Chapter 14
Ecological Constraints on Mating Tactics

Aurelio José Figueredo, Barbara H. Brumbach, Daniel N. Jones, Jon A. Sefcek, Geneva Vásquez, and W. Jake Jacobs
University of Arizona

Mating tactics do not exist in a vacuum. Rather, they develop within specific environmental contexts. Such contextual influences can be conceptualized as a series of concentric circles around the individual, as in Bronfenbrenner’s (1979) ecological model of behavioral development, that are hierarchically nested within each other like a set of Russian dolls. Bronfenbrenner placed behavioral development within an ecological perspective by combining principles from sociology and developmental psychology. Within Bronfenbrenner’s theoretical framework, relationships between individuals and their environments are viewed as mutually shaping, in that they systematically interact with one another. He proposed four interlocking systems that purportedly shape early individual development: (1) the micro-system, which includes the individual’s interactions with family and community (e.g., home, neighborhood); (2) the meso-system, which includes interrelationships among the various social settings within which the individual must function (e.g., schools, day-care centers); (3) the exo-system, which includes external forces upon which the individual has no direct control but which indirectly influence the individual (e.g., school boards, social service agencies, and planning commissions); and (4) The macro-system, which includes forces at the sociocultural level that provide the broad ideological and organizational patterns within which the lower levels of interaction play out. Although the Bronfenbrenner model was designed for understanding the forces governing child development,
we may use a similar model to contextualize the adaptive significance of mating tactics within an ecological framework. Such ecological forces may be expected to inform and constrain the development of specific mating tactics. We propose that any evolutionarily meaningful conceptualization of Mating Intelligence must encompass an interactive engagement of the individual with those critical environmental contingencies. Mating Intelligence is partly intelligence about the socio-ecological context of mating.

Evolutionary theory also accommodates the role of environmental factors in the development and expression of behavior, but the general expectation is that such factors should elicit an evolved adaptive response from the organism, and not just an arbitrary “shaping,” if they were reliably present in the evolutionary history of the species (e.g., Cosmides & Tooby, 1992). The essential difference from the Standard Social Science Model (SSSM) approach to such environmental influences is that evolutionary theory views the organismic responses as strategic and not randomly or passively reactive. This perspective does not deny the occasional existence of pathological and maladaptive responses, but predicts that they should be fairly rare within reasonably natural environments. However, although reaction to environmental factors is offered as a causal explanation by SSSM theories, these theories frequently fail to explain why a specific reaction to these influences would be functionally appropriate. For example, if father-absence predicts younger puberty and onset of sexual behavior among daughters, then SSSM theory might posit that father-absence leads girls to react to their existential loss by seeking a surrogate father-figure in the form of a boyfriend, but would not explain why that represents a fitness-promoting strategy, whereas the evolutionary developmental theory at least tries to identify some fitness benefits to reactive puberty-timing (e.g., Belsky, Steinberg, & Draper, 1991).

We should carefully delimit what is and what is not implied by the concept of a strategic response in evolutionary psychology. What distinguishes evolutionary thinking from the SSSM approach is the explicit consideration of the ultimate consequences of the organism’s reactions for survival and reproduction. Thus, although an environmental stimulus might elicit a response from the organism, the nature of the response will be naturally selected based upon its effect on the environment, especially its effect on the fate of one’s genes within that environment. Therefore, a truly ecological theory is not merely one that posits environmental explanations of behavior. Ecology is the study of the organism’s interactive and reciprocal relationship with its environment, including other organisms. Evolutionary ecology goes further to analyze how this interaction might be fitness-promoting. The organism’s response to its environment therefore has to make adaptive sense in order to be favored by natural selection over evolutionary time. Furthermore, evolutionary psychology demands that when one proposes an evolved adaptive mechanism, one does not merely
posit an unspecified influence but instead identifies the operating characteristics of the proposed psychological mechanism in terms of specific inputs and outputs of the specialized subsystem.

The evolutionary-theoretical framework that we will be using to contextualize mating tactics is called Life History Theory. Life History Theory is a selectionist theory, based on evolutionary theory, which explains the coordinated allocation of bioenergetic and material resources to survival and reproduction across an individual’s life-span. The theory describes variation in life-history strategy as a continuum from r-selected to K-selected allocation of resources. The theory characterizes K-selected species (e.g., humans, whales, elephants) as preferentially allocating bioenergetic resources to Somatic Effort (the continued survival of the organism) over Reproductive Effort (the production of new organisms), whereas r-selected species (e.g., cockroaches, mice, rabbits) preferentially allocate these same resources to Reproductive effort over Somatic Effort. Of course, all organisms must invest in both Somatic and Reproductive Effort to survive and reproduce, because the latter is not possible without the former, but the difference between these two general classes of behavioral strategies lies in relative emphasis. Moreover, the theory suggests that when allocating Reproductive Effort, K-selected species preferentially allocate resources to Parental Effort (the survival of offspring) and Nepotistic Effort (the survival of kin) over Mating Effort (obtaining and retaining sexual partners) whereas r-selected species preferentially allocate resources to Mating Effort over both Parental Effort and Nepotistic Effort.

These fundamental allocations would necessarily inform and constrain the behavioral evolution and development of alternative mating tactics. That is because mating tactics need to be coordinated with a variety of related life-history traits for the allocation of resources among these fitness-enhancing activities to be optimal. Uncoordinated life-history traits, although perhaps individually efficacious, will inevitably create strategic interference with each other. For example, risky, impulsive courtship displays (a form of Mating Effort) might interfere with slow, careful body growth (a form of Somatic Effort), because early death tends to prevent further growth. Coordinated life-history traits, including appropriate mating tactics, should instead comprise a coherent reproductive strategy.

Life History Theory predicts that many human psychosocial traits will accumulate in adaptively coordinated ways, combining into intertwined functional composites or clusters that represent coadapted reproductive strategies (Figueroedo, Vásquez, Brumbach, Schneider, Sefcek, et al., 2006). The core psychological characteristics clustering toward the low end of the “Differential K” continuum (a term used in relation to individual differences in levels of K-selected strategy among humans) entail a focus on short-term gains at the expense of long-term costs, numerous mates, and little parental investment. Within modern society, these low-K
characteristics could manifest as impulsivity, short-term thinking, promiscuity, low female parental investment, little or no male parental investment, little social support, disregard for social rules, and extensive risk-taking. The core psychological characteristics at the high end of the Differential K continuum entail long-term considerations, selective mating, and high parental investment. Within modern society, these high-K characteristics could manifest as long-term thinking, monogamy, extensive parental investment, substantial social support structures, adherence to social rules (e.g., cooperation, altruism), and careful consideration of risks.

Our research group at the University of Arizona has recently documented large and reliable individual differences in a wide array of correlated life-history traits (Figueroedo, Vásquez, Brumbach, Sefcek, Kirchner, & Jacobs, 2005; Figueredo, Vásquez, Brumbach, & Schneider, 2006a, 2006b; Figueredo, Vásquez, Brumbach, Schneider, Sefcek, Tal, Hill, Wenner, & Jacobs, 2006). This cluster of coordinated life-history traits, which we have called the “K-Factor,” has a high heritability. A behavioral-genetic comparison of Monozygotic and Dizygotic twins revealed a heritability coefficient for the K-Factor of .65, yet this figure still permits a considerable amount of ecological flexibility during individual development (Figueroedo, Vásquez, Brumbach, & Schneider). Thus, at the level of both behavioral evolution by natural selection and behavioral development by biologically prepared learning, life-history strategy is expected to be exquisitely responsive to the ambient ecology of the organism.

We propose that although life-history strategies are somewhat heritable, ecological factors can adaptively shape the life-history strategy of individuals. The life-history strategy of an individual, with its optimal allocations of bioenergetic and material resources to the various components of Somatic and Reproductive Effort, in turn adaptively shapes the selection of mating tactics. This shaping occurs by the complementary mechanisms of: (1) behavioral evolution by means of natural and sexual selection, and (2) behavioral development by means of biologically prepared learning (Figueroedo, Hammond, & McKiernan, 2006). Furthermore, we propose that a hierarchy of environmental factors, from long-term evolutionary ecological conditions (e.g., climate), to immediate social contingencies (e.g., sex ratio within a local community), to family context during development (e.g. strong or weak kin support), to transient situations which the organism may encounter (e.g., spontaneous mating opportunities), shape individual life-history strategies in theoretically specifiable ways. We will therefore be proposing a hierarchy of specific ecological inputs and outputs of the proximate mechanisms presumed to be regulating life-history strategy. Life-history strategy will, in turn, be conceptualized as the primary organizing principle behind the evolution and development of mating tactics. Ecology will therefore constrain mating tactics through the
mediating mechanism of life-history strategy. Evolutionary psychological theory conceives of the human mind as a product of the natural and sexual selective pressures that have acted over evolutionary time (see Geary, 2005; Figueredo, Hammond, & McKiernan, 2006). These natural and sexual selective pressures include the hierarchy of ecological constraints which we outline in this chapter. Thus, the emerging SUNY New Paltz model of Mating Intelligence presented in this volume should explicitly incorporate responsiveness to these ecological constraints on mating tactics as an essential operating characteristic of the dedicated and domain-specific mechanisms of Mating Intelligence.

Whereas the SSSM presumes that humans somehow possess an undirected and generalized sensitivity to the environment, Evolutionary Psychology instead expects that directed and adaptively appropriate responses to specific cues will be biologically prepared (Figueredo, Hammond, & McKiernan, 2006). Thus, a critic may doubt that the higher sociocultural levels of the Bronfenbrenner model are relevant to Evolutionary Psychology under the presumption that the supposed Pleistocene “Environment of Evolutionary Adaptedness” of humans contained no higher level of social organization than the simple hunter-gatherer band (e.g., Cosmides, Tooby & Barkow, 1992). On the other hand, there is indirect archaeological and ethnographic evidence indicating that, at least since the late Pleistocene, most hunter-gatherer societies have probably possessed tribal-scale institutions among distant relatives that are substantially more complex than that of the small band, and have thus evolved behavioral-genetic “tribal instincts” as an adaptation to this higher level of social organization (Richerson & Boyd, 1998, 1999, 2001a, 2001b).

In addition, many Darwinian anthropologists and molecular geneticists maintain that human evolution did not end with the close of the Pleistocene, but instead continued well into the Holocene (e.g., Irons, 1998; Hrdy, 1999; Evans, Gilbert, Mekel-Bobrov, Vallender, Anderson, Vaez-Azizi, Tishkoff, Hudson, & Lahn, 2005; Mekel-Bobrov, Gilbert, Evans, Vallender, Anderson, Hudson, Tishkoff, & Lahn, 2005). The 10,000 years or more since the inception of agriculture have been more than enough time for gene-culture co-evolution to produce physiological and behavioral genetic adaptations to the dramatically altered conditions of existence (Irons, 1998; Lumsden & Wilson, 1981). Evidence for such continuing gene-culture co-evolution includes the finding that the geographic patterns of variation in the first principal component of gene frequencies for the six most important milk proteins in native European cattle breeds correlated with both the locations of European Neolithic cattle farming sites (−.75) and with the frequency of genes for lactose tolerance (−.59) in modern Europeans, the distribution of cattle farming sites being correlated (.73) with the lactase persistence gene frequencies (Beja-Pereiral et al.,
Similarly, the spread of genes for sickle-cell anemia was correlated with the spread of the malaria parasite, its mosquito vectors, and ultimately with the clearing of patches of rainforest for the cultivation of yams in Africa (Durham, 1992; Coluzzi, 1999).

Given the massive changes in both morphology and behavior that have occurred in virtually all of our domesticated plants and animals in exactly the same time period (Palumbi, 2001), it is hard to believe that gene-culture co-evolution did not produce any significant changes in humans during the Holocene (Lumsden & Wilson, 1981). Arguably, these domesticates changed our “Adaptively Relevant Environments” (Irons, 1988) as much as we changed theirs. There is substantial molecular genetic evidence for massive population expansions and migrations during the Holocene over many large areas of the world, typically correlated with innovations in and intensification of food production (Cavalli-Sforza, Menozzi, & Piazza, 1993, 1994). It is therefore unreasonable to imagine that behavioral genetic changes in our mental adaptations to the more densely populated and complex societies produced by agriculture did not also occur during that period. Thus, the higher sociocultural levels of the Bronfenbrenner model are indeed relevant to the evolutionary psychology of mating intelligence.

THE EVOLUTIONARY ECOLOGICAL LEVEL

Although the Bronfenbrenner model only describes events occurring within developmental time, we will also consider changes occurring over evolutionary time (Figueredo, Hammond, & McKiernan, 2006). Evolutionary behavioral ecology addresses how the ecology affects the long-term evolution of behavior in entire populations, and not just the behavioral development of organisms within their individual lifetimes. Both physical and cultural ecology influence mating systems over evolutionary time. Physical ecology is referring to the material environment and cultural ecology is referring to the social environment.

Humans adapt to different ecological niches. The physical environment may vary in topography, climate, and ecology, which will influence types of subsistence methods (ways of getting food) humans adopt (Diamond, 1999). We propose that differences in physical ecology and subsistence economies will influence cultural ecology. For example, a cultural ecology is less likely to have extreme stratification among individuals based on wealth when it is difficult to maintain and hold resources in that physical ecology. Cultural ecologies vary across groups. Variation between cultures can exist because of variation in the physical ecology. Consequently, cultural variability may influence the variability in mating
systems by means of differential life-history strategies. For example, oppressive patriarchal cultures may severely limit female mate choice, shifting the adaptive costs and benefits of different mating strategies. Depending on characteristics of the physical ecology, some cultural practices, traditions, and norms will enhance inclusive fitness better than others. Thus, differences in physical ecologies and subsistence methods influence cultural ecologies that, in turn, influence general mating systems.

During human evolution, it is likely that physical and cultural ecological conditions varied and that human mating systems may have been accordingly variable. We suggest that Mating Intelligence is best viewed within the broader context of physical and cultural ecologies. We predict that humans make systematic changes in mating systems based on the current ecology as a way to optimize the coordination of life-history strategies—specifically in relation to reproductive effort being differentially allocated between mating effort and parental effort. Groups must develop cultures that find the right balance between good-genes mate choice and high investment parenting. When the future is uncertain, it may be a better strategy to focus on mating effort (e.g., more offspring with higher genotypic diversity), as opposed to, when the future is certain it may be a better strategy to focus on parental effort (e.g., few offspring with lower genotypic diversity). An illustrative change in physical ecological conditions will provide a preliminary test of the hypothesized causal relations among physical and cultural ecology and mating systems.

One example of a major change in physical ecology is the shift in subsistence patterns brought on by the agricultural revolution. The onset of intensive agriculture had profound effects on the physical ecology of humans. Humans changed from having a somewhat nomadic lifestyle to one that was more sedentary. Since food production was typically focused on one or two staple crops, there was less variability in the diet. In addition, there was an increase in infectious disease due to increased population size and living in close proximity to domesticated animals (Cavalli-Sforza, Menozzi, & Piazza, 1994; Diamond, 1999). During our evolutionary history, some physical ecologies contained resources that could be controlled by individuals, and some did not. For example, farmland can be defended by either groups or individuals. Such defense is only adaptive when the benefits of holding the land out-weigh the costs of defending it—which is usually true for societies whose subsistence relied on anything from small-scale horticulture to intensive agriculture. Some of the world’s ecological niches will be more conducive to this type of farming (Cavalli-Sforza, Menozzi, & Piazza, 1994; Diamond, 1999).

We will first discuss two types of cultural ecologies, matrilineal and patrilineal societies, which are related to the ability to hold and control resources. Matrilineal and patrilineal cultures will first be discussed in...
the context of pre-agricultural subsistence economies. Then we will discuss the changes that happen in post-agricultural societies.

There are physical ecologies that are not conducive to individuals holding resources. Hunting and gathering societies represent good examples of such societies. Since land and animals cannot be passed on to offspring in these societies, it is likely that social status, rather than material resources, will be the primary competitive advantage to be passed down. In such societies where holding resources is difficult, it may not matter very much whether social status is passed down through female or male lines (Hrdy, 1999). For example, social status is passed down matrilineally (through the female line) in many nonhuman primates.

Societies in which it is hard for individuals to hold material resources tend to be more egalitarian, since there is less of an economic basis for social stratification. Consequently, the mating system is likely to support female mate choice of male qualities such as charisma or health, rather than resource-holding potential (wealth). These mating practices are conducive to a matrilineal social structure in which social status and resources are passed along the female line. Although status and resources can be passed directly from mother to daughter, in humans that transfer of resources is usually made more indirectly through the female line. For example, transfer can be made to the mother’s brother’s or sisters’ sons (Gaulin, 1997; Hrdy, 1999; Warner, Lee, & Lee, 1986). Since there is less direct male investment in females’ offspring, there is less need for the mother to ensure the husband’s paternity of the children. Consequently, in matrilineal societies, females tend to have more sexual freedom. For example, the Canela, a matrilineal group in Brazil, follow this pattern. They live in an unpredictable and resource-scarce environment in which the male mortality rate is high. When a Canela woman finds that she is pregnant, she may try to have sexual relations with several men (usually of high status) other than the husband, presumably to confuse paternity. Each male lover is less likely to kill, abuse, or neglect her child, since he may be the father. In this way, the mother may secure investment and protection from several men, rather than gambling on investment exclusively from a single mate who is likely to die young. During traditional Canela marriage ceremonies, the couple is reminded to stay together until all of their children have grown up, to tolerate each other’s affairs, and to remember that the welfare and survival of the child is more important than the man controlling the wife’s sexuality (Hrdy, 1999).

In contrast, other physical ecologies are conducive to individuals holding resources. Societies that practiced small-scale horticulture, or had other resources (such as grazing lands or domesticated animals) that could be held, are examples of societies that predate the emergence of intensive agriculture. If there is potential for holding material resources, it tends to be the men doing the controlling. This results in mating systems where
males have intense intra-sexual competition for resources, and consequently, are likely to have male stratification in status based on ability to hold and control economic resources (Ellis, 2001; Hrdy, 1997; Smuts, 1995).

This type of society tends to encourage female mate-choice based on male resource holding potential and wealth. Because females should want these resources passed to their offspring, they should try to ensure the husband’s paternity certainty regarding the children. Consequently, the mating system will likely have high paternal investment, and resources will almost invariably pass down the male lineage, in a patrilineal pattern (Hrdy, 1997; Smuts, 1995). In these societies, female chastity is valued and females are punished much more heavily for infidelity. For example, the Maya in Mexico and Central America reinforce norms of female fidelity and ensure paternity certainty through religious doctrine. Women are fearful of going out unchaperoned at night because they risk being harmed by the demon H’ik’al. In one variation of this myth, the demon captures women who have not followed the menstruation rules or who have behaved immodestly, rapes them, and then the women die from giving perpetual birth (Hrdy, 1997, 1999).

The impact that the agricultural revolution had on cultural ecologies and ultimately on mating systems can be considered a natural experiment. After the introduction of intensive agriculture, there would have been definite property (e.g., farm land and domestic animals) to pass on to offspring (Diamond, 1999). If a society had originally been patrilineal, then this change may have accentuated the properties of the existing system. For example, there were even bigger winners and losers because there was even more property that could be controlled by an individual, leading to even greater male stratification. The population would have increased, there would have been more specialization in jobs, and there would have been more complex religious and political organization. Ultimately however, since the mating system was originally based on small-scale resource holding potential and female choice of the most wealthy males, the system would have stayed basically the same, if more extreme. For example, even stricter rules about female chastity and adultery would have developed (cf., Wemple, 1981).

The agricultural revolution, however, would have had a very different impact on societies that were originally matrilineal. Since matrilineal systems can exist when there are not resources to hold and pass down to offspring, intensive agriculture would have produced major changes. The strategic cultural change would have been to adopt patriliney and the mating strategies associated with that social structure. In fact, as soon as intensive agriculture is introduced to a matrilineal society, it invariably changes to a patrilineal society (Hrdy, 1999).

Mating tactics should differ between patrilineal groups and matrilineal groups. Consequently, what is an “intelligent” or adaptive mating tac-
tic in one social structure may not be in the other. There are two ways that adaptive mating tactics might arise from different types of social structure. First, there could have been gene-culture co-evolution, in which humans were genetically flexible with their social structure before the agricultural revolution but became more genetically canalized toward patriliney with the onset of large-scale agriculture. Individuals might become evolutionarily predisposed towards mating strategies that work best in patrilineal societies (i.e., males competing for high status and resources, females acting in ways to ensure paternity certainty). An alternative scenario, however, is that humans evolved more developmental sensitivity to the interrelated set of environmental cues that signal monopolizable resources, patriliney, wealth-based social status, female choice for paternal investment, and male concern with paternity. In the latter scenario, Mating Intelligence would include an individual’s ability to properly assess the environment and employ the mating tactics best suited to the current social structure.

THE SOCIETAL LEVEL

The societal level is comprised of many sociocultural constraints including social customs, morals, norms, values, and laws, which affect individuals, but which they cannot individually control (Brofenbrenner, 1979). From an adaptationist perspective, this may be considered one of the more abstract, larger-scale psychological components of the adaptive landscape, or set of selective forces which act upon individuals. This system itself is composed of a hierarchical assortment of subsystems, in which specific values or norms may apply only in certain sub-populations. For example, “Western culture varies from country to country, city to city, street to street, and house to house. As such, behavior that is seen as “dysfunctional” within one cultural niche may be functional within a different cultural niche. For example, beating a rival to death may boost one’s reputation and mating success in a criminal gang, but would raise eyebrows in most faculty meetings.

The importance of this system can be illustrated by considering behavioral norms in relation to the concept of “mental disorder”. Some current estimates suggest that approximately 50 percent of Americans will be diagnosed with a mental disorder at least once in their lifetime. Such a high prevalence of maladaptive behavior is surprising from an adaptationist standpoint, leading researchers such as Wakefield (1992) and Nesse (1999) to propose that such “disorders” may have yielded some hidden adaptive benefits under ancestral conditions.. In this view, the mismatch between prehistoric small-group living and modern urban living causes
previously adaptive strategies (e.g., depression, schizotypy, phobias) to appear maladaptive.

This mismatch perspective might illuminate the personality “disorder” of psychopathy. Behaviorally, psychopaths are egocentric and grandiose, ruthlessly goal-directed, Machiavellian and dominant, insensitive to risk, impulsive, and lacking in basic social emotions. Mealey (1995) offered a general evolutionary account of this suite of behaviors, arguing that it is an adaptive strategy in which there may be a continuum of heritable psychopathic mating tactics, ranging from hard-wired, empathy-blind rapists to morally flexible opportunists. This perspective is supported by evidence suggesting “deficiencies” in psychopaths’ brain systems governing empathy, fear, and startle responses (Blair, 2003; Patrick, 1994), and “abnormal” brain activation patterns in facial-emotion-identification tasks (Gordon, Baird, & End, 2004). On the other hand, psychopaths show lower levels of fluctuating asymmetry, a standard marker of “developmental instability” or maladaptedness (Lalumiere, Harris, & Rice, 2001), as compared to non-psychopathic criminals. We argue that not only are many psychopathic traits (e.g., Machiavellianism) adaptive (Wilson, Near, & Miller, 1996), but following Mealey, we suggest that they collectively represent a coherent reproductive strategy—one of intraspecific social parasitism and sexual exploitation. Within certain socio-cultural niches, psychopathic strategies may increase reproductive success, particularly when psychopaths’ decreased startle, fear, empathy, and remorse would make them more effective at using coercive tactics (e.g., cheating, stealing, raping, and killing). Thus, the degree of psychopathic behavior may reflect the degree of biological preparedness (the genetic “push” given the right environment), for that strategy that is inherited by any given individual (Figueredo, 1995).

Yet, do these behaviors really represent a functionally adaptive strategy? Universally, psychopathic behaviors are considered morally repulsive, and psychopaths are considered cheaters in every sense of the word. Psychopathy clashes with prevailing sociocultural standards of behavior as codified in criminal law (e.g., there is a 20–70 percent prevalence rate of psychopathy in U.S. prisons, making psychopathy nearly synonymous with criminality). Hare (1993) reports that features of real psychopaths include promiscuity, philandering, multiple marriages over their lifetime, and multiple children with multiple partners. Each of these tendencies can increase reproductive success relative to non-cheaters within the same population. Further, currently incarcerated psychopaths may just be the ones that were not adept enough at their strategy to get away with such behaviors. This perspective leads us to what we term the harmful function model of psychopathy; essentially, psychopaths suffer from an ethical pathology (Wiebe, 2004), which is socially harmful to everyone else, but
which may be adaptively functional, subjectively enjoyable, and reproductively successful for the individual.

In this view, it is the societal context of psychopathic behavior that is the problem. Ultimately, what is moral or adaptive from the standpoint of “society” may be different from what is adaptively functional for certain individuals. A five-year prison term for a five-minute rape may not sound like a rationally desirable outcome, but it is an outcome that evolution might favor, as part of a psychopathic mating strategy, under certain conditions. Thus, we may view the problem of psychopathy as one of conflict between different reproductive strategies, perhaps existing in a frequency-dependent dynamic equilibrium. The interests ascribed by social scientists to “society” as a whole are nothing more than those of the dominant reproductive life history strategy, which stand in conflict with those of the psychopathic “cheaters.”

Miller (2004, personal communication) has offered a cultural analogy to illustrate this principle of context-specificity. When playing violent “first-person shooter” computer games, such as Half-Life 2 and Grand Theft Auto, we adopt the role of a psychopath, for fun. We become insensitive to the true costs of risky behavior (we get multiple ‘lives’), we don’t worry about police retribution for impulsivity, there is no moral ambiguity about our mission, we become egocentric and grandiose about who we are and what our goal is, and we feel nothing for our “victims.” While computer-gamers become temporarily psychopathic in the game context, this behavior does not seem to generalize to the real world—it is an entertaining form of self-inflicted, transient psychopathy. Real psychopaths simply bring the same gaming mind-set into their real social and sexual interactions.

We may therefore align ourselves with Wakefield’s (1992) harmful dysfunction model of human mental disorders, yet focus on the ever-changing modern environment rather than on differences between the Pleistocene and today. This perspective fits perfectly into the Brofenbrenner framework because it construes “functionality” as biology working under particular sociocultural constraints. The human environment has changed dramatically over the Holocene (the last 10,000 years). From agriculture to agri-business, and bronze-age industry to industrial revolutions, many aspects of modern life never existed before. Over the past 300–500 years alone, we switched from small pre-industrial farming towns to post-industrial technological mega-cities, and from semi-arranged patriarchal marriages to speed dating. Psychopaths flourish in mega-cities with speed dating. Given that such psychopath-conducive environments probably did not exist in previous human evolutionary history, psychopathy itself may be a newly emerging adaptation associated with an increasingly complex society. A strong version of our hypothesis would predict that, if molecular behavior genetics finds alleles that predict psychopathy, those alleles
will be only several hundred to a few thousand years old (no more ancient than the socio-cultural conditions that favor opportunistic, coercive mating strategies), and have been spreading rapidly. Also, the partially facultative (developmentally flexible) nature of psychopathy (at least for “secondary psychopaths”) suggests that Mating Intelligence mechanisms would necessarily involve an evolved sensitivity to socio-cultural cues (e.g. mobility, anonymity, gullibility) that predict when psychopathy will pay.

THE FAMILIAL LEVEL

Human family structures influence our mating strategies and are unique in many respects, including the unprecedented number of years of investment that we devote to our offspring. One cause of this investment is that our offspring, who are among the most altricial, or helpless, within the animal kingdom, would perish before the age of reproductive maturity without high investment. However, viewed from an evolutionary standpoint, the helplessness of human infants reveals our generally K-selected life-history strategy. Furthermore, the helplessness of babies is intimately connected to a large suite of other traits that are typical of our species, but not very common among other animals, including our longevity, large brains, maternal milk production, and paternal investment. The necessity for parental investment, inherent in K-selected life-history strategies, constrains the human allocation of mating effort, especially for high-investing mothers and fathers. Because we assume that the average person possesses a limited amount of resources, including time, those people who invest heavily into the survival and growth of their children will tend to have less time for finding and investing in additional mating opportunities, including extra-pair copulations.

A favored explanation for the extended developmental period of humans, in the emerging field of evolutionary developmental psychology, is that humans need a long childhood to learn the social skills necessary to navigate through the complexities of human groups (cf., Ellis & Bjorklund, 2005). The development of mating intelligence may be central to this process, since courtship, sexual competition, and mate choice must be among the most complex social tasks that a human will ever face.

Although there are countless ways in which families seem to influence human mating tactics, in this section we will focus on only two. The first will be the way that fathers influence the mating tactics of daughters. Although paternal investment is not required to ensure a child’s survival in some human societies, the average amount of paternal investment in offspring is remarkable—humans are the only species of primate that invests extensive paternal care while living in groups that include complex
multi-male coalitions (Flinn & Ward, 2005). Again, this is likely due to the altricial nature of our offspring. However, these observations beg the question: What happens when fathers don’t invest? While boys experience a variety of correlates of father absence, such as increased delinquency, aggression, and other indicators of high mating effort, one of the most widely studied aspects of familial influence on mating strategies is the effect of father absence on daughters (Draper & Belsky, 1990).

Belsky, Steinberg, and Draper (1991) offered an evolutionary theory of socialization based on a previous theory of father absence proposed by Draper and Harpending (1982). They posited that several features of the family environment during the first seven years of life, including father absence, could set daughters on a developmental trajectory toward early puberty and sexual behavior, because the familial micro-environment serves as a litmus test of the social macro-environment in which girls will find themselves. In particular, if one’s own father was absent and uninvesting, then perhaps other males in the local mating market will act similarly, and it would be prudent not to count on them as long-term providers. This leads to the development of an appropriate (more r-selected) life-history strategy for the macro-environment, which leads to adoption of the optimal (more short-term) mating strategy given the socio-ecological conditions. Familial stressors associated with low paternal investment are correlated with a variety of physical and psychological outcomes among daughters, including early menarche, initiation of sexual activity, and age at first birth; higher incidence of affective disorders; and greater likelihood of reproductive system cancers and obesity (Ellis, 2004). These all comprise elements of lower-K (high mating effort, high fertility) life-history strategies.

Certain revisions of Belsky et al.’s (1991) evolutionary socialization model have challenged the view that all daughters are equally prone to the specified outcomes. These theories, including Belsky’s (2005) revision (suggesting differential susceptibility to environmental influence), have stressed the importance of genetic contributions to the development of an individual’s life history strategy and the likelihood of father absence. In a twin study, Figueredo, Vásquez, Brumbach, and Schneider (2006b) found that life history strategy, as measured by many indicators (including father absence), is highly heritable. Furthermore, studies find that the behavioral outcomes in daughters (e.g., precocious sexuality) are much smaller if the father absence is due to accidental death (which is less likely to reflect heritable personality and life-history traits) than if the father absence is due to divorce of abandonment (which is more likely to reflect heritable personality and life-history traits) (cf., Krohn & Bogan, 2001). Adding further weight to theory that genetic factors play a role in the correlation between father absence and sexual strategy outcomes, Comings et al. (2002) found that a variant X-linked androgen receptor gene seemed to
predispose fathers to absence from their children and predispose daughters to precocious sexuality and other outcomes described by Belsky et al. (1991). Thus, recent evidence suggests that the typical familial ecology in which one’s ancestors evolved may exert a great deal of influence upon an individual’s adoption of a sexual strategy. However, the fact that a person’s family history, in the broadest sense, influences his or her sexual behavior does not negate the necessity for environmental input, and none of the lines of evidence regarding genetic influence upon life history strategy have suggested that genes are responsible for all of the variance in a person’s sexual strategy. Instead, to unite the two perspectives described above, it seems that father absence, and its mating-strategy correlates, is a condition that some individuals are more biologically prepared for than others. Father absence, especially for some individuals, serves as trigger for early sexual maturity, early mating behavior, and lower expectations regarding paternal investment.

The two decades of life that human females often experience after menopause also influence our mating decisions (Hrdy, 1999). Although the longevity of post-menopausal women may have arisen to allow mothers to survive long enough to see their lastborn child reach adulthood, research indicates an additional benefit of the post-menopausal phase. Maternal grandmothers often use their later years to increase their inclusive fitness by channeling resources to their children and grandchildren. Hawkes et al. (1998) found that, compared to primate species in which females do not experience a long post-menopausal phase, human females can breed faster, with more closely spaced offspring. In many hunter-gather societies grandmothers provide more food to children than do young mothers (cf., Hrdy, 1999). A recent census suggests that roughly four million grandmothers are the primary caretakers of their grandchildren in the United States. (Hrdy, 1999). It is likely that the mothers whose children are being reared by grandmothers are capitalizing on their assistance to practice lower-K life history strategies while increasing the survival rates of their offspring. Hrdy (1999) even suggested that female teenagers who think their mothers will help them in caring for offspring are more likely to get pregnant than girls who think their mothers would not offer childcare assistance. If this is indeed the case, it seems to be an example of Mating Intelligence at work in the adoption of an alternative reproductive strategy. As with male psychopathy, what looks like a pathology at first glance (teen pregnancy) may turn out to have a hidden adaptive logic.

The facts above suggest that, while some people may be more easily influenced by certain environmental cues, almost all people can use a wide array of cues to adjust their mating behaviors to their socio-ecological context. Due to conditions experienced by their ancestors, some individuals may be more prepared to respond to scarcity of resources as a cue to adopt
a lower-K strategy while others may be more prepared to respond to familial cues. For example, throughout much of human history, it is likely that girls who were raised in father-absent conditions were likely to find, once they reached adulthood, that other men within their social group were also unwilling to invest in long-term partners or children. However, because of gene-culture evolution and both sexes’ susceptibility to environmental influences, the same girls were also likely to live in social groups in which women, namely mothers and daughters, lived in close proximity to one another and invested in each other’s offspring. By investing in the offspring of their daughters, and channeling investment into their offspring from their own mothers, women in this social situation might attain equal fitness to women in societies in which men invest heavily into their own children. Although the two situations represent different strategies, both are examples of Mating Intelligence at work.

THE INDIVIDUAL LEVEL

Individuals who pursue varied reproductive strategies may have certain intra-psychic processes (e.g., obedience to authority, conformity, tolerance for dissonance) which aid in achieving reproductive success. Such intra-psychic processes may serve immediate functions such as staying out of trouble, facilitating good peer relations, and avoiding inconsistency among behavioral tactics. However, the benefits of such processes may depend strongly on the environment and the life-history strategy of the individual. Stable environments which favor higher-K life-history strategies are likely to select for individuals who favor a stable social structure, invest in kin and social networks, learn from their relatives and friends, and benefit from consistent behavior. As a result, individuals with higher-K life-history strategies should be more obedient to authority, conform more to social norms, and maintain higher consistency in cognitions. In contrast, unstable environments favoring lower-K life-history strategies may select for individuals who are high in Machiavellianism, antisocial tendencies, and opportunistic and random behaviors. As a result, individuals with lower-K life-history strategies should be less obedient to authority, conform less, and have lower consistency in beliefs and behaviors. Thus we hypothesize that certain intra-psychic processes are ultimately the result of the selective pressures placed upon individuals given a specific ecological niche and based upon their life-history strategy.

The Theory of Cognitive Dissonance (Festinger, 1957) is a good example of an intra-psychic process which is likely to have evolved as a means of maintaining a cohesive life-history strategy. Cognitive Dissonance theory states that when an individual has two competing cognitions, such as
freely advocating a position one is opposed to, the individual will be motivated to reduce the discomfort (dissonance) associated with the discrepancy of the cognitions. Furthermore, individuals will avoid situations likely to create a discrepancy between cognitions. Festinger (1957) also noted that individuals are likely to differ with respect to their tolerance for dissonance.

We propose that such differences in tolerance for dissonance are likely to hinge upon the reproductive costs and benefits of behavioral consistency for a given individual. For example, individuals with a higher-K life-history strategy are likely to invest in their careers, relationships, and children, and be long-term planners. Behaving inconsistently with one’s moral beliefs or social commitments (e.g., quitting a job, cheating on a partner) might impose serious reproductive costs (e.g., loss of a job, partner, or friends) in the long run. Thus, the discomfort of dissonance would lead an individual with a higher-K life-history strategy to avoid inconsistency, proximately to avoid the associated discomfort, but ultimately to save the individual from such reproductive costs. Additionally, if he or she did make a change (e.g., new partner, new job), the individual with a higher-K life-history strategy is likely to adapt by changing their beliefs (e.g., “I hated that job”) to match the new situation and restore consistency. Likewise, if the new behavior or situation is destructive, consistency can also be restored by changing the inconsistent behavior or by vowing never to behave in such an inconsistent way again (e.g., “I’ll never cheat again”). In situations where ephemeral changes or inconsistencies are likely to be short-lived, such individuals are likely to use dissonance reduction strategies such as self-affirmation or trivialization, which would reduce the discomfort of dissonance while still maintaining a strong internal need for consistency, maintaining overall integrity.

Conversely, individuals with a lower-K life-history strategy may have fewer consistency needs. Since uncertain environments favor opportunistic over planned (higher-K) behaviors, consistency may be undesirable. As a result, individuals who pursue lower-K life-history strategy are not likely to benefit from consistency, resulting in reduced inhibitions and a reduced need to rationalize behavior. For example, individuals who are not constrained by consistency can behave in ways that suit them best in the short term, and while consistency may pay off eventually, low-K individuals are not interested in long-term payoffs. These life-history strategies may further play out in moral domains, as outlined in Kohlberg’s (1969) stages of moral development. Low-K individuals might benefit from developing simpler, short-term moral values such that they only avoid punishment and gain rewards. To progress beyond such simple rules to viewing others’ perspectives may only be adaptive within stable and long-term social relationships, which high-K individuals are better suited for.
Cognitive consistency, beyond its role in maintaining a cohesive reproductive strategy, is also likely to create a perception of integrity in the consistent individual, because she does what she says and says what she does. Thus, higher-K individuals are also likely to prize integrity and consistency as desirable traits in a partner, which, in addition to being desirable, may themselves create consistency, predictability, and comfort in social interactions, and may also signal things like long-term pair-bonding, fidelity, and parental investment.

The attributions (internal vs. external) that individuals make based on positive or negative outcomes comprise an important dimension in how an individual interprets his or her environment (Heider, 1958). Further, one’s attribution style is another intra-psychic process that may be related to life-history strategy. For example, an individual who decides to go to college but fails, can make an internal attribution (e.g., “I am not smart enough for college”) or an external attribution (e.g., “the professors didn’t like me”) for the failure outcome. An individual who makes an external attribution regarding college failure might attempt to try a different college, since he or she may think they will succeed if future professors are more agreeable. In contrast, an individual who makes an internal attribution regarding college failure is likely to skip any future college attempts. Individuals who pursue higher-K life-history strategies benefit from long-term planning, learning from their mistakes, and thinking in terms of the long run. Therefore, it is likely that individuals with a higher-K life-history strategy will make more accurate attributions whether they be internal or external regarding both their successes and failures. Although such accurate attributions may at times be unpleasant, they have the potential for a long-term pay off by allowing the individual to adjust and learn from past situations. Because higher-K life-history strategies are often pursued in the context of long-term stable environments, accurate attributions, even if self-effacing at times, are likely to pay off over time. Thus, by acknowledging one’s own limitations by making internal attributions to failure when necessary could help avoid bad long-term outcomes, which may result in higher-K individuals experiencing temporary depression or negative affect in the face of failure. Internal attributions for success would provoke approaching situations where one’s abilities are rewarded, and would lead to more favorable future outcomes and increased positive affect for higher-K individuals. Likewise, however, external attributions to success, when appropriate, may keep an individual from pursuing a behavior that may have paid off once, but is not likely to pay off over time. Moreover, attribution style may also be a strong mating indicator in the sense that, over time, accurate attributions may create the perception of maturity and self-awareness, which would be an attractive quality for those seeking a long-term partner, whereas “passing the
buck” (e.g., inappropriate external attributions to failure) may pay off in the short term, but eventually foster a negative image of immaturity and narcissism in the minds of other group members.

Individuals with a lower-K life-history strategy are likely to benefit from a preponderance of self-enhancing attributions rather than accurate ones (i.e., mostly external attributions for failure and internal attributions for success). Consistently denying failure and accepting success may create the positive self-perception and confidence necessary for short-term opportunistic behaviors, even though such behavior may be seen as hypocritical and self-serving over the longer term. Since individuals who pursue lower-K life-history strategies live in unstable environments and try to mate with more people, changing one’s behavior (due to any internal attribution for failure) may be maladaptive, as such behavior may be adaptive later in the ever-changing environment, or when encountering a new person. For example, a lower-K person may approach a prospective partner in a certain way and get rejected. If he or she attributes the rejection to their approach tactic, he or she might fail to use that tactic again, even though it may work in a different situation with a different person. A lower-K life-history strategist benefits from opportunistic behavior as well, thus, making any internal attributions for failure might discourage future opportunistic behavior. Furthermore, the positive benefit of self-accuracy over time is not likely to pay-off for lower-K individuals, since they are only interested in the short-term.

We propose that intra-psychic processes such as obedience to authority, conformity, cognitive dissonance, and attributional style have evolved to serve individuals based upon their particular ecological niches and life-history strategies. However, differences in life-history strategy may interact with other individual difference variables to limit the utility of these intra-psychic mechanisms. For example, individuals who are high in self-monitoring (Synder, 1974) and who pursue higher-K life-history strategies may have unique intra-psychic processes aimed at maximizing reproductive success, such as higher tolerance for dissonance (Geher et. al., 2005). Thus, an individual may pursue a generally high-K life-history strategy but also opportunistically exploit certain short-term opportunities, without cognitive dissonance. Such an adaptively hypocritical individual might better exploit short-term opportunities while presenting minimal risk to more important long-term investments, thereby maximizing reproductive potential when the ecology would favor such an approach.

In sum, we hypothesize that the ultimate objective of pursuing a cohesive life-history strategy will lead to more specific proximate mechanisms such as a need for consistency, obedience to authority, conformity, and attributional style, which have generally favored the survival and reproduction of individuals.
THE SITUATIONAL LEVEL

Surprisingly little theoretical work has tried to categorize fitness-relevant situations. In this section, we address that shortcoming, focusing on social situations that influence the mating tactics exhibited by adult humans.

An individual’s immediate environment offers ‘affordances’ (Gibson, 1979) or ‘stimulus support’ (Tolman, 1932) that constrain an individual’s behavioral options. The relevant affordances in mating situations include the: (1) potential mates, (2) sexual rivals, (3) other socially relevant individuals (e.g., mates’ and rivals’ friends and families), and (4) mating strategies available to the individual.

Any mating situation consists of adaptive problems encountered during intrasexual or intersexual cooperation and conflict and the extant mating strategies of the target individual. The adaptive problems that an individual faces in a mating situation logically fall into several distinct classes (aside from those generated by individual differences in the mating strategies of the particular cooperators or competitors involved). Each of these distinct classes calls for a corresponding set of distinct mating tactics. Four distinct classes of sexual cooperation are: Male-Male intrasexual cooperation (MM+); Female-Female intrasexual cooperation (FF+); Male-Female intersexual cooperation (MF+); and Female-Male intersexual cooperation (FM+). Four distinct classes of sexual conflict are: Male-Male intrasexual conflict (MM-); Female-Female intrasexual conflict (FF-); Male-Female intersexual conflict (MF-); and Female-Male intersexual conflict (FM-). Each of these classes can be further subdivided into long-term and short-term mating contexts. Furthermore, any specific situation might involve a complex combination of cooperation and conflict (a ‘mixed-motive game’ in game theory terms) among the interacting individuals. For the moment, we will describe just the four basic classes of sexual conflict—the basic modes of strategic interference among different individuals’ reproductive interests.

Females are the limiting resource for male reproduction because any male that attracts more than one mate does so at the expense of other males within the same mating market. To the extent that these two conditions hold, the logical distinction drawn above will also hold in the natural environment; distinct sets (and thereby classes) of adaptive problems are marked empirically by these four forms of intraspecific sexual conflict.

The first situation involves Male-Female intersexual conflict (MF-). Here, we expect the female to set the adaptive problems—the male must convince the female that his genetic material or parental investment potential is the best available to that female. Under these circumstances, we expect the male to exhibit fitness displays related to the female’s apparent preferences, such as displays of athletic prowess, risk taking, humor,
resources, honesty, fidelity, and the like. These may be honest or dishonest displays.

A second situation involves Female-Male intersexual conflict (FM-). Here, we expect the male to set the adaptive problems—the female must convince the male that, if he is to invest, her genetic material or parental investment potential is the best available to that male. Under these circumstances, we expect the female to exhibit fitness displays related to the male’s apparent preferences, displays that maximize indicators of fecundity such as hip to waist ratio, clear skin, shiny hair, sexual interest as well as humor, honesty, fidelity, and the like. These may be honest or dishonest displays. This fact sets a second set of adaptive problems for the female: She must detect dishonest displays. Hence, we expect the female to ‘interview’ the male, examining the honesty of his display.

A third situation involves Male-Male intrasexual conflict (MM-). Here, we expect the competing male to set the primary adaptive problems. Assuming that females can observe the outcome of MM-, the male’s adaptive problem is to achieve higher status than other males, which will attract the largest quantity or quality of female mates. Thus, males should pursue strategies that advance his relative status or dominance in the male community. He may use some of the same strategies that he uses in MF-, such as resource or fitness-indicator displays, but he may also use aggressive strategies specific to male-male competition.

A fourth situation involves Female-Female intrasexual conflict (FF-). Here, we expect the competing female to set the primary adaptive problems. Assuming that the genetic quality of males varies, the adaptive problem for the female is to attract and retain the best possible male genes in the face of competition from other females. Under these circumstances, we expect the female to display her reproductive potential to its best advantage (e.g., fertility, maternal care ability), and to denigrate the reproductive potential of her rivals.

The diversity of these situations and individual differences related to them (see e.g., Shoda & Mischel, 1995), would impose selection for the abilities to discriminate among them, to assess the relevant adaptive problems (e.g., to “mind read” the intentions of others; see Baron-Cohen, 1997, 2003), and to adjust behavioral tactics appropriately. In addition, we expect behavioral tactics to be adaptively modulated by subjective estimates of one’s own mate value and mating strategies relative to that of rivals and potential mates. Thus, adaptive mating behavior should be controlled through both immediate environmental contingencies and evolved ‘behavioral rules’ (rule governance; e.g., Baum, 2005; Catania, 1990; Hayes, 1989).

Hence, adaptive mating tactics should take into account (1) the class of mating situation (MF-, FM-, MM-, or FF-), (2) the relative mate values and mating strategies of each potential mate and rivals, (3) one’s available fit-
ness indicators and competitive tactics, (4) instinctive or learned estimates of the costs, benefits, and risks of different indicators and tactics given the mating situation, relative mate values, and different mating strategies of each relevant individual. Given that situations tend to repeat themselves and that relative mate values and mating tactics tend to remain stable, the organism, at maturity, produces distinct and individually unique behavioral signatures (e.g., Mischel, Shoda, & Mendoza-Denton, 2002; Shoda & Smith, 2004). Furthermore, dispositional traits such as life-history strategies will moderate how an organism responds to different situations, generating a spectrum of behavioral signatures that match individual differences in strategic objectives. For example, the choice of long-term or short-term mating tactics will be partially influenced by the individual’s overall life-history strategy.

The most immediate level of an organism’s ecology is the set of transient social situations encountered, each of which set the occasion for specific actions—or behavioral tactics—to occur (Mischel, 1968; Skinner, 1938). These tactics either work or don’t, given the situation; those that work tend to be repeated when the organism re-encounters the situation; those that don’t tend to drop out of the organism’s behavioral repertoire (Baum, 2005). Tendencies to retain and reproduce ‘successful’ behavioral tactics generate individually distinct, situation-contingent behavioral signatures, which one can use to predict future behavior (e.g., Schmajuk, Lamoureaux, & Holland, 1998; Shoda and Mischel, 1995).

Hence, we predict that behavioral strategies, acquired in a specific situation through selective mechanisms such as those described above, generalize to those situations falling within the same taxonomic class. The specific tactics used in each situation, however, will depend upon the perceived affordances present in that situation (e.g., Gibson, 1974).

Consider, for example, that males typically learn appropriate intersexual behavior. The family (parents and perhaps siblings) is the foundational source of training for social and sexual behavior in the home. Peer groups, however, are the foundational source of training for social and sexual behavior outside of the home (see Harris, 1995, 1998, 2005 for extensive reviews). Now consider such behavior outside of the home.

For most humans, especially in ancestral hunter-gatherer societies, there are no special training and no special schools. Instead, individuals in local peer groups dictate the contingencies, which shape social and sexual behavior in any given situation. If both same sex and opposite sex peers respond well to first attempts, the male learns and continues the appropriate behavior. If the male doesn’t get it right the first few times, he may well withdraw into shyness, insecurities, inferiority feelings, simply give up, or, if options are available, seek other peer groups.

In short, males receive extensive training in the form of modeled examples, verbal rules, and immediate social and sexual consequences
for appropriate and inappropriate behavior (see Baum, 2005 for an extended review of these principles), both in their home environment and in their extended social environment. Conversely, sexually coercive males have been shown to use “Macho” tactics, more suited to intermale competition (MM-), in their courtship of females (Lalumiere et al., 1996). Thus, resorting to sexually coercive tactics may result from a failure to discriminate between different classes of mating situation.

As these examples illustrate, structured experience supports discrimination, shaping, and continued practice of social skills in each of main sexual situations (MF, FM, MM, or FF) we described. Thus, any adaptive, dedicated, domain-specific Mating Intelligence should take into account these distinct mating situations, their associated cues, and the selective contingencies inherent to them.

**CONCLUSION**

We have reviewed a hierarchy of nested environmental levels (the evolutionary-ecological, the societal, the familial, the individual, and the situational) in which both physical and social ecology constrain mating tactics. These ecological contexts shape, but do not dictate, which particular mating tactics are optimal. Other individual differences (such as biologically prepared life-history strategy, genetic quality, phenotypic condition, available resources, and reproductive history) are also expected to influence mating tactics. For example, young, healthy, child-less individuals can afford to invest heavily in mating effort, even if they are genetically predisposed towards high parental effort once children arrive. A dedicated, domain-specific psychological mechanism of Mating Intelligence should be specifically adapted to detect and respond to external cues regarding the appropriateness of mating tactics within each specific ecological context. So, mating tactics should not be studied in a vacuum, as in some oversimplified game theory models and much evolutionary psychological research. Instead, Mating Intelligence should be contextualized within the surrounding physical and social ecology, so reproductive costs and benefits of different mating tactics can be adequately assessed. Further research on the nature and functions of Mating Intelligence should explicitly consider the complex ecological and situational variables that constrain mating tactics.

**REFERENCES**


