Blackwell Handbook of Social Psychology: Intraindividual Processes

Edited by

Abraham Tesser and Norbert Schwarz

BLACKWELL
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Blackwell Handbook of Social Psychology: Intraindividual Processes

Blackwell Handbook of Social Psychology

Series editors: Miles Hewstone and Marilynn Brewer

The four volumes of this authoritative handbook each draw together 25–30 newly commissioned chapters to provide a comprehensive overview of specific topics in the field of social psychology. Designed to have considerable depth as well as breadth, the volumes encompass theory and research at the intraindividual, interpersonal, intergroup, and group levels. Editors have been chosen for their expertise and knowledge of the subject, making *The Blackwell Handbook of Social Psychology* an invaluable companion for any serious social psychology scholar.

Intraindividual Processes, edited by Abraham Tesser and Norbert Schwarz
Interpersonal Processes, edited by Garth Fletcher and Margaret Clark
Intergroup Processes, edited by Rupert Brown and Samuel Gaertner
Group Processes, edited by Michael A. Hogg and Scott Tindale

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Series Editors' Preface

The idea for a new international handbook series for social psychology was conceived in July 1996 during the triannual meeting of the European Association of Experimental Social Psychology in the idyllic setting of Gmunden, Austria. Over a glass of wine and pleasant breezes from the Traunsee, Alison Mudditt (then Psychology Editor for Blackwell Publishers) engaged the two of us in a "hypothetical" discussion of what a multi-volume handbook of social psychology at the start of the twenty-first century might look like. By the second glass of wine we were hooked, and the project that has culminated in the publication of this four-volume *Blackwell Handbook of Social Psychology* was commissioned.

The EAESP meeting provided a fitting setting for the origin of a project that was intended to be an international collaborative effort. The idea was to produce a set of volumes that would provide a rich picture of social psychology at the start of the new millennium: a cross-section of the field that would be both comprehensive and forward-looking. In conceiving an organizational framework for such a venture, we sought to go beyond a simple topical structure for the content of the volumes in order to reflect more closely the complex pattern of cross-cutting theoretical perspectives and research agendas that comprise social psychology as a dynamic enterprise. Rather than lengthy review papers covering a large domain of social psychological research, we felt that a larger number of shorter and more focused chapters would better reflect the diversity and the synergies representative of the field at this point in time.

The idea we developed was to represent the discipline in a kind of matrix structure, crossing levels of analysis with topics, processes, and functions that recur at all of these levels in social psychological theory and research. Taking inspiration from Willem Doise's 1986 book *Levels of Explanation in Social Psychology*, four levels of analysis – intrapersonal, interpersonal, intragroup, and intergroup – provided the basis for organizing the handbook series into four volumes. The content of each volume would be selected on the basis of cross-cutting themes represented by basic processes of social cognition, attribution, social motivation, affect and emotion, social influence, social comparison, self and identity, as they operate at each level. In addition, each volume would include methodological issues and areas of applied or policy-relevant research related to social psychological research at that level of analysis.

Armed with this rough organizational framework as our vision for the series, our role was to commission editors for the individual volumes who would take on the challenging task of turning this vision into reality. The plan was to recruit two experts for each volume, who would bring different but complementary perspectives and experience to the subject matter to work together to plan, commission, and edit 25–30 papers that would be representative of current and exciting work within their broad domain. Once selected, co-editors were encouraged to use the matrix framework as a heuristic device to plan the coverage of their volume, but were free to select from and embellish upon that structure to fit their own vision of the field and its current directions.

We have been extremely fortunate in having persuaded eight exceptionally qualified and dedicated scholars of social psychology to join us in this enterprise and take on the real work of making this Handbook happen. Once they came on board, our role became an easy one: just relax and observe as the project was brought to fruition in capable hands. We are deeply endebted and grateful to Abraham Tesser and Norbert Schwarz, Margaret Clark and Garth Fletcher, Michael Hogg and Scott Tinsdale, Rupert Brown, and Samuel Gaertner for their creative leadership in producing the four volumes of this series. Through their efforts, a rough outline has become a richly textured portrait of social psychology at the threshold of the twenty-first century.

In addition to the efforts of our volume editors and contributors, we are grateful to the editorial staff at Blackwell Publishers who have seen this project through from its inception. The project owes a great deal to Alison Mudditt who first inspired it. When Alison went on to new ventures in the publishing world, Martin Davies took over as our capable and dedicated Commissioning Editor who provided guidance and oversight throughout the operational phases. Our thanks to everyone who has been a part of this exciting collaborative venture.

Miles Hewstone
Marilynn Brewer

Preface

Why in the world would two grown people who are fully employed put a huge chunk of time into helping to edit yet another *Handbook of Social Psychology*? There are at least three scientific disciplinary reasons for this project. First, the discipline of social psychology is currently very broad and the amount of work that is appearing is prodigious, particularly in the intrapersonal processes area. Comprehensive coverage is not possible in one- or two-volume compendiums. Rather than a few chapters, the current volume is devoted entirely to intrapersonal process research. Indeed, we believe that this volume includes coverage of areas that is not available in handbook form elsewhere. Second, there is a very different array of chapter authors. Both of us have been consumers of research in this area for a long time and we had some well-developed ideas about the researchers who might be in a good position to describe particular areas of work. Many of these scientists have not contributed to other handbooks. Thus, they provide a fresh slant even in areas treated in other handbooks. Moreover, there has been a lag in recognizing the changing demography of the field of social psychology. Modern social psychology became viable and began to grow, almost exponentially, since World War II. The discipline was near exclusively North American. However, the decade of the 1990s brought a dramatic change. Social psychology has continued to increase in importance but it has become a *worldwide* enterprise. In this, as in the other volumes of this Handbook, we have made a self-conscious attempt to include authors from among productive scientists not only in the United States but in Europe and Australia as well. Third, the field of social psychology is developing and changing rapidly. A major handbook of social psychology was published in 1996 (edited by Tory Higgins and Arie Kruglanski) and another in 1998 (edited by Dan Gilbert, Susan Fiske, and Gardner Lindzey). However, because of changes in the field and inevitable publication lags some of the material is now dated. Why a new handbook? To provide more comprehensive coverage, to better reflect the international nature of the discipline and to bring the reportage up to date.

The Organization of this Volume

The *Blackwell Handbook of Social Psychology* comprises four volumes reflecting different levels of focus in social psychology. They range from a focus on intraindividual processes to interpersonal processes, group processes, and intergroup relations. This particular volume, "Intraindividual Processes," focuses on the individual as the unit of analysis. We attempt to present the state of the science regarding cognition, affect, and motivation. We also attempt to put this work into broad substantive and methodological perspective. Finally, there is a sampling of applications of the cognitive and motivational principles spelled out in the chapters devoted to basic research on these issues.

At the outset, we have attempted to provide the reader with a set of integrative perspectives. The evolutionary and cultural perspectives are very broad and are currently enjoying a renaissance of interest. However, as Burnstein and Branigan, and Miller point out, the potential of neither perspective has been close to fully exploited in our attempts to understand intrapersonal processes. The developmental perspective continues to lurk on the fringes of social psychology. Greater attention to the developmental perspective will certainly provide deeper insight into changes associated with age. According to Durkin, it will also force a renewed appreciation for the role of *social* variables in the unfolding of cognitive and affective processes. If we are to understand the results of studies involving emotion and cognition, we need to have an understanding of the methods used. Winkielman, Berntson, and Cacioppo review the progress we have made in being able to infer psychological events from psychophysiological responses and remind us of the importance of studying the same cognitive and affective processes across a variety of levels. Bassili prepares us by reviewing the three major dependent variables used in studies intended to illuminate cognitive processes, i.e. memory, response time, and the output of judgmental processes.

In the interest of making this compendium of chapters more manageable, and in line with current usage, we have divided the primary research chapters into two broad groupings: Cognition and Social Motivation. In some instances, the assignment of a chapter to a particular grouping is somewhat arbitrary. For example, from the Cognition grouping, chapter 7 on the social unconscious (Banaji, Lemm, and Carpenter) deals not only with nonconscious cognitive effects but also with the impact of nonconscious goals and affect as well; chapter 12 on standards, expectancies, and social comparison (Biernat and Billings) clearly implicates motivational as well as cognitive principles. From the Social Motivation grouping, chapter 19 on construction of attitudes (Bohner and Schwarz) and chapter 24 on constructing personal pasts and futures (Ross and Buehler) have strong cognitive themes running through them. Nevertheless, we believe that the assignment is not totally arbitrary and perhaps helps to put intellectual neighbors into proximity with one another.

Within each of the groupings the usual suspects emerge, but there are some new leads as well. Part II on Cognition has chapters on memory and judgment. However, chapter 6 (Smith and Queller) brings the memory work up to date in a highly readable overview. In addition, the work on judgment has been particularly well articulated in this volume: chapter 10 (Griffin, Gonzalez, and Varey) is about heuristics and biases, chapter 11 (Martin, Strack, and Stapel) is about the exquisite flexibility in assimilation and contrast effects, and chapter 12 (Biernat and Billings) discusses the broad impact of standards, expectancies, and social comparison. Compendiums in social psychology often slight the psychology of language. In this volume we explore the role of language in social cognition (chapter 8 by Semin) as well as the role of language pragmatics (chapter 9 by Hilton and Slugoski). Cross-cutting all this, chapter 7 (Banaji, Lemm, and Carpenter) documents the pervasiveness of nonconscious processes in each of the areas mentioned above . Finally, an area that is sometimes slighted in social cognition work is individual differences. Chapter 13 (Suedfeld and Tetlock) provides a nice overview of the individual difference constructs of need for cognition, conceptual/integrative complexity, and the need for closure.

Under the broad umbrella of Social Motivation (Part III) reside chapters on self-regulation and motivation, emotion and affect, attitudes and values, and self-related issues. Concerns with self-regulation have been with us for some time but there has been a recent upsurge of research attention to this area. Chapter 14 (Carver) provides an integrated account of how a feedback model can account for affect, behavior, and goal persistence, and behavior in the face of adversity. Chapter 15 (Oettingen and Gollwitzer) looks at fantasy and ruminative processes along with other variables that affect goal setting; it also describes the qualities of set goals that facilitate or interfere with goal striving. Chapter 16 (Dunning) uses a computer metaphor of the executive function to frame the recent research on social cognitive motivation. Within this frame, it examines motives concerned with the acquisition of knowledge, self-affirmation, and coherence or consistency. Closely related to motivation is the psychology of emotion and mood. Chapter 17 (Parrott) provides a highly readable, comprehensive, broad-brush description of current theoretical and empirical work in emotion. The last decade has seen an explosion of work on mood and judgment. Chapter 18 (Bless) summarizes and takes us to the cutting edge of that work.

Gordon Allport once suggested that "attitude" was the most important concept in social psychology. Although the popularity of attitude research has had peaks and valleys, it is difficult to disagree with him. In this volume, chapter 19 (Bohner and Schwarz) review mainstream work on attitudes, including attitude change and the relationship between attitudes and behavior. In chapter 20, Schwarz and Bohner make a persuasive argument for attitude as a construction and they carefully review the implications of taking this perspective seriously. Many of us believe that values and ideologies play an important role in understanding attitudes and behavior, yet discussions of values and ideologies are often neglected. Chapter 21 (Rohan and Zanna) provides working definitions of these constructs. It suggests that values play a particularly influential role in determining attitudes and behavior; ideology often serves as a rationalization for value-driven attitudes and behaviors.

The psychology of self has long had a prominent role in social psychological research and has enjoyed heightened research interest over the last fifteen or twenty years. Chapter 22 (Tesser) provides a broad overview of processes related to the maintenance of self-esteem. Chapter 23 (Oyserman) gives us a nuanced and subtle view of the role of culture in the construction of the self. Chapter 24 (Ross and Buehler) creatively reviews the processes involved in constructing personal pasts and futures.

Can research on social cognition and social motivation be put to use in applied settings? Indeed it can. Space constraints allow us to feature only a few examples of applications (Part IV). In the political realm, chapter 28 (Ottati) shows us how social cognition research has been helpful in understanding political judgment. In chapter 25 (Köhnken, Fiedler, and Möhlenbeck) we see how social cognition and social motivational principles can provide insights for (a) applications *in* law, e.g. how to improve witness memory; (b) for psychology *and* law, e.g. jury decision making; and (c) for psychology *of* law, e.g. why people obey the law. Chapter 26 (Shavitt and Wänke) on consumer behavior and chapter 27 (Aspinwall) on adversity nicely highlight the value of primary research for understanding consumer behavior and coping. What is particularly interesting about both of these chapters is the presence of a case for a more evenhanded view of the relationship between basic and applied research. The usual view is that basic research informs applied research. Both chapters present very persuasive arguments for the idea that applied research can usefully inform the agenda for basic research.

The authors of this volume are experts in their various areas and are busy, sought-after people. They spent a lot of time and energy writing their chapters. They had to endure our requests for revision and our persistent nagging that they get their chapters in on time and within our length limits. This could not have been pleasant for them and only on rare occasion was the nagging fun for us. In the end, however, we believe that the time and energy were well spent. The chapters provide an authoritative, comprehensive, up to date, and readable description of the field. We say, thank you, thank you, *thank you* to all the authors. And, we invite you, the reader, to sample the contents of this volume. We hope that you will find it informative, useful, and perhaps even enjoyable to read.

Abraham Tesser
Norbert Schwarz

PART I

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Chapter One

Evolutionary Analyses in Social Psychology

Eugene Burnstein and Christine Branigan

The Concept of Adaptation

Early in the history of the field social psychologists such as William James and William McDougall viewed minds as biological systems, like the heart or lungs, designed to perform particular functions. How well a mind did this depended on the *fit* between what its design allowed it to do and what the environment required: we will often say a psychological mechanism increases or decreases fitness, meaning it causes individuals to be more or less adapted, to be better or worse suited to their environment. James and McDougall believed the invisible hand guiding the mind's design was natural selection or differential reproduction as a function of individual fitness. Good design, in short, drives out bad. At the biological level, natural selection is about genetic continuation: certain genotypes or, if you prefer, individuals with a specific genetic constitution, are more successful at reproducing than other genotypes (or individuals with different genetic constitutions). The evolution of the mind, therefore, is the result of changes in the human gene pool with one allele replacing another, the surviving alleles being those that give rise to a psychological system (and its underlying biology) that succeeds more than alternative systems in causing the replication of its underlying allele(s).

James and McDougall decomposed the mind into distinct psychological adaptations or, in the spirit of the times, instincts. James's *Principles of Psychology* had a long list of these devices (e.g. walking, climbing, hunting, acquisition, construction, pugnacity, anger, fear, and jealousy). McDougall added to James's list (e.g. gregariousness, parenting) and described them as "an inherited or innate psycho-physical disposition which determines its possessor to perceive, and to pay attention to, objects of a certain class, to experience an emotional excitement of a particular quality upon perceiving such an object, and to act in regard to it in a particular manner, or at least, to experience an impulse to such action" (McDougall, 1909, p. 30). Few say "instinct" today. We know evolved mechanisms are sensitive to context and we want to avoid implying something fixed and inevitable ("which determines its possessor"). Instead, terms like adaptation, strategy, heuristic, module, or, when stressing a mechanism's computational prowess, algorithm are used, often interchangeably. Generally they refer to a configuration of feelings, thoughts, and actions (plus supporting physiology) designed so as to advantage an individual's fitness relative to others in the population. Hence, a trait or strategy is adaptive if, compared to alternatives, it gives individuals a better chance to mature and acquire resources to perform *the* task essential to evolution, i.e. to reproduce, raise, and, finally, to provision others (kin) in aid of their reproduction. In a word, it insures genetic continuation.

In some respects, however, adaptations are like James's and McDougall's instincts. They do involve biological structures sensitive to ("perceive, and to pay attention to") a limited set of stimuli ("objects of a certain class"). And both must assume, of course, heritability: that intelligence (Bouchard and McGue, 1981), schizophrenia (Gottesman, 1991), manic depression (Tsuang and Faraone, 1990), alcoholism (Cloninger, 1987), neuroticism and extraversion (Loehlin, 1992) are known to be moderately heritable and that there is growing evidence of heritability for social attitudes (Tesser, 1993), religiosity (Waller, Kojetin, Bouchard, & Lykken, 1990), divorce (McGue and Lykken, 1992), and, yes, watching television (Plomin, Corley, DeFries, and Fulker, 1990) suggest how complex is the link between genotype and phenotype.

Analyzing Social Transactions: The Forms of Cooperation

In this section we discuss the cooperative transactions directly contributing to genetic continuation: kin altruism, mating effort, and parental investment. Later sections examine status negotiations and non-kin cooperation, transactions whose contributions to fitness are indirect but no less powerful since they determine what resources individuals have to invest in kin, mates, and offspring.

Generally, altruism denotes a form of cooperation whereby individuals assist another at significant expense to themselves and without reference to repayment. It is not an uncommon strategy. In most societies sharing goods and services without concern for balancing accounts is typical among friends and relatives. A second type of cooperation is one in which all parties benefit. It is called reciprocal altruism by evolutionary theorists, direct reciprocity, balanced reciprocity, or simply reciprocity by anthropologists, and cooperation by everybody else (Hawkes, 1992). What they are talking about are cases where individuals provide goods or services to one another, thereby incurring a short-term cost, with the expectation of receiving benefits in return. It characterizes mating, parental care, and other collaborations such as hunting, harvesting, building, playing games, providing mutual protection, or any activity in which return for one's effort comes directly from individuals who benefited. All the cases just cited may also involve indirect reciprocity where repayment is made by third parties not involved in the initial transaction and, thus, not directly benefiting therefrom. It might come from individuals who were assisted by still another person in a roundabout exchange of goods and services typical in the division of labor, or from the collective, as when it rewards its members by raising their status or providing them with extra resources and assistance.

Kin altruism

In traditional Darwinian theory fitness is measured by number of offspring. Hamilton (1964) reminded us, however, that reproductive success is significant for natural selection because it indicates the likelihood of one's genotype being replicated in future generations: reproductive success means genetic continuation and reproductive failure means genetic termination. But having offspring is not the only means of replicating a genotype, nor is it necessarily the most important one. Since we share genes identical by descent with kin, to get a true estimate of a strategy's impact on fitness, you have to factor in its effect on the strategist's relatives' fitness as well. Why? Because a heritable strategy that decreases the actor's own (Darwinian) fitness can still be adaptive and increase in frequency, if it improves the reproductive success of kin who have the genes for the same strategy. Hamilton's idea of assessing the adaptive value of a strategy in terms of its costs and benefits to kin as well as its costs and benefits to the actors themselves is called, in contrast with traditional Darwinian fitness, inclusive fitness or kin selection.

Kin selection theory is a good example of evolutionary models that predicts when a strategy, in this case altruism, is relatively beneficial or costly and, hence, when it prevails or is replaced by some alternative (non-altruistic) course of action. Assume C equals the cost to altruists of giving help and B the benefit to recipients of being helped, and, of course, that altruism is heritable. According to traditional Darwinian analysis a heritable strategy that causes reproductive harm is selected against. Hamilton's insight was that the opposite can happen when altruists and recipients are kin because they then probably share the genes underlying altruism. If so, the likelihood of their replication increases given that the cost of helping is less than the benefit to the recipient weighted by the degree of relatedness, r, or $Br > C$, Hamilton's well-known inequality. Less formally, Hamilton says that we are inclined to discriminate according to kinship, assisting close relatives over distant relatives or unrelated individuals; and that this inclination waxes when the costs and benefits of assisting are large (e.g. in dangerous, life-threatening emergencies) and wanes when they are small (e.g. simple everyday favors). Both the animal and human literature offer strong support for these hypotheses (e.g. Burnstein, Crandall, and Kitayama, 1994; Trivers, 1985; Sober and Wilson, 1998).

The starkest test of kin altruism in humans are studies comparing the cooperativeness of monozygotic (MZ) and dizygotic (DZ) twins. Findings from studies on reactions to separation, efforts to remain in close proximity as children and adults, and even in usage of the pronouns "I" versus "we" indicate MZ twins share a more intimate relationship than DZ twins. Over 60 years ago researchers found MZ twins tried to maintain equality of performance on mathematical and lexical tasks to the point that one twin would slow down to enable the co-twin to catch up, whereas DZ twins tried to outdo their co-twin. Similarly, the most recent research shows MZ twins avoid free-riding, work harder for their co-twin, and thereby complete their joint task more quickly than DZ twins (see review in Segal, 1999). Perhaps assisting another is intrinsically rewarding, the magnitude depending on the relationship between the individuals. Two sorts of finding support this. Research on autonomic functioning and empathy suggests potentially friendly people elicit positive affect in an observer when they succeed and negative affect when they fail, and potentially unfriendly people, negative affect when successful and positive affect when failing (e.g.

Lanzetta and Englis, 1989). In addition, operant conditioning research (Weiss, Buchanan, Alstatt, and Lombardo, 1971) demonstrates that when a response is instrumental in assisting another, assistance functions as a reward just as conventional reinforcers, namely, assistance occurring after every response (continuous reinforcement) or with minimal delay, produces a higher level of responding and shorter latency than intermittent assistance or assistance that occurs after an appreciable delay.

Kinship is not the only cue to how much someone contributes to one's fitness. Often other features assume greater significance and cause us to discount kinship. Sometimes, for instance, recipients are of an inappropriate age. In Hamilton's model kinship becomes increasingly unimportant when the recipients are too young to reproduce (and might not survive to reach this point) or are too old to do so. Comparable discounting is predicted to occur as a function of relatives' viability and resources, since sickness and impoverishment reduce their reproductive value. Studies using hypothetical decisions show if kin are in dire need and assisting them is risky, altruists discriminate in favor of the healthier, wealthier, and younger, but *against* the very young as infant mortality increases (Burnstein, Crandall, and Kitayama, 1994). Kin altruism can also pose stunning problems of choice. Wang (in press) finds decisions about which relatives should survive and which perish produce such intense conflict that individuals abandon their normal strategy, one they followed in deciding the fate of non-kin. Instead, in effect they refuse to choose. Wang used the Tversky-Kahneman framing task to create a paradigmatic "Sophie's Choice" dilemma. In the standard version, where life or death decisions are made about groups of strangers, individuals are risk-avoiding, preferring a certain outcome over a risky or probabilistic one if the alternatives are framed in terms of benefits, or lives saved (e.g. a choice between two medical procedures where one will save 60 percent of the people for sure and the other has a 60 percent chance of saving everyone); but they are risk-seeking, preferring the risky over the certain outcome, if the alternatives are framed in terms of costs, or number of deaths (e.g. 40 percent of the people would die for sure versus a 40 percent chance of everyone dying). One general finding of interest is that framing effects hold for large groups – about 600 or more members, the group size in the standard Tversky-Kahneman procedure – but vanish for smaller groups of around 60 members or less. Wang suggests that as group size approaches that of ancestral bands, people are averse to deciding who lives or dies and an "either we all live together or die together" rationality dominates. This refusal to choose is even more poignant when individuals must make life or death decisions regarding groups explicitly composed of close kin (e.g. siblings and parents). Then, for example, when problems are framed in terms of number of lives saved, over 70 percent chose the risky or probabilistic course, which is the reverse of what they do when group members are strangers (see Chagnon and Bugos, 1979, and Sime, 1983 for kin altruism in actual life or death situations).

Mating and parental investment

Darwin thought it useful to distinguish between two forms of selection, "natural" and "sexual". Not because their ultimate impact on reproduction differed but because natural selection, being concerned with adaptation to the physical world, could not account for the evolution of extravagance and imprudence: luxuriant plumage, cumbersome antlers, Armani suits, body piercing, bungee jumping and other remarkably profligate or risky displays. Nor was it evident to him why men put such great weight on women's looks, whereas women are most concerned with a man's character. Obviously, notions of beauty and personality in part reflect cultural norms and personal experience. However, research since Darwin also demonstrates that in important respects the aesthetics of mate preferences are universal and appear quite early in life. Buss's (1989; 1999) review of studies in over 30 countries finds in every case males are more concerned than females with a mate's appearance. Similar findings from pre-modern cultures are summarized by Ford and Beach (1951), who conclude a male's attractiveness depends much less on his handsomeness than on his skill and prowess. Finally, several experiments (e.g. Langlois, Ritter, Roggman, and Vaughn, 1991) indicate two- and three-month-old infants prefer attractive adult female faces more than unattractive ones and the effect holds independent of race of observer or target.

Darwin (1871/1981) reasoned that extravagant displays evolved because they increase mate value and give a reproductive edge at the expense of others of the sex. In humans this would imply physical appearance is more diagnostic in respect to female mate value than to that of males. Jones (1995) explains this using the adaptationist assumption: individuals have relatively fixed or "hard-wired" reactions to a stimulus pattern if the consequences to fitness have been constant over evolutionary time. "Given that learning entails costs, in terms of trial and error, organisms are expected to adapt to selectively important invariants in their environment with corresponding behavioral, cognitive, or motivational invariances" (Jones, 1995, p. 726). For example, aesthetic reactions to fatness in females – not obesity, which is rare in ancestral groups – varies over cultures. Fatness is advantageous and valued when the food supply is unreliable, average temperatures are low, early pregnancies are desirable (the likelihood of ovulation and lactation is positively related to percentage body fat, especially around the time of menarche), females enjoy low status or have little control over timing of their pregnancies, and pregnancy and childcare do not interfere with the work females perform or the work is not highly valued (Anderson, Crawford, Nadeau, and Lindberg, 1991). This implies that aesthetic reactions to fatness are not invariant but instead depend on its contribution to fitness in particular environments. Hence, when the opposite conditions obtain, when food is plentiful, climate temperate, early pregnancy discouraged, and females have relatively high status – specifically, among American college students – males rate fat females as less attractive (but more fecund) than slim females (Tassinary and Hansen, 1998); and middle-class American parents invest less in educating fat daughters than slim daughters but do not discriminate between fat and slim sons (Crandall, 1995).

Compared to that between fatness and fecundity, the relationship between age and fecundity is relatively invariant. In virtually any population, fertility rates decline much more precipitously for females than for males. Jones argues, therefore, that coding for attractiveness reflects an evolved mechanism for assessing age-related changes in a key component of female mate value, fecundity. As a result, signs of aging elicit an invariant reaction having more impact on males' estimates of females' attractiveness than on females' evaluation of males' attractiveness. The research results are largely consistent with this analysis. Neotenous or babyface features (large eyes, small nose, and full lips) are the markers of youthfulness and female faces displaying them in exaggerated or supernormal form are perceived universally as particularly attractive and overly youthful by males (Jones, 1995). It is no accident female models not only have more neotenous facial proportions and are considered more attractive than, say, female undergraduates, but also their age is vastly underestimated. Finally, a critical quality like fecundity may have multiple markers. Singh, for instance, hypothesizes that the waist-to-hip ratio (WHR) is also a cue to a female's reproductive potential and presents considerable evidence that females with a WHR of .7 are perceived by males as more attractive than those with greater or smaller WHR values (Singh, 1993; but see Tassinary and Hansen, 1998).

It is equally plausible that physical attractiveness signals fitness in the sense of heritable viability or good genes instead of (or in addition to) age and, by extension, fecundity. This assumes individuals and infectious pathogens have waged war over evolutionary time so that natural selection has designed males to be attracted to females who "look" free of parasites and, hence, are likely to have resistance to infectious diseases (Hamilton and Zuk, 1982). Obviously, choosing a mate of this sort enhances an offspring's viability. When it comes to modern humans, however, recent research does not bode well for the hypothesis that attractive individuals are relatively free of infections and generally healthy. Kalick, Zebrowitz, Langlois, and Johnson (1998) found adolescent facial attractiveness was unrelated to health either at adolescence, middle adulthood, or late adulthood. Furthermore, in attempting to estimate the target's health individuals mistakenly judged attractive targets as healthier than unattractive targets. In fact, correlations between perceived health and true (medically assessed) health increase only when attractiveness was statistically controlled, demonstrating attractiveness can mislead and actually suppress accurate detection of good genes. This suggests that attractiveness, while perhaps a reliable cue to heritable viability in ancestral environments, can nowadays be employed in a deceptive manner to influence others' choice. Again, keep in mind that displaying traits like physical attractiveness strategically does not imply a conscious intention to deceive; people could equally well believe they are conforming to norms about personal beautification and ornamentation. As Dawkins and Krebs (1978) cautioned, individuals may have evolved signals whose function is to manipulate another's action to their benefit without awareness on the part of the sender or receiver. Certainly for senders, to be unaware is to be incapable of leaking the scam (e.g. Alexander, 1987).

A different explanation of the evolution of physical attractiveness as a good genes marker is offered by Gangestad and Thornhill (1997). They reasoned that universally attractive features, whether having prominent cheekbones or being ambitious, are sufficiently costly that only relatively fit individuals can afford to display them. Hence, they advertise individual fitness and do so honestly. This argument stems from Zahavi's (1975) strategic handicap principle, according to which phenotypic prodigality signals latent resources in senders that can assist receivers who, upon recognizing this, benefit the senders (e.g. chooses him or her for a mate). Of course, senders gain by convincing a receiver they have more resources than they actually possess, whereas receivers gain by detecting the dishonesty and gauging others' hidden talents accurately. The handicap principle describes how in light of this conflict honest advertising is positively selected: extravagant displays of beauty, strength, courage, wealth, or power are costly because they waste resources or expose actors to risk. They may still be adaptive, however, if the returns are sufficiently large. This occurs when a display allows the receiver to size up senders accurately enough to discriminate in favor of the more endowed. In essence, Zahavi's model argues honest advertising is insured since high-quality individuals suffer lower marginal cost for each extra unit of display: resources expended in advertising are unavailable to deal with more immediate threats to fitness (e.g. pathogen resistance, parental investment). Hence, in aesthetic or behavioral contests, those with minimal resources have less left over per unit expended, and must break off signaling at a lower cost level than those with large resources. The upshot is that displays costly enough to constitute a real handicap signal the sender can afford it.

Gangestad and Thornhill argue physical appearance signals heritable viability, in particular a capacity to express ontogeny, one's developmental design, in the face of environmental and genetic insults. Their viability marker is fluctuating asymmetry (FA), a deviation from symmetry in bilateral morphological traits that are typically symmetrical (e.g. ears, legs, arms, etc.). Because the same genes control development of the trait on both sides of the body, asymmetries presumably reflect imperfect development, developmental instabilities due to toxins, pathogens, defective childcare, bullying, mutations, inbreeding, and the like. If so, at least two things follow. First, males evidencing developmental stability or minimal FA have more of whatever resources it takes – heritable viability – to resist these insults than males with maximal FA. And second, according to Zahavian honest advertising, males with minimal FA have more well developed expression of costly sexually selected handicap attributes and greater mating success than those evidencing development instability or maximal FA.

Gangestad and Thornhill measure FA by comparing bilateral widths or lengths of feet, ankles, hands, wrists, elbows, ears and pinky fingers – differences virtually undetectable without calipers. Based on these indices they found males' FA was negatively related to number of sexual partners, and number of extra-pair matings (among those in long-term romantic relations). Consistent with the principle that females benefit less than males from more matings, there was only a weak relationship at best between FA and the number of partners or extra-pair sex in females. Finally, facial attractiveness is negatively related to FA and, hence, may mediate the impact of FA on sexual experience, especially when FA is based on features that are difficult to detect. It is not the only factor influencing the impact of FA, however. An appreciable number of other handicapping attributes that typically play a role in male–male competition as well as in female choice, including energetically costly physical features (e.g. body mass, muscularity, robustness, and vigor) and risky behavioral traits (e.g. social dominance, heterosexual assertiveness, and narcissism) were discovered to have considerable impact as mediating processes. Again, this held only for men. Women's FA was unrelated to sexual experience or to any of the mediators; their social dominance predicts the number of partners but is uncorrelated with FA and, hence, does not mediate the relationship between FA and number of sexual partners.

These male–female differences in mate preferences correspond nicely to the different recurrent problems in reproduction each sex had to adapt to in the ancestral environment. Consider obligatory parental investment, the unavoidable somatic and psychic costs of reproduction. For a woman, the minimum is nine months of internal fertilization, gestation, and placentation, plus breast feeding, which among hunter-gatherers may last several years. In comparison, obligatory parental investment by men, i.e. performance of the sexual act, is derisory. The implication is that women, by investing more than men, suffer greater costs from a neglectful, incompetent mate and derive greater benefits from an attentive, resourceful one than men do. Needless to say, over evolutionary time such differences select for differences in mating strategies. Accordingly, Trivers (1985) assumes women are designed to accurately assess mate quality and maintain high standards, especially if male investment is problematic (e.g. short-term relationships). Whereas men's default strategy, unless constrained by female choice, is to mate promiscuously and claim high quality regardless of its truth. Note that Zahavi argues differently in respect to males. He predicts low-resource individuals cannot long continue building Potemkin villages to entice females or may not even attempt to, recognizing they will eventually be outspent by high-resource competitors. Perhaps both are right. In cheap, low-intensity competitions men can claim having large resources whether they do or not; but in expensive, high-intensity contests, they are constrained to advertise honestly and are no more prodigal than they can afford.

While evolutionary theory says the risks in mating are different for men and women, what they want in mates is often similar. Cross-national comparisons of thirteen characteristics commonly sought in a mate reveal that while males rank physical attractiveness third and females sixth for desirability in a mate, both sexes ranked kindness and intelligence as one and two, and good housekeeper and religious orientation as twelve and thirteen, respectively. Good heredity fell near the middle – heritable viability may not be a conscious priority and, perhaps, may be expressed only indirectly via markers such as good health and adaptability which are ranked high (Buss, 1989). Preferences do diverge in domains where theory says the sexes have confronted different adaptive problems. Take provisioning or ability to invest. Findings from a variety of cultures show women typically believe good financial prospects are nearly indispensable in a mate while men consider them relatively unimportant; and, when evaluating the standard marker for fecundity, age, men everywhere prefer a younger mate; whereas women want a mate older than they (Buss, 1999).

As to the actual adaptive value of mate preferences, although the number of studies is small the common finding is they do enhance fitness. Both among modern Kipsigis (Borgerhoff Mulder, 1988) and eighteenth-century Germans (Voland and Engel, 1990) a bride's youthfulness or physical attractiveness and a groom's wealth is positively related to lifetime reproductive success. The only study we know of in a modern society (Bereczkei and Csanaky, 1996) found that Hungarian men who choose younger mates and Hungarian women who choose higher status mates have more surviving offspring than those who pursue the opposite mating strategy; and that couples in which wives are younger than husbands and husbands more educated than wives stay together longer than other couples. This indicates that the relationship between mate preferences and reproductive success is mediated by the durability of the marriage. In other words, by strengthening pair-bonds, mate preference mechanisms establish a necessary condition for reproductive success in humans, extended parental investment.

The central problem of parental investment stems from the males' tendency to defect and divert resources elsewhere rather than assist his spouse in childrearing. Trivers's explanation that, *ceteris paribus*, promiscuity produces greater return to fitness for males, was discussed earlier. A second and perhaps more significant reason, certainly for father–child conflicts, is that paternity is inherently uncertain, although not if DNA testing of the newborn becomes standard practice. In any event, as paternal uncertainty increases – the coefficient of relatedness in Hamilton's inequality is weighted by a probability of less than one – at some point investing in his spouse's children detracts from the husband's fitness. It is no accident, therefore, that groups with high paternal uncertainty develop institutions relieving men of responsibility for assisting spouses' children and sanctioning investment in the latter by men whose kinship with the child is undisputed (e.g. the avunculate, an arrangement in which the mother's brother is responsible for provisioning his sister's children). Nonetheless, throughout the world mothers and fathers are prematurely widowed, and women are abandoned with dependent children. An evolutionary analysis predicts that since assisting step-children decreases the step-parent's fitness, if widowed or abandoned parents enter into a new marital relationship, the children's fate becomes insecure. Much cross-cultural evidence suggests pressures to invest in unrelated children commonly elicit meanness (Betzig, Mulder, and Turke, 1988). The most striking evidence, however, comes from modern societies. Children in North America living with a step-parent are more likely to suffer abuse than those living with their biological parents. In Ontario, Canada during 1983 the rate per capita child abuse for young children residing with one biological and one step-parent was over 13 per 1,000; whereas the rate for children residing with both biological parents was less than 1 per 1,000 (Daly and Wilson, 1988). And of young children whose mistreatment was fatal, 43 percent resided with step-parents. This means North American children living with a step-parent are about 100 times more likely to die due to abuse than those living with both biological parents.

A common device hypothesized to reduce paternal uncertainty and encourage parental investment is namesaking, a process of social categorization serving to identify the newborn as belonging to the family. If the function of namesaking is to elicit investment by establishing in the minds of kin and third parties a newborn's claim on kin resources, it should increase as investment becomes problematic (e.g. when children are adopted or parents are unmarried). In support, among unmarried teenage mothers infants named for a relative are almost always named for the presumed father; almost half even take the father's last name despite the parents never marrying. Similarly, analyses of namesaking in communities where wealth is transferred through the father's lineage found special efforts to assuage the patriline's worries and establish a claim to its resources: first children are twice as likely to be named after paternal grandparents than after maternal grandparents. A corollary is that as confidence in being accepted as a family member increases, the need to assert a claim to its resources decreases. In a sample of biological and adoptive parents slightly less than 50 percent of biological parents and slightly more than 75 percent of adoptive parents named their child for a relative; and because paternal uncertainty is an issue for biological parents but never for adoptive parents, it is unsurprising that biological parents favor patrilineal namesakes but adoptive parents don't (Johnson, McAndrew, and Harris, 1991).

Status Negotiations

Theoretically, hierarchization can be viewed as an *n*-person mixed-motive game where high status individuals gain greater access to resources and exert greater control over distribution as long as a sufficient number of low status members accept their dominance. High status members, therefore, should seek to legitimize the system by insuring returns to those not so advantaged sufficient to elicit cooperation. In short, the stability of a hierarchy depends on its costs and benefits relative to that of other arrangements (e.g. leaving and joining another group). Of course, owing to their control over distribution, dominant individuals are tempted to defect and monopolize resources. As a result most bands and tribes with stable hierarchies have institutions to punish those taking unfair advantage of rank, say, to bully or humiliate other members (Boone, 1992; Boehm, 1997). There also may be psychological mechanisms that encourage fair-sharing by dominant members and reinforce acceptance of hierarchy. For instance, it has been hypothesized that achieving dominance produces elation in people and elation is a mood known to increase generosity (Buss, 1999).

In any event, that hierarchy is universal and emerges quickly indicates a readiness to code the qualities in others signaling dominance. Moreover, a considerable experimental literature supports the hypothesis of a status computation mechanism (McGrath, 1984). To begin with, members are sensitive to individual differences in the capacity to contribute to group problem solving (task status) and willingness to do so amicably (social–emotional status). Even in short-lived groups of strangers, those signaling that they have resources and will share them are speedily differentiated from members who do not, within the first few minutes under laboratory conditions, despite minimal incentives to do so. This together with evidence of individuals ranking others when it is irrelevant to their task suggests status computation is automatic (Cummins, 1998; see review in Burnstein, Crandall, and Kitayama, 1994). And the mechanism is not peculiar to adult humans. Cheney and Seyfarth (1985) report young primates as well as children can infer another's position in a group after watching a small number of interactions between members.

Stratified groups offer members occasions to display their resources by doing things that consume energy or wealth, put somatic integrity at risk, and decrease reproductive success: "Consider the astounding wastage embodied in the gladiatorial displays and circuses underwritten by Roman elites, . . . or the elaborate, costly, and often risky recreational activities undertaken by contemporary Americans on their respective vision quests . . . all of these behaviors involve investments of time and energy . . . [that] go beyond what is required for the fulfillment of basic survival, maintenance, and reproductive goals" (Boone, 1998, p. 2; also see Veblen (1973) on conspicuous consumption). Adaptive problems arise in hierarchies when individuals engage in deceptive displays, claiming a status incommensurate with their resources. Since hierarchy has been a persistent feature of group life, mechanisms for detecting and punishing such deceptions are likely to have evolved. Certainly humans are sensitive to features they think signal important latent qualities. In fact, we take advantage of this sensitivity to reduce another's status by using these features as targets of derogation in partner selection contests. Women, for example, pan rivals for looks or promiscuity, whereas men, presumably, focus on their lack of intelligence or earning capacity (Buss, 1999).

Perhaps because facial expressions are more easily observed and less easily controlled than other features, we regularly use them to judge whether people measure up, to understand the emotion they are experiencing at a particular moment, or to estimate more stable qualities like kindness or dominance. Strong jaws and broad cheekbones, for example, increase others' perceived dominance probably by suggesting both physical strength and will power. Conversely, babyfaced individuals are described, even by themselves, as relatively submissive and friendly (Berry, 1991). Moreover, correlations between individual differences in facial dominance and testosterone level suggest the strong jaws–broad cheekbones versus babyfaced distinction may predict how likely individuals are to attempt to dominate (Gangestad and Thornhill, 1997). In any event, according to the strategic handicap argument facial features that enable receivers to accurately estimate senders' hidden qualities will evolve provided the marginal cost of signaling them is greater for low-quality senders. The set of features most identified with status, called facial dominance, is usually assessed by having judges rate portraits for the degree to which the person appears to be the sort that is respected, influential, assertive, a leader, gives direction, and the like. Using this procedure facial dominance has been found to be perceived in similar fashion over a variety of cultures and to be reasonably stable from early adulthood to middle age (see review in Mueller and Mazur, 1997). Moreover, it predicts mating success for males, which is expected since most evolutionary models assume that when males compete for mates the outcome is largely determined by relative status (Buss, 1999; Kenrick and Keefe, 1992).

Transactions between individuals of different statuses are successful to the extent that claims to superiority are accepted by others. The major threat to success is the likelihood that the person who looks or acts dominant is engaging in dishonest advertising. Hence, members negotiating their respective statuses are guarded in their transactions. On occasion those signaling dominance slip and reveal they do not merit it (e.g. they behave assertively when it is inappropriate). Once this is detected they may be rejected as arrogant or oafish and suffer the cost of the display with no return benefit. Mueller and Mazur (1997) studied this phenomenon in a well-defined hierarchy, the military, where status is distinctly marked by formal rank. They found that among West Point cadets facial dominance predicts cadet rank as well as army rank twenty or more years after graduating from West Point (cadet rank is unrelated to later army rank and, hence, does not mediate the impact of facial dominance), speed of promotion, and number of children. What is particularly interesting, and consistent with Zahavi, is that in negotiating status dominant looks serve to disadvantage men with inadequate resources: among individuals low in professional competence, as measured by academic standing, sociability, and participation in team sports, facial dominance is negatively correlated with final rank; whereas among those high in professional competence, facial dominance is positively correlated with final rank. Comparable differences in social outcomes are found for babyface individuals who advertise dishonestly and behave aggressively instead of complaisantly (Zebrowitz and Lee, 1999).

Cooperation in the Absence of Kinship

Given the possibility of free-riding why is cooperation so common, fluent, and stable? At least since Axelrod's (1984) TIT-FOR-TAT (TFT) simulation, a favorite evolutionary hypothesis is that general trust is the default code for social transactions. The same argument was made earlier by social psychologists such as Asch (1952; see his theory of mutually shared fields), albeit in different language, that a cooperative strategy is adaptive in iterated Prisoner's Dilemma Game-like situations because, absent information to the contrary, individuals perceive themselves as having interdependent costs and benefits, evaluate alternative strategies in this light, and are aware their partners are doing just as they are. Good evidence for this sort of coding mechanism comes from research comparing strategies under low and high social uncertainty. In the former, players know their own and others' costs and benefits, recognize the knowledge is shared, and, hence, believe they can predict each others' actions; in the latter, players are unclear about how their partners represent the transaction and, thus, cannot predict what the latter will do. For example, those who believe their unseen partner is a person tend to adopt a cooperative strategy, which depends on assuming both have a common understanding of each other's intentions (and, by default, judge them benign) and both know this. Whereas those supposedly playing against a computer are no doubt perplexed about its "intentions". As a result, they think defensively, adopting a competitive strategy to protect against the worst the partner can inflict (see review in Burnstein, 1969). Finally, it is worth noting that in these experiments both computer-partner and person-partner play a nice, forgiving strategy like TFT which typically evokes cooperation.

As you may know, TFT is called nice because it cooperates from the start and never defects as long as the partner cooperates (hence it never initiates a vicious cycle of mutual defections); and forgiving because it immediately begins cooperating again whenever the partner does. After Axelrod (1984) demonstrated that TFT contributed more to fitness than any alternative strategy game theory experts could devise, many thought being nice and forgiving were necessary and sufficient for the evolution of cooperation (but see Boyd and Lorberbaum, 1987). These early analyses, however, only compared *transaction strategies*, rules for when to behave cooperatively or competitively toward a partner. For parsimony, the option of rejecting a partner was not allowed. On its face, however, *partner selection strategies*, rules for deciding whether to have any dealings at all with someone, are prior to and, on its face, seem no less important than rules for deciding whether to cooperate or compete with him or her. But be this as it may, do these two sorts of strategies contribute differently to fitness? To answer this question comparisons were made between different partner selection strategies simply in conjunction with a single transaction strategy, usually TFT (see below). But sociality in essence is more complicated. All people have occasion to size-up strangers or members of other groups. In the nature of things, transactions with these individuals sometimes enhance fitness more than those with tried-and-true ingroup members. Consequently, individuals who deal only with those they know and trust suffer opportunity costs. On the other hand, ingroup members are less likely to cheat than strangers. Seeking to reduce opportunity costs by doing business with strangers, therefore, risks transaction costs or a sucker's payoff. The adaptive problem is how to achieve a good enough tradeoff between transaction costs and opportunity costs. This difficulty is inherent to any multi-group environment and must have been so throughout evolutionary history (for an empirical demonstration in modern business, see Uzzi, 1996). A solution that is likely to have evolved is suggested by Hayashi and Yamagishi (1998). Their research followed from Hayashi's earlier simulation comparing the contribution to fitness of various partner selection strategies *vis-à-vis* TFT. Opportunity costs, therefore, were nil. Under these conditions he demonstrated that reciprocating defection by quitting the relationship, finding a new, trustworthy partner and cooperating until the latter de-