inhibits behavior and is associated with negative affect (the Behavioral Inhibition System).

According to frequency-dependency models (e.g., Gangestad & Simpson, 1990), selection can produce alternate genotypes—genetically-based traits or sets of traits—that result in different mating

FIGURE 5.1 The trait scales a sociosexual orientation a more restricted constraint. Source: This figure Variation," by S.

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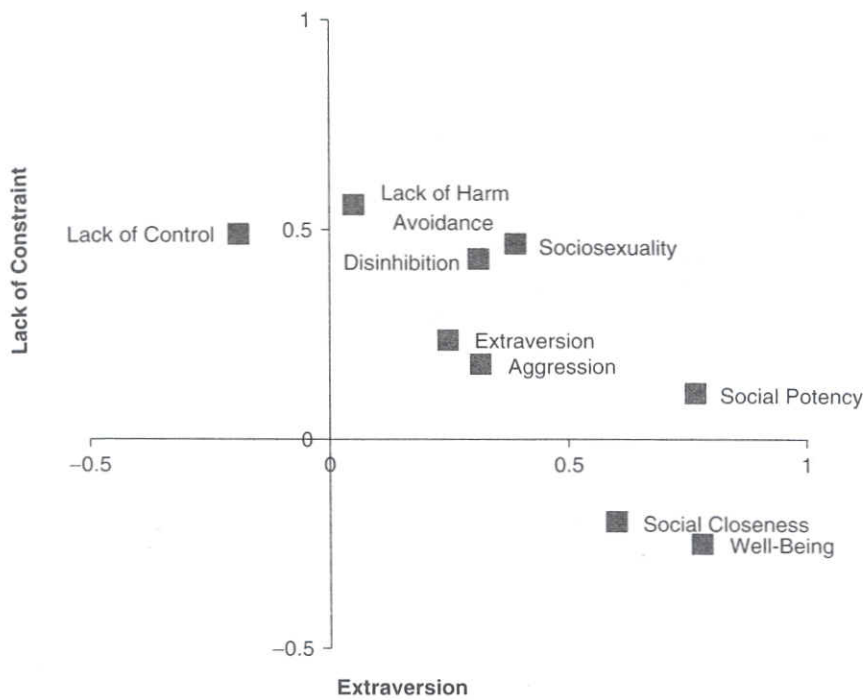


FIGURE 5.1 The Horizontal Axis Reflects Extraversion, and the Vertical Axis Reflects Lack of Constraint. The trait scales are from the Multidimensional Personality Questionnaire (Tellegen, 1982). A more unrestricted sociosexual orientation is associated with motives characteristic of high extraversion and low constraint, whereas a more restricted orientation is associated with motives characteristic of low extraversion (introversion) and high constraint.
 Source: This figure is based on one originally published in "Toward an Evolutionary History of Female Sociosexual Variation," by S. Gangestad and J. A. Simpson, 1990, *Journal of Personality*, 58. Reprinted with permission.

strategies. Each genotype can have good reproductive fitness outcomes across time as long as individuals adopt a reproductive strategy that is suited to their personal motivations, talents, skills, and assets. As we have seen, specific clusters of traits ought to promote the enactment of different reproductive strategies, including restricted and unrestricted forms of sociosexuality. Indeed, Gangestad and Simpson (1990) have provided evidence that both restricted and unrestricted mating strategies could have enhanced reproductive fitness especially in women during evolutionary history, depending on whether a woman needed greater paternal investment or better genes from male partners, given the specific demands of her environment. The specific cluster of traits that would

have facilitated an unrestricted mating strategy should have been those that led ancestral women to meet and draw the attention of highly desirable mates (e.g., greater extraversion) while not being overly restrained or excessively regulated (e.g., greater disinhibition). The opposite cluster of traits should have promoted a restricted mating strategy.

In conclusion, evolutionary theories and principles have a great deal to offer personality psychology. One of the primary objectives of this chapter was to highlight how certain evolutionary theories—especially those related to Life History Theory—can generate novel and important insights into not only why certain personality traits such as the Big Five exist, but how and why people have different

scores on traits and why certain traits may "cluster" more than others. One reason why evolutionary theories provide unique insights is that they address deeper "why" questions that focus on the ultimate origins, purposes, and functions of a given trait or behavior. The field of personality is well-positioned to take full advantage of one of the most powerful sets of ideas in the social and life sciences—the modern evolutionary perspective. It is time to do so.

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