Mating Intelligence

Sex, Relationships, and the Mind's Reproductive System

Edited by
Glenn Geher • Geoffrey Miller

LEA Lawrence Erlbaum Associates
Taylor & Francis Group

New York London

Cover design by Tomai Maridou.

Lawrence Erlbaum Associates
Taylor & Francis Group
270 Madison Avenue
New York, NY 10016

Lawrence Erlbaum Associates
Taylor & Francis Group
2 Park Square
Milton Park, Abingdon
Oxon OX14 4RN

Lawrence Erlbaum Associates is an imprint of Taylor & Francis Group, an Informa business

Printed in the United States of America on acid-free paper
10 9 8 7 6 5 4 3 2 1

International Standard Book Number-13: 978-0-8058-5749-8 (Softcover) 978-0-8058-5748-1 (Hardcover)

Visit the Taylor & Francis Web site at
http://www.taylorandfrancis.com

and the LEA Web site at
http://www.erlbaum.com

Chapter 1

Mating Intelligence: Toward an Evolutionarily Informed Construct

Glenn Geher
State University of New York at New Paltz

Geoffrey Miller
University of New Mexico

Jeremy Murphy
State University of New York at New Paltz

This book introduces a new construct called 'Mating Intelligence' (MI) which concerns cognitive processes that uniquely apply to the domain of human mating, sexuality, and intimate relationships. This MI construct encompasses both species-typical psychological adaptations (such as the perceptual, cognitive, and decision-making processes for evaluating an individual's potential as a long-term mate), and a set of individual differences in the efficiencies, parameters, and design details of those traits. Although we all have some ability to assess who is attractive (a species-typical adaptation), some of us are better at this than are others (i.e., we show individual differences in adaptive functioning).

We propose the construct with some trepidation, because most new constructs in psychology are a waste of time. They may succeed in getting a new technical term associated with the name of a tenure-seeking researcher, but rarely lead to cumulative, consilient scientific progress (McGrath, 2005). Technically, new constructs rarely show good discriminant validity (predicting behavior differently from existing constructs) or

good incremental validity (predicting behavior better than existing constructs) (see, e.g., Gottfredson, 2003; Judge, Erez, Bono & Thoresen, 2002). The burden of proof should rightly be against researchers trying to introduce a new way of parsing human nature or a new individual-differences variable.

This is especially true in intelligence and personality research, where most new constructs turn out to be little more than the good old-fashioned *g* factor (general intelligence, IQ), and/or one or more of the 'Big Five' personality traits (openness, conscientiousness, extroversion, agreeableness, emotional stability). For example, some evidence suggests that 'political authoritarianism' corresponds empirically to low intelligence plus low openness (i.e., conservatism), high conscientiousness (i.e., sense of duty), and low agreeableness (i.e., aggressiveness) (Heaven & Bucci, 2001; Jost, Glaser, Kruglanski, & Sulloway, 2003; Schultz & Searleman, 2002). Many other newly introduced constructs turn out to be little more than statistical sub-factors of general intelligence. For example, Howard Gardner's 'multiple intelligences' (Gardner, 1983) all correlate positively with general intelligence, but often can't be measured with as much reliability and validity, so they look more attractively elusive and mystical (see Gordon, 1997; Hunt, 2001; Klein, 2003; Pyryt, 2000). Similar problems afflict Robert Sternberg's construct of 'practical intelligence' (Gottfredson, 2003).

On the other hand, there are a few constructs—notably 'social intelligence' (Cantor & Kihlstrom, 1987) and 'emotional intelligence' (Salovey & Mayer, 1990)—that have provoked progressive research traditions in the last several decades. Research on social intelligence (including Theory of Mind, Machiavellian intelligence, autism, and face perception) has arguably been the most important innovation in developmental psychology and comparative psychology in the last 30 years (e.g., Reader & Laland, 2002). It has yielded thousands of papers on the 'mind-reading' skills of apes, children, and adults. Research on emotional intelligence has had a similar impact in business management, organizational behavior, clinical psychology, and relationship research (e.g., George, 2000). Both constructs are also informing the emerging fields of social neuroscience and affective neuroscience (e.g., Bar-On, Tranel, Denburg, & Bechara, 2003).

For both social and emotional intelligence, though, the development of reliable, valid individual-differences measures of the constructs has proven somewhat frustrating and elusive (e.g., Davies, Stankov, & Roberts, 1998; Geher, 2004; cf. Mayer, Caruso, & Salovey, 1999)—especially in finding measures that show good discriminant validity beyond well-established measures of general intelligence and personality (De Raad, 2005). Some evidence for discriminant validity has been published for some emotional intelligence scales (e.g., Livingstone & Day, 2005; Petrides & Furnham, 2001, 2003; Tett, Fox, & Wang, 2005). However, skeptics

suggest that social intelligence is just general intelligence plus extroversion, or that emotional intelligence is just general intelligence plus agreeableness and emotional stability (see, e.g., De Raad, 2005; Matthews, Zeidner, & Roberts, 2004; Schulte, Ree, & Carretta, 2004).

Although such criticisms are important, they often miss the crucial tension that makes these constructs scientifically productive—these constructs bridge the gap between research on human universals and research on individual differences. They unify the experimental psychology tradition of Wilhelm Wundt and the correlational psychology tradition of Francis Galton. They identify not just a distinctive part of human nature, but a cluster of human differences that are socially salient and important. The human-universal aspect of these constructs helps researchers identify key adaptive problems, social functions, and cognitive mechanisms. The individual-differences aspect helps researchers develop valid ability tests that can drive comparative research across species, sexes, ages, populations, families, individuals, and psychopathologies.

For instance, emotional intelligence is a set of mental abilities (to read facial expressions, identify emotions in self and other, and control one's own emotions under trying situations), but it is also a partly-heritable, partly-trainable dimension of variation that is helpful to appreciate in school, work, and family life (Ciarrochi, Forgas, & Mayer, 2006). We all have emotional intelligence in some form, to a far higher degree than most other species. But we differ in how well it works, and even small individual differences in emotional intelligence can yield huge differences in life-outcomes—getting promoted versus fired, driving to a second honeymoon versus a divorce hearing. We suspect that Mating Intelligence will also turn out to have two faces—a set of universal mechanisms, and a dimension of individual differences—as a psychological construct.

A HISTORY OF MUTUAL NEGLECT BETWEEN MATING RESEARCH AND INTELLIGENCE RESEARCH

We aim for 'mating intelligence' to serve a research-motivating function like the 'social intelligence' and 'emotional intelligence' constructs did. Specifically, we hope it will build bridges between mating research (including evolutionary psychology, human sexuality, and relationship research) and intelligence research (including psychometrics and behavior genetics). These two fields have neglected each other for over a century.

Human intelligence research has neglected the central adaptive challenge in the life of any sexually reproducing species—finding mates and having offspring. To quantify this neglect, we examined all volumes of the premier international journal *Intelligence* since its inception in 1977. We searched in SciSearch for *Intelligence* articles that included all keywords we

could list related to mating (e.g., *mating, mate, marriage, sex*) in the title or abstract. We then read the abstracts to see if they genuinely concerned mating issues. As of November 2005, only 3 of 811 articles (0.8 percent) in *Intelligence* have dealt directly with human mating (Benbow, Zonderman, & Stanley, 1983; Kanazawa & Kovar, 2004; Rushton, 2004). Another 43 articles concern sex differences unrelated to the context of mating behavior (e.g., Deary, Thorpe, Wilson, Starr, & Whalley, 2003).

Equally, mating research has neglected intelligence—the most reliably measurable, predictive, heritable construct in the history of psychology (Jensen, 1998). Evolutionary psychology has been at the forefront of human mating research since about 1990, and its premier journal is *Evolution and Human Behavior.* Since changing its name from *Ethology and Sociobiology* in 1997, only 1 of its 311 research articles (Flinn, Geary, & Ward, 2005), as of November 2005, has dealt directly with intelligence (according to a similar keyword search in SciSearch). Another 6 concern sex differences in specific cognitive abilities (e.g., Silverman, Choi, Mackewn, Fisher, Moro & Olshansky, 2000), but do not directly relate intelligence to mating behavior. Similarly, the premier journal in relationship research, the *Journal of Social and Personal Relationships*, contains only 2 of 939 articles directly concerning intelligence since its inception in 1985 (Rowatt, Cunningham, & Druen, 1999; Sprecher & Regan, 2002).

More generally, although SciSearch returns 44,111 results for 'mating' and 27,974 results for 'intelligence' in all journals since 1950 (out of 51,477,995 total records), the combination of 'mating' and 'intelligence' appear in only 40 relevant articles. (In descending order of citation impact, the top 10 were: Crow, 1993, 1995; Feingold, 1992; Lykken & Tellegen, 1993; Miller & Todd, 1998; Furlow, Gangestad, & Armijo-Prewitt, 1998; Eaves, 1973; Hatfield & Sprecher, 1995; Li, Bailey, Kenrick, & Linsenmeier, 2002; Rushton & Nicholson, 1988). Most of these concerned assortative mating for intelligence. (Another 60-odd articles concerned different 'mating' strategies in genetic algorithms, an artificial 'intelligence' optimization method, based on early work by Todd & Miller, 1991). Those 40 relevant mating/intelligence articles are only twice as many as would be expected by chance (24), given the base-rate frequency of 'mating' (.000857) and 'intelligence' (.000543) in the whole scientific literature of 51 million papers since 1950. In fact, 'mating' is less likely to be associated with 'intelligence' (121 total papers) than with 'cockroach' (168 papers), 'Norway' (178), or 'steel' (182). Thus, 'mating' and 'intelligence' do not seem very closely connected in the minds of scientists.

Indeed, we could find only three areas of overlap between mating research and intelligence research.

First, as mentioned above, there is the literature of assortative mating for intelligence, which is important to ascertain mostly for technical

reasons in behavior genetics (overlooked assortative mating can bias estimates of heritability from twin and adoption studies).

Second, there are sporadic references to mate preferences for intelligence, creativity, adaptability, and other aspects of general intelligence in the evolutionary psychology literature on human mate choice—including research on cross-cultural preferences, personal ads, and sperm-donor preferences (e.g., Buss, 1989; Dunbar, Marriott, & Duncan, 1997; Haselton & Miller, 2006; Kenrick et al., 1990; Li et al., 2002; Scheib, 1994).

Third, there is the clinical psychology literature on mental illnesses that undermine mating intelligence in particular ways that are not entirely explained by reduced general intelligence. These mating-intelligence disorders include the following: Borderline personality disorder includes highly unstable evaluations of the commitment level and mate value of a potential mate, and of one's own mate value (Skodol, Gunderson, Pfohl, Widiger, Livesley, & Siever, 2002). Anorexia—severe, sometimes fatal under-eating—often includes misconceptions that the other sex is attracted to a much thinner body form than they actually prefer, and such misconceptions are often driven by media stereotypes and adolescent peer-group gossip (Groesz, Levine, & Murnen, 2002; Paxton, Schutz, Wertheim, & Muir, 1999). Asperger's syndrome and autism are characterized by deficits in social understanding and communication abilities that result in pervasive, consistent problems in attracting, retaining, and understanding sexual partners (Ashton, 2002; Baron-Cohen, Wheelwright, Skinner, Martin, & Cubley, 2001; Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2003). Narcissistic personality disorder—extreme arrogance, grandiosity, self-involvement, and showing off—can be construed as obsessive overinvesting in conspicuous, public fitness-displays to attract multiple short-term mates (Buss & Shackelford, 1997; Gabriel, Critelli, & Ee, 1994; Robins & Beer, 2001). Antisocial personality disorder (psychopathy)—a pervasive pattern of callous, exploitative, impulsive, violent, and promiscuous behavior—can be construed as over-reliance on deceptive, coercive, and short-term mating tactics (see Dunsieth, Nelson, Bursman-Lovins, Holcomb, Bechman, Welge, Roby, Taylor, Soutullo, & McElroy, 2004; Krueger, Hicks, Patrick, Carlson, Iacono, & McGue, 2002). All these personality disorders seriously reduce long-term mating success, relationship satisfaction, and marital stability (Grant, Hasin, Stinson, Dawson, Chou, Ruan, & Pickering, 2004; Skodol, Gunderson, McGlashan, Dyck, Stout, Bender, Grilo, Shea, Zanatini, Morey, Sanislow, & Oldham, 2002), so can be viewed partly as disorders of Mating Intelligence. However, antisocial personality disorder in males often increases short-term reproductive success (Moffitt, Caspi, Harrington, & Milne, 2002)—insofar as this represents a successful 'alternative strategy' in male mating behavior, this emphasizes the point that Mating Intelligence can have a very dark side indeed.

Clearly, none of these research areas has developed an integrated view of Mating Intelligence as a major adaptive domain of human cognitive functioning. We think this century of mutual neglect between mating research and intelligence research has been harmful in many ways. It led mating researchers to neglect the romantic attractiveness of intelligence in its diverse manifestations. It led relationship researchers to neglect intelligence as an explanatory variable in predicting relationship formation, satisfaction, conflict, and dissolution. It led intelligence researchers to focus on the predictive validity of general intelligence in the public domains of education and employment rather than the private domains of relationships and family life, making it easier for critics to portray the 'general intelligence' construct as exclusively concerned with modern book-learning. It led sex-differences researchers to spend decades on sterile debates about cognitive differences between men and women, without any sexual-selection theory from mating research to drive sex-differences predictions, or sophisticated psychometrics from intelligence research to clarify the nature of the cognitive differences.

Each of these scientific problems led to lost opportunities in applied psychology—decades of delay in understanding the real-world effects of intelligence differences in the domains of human mating, relationships, sexuality, marriage, and family life—and in understanding all their associated 'social' (i.e., sexual) problems, such as teen pregnancy, sexually transmitted diseases, abortion, single motherhood, spousal abuse, depression, suicide, divorce, rape, sexual discrimination, and so forth. Research on happiness ('subjective well-being') consistently shows that the quality of intimate relationships (especially sexual relationships) is a major predictor of overall life-satisfaction—often more important than education, income, or occupational status (DePaulo & Morris, 2005; Diener, Oishi, & Lucas, 2005; Lucas, 2005; Mroczek & Spiro, 2005). By neglecting to study the links between mating, intelligence, and human happiness, psychologists have done a great disservice to humanity. Our proximal goal with this book is to spark more interdisciplinary research on mating intelligence, but our ultimate goal is to promote the happiness of human individuals and the sustainability of human societies by shedding more light on the most intimate and important sources of satisfaction in life.

AN EVOLUTIONARY PSYCHOLOGY CONTEXT FOR MATING INTELLIGENCE

If the 1960s is often characterized as the era of the *cognitive revolution* (Martel Johnson & Erneling, 1997), then the 1990s and the current decade must surely qualify as the period of the *evolution revolution* in psychology. A

recent content analysis of articles featured in *Behavioral and Brain Sciences*, an elite interdisciplinary journal, revealed that more than 30 percent of articles published in the last decade include *evolution* in the title or as a keyword (Wilson, Garruto, McLeod, Regan, Tan-Wilson, unpublished manuscript). Evolution has come of age in psychology, not just in the new field of evolutionary psychology proper, but in the prominence of adaptationist analysis across many areas of traditional psychology—perceptual, cognitive, social, developmental, and abnormal.

However, many areas of psychology have been slow to incorporate evolutionary principles. Intelligence research is a case in point. To be sure, much work has addressed the heritability of intelligence (e.g., Plomin & Spinath, 2004), and the evolutionary origins of 'human intelligence' (e.g., Sternberg & Kaufman, 2002). Yet the behavior genetics work on intelligence has rarely connected to the evolutionary stories to yield an integrated evolutionary genetic theory of the selection pressures that shaped human intelligence to have the structure, dimensions of variance, and types of heritability that it does. In particular, competing theories of intelligence (e.g., Jensen vs. Sternberg vs. Gardner) have never been resolved by appeal to evolutionary principles. Also, the unitary nature of the *g* factor (general intelligence) has not been reconciled with evolutionary psychology's 'massive modularity' claim that the human cognitive architecture is composed of hundreds of distinct psychological adaptations. Further, although some new constructs, such as emotional intelligence (Salovey & Mayer, 1990), seem more closely related to core adaptive challenges of humans as social primates, work on such constructs has generally progressed separately from evolutionary psychology (Geher & Renstrom, 2004).

In the past several years, evolutionary psychologists have provided insights into many aspects of human behavior that would not have been possible without the broad and powerful explanatory nature of evolutionary theory. Many such findings deal with issues of human mating (e.g., Buss, 2003), including diverse topics such as sexual jealousy (Buss, Larsen, Westen, & Semmelroth, 1992), the effects of body symmetry on attractiveness ratings (Gangestad & Thornhill, 1997), and the phenomenology of short and long-term mating strategies across the sexes (Schmitt, Shackelford, & Buss, 2002).

This focus on human mating taken by evolutionary psychology is not capricious. In general, evolutionary psychology underscores reproductive success as the ultimate arbiter of whether some trait is likely to replicate across generations and thereby become species-typical. Mating processes influence reproductive success more directly than any other class of human behaviors. As such, the mating domain deserves a special status in evolutionary psychology. In the words of David Buss:

> Because differential reproduction is the engine that drives the evolutionary process, the psychological mechanisms surrounding reproduction should be especially strong targets of selection. (Buss, 2004, p. 103)

Yet, in spite of all the evolutionary psychology work on human mating, evolutionary theorizing about the origins of human intelligence has neglected the mating domain as a possible source of selection pressures, or an adaptive arena in which intelligence matters.

The book is a first step in trying to synthesize insights concerning human mating and human intelligence within an evolutionary framework. With few exceptions, existing conceptions of intelligence are devoid of mating-related content. Similarly, mating research in evolutionary psychology generally ignores intelligence, except as a vaguely defined trait that seems sexually attractive for obscure reasons (see Miller, 2000, for an exception). Likewise, human sexuality research and intimate relationships research neglects intelligence differences between people. These facts are troubling given the centrality of both mating and intelligence in human psychology. So we have a situation in which two important areas of psychology, intelligence and mating psychology, need to be synthesized. Given the utility of short, memorable phrases as labels for emerging research areas, we think it is useful to label this synthesized construct *mating intelligence* (MI).

MATING INTELLIGENCE (MI) DEFINED

Roughly, we think of mating intelligence (MI) as the mind's reproductive system: the total set of psychological capacities for sexual courtship, competition, and rivalry; for relationship-formation, commitment, coordination, and termination; for flirtation, foreplay, and copulation; for mate-search, mate-choice, mate-guarding, and mate-switching; and for many other behavioral capacities that bring mainly reproductive (rather than survival) payoffs. MI is not a single capacity, a single adaptation, a single brain region, or a single 'group factor' under the *g* factor (general intelligence). Rather, it is a collective noun that covers dozens or hundreds of distinct adaptations, exaptations, learned skills, and *ad hoc* tactics for mating. MI forms a coherent category only at the functional level (capacities evolved, learned, or invented *for* mating). As is addressed in Miller's 'Frequently Asked Questions' chapter in this volume, MI is probably not best conceived as a coherent category at the level of genetics (we don't expect distinct MI genes), neuroscience (we don't expect distinct MI cortical areas), or cognitive processes (we don't expect distinct MI modes of Bayesian inference).

Some of the many MI capacities may be human universals that show very high efficiency and adaptiveness across all neurologically normal, sexually mature adults; thus, they might show little variation between individuals and low correlations with general intelligence. In later chapters, we often refer to these as 'mating mechanisms,' to emphasize their efficient, reliable functioning. Other MI capacities might show high variance and heritability, and might have high *g*-loadings (high correlations with general intelligence or IQ). In later chapters, we often refer to these as 'mental fitness indicators,' to emphasize their conspicuous variation across individuals. Thus, the relationships between MI, general intelligence, social intelligence, and emotional intelligence will vary from capacity to capacity—sometimes closely connected, sometimes not.

Even within mating mechanisms that operate efficiently within all normal humans, we might still expect substantial adaptive differences in their design details, including perceptual inputs, decision parameters, and behavioral outputs, across sexes, ages, levels of mental and physical attractiveness, and many other cross-individual and cross-situational variables.

DIFFERENT VIEWS OF MI

As will become clear from the diversity of ideas included in this volume, different researchers have different views of MI. This theoretical diversity is not unusual in intelligence research (see Geher, 2004). One of this book's goals is to provide a forum for these different voices, in hopes of moving toward a consensual MI framework that can fruitfully guide future research, and that is well-rooted in the current theories and findings of evolutionary psychology, human sexuality research, intimate relationship research, and intelligence research.

As a starting point, we sketch four distinct views of MI as they have been articulated by or as they have influenced various contributors to this volume (see Table 1.1.):

A. *The SUNY New Paltz Mating Intelligence Project.* The authors from the State University of New York (SUNY) at New Paltz (Glenn Geher, Jeremy Murphy) do empirical research on MI construed as *a set of inter-related cognitive abilities that bear directly on mating-relevant issues and that show variability across individual adults.* We think of MI as partially independent of general intelligence, and as distinct from other domains of (e.g., social intelligence, emotional intelligence). From this perspective, MI must include all mating-relevant domains that have proven important in the extant literature on evolutionary psychology and human sexuality (e.g., factors that predict success in attracting and retaining short- and long-term mates, reactions to dif-

TABLE 1.1.
Four Conceptions of Mating Intelligence

	SUNY New Paltz Mating Intelligence Project	*Cosmides and Tooby (2002)*	*Kanazawa (2004)*	*Miller (2000)*
Conception of Mating Intelligence	Set of task-specific cognitive abilities to handle ancestral mating problems	Set of task-specific cognitive abilities to handle ancestral mating problems	Set of task-specific cognitive abilities to handle ancestral mating problems	Focused on sexually selected creative courtship abilities that show high variability, heritability, and difficulty
Relation to General Intelligence (g)	Modest positive correlations with g (as with social & emotional intelligence)	Slight positive correlations with g, which is a 'bundling together' of domain-specific abilities	No correlation with g, except when mating involves evolutionarily novel problems	High positive correlations with general intelligence; Reliable, valid g-indicators
Understanding Lewinskygate	Clinton's sometimes ill-judged mating decisions are largely unrelated to his high general intelligence	Clinton's affair-seeking reflects ancestral mating adaptations for extra-pair copulation by high-status males	Clinton's affair-seeking reflects ancestral mating adaptations for extra-pair copulation by high-status males	Clinton's ability to attract young females reveals his general genetic and phenotypic quality, including general intelligence

ferent kinds of infidelity, etc.; see Buss, 2003). Also, this perspective emphasizes 'cross-sex mind-reading'—our social-cognitive abilities to understand the beliefs and desires of the opposite sex, and to make accurate mating-relevant judgments of their psychological traits. For example, we are interested in whether males can accurately judge which personal advertisement (among three describing potential male marriage partners) will prove most attractive to female raters. We are provisionally defining high MI as the ability to make accurate judgments of this sort across several different mating-related tasks. Other key MI-demanding tasks include detecting sexual interest

from a potential mate, detecting sexual infidelity by a partner, and detecting sexual envy from a rival. Readers who are familiar with ability-based methods of measuring emotional intelligence (e.g., Brackett & Salovey, 2004; Mayer et al., 2000) will recognize this framework as similar. This MI-as-ability view has influenced mainly the chapters in this volume first-authored by Glenn Geher, James Casey, and Scott Kaufman.

B. *Cosmides and Tooby's Conception of Domain-Specific Psychological Adaptations.* In their foundational papers in evolutionary psychology, Cosmides and Tooby emphasize massive modularity as a hallmark of adaptations that comprise the human mind. Their view of 'intelligences' is no exception. Cosmides and Tooby (2002) divide intelligences into two distinct categories: *dedicated intelligences* and *improvisational intelligence*. A dedicated intelligence is a reliably developing, universal human ability to solve a set of adaptively important, ancestrally recurring problems. For instance, in their work on the cheater-detection module (Cosmides & Tooby, 1992), they argue that selection favored specialized cognitive modules that allowed us to detect individuals who cheat on implicit social contracts (who take without giving in return). Improvisational intelligence, on the other hand, concerns abilities to solve evolutionarily novel problems such as driving cars, learning calculus, or investing in pensions. They conceive of this more domain-general kind of intelligence as being comprised of a 'bundling together' of several dedicated intelligences. From this perspective, 'Mating Intelligence' is *a class of domain-specific dedicated intelligences attuned to ancestral mating challenges, plus whatever forms of improvisational intelligence deal with evolutionarily novel mating challenges* (e.g., single's ads, contraception, divorce courts). This MI-as-domain-specific-adaptations view has influenced virtually all the chapters in this book, especially those first-authored by Lars Penke, Charlotte de Backer, Norm Li, Maureen O'Sullivan, Viviana Weekes-Shackelford, Jessica Ash, and Aurelio José Figueredo.

C. *Kanazawa's Separation of Mating Domains from General Intelligence.* In a recent set of papers on the evolution of intelligence (Kanazawa & Kovar, 2004; Kanazawa, 2004, Kanazawa, this volume; cf. Borsboom & Dolan, 2006), Satoshi Kanazawa agrees with Cosmides and Tooby that massively modular, domain-specific adaptations (including MI capacities) sufficed for most problem solving in our evolutionary past. However, he argues that humans also evolved a new, domain-specific adaptation, 'general intelligence,' for solving evolutionarily novel problems (e.g., new ways of hunting, socializing, making tools). From this perspective, mating (as an evolutionarily ancient domain) should have little connection to general intelligence (as an adaptation for evolutionary novelty), so MI abilities should be uncorrelated with

measures of general intelligence, and mating research and intelligence research should proceed without much cross-talk.

D. *Miller's Focus on MI as Mental Fitness Indicators.* In previous work, one of us (Geoffrey Miller) has extended the Cosmides/Tooby framework in a different direction, arguing that many human domain-specific mental traits evolved through sexual selection as 'mental fitness indicators' (Miller, 2000a, b). In this view, many unique human capacities for language, art, music, humor, and creativity evolved to attract sexual partners, and they did so because they were reliable signals of general intelligence (a brain with high 'neurodevelopmental stability') and good genes (a genotype with relatively few harmful mutations). This view predicts substantial correlations between general intelligence and many sexually attractive mental fitness indicators, but does not predict such correlations between general intelligence and most other components of MI. This fitness indicator framework has influenced the chapters first-authored by Lars Penke, Daniel Nettle, Matthew Keller, Andrew Shaner, Scott Kaufman, and Geoffrey Miller.

MATING INTELLIGENCE VERSUS TRADITIONAL NORMS OF RATIONALITY

These four views differ in their emphasis on MI as a way of understanding others versus a way of impressing them, in their predictions about MI's relationship with general intelligence, and in their views about mismatches between ancestral and modern mating conditions. What they have in common is a biologically grounded view of 'intelligence' as adaptive behavior rather than rational choice. In traditional social stereotypes, 'intelligence' implies cold, rational, analytical calculation. In traditional economics and other social sciences that use Rational Choice Theory, 'intelligence' implies the maximization of expected subjective utilities given consistent, transitive preferences. In research on judgment and decision-making, 'intelligence' implies adherence to rather narrow procedural norms of logical reasoning and statistical inference. None of these meanings fit very well with this book's emphasis on the hottest domain of human cognition—mating—which seems both too carnal and too transcendental to fit into such narrow, workaday meanings of 'intelligence.'

As with social and emotional intelligence, mating intelligence can embody hidden forms of adaptive logic that violate traditional norms of rationality, including traditional criteria of 'intelligence,' narrowly construed. For example, mating intelligence is what makes high-school kids distracted when they're taking the SAT test—they might pay so much attention to the socio-sexual cues of interest from their peer group that

they miss some analytical reasoning questions. Their parents and their college admission boards might despair over this, but the kids are tuned into the evolutionarily salient forms of intelligence that really count.

Mating Intelligence is not just distracting from academic tasks; it has been under different kinds of selection pressures that favor different performance criteria. For example, many analytical reasoning tasks assume that the reasoner's goal should be to maximize accuracy—the probability of a 'correct' response. By contrast, most evolutionary psychologists now understand that animals and humans are under selection not to maximize raw accuracy in decision-making, but to maximize expected benefits and to minimize expected costs (Haselton & Buss, 2000; Haselton & Nettle, 2005). When fitness costs and benefits of different errors are very different (e.g., failing to notice a saber-toothed cat vs. false-alarming to a rock as if it were a saber-toothed cat), then selection can favor extremely biased responses (e.g., a very low threshold for detecting predators) rather than raw accuracy. Selection favors tendencies to commit errors that are less harmful.

For example, accuracy-maximization might favor young men who go around assuming that most young women are not interested in having a short-term sexual affair with them. However, benefit-maximization might favor young men evolving the opposite assumption (that all women secretly desire them), because, if they are motivated to court many women (as a result of such biased assumptions), the reproductive benefits of finding the very women who say 'yes' may vastly outweigh the reproductive costs (e.g., slightly lower social status due to the embarrassment of being rejection) of the many women who say 'no' (Haselton & Buss, 2000). From a narrow rationality perspective, the young men who assume that all women want them are showing severe social-cognitive inaccuracies, judgment biases, and probably narcissistic personality disorder. However, from an evolutionary perspective, those young men may be showing an adaptive bias that has consistently maximized the reproductive success of their male ancestors—however annoying it was to their female non-ancestors. In this case, male Mating Intelligence would look very low on first inspection (very inaccurate), but rather high on closer examination.

Another recently documented case of adaptive bias is that women tend to perceive men as less committed in relationships than they really are (Haselton & Buss, 2001). Here again the reasons concern an asymmetry in the costs of under-perceiving a male's commitment (which may annoy him, but motivate more conspicuous commitment-displays and attentiveness), versus over-perceiving commitment (which could lead to impulsive sex, pregnancy, abandonment by the male, and subsequent death of the child through lack of paternal investment). It is much worse to be impregnated by a commitment-pretending psychopath than to doubt a truly committed partner's intentions. Thus, women doubt male commitment, and

men feign more commitment than they feel—a never-ending arms race of romantic skepticism and excess that has shaped both female and male Mating Intelligence.

A third example of adaptive biases in MI comes from the Ideal Standards Model of Fletcher and Simpson (2000), which explicitly considers which mating contexts should favor raw judgment accuracy versus adaptively biased judgment. According to this perspective, there are times during the mating process when raw accuracy is most adaptive (and should be typical), while there are other times when specific biases are most adaptive (and should prevail). Consider, for instance, the mate-selection phase of the game. When initially assessing the value of a potential mate as a long-term partner, accuracy is crucial. Assessments of kindness, fertility, strength, and social status are key to acquiring a mate who would be good for the long haul. However, when you find yourself in the throes of a long-term relationship with several shared children who need much parental support, focusing on your partner's many annoying habits that have unfolded across the relationship may not be best for everyone involved. Rather, holding an idealized, biased, overly rosy picture of one's partner at this stage may be best for both proximal relationship satisfaction and ultimate survival of offspring (see Murray, Holmes, & Griffin, 1996, for evidence suggesting that such biased perceptions of partners do, in fact, emerge in healthy long-term relationships).

Thus, high MI may not correspond in any simple way to traditional narrow norms of procedural rationality, such as logical deduction or statistical induction. MI researchers may often benefit from viewing human mating tasks from a formal decision-making perspective, as long as they remember that evolution maximizes reproductive success—not personal happiness, relationship stability, parental love, or accuracy in understanding the other sex. To test a formal decision-making model of some mating task—one that includes explicit performance criteria—a good first step might be to see whether people who score higher on general intelligence (e.g., traditional IQ tests) also tend to score higher on the mating task performance criteria. If they do not, there is probably something wrong with the formal model and its performance criteria (see Stanovich & West, 2000).

Another major misconception about Mating Intelligence derives from stereotypes about nerds, geeks, and highly intelligent but socially awkward engineers. Some of the most conspicuously 'intelligent' individuals in modern society are physicists, software engineers, and members of other highly technical professions that require years of obsessive dedication to achieving academic credentials at the cost of one's social and sexual maturation. The result is that the most successful members of these professions are often males with some degree of Asperger syndrome—a keen interest in abstract systems of thought rather than human relationships

(Baron-Cohen et al., 2001; 2003). Such nerds would tend to score very highly on traditional tests of General Intelligence, but very poorly on tests of Mating Intelligence. This is likely a source of continuing frustration to their girl-friends, spouses, and co-workers (see Aston, 2002). The nerd-prevalence rate—especially in academic settings—can thereby give the false impression that General Intelligence must be uncorrelated—or even negatively correlated—with Mating Intelligence in the general population.

MATING INTELLIGENCE IN RELATION TO SOCIAL INTELLIGENCE

Social Intelligence (a.k.a. Machiavellian Intelligence, Theory of Mind, mind-reading) concerns our abilities to understand the beliefs and desires of others (Cantor & Kihlstrom, 1987). As such, it clearly overlaps with any reasonable notion of Mating Intelligence, because human heterosexual relationships depend upon understanding the beliefs and desires of opposite-sex partners and same-sex rivals. For example, successful mating depend on assessing each potential mate's beliefs, desires, and preferences through their verbal and non-verbal signals; remembering a vast array of social information about each potential mate's relatives, friends, offspring, previous lovers, and would-be lovers; sorting through conflicting social information (gossip) about each potential mate that is generated or repeated by other individuals with their own socio-sexual agendas; and assessing each potential mate's relative social status in the local dominance hierarchy and mating market. In a highly social primate species such as ours, the sexually successful must be socially competent.

Social intelligence becomes even more important in longer-term relationships, as partners must coordinate their foraging, parenting, and social efforts given somewhat conflicting interests, agendas, personalities, and preferences. Indeed, for people who have been successfully married a long time, one's mental model of one's spouse is probably the most accurate and detailed understanding of another human that one ever develops in his or her lifetime. This is one reason why the death of a spouse is so traumatic.

From this point of view, MI is a sub-set of Social Intelligence, but Social Intelligence also concerns Theory of Mind applied to non-sexual relationships with parents, offspring, siblings, kin, friends, allies, trading partners, enemies, dominants, subordinates, peers, mentors, pupils, and other groups. MI might thereby be classed alongside research on Parenting Intelligence, Trading Intelligence, Status Intelligence, and Group-Competition Intelligence.

However, MI is not entirely subsumed by Social Intelligence, because it also includes some psychological adaptations that do not concern understanding the beliefs and desires of others. For example, male adaptations

for being attracted to facial beauty and for having stronger orgasms given sperm competition are clear components of MI, but do not obviously depend on Theory of Mind. So, Mating Intelligence and Social Intelligence are partially overlapping, but partially distinct constructs.

What can MI research learn from Social Intelligence research? Kihlstrom and Cantor (2000) argue that social intelligence is an important psychological construct in principle, but that it has shown a limited capacity in practice to guide progressive empirical research. Ever since Thorndike (1920, as cited in Kihlstrom & Cantor, 2000) defined social intelligence as the ability to understand and interact with others, there have been countless attempts to develop reliable, valid measures of social intelligence. However, many early measures of social intelligence (e.g., the George Washington Social Intelligence Test) correlated so heavily with measurements of general intelligence that the social intelligence construct seemed to have little discriminative validity (Kihlstrom & Cantor, 2000). Perhaps social intelligence was just general intelligence applied to social problems, rather than a distinctive set of psychological processes.

In fact, social intelligence research seemed to flourish only after it gave up any connection to psychometric research on individual differences, and turned into the study of adaptive species-typical capacities for certain kinds of social inference (e.g., Theory of Mind research in primates, children, and autistics—see Whiten & Byrne, 1997). For example, Gardner (1983) posited distinctions between general intelligence, 'intrapersonal intelligence' (ability to understand one's own thoughts and feelings), and 'interpersonal intelligence' (ability to understanding the thoughts and feelings of others), but he never demonstrated that the latter can be operationalized into reliable, valid individual-differences measures that are distinct from the *g* factor. Instead, his arguments for the adaptive importance of these 'intelligences' inspired work in comparative, evolutionary, developmental, and clinical psychology on domain-specific, species-typical capacities for social cognition. In the last 25 years, there has been an explosion of research on 'social intelligence,' but it has almost nothing to do with mainstream intelligence research.

MATING INTELLIGENCE IN RELATION TO EMOTIONAL INTELLIGENCE

MI also overlaps partially with Emotional Intelligence, such that neither is a clear super-set of the other. Emotional Intelligence concerns abilities to understand and influence the emotions of others and of oneself (Salovey & Mayer, 1990). It has been better operationalized than Social Intelligence as an individual-differences construct. For example, the four-part model of emotional intelligence developed by Mayer, Salovey, and colleagues (e.g.,

Mayer, Salovey, & Caruso, 2000) has proven valid and useful in several ways (Matthews et al., 2004). This currently dominant model views emotional intelligence as comprised of four somewhat distinct capacities (to identify, understand, and manage emotions, and to modulate emotions adaptively to promote effective cognition) that vary between individuals, but that tend to positively inter-correlate with each other and with general intelligence. Emotional Intelligence researchers still disagree about the best ways to define and operationalize the construct (see Geher, 2004), but agree that Emotional Intelligence is important across many domains of human social life.

Such emotional-comprehension and emotional-influence capacities are certainly a crucial part of human mating, which activates virtually the whole range of human emotions (e.g., interest, lust, love, surprise, disgust, happiness, sadness, jealousy, envy, hate, rage, fear, anxiety, anticipation, orgasm). Successful courtship demands exemplary abilities to influence a potential mate's emotional state—to maximize interest, lust, and love; to minimize disgust and hate; to optimize levels of jealousy and anxiety; and to create romantic contexts conducive to orgasm. It also requires very high levels of emotional self-control, which are often (unconsciously) tested to the breaking point by potential mates. But there is much more to MI than just Emotional Intelligence, because MI includes many other mating-related adaptations for perception, cognition, memory, learning, planning, decision-making, and motor control. Most mating is very emotionally charged, because the fitness stakes are so high, but human sexuality is not driven exclusively by 'basic emotions' (such as 'lust' or 'jealousy') as normally construed.

MATING INTELLIGENCE: IS BILL CLINTON AN EXEMPLAR?

Bill Gates exemplifies general intelligence; Oprah Winfrey exemplifies Emotional Intelligence. Who exemplifies Mating Intelligence? Several conceptual issues about MI can be clarified by asking whether former U.S. President Bill Clinton captures this construct.

By nearly all accounts, Clinton is extremely intelligent: despite a humble background in a small Arkansas town, he graduated from Georgetown University, visited Oxford as a Rhodes scholar, and got a law degree from Yale University (see Clinton, 2004). As an orator and writer, he has proven articulate, insightful, and highly persuasive to many voters and political peers. The media have consistently portrayed him as one of America's most intelligence presidents. For example, LaRouche (2002) wrote "Clinton was, personally, perhaps the most intelligent President of the Twentieth Century . . ."

Clinton embodies both the light and dark side of mating intelligence: he shows high general intelligence, but is especially strong on mating-relevant abilities: verbal fluency, moral vision, humor, charisma, mind-reading. He's also renowned for showing 'bad sexual judgment' that actually would have had high reproductive payoffs in prehistory—not just with White House intern Monica Lewinsky, but in allegedly dozens of extramarital affairs with many women throughout his adult life, some of whom would have become pregnant if contraception did not exist. So, he would have had a lot of kids—and that's evolutionary success, not political scandal.

Different reactions to 'Lewinskygate' (the 1998 political scandal following the Lewinsky affair) highlight the vastly different implicit views of Mating Intelligence held by media pundits and most psychologists (including intimate relationship researchers, sexuality researchers, and marriage counselors) versus views held by normal voters and evolutionary psychologists. To the former groups, Clinton's affairs revealed reckless impulsiveness, poor judgment, and the pursuit of short-term lust over long-term political respectability and marital stability. Why seek a few minutes of pleasant fellatio when the potential costs were so high—months of embarrassing impeachment hearings and divorce court? The apparent 'poor judgment' shown by Clinton warranted a chapter (written by Diane Halpern) in Robert Sternberg's (2002) book *Why Smart People Can Be So Stupid*. Halpern's cognitive analysis of Clinton's decision-making focused on his individual learning history regarding infidelity (e.g., his father's behavior), and his social learning processes (e.g., the example of other presidents who were highly promiscuous without impeachment). While these learning processes might have influenced Clinton to some extent, they amount to little more than post hoc explanations of apparent psychopathology.

By contrast, to the normal voters and evolutionary psychologists, sexual promiscuity by high-status male social primates comes as no surprise. Indeed, it is both the statistical norm across species, cultures, and history, and the whole adaptive point of status-striving by males (Betzig, 1986; Buss, 2003). As all animal behavior researchers know, males generally compete for resources and status in order to maximize their reproductive success, typically by attracting many females. This may explain Clinton's 'surprisingly' resilient public opinion ratings throughout the Lewinsky-gate scandal—almost 70 percent of American voters approved of his presidency even as the House of Representatives was voting on impeachment (Lawrence & Bennett, 2001; Sonner & Wilcox, 1999; Shah, Watts, Domke, & Fan, 2002).

Consider intelligence as "purposive adaptation to, and selection and shaping of, real-world environments relevant to one's life" (Sternberg, 1985, p. 45). If we interpret this adaptive notion of intelligence in clear

evolutionary terms (where 'adaptive' means promoting reproductive success) rather than vague socio-economic terms (where 'adaptive' might mean promoting personal wealth, happiness, political respectability, or marital stability), then we can understand why Mating Intelligence for high-status leaders in complex hierarchical societies typically leads to the organization of formal harem systems that produce hundreds of offspring (Betzig, 1986). From that perspective, the Moroccan despot Moulay Ismail the Bloodthirsty (1672–1727), who sired over 600 sons and killed thousands of male sexual rivals with his own sword (Betzig, 1986), could be viewed as embodying a very high level of adaptive Mating Intelligence. True, he was also a sexist, oppressive, patriarchal psychopath, but evolutionary adaptiveness rarely equals moral virtue (ask any predator or parasite). In this perspective, Clinton was showing impaired Mating Intelligence only to the extent that he used contraception, chose some indiscreet female partners, and provoked sexual envy by lower-status male rivals.

In thinking about Mating Intelligence, we must realize that there is often a mismatch between what is currently adaptive versus what would have been adaptive under ancestral, prehistoric conditions (Tooby & DeVore, 1987). Psychological adaptations in general, and mechanisms of Mating Intelligence in general, have been shaped by prehistoric selection pressures to take advantage of typical fitness opportunities and to avoid typical fitness costs as they would have confronted our ancestors. Evolution cannot anticipate the future. It cannot have shaped human Mating Intelligence to perform optimally given evolutionary novelties such as contraception, religiously imposed monogamy, the American Constitution's impeachment process, or right-wing sexual hypocrisy.

Thus, in judging Clinton's Mating Intelligence, it is only marginally relevant to ask whether Clinton's liaison with Lewinsky resulted in a Clinton-Lewinsky baby (an actual reproductive benefit) or an impeachment (an actual status cost). However, it may be worthwhile to review some of the mating cues that may have influenced Clinton's behavior. At the time of the affair in 1995, Monica Lewinsky (b. 1973) was 22 (near peak fertility), and Clinton's wife Hilary (b. 1947) was 48 (with negligible fertility, approaching menopause). From a strictly reproductive viewpoint, Hilary had an expected future reproductive value of zero, and Monica had the potential for several offspring. Although Hilary (a graduate of Yale Law School) doubtless had higher intelligence and leadership potential than Monica, those heritable qualities could no longer be passed on to offspring. Thus, from a strict evolutionist perspective, Clinton's behavior looks adaptive—a hallmark of mating intelligence.

Clinton's liaisons with Lewinsky provide insights directly into how to best understand the construct at hand: MI. To provide applications of the different conceptions of MI presented in this chapter, we may consider how each conception differentially pertains to the scandal. The provisional

SUNY New Paltz conception of MI takes the tack that MI is comprised of mating-relevant cognitive abilities which should be generally unrelated to *g*. From this perspective, we may conceptualize Clinton's mating-relevant decision-making as reflecting short-term mating tactics that are not rooted in Clinton's relatively high level of intelligence. More simply, from this perspective, he is a smart man who may not tend to make particularly smart decisions when it comes to relationships.

Cosmides and Tooby's (2002) modularistic perspective on intelligence provides a similar account of Lewinskygate. They see (and provide good evidence for; see Cosmides & Tooby, 2005) the human mind as comprised of multiple, discrete modules designed to address specific adaptive hurdles presented to our ancestors across evolutionary time. From this perspective, mating-relevant decision-making may be broken into multiple discrete, (and largely independent) psychological components. This framework would potentially conceive of Lewinskygate as representative of Clinton's cheating-in-monogamous-relationships module, shaped not primarily by his own experiences (as suggested by Halpern, 2002), but, rather, by selection pressures that favored sexual infidelity in males given certain conditions in our ancestral past. From this perspective, *g* barely enters the picture; domain-general intelligence is largely irrelevant to such domain-specific behavioral patterns.

Kanazawa's (2004) framework for understanding the relationship between intelligence and mating would conceive of Lewinskygate in a relatively straightforward manner. From this vantage point, general intelligence evolved primarily to deal with evolutionarily novel situations. Whether (and under what conditions) one should cheat in a monogamous relationship characterizes ancestral psychology. Given the evolutionarily familiar nature of infidelity, psychological mechanisms tied to infidelity should be altogether independent of general intelligence. This analysis is consistent with the SUNY New Paltz MI analysis stated prior; Clinton is a smart man—and his high level of general intelligence buys him no benefits when it comes to most mating-relevant decision-making.

Miller's (2000) account of general intelligence as rooted in mating-relevant pressures across evolutionary history potentially provides a very different view of Lewinskygate. From this perspective, *g* and MI are largely one-and-the-same. As such, the fact that Clinton is high in *g* corresponds to an increased likelihood of his ability to acquire mates and of engaging in behaviors that should positively correlate with outcomes associated with reproductive success. His ability to effectively utilize his power, charm, and physical features in a coordinated effort to attract reproductively viable and attractive young women speaks to relatively high fitness levels and his ability to advertise such fitness well. From this perspective, Lewinskygate does not necessarily reflect unintelligent behavior. As a testament to this perspective, note that Clinton's marriage,

presidency, and place in history may largely have been unaffected by the scandal.

A further point regarding MI that is addressed by the current case study corresponds to whether MI is best conceptualized in terms of *accurate* versus *biased* decision-making. One may envision Clinton having thought something like, "The odds of getting caught are pretty much zero, and the costs associated with getting caught are not likely to be great . . ." Such thoughts did not necessarily capture the reality of the contingencies of the situation accurately. As such, from an accuracy-corresponds-to-intelligence perspective, such thinking would seem unintelligent.

However, modern-day evolutionary social psychologists (and other social psychologists in general [see Taylor & Brown, 1988]) have made the case that erroneous judgments which are biased in ways that are likely to increase genetic fitness are essentially more adaptive (in the evolutionary sense) than relatively accurate judgments across many kinds of situations (e.g., Krebs & Denton, 1997). From this perspective, we can think of the aforementioned hypothetical presidential thoughts as biased in exactly that kind of fitness-enhancing manner. In effect, such judgments are somewhat similar to judgments by males of females' sexual interest which tend to overestimate such interest (as found in Haselton and Buss' [2000] work on error management theory). Given that such judgments represent *overestimates*, they are inaccurate by definition. However, from an evolutionary perspective, it is easy to see how such biased judgments may impel behavior that is more likely to lead to reproductive success compared with alternative behaviors, thus being *adaptive* in the relatively ultimate sense of the word.

This analysis of Clinton's scandalous behavior was designed to provide a context that allows for a discussion of issues that underlie disparate conceptualizations of MI. Are there dedicated intelligences pertaining to domains underlying human mating that are distinct from *g*? Are cognitive factors associated with mating conceptually and empirically conflated with *g*? Is MI best conceptualized as a set of accurate decision-making skills? Is MI, rather, better conceptualized as the tendency to make judgments in mating-relevant contexts that are biased in such a way so as to likely increase an individual's overall likelihood of successful reproduction?

MATING DOMAINS RELEVANT TO MATING INTELLIGENCE

In our attempt to delineate the areas of psychology that need to be considered in the development of MI as a construct, we have, heretofore considered sexual selection and the shaping of human intelligence, whether

intelligent mating decisions are relatively accurate versus erroneous, how MI relates to general intelligence, and how MI relates to extant constructs related to social intelligence. We also believe that it is crucial to address the multiple behavioral domains that underlie human mating. In the development of such an organization of these domains, we start with the theory of sexual selection. Sexual selection is divisible into (a) selection occurring due to the preferences of an individual for certain characteristics in a mate, and, separately, (b) selection occurring as a result of several individuals of the same sex competing for a mate (Buss, 2003). More simply, we are speaking formerly of inter-sexual choice, and secondly of intra-sexual competition. Seeing as these terms relate to the process of sexual selection, it follows that the interplay of both choice and rivalry in mating would lead to specific adaptations. These mating-relevant adaptations, to some extent, must themselves represent a part of what we are labeling MI.

Adaptations arising from mate-choice have obvious corollaries in the animal kingdom, such as the example of the peacock's plumage. In the domain of human mating, desires of one sex (e.g., females' desire for a wealthy mate) may select qualities of the other sex (e.g., males' tendencies to seek and display wealth). Thus, qualities desired in potential mates and qualities advertised to potential mates, by both sexes, likely comprise important domains of MI. An important implication of this point regarding MI is that it may well be structured differently across the sexes so as to take into account specific selective pressures that have differentially acted across the sexes over evolutionary history. For instance, an important component of MI in males may be to effectively advertise wealth (regardless of actual levels of wealth); an important component of MI in females may be to effectively advertise youth (regardless of actual age). The integrative model of MI presented in the final chapter of this book (Geher, Camargo, & O'Rourke) addresses this notion of MI as sex-differentiated.

Alternately, the latter half of our division of sexual selection—intra-sexual rivalry, may have played a similarly large role in the shaping of MI. The common example used within this sub-category is the size of the stag's horns. Presumably, such large horns evolved through a form of ritualized inter-locking of horns, in which winners (often the males with the biggest horns) gained access to females. Similarly, in male humans, much of the sexual dimorphism, characterized by larger and stronger males, developed through competition between males for the same mate. Again, given variability in intra-sexual tactics designed to obtain mates across the sexes, it is likely that MI regarding male intra-sexual rivalry differs from MI regarding female intra-sexual rivalry in some important ways. Males who are high in intra-sexual MI may be effective at dominating mixed-sex social situations, for instance. Females who are high in intra-sexual

MI may be effective at framing rivals as overly promiscuous without coming across as overly catty.

Adaptations in both males and females could presumably have arisen in the form of cognitive skills devoted to the judgment and assessment of potential rivals. These assessment skills would reduce the cost of competing with a rival who is clearly more adept or more fit than oneself. Also, adaptations for impressing or deterring rivals could arise in the form of a kind of socially intelligent adeptness at boasting, deceiving, or all around showing-off.

In this manner, it is apparent how cognitive abilities in the domain of mating could arise variably in the human species as a result of sexual selection at the level of inter-sexual choice or, alternatively, at the level of intra-sexual competition. A host of abilities might be identified as sexually selected adaptations. We suggest that MI can be conceptualized as addressing the different mating domains derived from sexual-selection theory.

THIS BOOK

This introductory section 1 contains the foreword by David Buss, the preface, and this introductory Chapter 1. The book is organized into six further sections.

Section 2 addresses mate search—the process of searching through potential sexual partners to find the most attractive ones who will reciprocate one's interest. In Chapter 2, Penke, Todd, Lenton, and Fasolo, consider the complexities that arise from mutual mate choice in humans—the fact that both men and women tend to be choosy about their long-term partners. They examine simple mate-search heuristics that learn to take into account one's own attractiveness, to avoid wasting time on the unattainable (whose mate value is much higher than one's own) or the undeserving (whose mate value is much lower than one's own.) In Chapter 3, De Backer, Braeckman, and Farinpour examine mate search in the context of newspaper personal ads, to assess one important component of MI: how accurate each sex is at understanding the distinctive traits sought by the other sex.

Section 3 concerns strategic flexibility in mating intelligence: How we adapt our mating preferences, goals, strategies, and tactics to local environmental circumstances and to our own strengths and weaknesses as potential mates. In Chapter 4, Li analyzes adaptive shifts in mate preferences in an economic 'mating market' framework, considering how individuals shift from favoring 'necessities' (e.g., female fertility, male resources) to favoring 'luxuries' (e.g., intelligence, creativity, sense of humor) in mates as their own mate value increases. In Chapter 5, Nettle and Clegg

analyze major human personality traits as distinct mating strategies that may flourish under different social, sexual, and environmental conditions. In Chapter 6, O'Sullivan analyzes the darker side of mating intelligence by considering several domains of human mating where deception and self-deception can have adaptive benefits. In Chapter 7, Weekes-Shackelford, Easton, and Stone consider how women's mate preferences shift adaptively depending on whether the women already have children from previous relationships—mating intelligence should work differently for virgins versus matriarchs, and in choosing a first boy-friend versus a potential stepfather to one's teenagers.

Section 4 concerns aspects of MI that we call 'mental fitness indicators'—traits that display intelligence, personality, mental health, or other qualities of brain function, that vary conspicuously across individuals, and that are romantically attractive. In Chapter 8, Keller analyzes the role of genetic mutations in maintaining heritable variation in the quality of mental fitness indicators, and how such indicators can work as reliable cues of 'good genes' in mate choice. In Chapter 9, Shaner, Miller, and Mintz consider the 'mental disorders' such as schizophrenia and depression, that can result when these mental fitness indicators develop poorly, and explain why such disorders are so often associated with poor MI and so harmful to mating success and intimate relationships.

Section 5 considers MI in relation to other well-studied individual differences, such as general intelligence, social intelligence, emotional intelligence, creativity, and sense of humor. In Chapter 10, Kaufman, Kozbelt, Bromley and Miller review the theoretical and empirical relationships between MI, creativity, sense of humor, general intelligence, and certain personality traits. In Chapter 11, Casey, Garrett, Brackett, and Rivers review emotional intelligence in relation to intimate relationships and MI. In Chapter 12, Kanazawa argues that MI and general intelligence are independent constructs, because they evolved to guide adaptive behavior in different domains (mating in the case of MI; mastery of evolutionarily novel econiches and technologies in the case of general intelligence).

Section 6 puts MI in its ecological context, since human adaptations for mating must have always been shaped in various ways by the surrounding social, cultural, ecological, and climatic environments. In Chapter 13, Ash and Gallup consider the possible role of prehistoric climate variability in favoring the emergence of larger human brains and human intelligence—factors which may have set the paleoclimatic stage for the evolution of mating intelligence. In Chapter 14, Figueredo, Brumbach, Jones, Sefcek, Vásquez, and Jacobs develop an integrative framework for considering the evolution of life-history strategies, including mating strategies, in relation to local socio-ecological variables.

Section 7 includes two concluding chapters. In Chapter 15, Miller tries to answer some 'frequently asked questions' about MI, summarizing several themes throughout the book and briefly touching on some topics not covered elsewhere (such as MI in homosexual relationships, and the genetic and neural bases of MI). In Chapter 16, Geher, Camargo, and O'Rourke provide a unifying framework for understanding MI by drawing a major distinction between mating mechanisms (i.e., universal mating-relevant adaptations) and mental fitness indicators (i.e., courtship-display abilities) of MI. That chapter also sketches out some possible directions for future theoretical and empirical research on MI.

WHAT THE MATING INTELLIGENCE CONSTRUCT CAN OFFER TO SCIENCE

The MI construct, at best, offers different benefits to different areas of basic and applied research. Here we sketch out a few that seem most salient to us at the moment:

- intelligence research: MI offers an additional, evolutionarily central, emotionally important domain of challenging psychological problems in which to investigate the role of the *g* factor and specific intelligences; one in which there might even be specific learning disabilities and cognitive deficits that have gone undiagnosed by professionals (though often noted by spouses!)
- evolutionary psychology: MI offers a way to integrate psychometrics and behavior genetics into the study of human universals, in a domain where individual differences are highly salient
- clinical psychology: MI offers a new perspective on certain psychological dysfunctions, psychopathologies, and anxieties that make people unhappy, especially because they interfere with mate acquisition, mate choice, and general relationship functioning
- psychiatry: MI offers a new perspective on issues in 'cosmetic psychopharmacology'—if MI is a legitimate domain of psychological functioning, then drugs that 'merely' make people more psychologically attractive (e.g., more confident, happy, empathic, creative) are more than superficial band-aids on 'real, underlying problems'; they're absolutely central to human well-being
- educational psych: MI highlights a whole domain of learnable skills and cognitive-developmental challenges that are virtually ignored in public schooling and higher education—we train people for decades to be productive workers, but devote hardly any time to being happy, loving, empathic sexual partners.

CONCLUSION

In sum, this book is necessarily challenging in many ways. It is ambitious in both its breadth and its goals. It was designed to bridge an important and conspicuous gap in the psychological literature; the gap between scholarship on human mating and scholarship on intelligence. As implied by Miller's (2000) work on human mating, intelligence and mating are, given our evolutionary heritage, intimately related. This book represents our match-making effort to induce these major areas of psychology to cross-fertilize each other.

The integration of these heretofore disparate ideas into one coherent construct should lead to useful and productive scholarship in psychology. With that said, there are clear challenges in the development of this construct. First, extant theories that *do* address the interplay between mating and intelligence have a somewhat heterogeneous quality; they tend to disagree on important points (e.g., Kanazawa's [2004] ideas on the relationship between general intelligence and mating success versus Miller's [2000] ideas on this same topic). Further, little empirical work has been conducted dealing with (a) ways to operationally define MI, (b) the factorial structure of MI, and (c) the correlates of MI. To develop a coherent model of MI, ideas pertaining to the evolution of intelligence, species-typical aspects of human mating, social intelligences, general intelligence, and the idea of mental-fitness indicators need to be integrated. While this integration is challenging, the high quality of the contributors to this volume coupled with the inclusion of an organizing model presented in the final chapter should serve to help work toward a coherent and useful framework for understanding MI.

ACKNOWLEDGMENTS

Kathleen Bauman Geher, Alice Andrews, and David Buss provided helpful feedback for which we are grateful. Further, we thank Elisabeth DeWispelaere and Jill Lavallee for their work on some of the content analyses summarized in this chapter. Additionally, Michelle Coombs was extremely helpful in assisting with the citations.

REFERENCES

Aston, M. C. (2002). *The other half of Asperger syndrome: A guide to an intimate relationship with a partner who has Asperger Syndrome.* Shawnee Mission, KN: Autism Asperger Publishing.

Bar-On, R., Tranel, D., Denburg, N. L., & Bechara, A. (2003). Exploring the neurological substrate of emotional and social intelligence. *Brain, 126,* 1790–1800.

Baron-Cohen, S., Richler, J., Bisarya, D., Gurunathan, N., & Wheelwright, S. (2003). The systemizing quotient: an investigation of adults with Asperger syndrome or high-functioning autism, and normal sex differences. *Philosophical Transactions of the Royal Society of London B, 358*(1430), 361–374.

Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders, 31*, 5–17.

Benbow, C. P., Zonderman, A. B., & Stanley, J. C. (1983). Assortative marriage and the familiality of cognitive abilities in families of extremely gifted students. *Intelligence, 7*, 153–161.

Borsboom, D., & Dolan, C. V. (2006). Why g is not an adaptation: A comment on Kanazawa (2004). *Psychological Review, 113*, 433–437.

Brackett, M. A., & Salovey, P. (2004). Measuring emotional intelligence with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy*. New York: Nova Science Publishers.

Buss, D. M. (1989). Sex differences in human mate selection: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences, 12*, 1–49.

Buss, D. M. (2003). *The evolution of desire: Strategies of human mating*. New York: Basic Books.

Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science, 3*, 251–255.

Buss, D. M., & Shackelford, T. K. (1997). Susceptibility to infidelity in the first year of marriage. *Journal of Research in Personality, 31*, 193–221.

Cantor, N., & Kihlstrom, J. F. (1987). *Personality and social intelligence*. Englewood Cliffs, NJ: Prentice Hall.

Clinton, B. (2004). *My life*. New York: Knopf.

Cosmides, L., & Tooby, J. (2002). Unraveling the enigma of human intelligence: Evolutionary psychology and the multimodular mind. In R. J. Sternberg & J. C. Kaufman (Eds.), *The evolution of intelligence*. Mahwah, NJ: Lawrence Erlbaum Associates.

Crow, T. J. (1993). Sexual selection, Machiavellian intelligence, and the origins of psychosis. *Lancet, 342*, 594–598.

Crow, T. J. (1995). A Darwinian approach to the origins of psychosis. *British Journal of Psychiatry, 167*, 12–25.

Davies, M., Stankov, L., & Roberts, R. D. (1998). Emotional intelligence: In search of an elusive construct. *Journal of Personality and Social Psychology, 75*, 989–1015.

De Raad, B. (2005). The trait-coverage of emotional intelligence. *Personality and Individual Differences, 38*, 673–687.

Deary, I. J., Thorpe, G., Wilson, V., Starr, J. M., & Whalley, L. J. (2003). Population sex differences in IQ at age 11: The Scottish mental survey 1932. *Intelligence, 31*, 533–542.

DePaulo, B. M., & Morris, W. L. (2005). Singles in society and in science. *Psychological Inquiry, 16*, 57–83.

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology, 54*, 403–425.

Dunbar, R. I. M., Marriott, A., & Duncan, N. D. C. (1997). Human conversational behavior. *Human Nature, 8,* 231–246.

Dunsieth, N. W., Nelson, E. B., Bursman-Lovins, L. A., Holcomb, J. L., Beckman, D., Welge, J. A., Roby, D., Taylor, P., Soutullo, C. A., & McElroy, S. L. (2004). Psychiatric and legal features of 113 men convicted of sexual offenses. *Journal of Clinical Psychiatry, 65,* 293–300.

Eaves, L. J. (1973). Assortative mating and intelligence: Analysis of pedigree data. *Heredity, 30,* 199–210.

Feingold, A. (1992). Gender differences in mate selection preferences: A test of the parental investment model. *Psychological Bulletin, 112,* 125–139.

Fletcher, G. J. O., & Simpson, J. A. (2000). Ideal standards in close relationships: Their structure and functions. *Current Directions in Psychological Science, 9,* 102–105.

Flinn, M. V., Geary, D. C., & Ward, C. V. (2005). Ecological dominance, social competition, and coalitionary arms races: Why humans evolved extraordinary intelligence. *Evolution* and *Human Behavior, 26,* 10–46.

Furlow, B., Gangestad, S. W., & Armijo-Prewitt, T. (1998). Developmental stability and human violence. *Proceedings of the Royal Society of London B, 265,* 1–6.

Gabriel, M. T., Critelli, J. W., & Ee, J. S. (1994). Narcissistic illusions in self-evaluations of intelligence and attractiveness. *Journal of Personality, 62,* 143–155.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Geher, G. (Ed.). (2004). *Measuring emotional intelligence: Common ground and controversy.* New York: Nova Science Publishers.

Geher, G., & Renstrom, K. L. (2004). Measuring the emotion-perception component of emotional intelligence. In S. P. Shohov (Ed.), *Advances in psychology research.* New York: Nova Science.

George, J. M. (2000). Emotions and leadership: The role of emotional intelligence. *Human Relations, 53,* 1027–1055.

Gordon, R. A. (1997). Everyday life as an intelligence test: Effects of intelligence and intelligence context. *Intelligence, 24,* 203–320.

Gottfredson, L. S. (2003). Dissecting practical intelligence theory: Its claims and evidence. *Intelligence, 31,* 343–397.

Grant, B. F., Hasin, D. S., Stinson, F. S., Dawson, D. A., Chou, S. P., Ruan, W. J., & Pickering, R. P. (2004). Prevalence, correlates, and disability of personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry, 65,* 948–958.

Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31,* 1–16.

Halpern, D. F. (2002). Sex, lies, and audiotapes. In R. Sternberg (Ed.), *Why smart people can be so stupid.* New Haven, CT: Yale University Press.

Haselton, M., & Miller, G. F. (2006). Women's fertility across the cycle increases the short-term attractiveness of creative intelligence compared to wealth. *Human Nature, 17,* 50–73.

Hatfield, E., & Sprecher, S. (1995). Men's and women's preferences in marital partners in the United States, Russia, and Japan. *Journal of Cross-Cultural Psychology, 26,* 728–750.

Heaven, P. C. L., & Bucci, S. (2001). Right-wing authoritarianism, social dominance orientation and personality: An analysis using the IPIP measure. *European Journal of Personality, 15,* 49–56.

Hunt, E. (2001). Multiple views on multiple intelligences. *Contemporary Psychology, 46,* 5–7.

Jensen, A. (1998). *The g factor: The science of mental ability.* London: Praeger.

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129,* 339–375.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology, 83,* 693–710.

Kanazawa, S. (this volume). The independence of mating intelligence and general intelligence. In G. Geher & G. F. Miller, (Eds.), *Mating intelligence: Sex, relationships, and the mind's reproductive system.* Mahwah, NJ: Lawrence Erlbaum Associates.

Kanazawa, S. (2004). General intelligence as a domain-specific adaptation. *Psychological Review, 111,* 512–523.

Kanazawa, S., & Kovar, J. L. (2004). Why beautiful people are more intelligent. *Intelligence, 32,* 227–243.

Kenrick, D. T., Sadalla, E. K., Groth, G., & Trost, M. R. (1990). Evolution, traits, and the stages of human courtship: Qualifying the parental investment model. *Journal of Personality, 58,* 97–116.

Kihlstrom, J. F., & Cantor, N. (2000). Social intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence.* Cambridge University Press.

Klein, P. D. (2003). Rethinking the multiplicity of cognitive resources and curricular representations: alternatives to 'learning styles' and 'multiple intelligences'. *Journal of Curriculum Studies, 35,* 45–81.

Krueger, R. F., Hicks, B. M., Patrick, C. J., Carlson, S. R., Iacono, W. G., & McGue, M. (2002). Etiologic connections among substance dependence, antisocial behavior, and personality: Modeling the externalizing spectrum. *Journal of Abnormal Psychology, 111,* 411–424.

LaRouche, L. H. (2002). Peace between two presidents. In Executive Intelligence Review. Retrieved August 10, 2005, from http://www.larouchepub.com/pr_lar/2002/020302ari_flei_ltr.html

Lawrence, R. G., & Bennett, W. L. (2001). Rethinking media politics and public opinion: Reactions to the Clinton-Lewinsky scandal. *Political Science Quarterly, 116,* 425–446.

Li, N. P., Bailey, J. M., Kenrick, D. T., & Linsenmeier, J. A. W. (2002). The necessities and luxuries of mate preferences: Testing the tradeoffs. *Journal of Personality and Social Psychology, 82,* 947–955.

Livingstone, H. A., & Day, A. L. (2005). Comparing the construct and criterion-related validity of ability-based and mixed-model measures of emotional intelligence. *Educational and Psychological Measurement, 65,* 851–873.

Lucas, R. E. (2005). Time does not heal all wounds—A longitudinal study of reaction and adaptation to divorce. *Psychological Science, 16,* 945–950.

Lykken, D. T., & Tellegen, A. (1993). Is human mating adventitious or the result of lawful choice: A twin study of mate selection. *Journal of Personality and Social Psychology, 65*, 56–68.

Martel Johnson, D., & Erneling, C.E. (Eds.) (1997). *The future of the cognitive revolution*. New York: Oxford University Press.

Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *Intelligence, 27*, 267–298.

McGrath, R. E. (2005). Conceptual complexity and construct validity. *Journal of Personality Assessment, 85*, 112–124.

Miller, G. F. (1997). Protean primates: The evolution of adaptive unpredictability in competition and courtship. In A. Whiten & R. W. Byrne (Eds.), *Machiavellian Intelligence II: Extensions and evaluations* (pp. 312–340). Cambridge University Press.

Miller, G. F. (2000a). *The mating mind: How sexual choice shaped the evolution of human nature*. New York: Doubleday.

Miller, G. F. (2000b). Sexual selection for indicators of intelligence. In G. Bock, J. Goode, & K. Webb (Eds.), *The nature of intelligence* (pp. 260–275). Novartis Foundation Symposium 233. New York: John Wiley.

Miller, G. F., & Todd, P. M. (1998). Mate choice turns cognitive. *Trends in Cognitive Sciences, 2*, 190–198.

Miller, G. F. (this volume). Mating intelligence: Frequently asked questions. In G. Geher & G. F. Miller, (Eds.), *Mating Intelligence: Sex, Relationships, and The Mind's Reproductive System*. Mahwah, NJ: Lawrence Erlbaum Associates.

Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology, 14*, 179–207.

Mroczek, D. K., & Spiro, A. (2005). Change in life satisfaction during adulthood: Findings from the veterans affairs normative aging study. *Journal of Personality and Social Psychology, 88*, 189–202.

Paxton, S. J., Schutz, H. K., Wertheim, E. H., & Muir, S. L. (1999). Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors, and binge eating in adolescent girls. *Journal of Abnormal Psychology, 108*, 255–266.

Petrides, K. V., & Furnham, A. (2001). Trait emotional intelligence: Psychometric investigation with reference to established trait taxonomies. *European Journal of Personality, 15*, 425–448.

Petrides, K. V., & Furnham, A. (2003). Trait emotional intelligence: Behavioural validation in two studies of emotion recognition and reactivity to mood induction. *European Journal of Personality, 17*, 39–57.

Plomin, R., & Spinath, F. M. (2004). Intelligence: Genetics, genes, and genomic. *Journal of Personality and Social Psychology, 86*, 112–129.

Pyryt, M. C. (2000). Finding "g": Easy viewing through higher order factor analysis. *Gifted Child Quarterly, 44*, 190–192.

Reader, S. M., & Laland, K. N. (2002). Social intelligence, innovation, and enhanced brain size in primates. *Proceedings of the National Academy of Sciences USA, 99*, 4436–4441.

Robins, R. W., & Beer, J. S. (2001). Positive illusions about the self: Short-term benefits and long-term costs. *Journal of Personality and Social Psychology, 80,* 340–352.

Rowatt, W. C., Cunningham, M. R., & Druen, P. B. (1999). Lying to get a date: The effect of facial physical attractiveness on the willingness to deceive prospective dating partners. *Journal of Social and Personal Relationships, 16,* 209–223.

Rushton, J. P. (2004). Placing intelligence into an evolutionary framework, or how g fits into the r-K matrix of life history traits including longevity. *Intelligence, 32,* 321–328.

Rushton, J. P., & Nicholson, I. R. (1988). Genetic similarity theory, intelligence, and human mate choice. *Ethology and Sociobiology, 9,* 45–57.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality, 9,* 185–211.

Scheib, J. E. (1994). Sperm donor selection and the psychology of female mate choice. *Ethology and Sociobiology, 15,* 113–129.

Schmitt, D. P., Shackelford, T. K., & Buss, D. M. (2001). Are men really more 'oriented' toward short-term mating than women? A critical review of theory and research. *Psychology, Evolution, and Gender, 3,* 211–239.

Schulte, M. J., Ree, M. J., & Carretta, T. R. (2004). Emotional intelligence: Not much more than *g* and personality. *Personality and Individual Differences, 37,* 1059–1068.

Schultz, P. W., & Searleman, A. (2002). Rigidity of thought and behavior: 100 years of research. *Genetic, Social, and General Psychology Monographs, 128,* 165–207.

Shah, D. V., Watts, M. D., Domke, D., & Fan, D. P. (2002). News framing and cueing of issue regimes—Explaining Clinton's public approval in spite of scandal. *Public Opinion Quarterly, 66,* 339–370.

Silverman, I., Choi, J., Mackewn, A., Fisher, M., Moro, J., Olshansky, E. (2000). Evolved mechanisms underlying wayfinding: Further studies on the hunter-gatherer theory of spatial sex differences. *Evolution and Human Behavior, 21,* 201–213.

Skodol, A. E., Gunderson, J. G., Pfohl, B., Widiger, T. A., Livesley, W. J., & Siever, L. J. (2002). The borderline diagnosis I: Psychopathology comorbidity, and personality structure. *Biological Psychiatry, 51,* 936–950.

Skodol, A. E., Gunderson, J. G., McGlashan, T. H., Dyck, I. R., Stout, R. L., Bender, D. S., Grilo, C. M., Shea, M. T., Zanatini, M. C., Morey, L. C., Sanislow, C. A., & Oldham, J. M. (2002). Functional impairment in patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder. *American Journal of Psychiatry, 159,* 276–283.

Sonner, M. W., & Wilcox, C. (1999). Forgiving and forgetting: Public support for Bill Clinton during the Lewinsky scandal. *PS: Political Science and Politics, 32,* 554–557.

Sprecher, S., & Regan, P. C. (2002). Liking some things (in some people) more than others: Partner preferences in romantic relationships and friendships. *Journal of Social and Personal Relationships, 19,* 463–481.

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate? *Behavioral and Brain Sciences, 23,* 645–726.

Sternberg, R. J. (1985). *Beyond IQ.* New York: Cambridge University Press.

Sternberg, R. J., & Kaufman, J. C. (Eds.) (2002). *Evolution of intelligence*. Mahwah, NJ: Lawrence Erlbaum Associates.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193–210.

Tett, R. P., Fox, K. E., & Wang, A. (2005). Development and validation of a self-report measure of emotional intelligence as a multidimensional trait domain. *Personality and Social Psychology Bulletin, 31*, 859–888.

Todd, P. M., & Miller, G. F. (1991). On the sympatric origin of species: Mercurial mating in the Quicksilver Model. In R. K. Belew & L. B. Booker (Eds.), *Proceedings of the Fourth Conference on Genetic Algorithms* (pp. 547–554). San Mateo, CA: Morgan Kaufmann.

Tooby, J., & DeVore, I. (1987). The reconstruction of hominid behavioral evolution through strategic modeling. In W. G. Kinzey (Ed.), The evolution of human behavior. New York: State University of New York Press.

Whiten, A., & Byrne, R. W. (Eds.) (1997). *Machiavellian intelligence II: Extensions and evaluations*. New York: Cambridge University Press.

Wilson, D. S., Garruto, R., McLeod, K. J., Regan, P. M., Tan-Wilson, A. *Grant proposal for NSF IGERT grant*. Unpublished Manuscript.