

Towards an Evolutionary Psychology of the Family

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## Towards an Evolutionary Psychology of the Family

Relationships with family are at the heart of human lives. As infants, we are dependent on our families for our survival, for helping us learn about the world around us. One day, a majority of people move out of the circle of their kin to form a family of their own and yet most retain strong ties to their natal kin. Family relationships are important to our emotional health and our social success. They are a source of great joy and sometimes a source of great pain. They can be our strongest allies and our most persistent opponents. There are hundreds of popular press books devoted to helping us understand and manage our family relationships: *Why Can't We Get Along?*, *Healing Adult Sibling Relationships*, *The World's Easiest Guide to Family Relationships*, *The Baffled Parent's Guide to Sibling Rivalry*, and *Parenting with Love and Logic*. Most of these works consider the hows and possible ways to deal with family processes. The current volume addresses the whys, the reasons behind people's behavior and how a greater understanding of "whys" can help us in our own lives, to better understand our own behavior and that of our family members.

When we refer to the evolved "reasons" or motivations behind people's behavior, we are not making a judgment about whether the behavior itself is good or bad or right or wrong in any moral sense. Behaviors exist and evolutionary psychologists are interested in understanding why certain behaviors evolved and why they appear in certain circumstances. Making a claim or giving evidence that a behavior has evolved (infanticide on the part of mothers, for example), says nothing about how such a behavior should be viewed from a moral stance. In fact, using what is to justify what ought to be is referred to as the *naturalistic fallacy*. Empirical data and the moral realm are logically distinct. No matter how desirable some behavior may be, that does not

mean that wishing makes it so, just as the existence of a behavior does not necessarily make it desirable. A better understanding of the evolutionary forces that shaped a behavior and the cues that the underlying mechanisms are sensitive to, may allow us to better shape behavior in the direction society views as more moral or desirable (for a more complete discussion of the naturalistic fallacy and evolutionary moral psychology, see Holcomb, 2004).

### **Evolutionary Psychology**

In many areas, the forward thinkers of the early 20<sup>th</sup> century interested in human behavior embraced Darwinism. However, the past 75 years has seen the de-biologizing of the study of human behavior. In psychology, neo-behaviorism, social learning theory, cognitive theory, modern psychoanalysis, and a variety of post-modernist explanations have come to dominate the thinking of many academics. We suggest that a new approach is needed, a return to a consideration of our ancestral history and the forces that shaped not only our physical forms but also our mental forms. To do this, we first review briefly what natural selection is, the role of kinship in evolutionary analyses, and how adaptations can function as decision makers, particularly with regard to kinship.

***Natural Selection.*** An adaptation is an anatomical structure, a physiological process, or a behavior pattern that contributed to ancestral individuals' ability to survive and reproduce in competition with other members of their species. Natural selection, the process that shapes adaptations, is the differential production or survival of offspring by genetically different members of the population (Williams, 1966). Darwin's (1859) logic may be explained through the following assumptions and inferences:

Assumption 1: Species are capable of overproducing offspring.

Assumption 2: The size of populations of individuals is relatively stable over time.

Assumption 3: Resources for supporting individuals are limited.

Inference 1: A struggle for existence among individuals ensues.

Assumption 4: Individuals differ on traits (i.e., adaptations) that enable them to survive and reproduce.

Assumption 5: At least some of the variation in these traits is heritable.

Inference 2: There is differential production or survival of offspring by genetically different members of the population, which is by definition natural selection.

Inference 3: Through many generations, evolution of traits that are more adaptive than others will occur through natural selection.

(Crawford & Salmon, 2004)

In other words, some feature of the environment poses a problem for an organism. Genetically based variants contribute to reproduction and survival. Individuals with those variants will be more successful, passing on their “good genes” and the resulting behavioral repertoire in many cases to their offspring.

Although Darwin’s logic of natural selection provides the basis for all evolutionary explanations, a number of concepts that were not fully developed in his work have been more completely refined in recent years. Particularly relevant for this volume on the family is kinship theory.

***Kinship Theory.*** Kinship (or the family network) has been a central construct in evolutionary biological analyses of social behavior since Hamilton (1964) demonstrated that altruistic behavior (behavior performed at a cost to oneself and a benefit to others) could evolve if the individuals involved were related. Even though the direct reproductive fitness of the donor

is reduced, if his actions aid his own genetic kin, then he receives an indirect fitness benefit.

Typically, this idea is expressed by the equation:

$$Br_1 > Cr_2$$

Where B = the benefit to the recipient

$r_1$  = the genetic correlation between the donor and the recipient's offspring

C = the cost to the donor

$r_2$  = the genetic correlation between the donor and its own offspring

(Crawford & Salmon, 2004)

In the equation, r represents the probability that the two individuals each have an allele that is a copy of one in a common ancestor. Such an allele is called identical by common descent and the probability of such is called a genetic correlation or a coefficient of relatedness between individuals.  $Br_1$  is the indirect benefit to the donor through the recipient's additional offspring and  $Cr_2$  is the direct cost to the helper because of its decreased offspring. Both sides of the equation refer to changes in the donor's fitness as a result of their actions. This was a revolutionary concept. No longer were organisms simply reproductive strategists, they were also nepotistic strategists. If an individual's genes are just as likely to be reproduced in a sister as in a daughter, one would expect the evolution of sororal investment in the same way as one expects maternal investment. This concept revolutionized the way biologists understand social interaction and influence.

Consider within-family conflict. Trivers (1974) used Hamilton's argument that the behavior of an individual is shaped by natural selection to maximize the probability that copies of alleles it carries are replicated through its behavior, to analyze within-family conflict. Because the probability of a focal individual replicating its allele(s) through its own offspring is 0.5 and

through its sibling's offspring (a niece or nephew) is only 0.25, natural selection will favor individuals that seek a greater share of their parent's resources. Because the parent is equally related to all its children and grandchildren, it will be selected to resist a particular offspring's demands.

When the offspring is young, the parent can maximize its fitness by investing in the current offspring at the expense of additional offspring, who would be future siblings of the current child. When the offspring is older, it can maximize its fitness if it defers parental investment in itself in favor of parental investment in additional younger siblings. Conflict is most intense at intermediate offspring ages. During this period, the parent's fitness is increased more by investing in additional offspring, whereas a particular offspring's fitness is increased more by continued parental investment. Thus, the intensity of within-family conflict varies both as a function of genetic relationship and the relative ages of individuals in the family. Weaning conflict is a well-known example of this.

Recently, Haig (1993, 2002) applied Trivers' concept to another level of analysis by considering three sets of genes that may have different interests: genes in the mother, maternally derived genes in the current offspring, and paternally derived genes in the current offspring. Because maternal genes have an equal stake in each offspring, they will be selected to transfer resources to offspring as a function of the offspring's likelihood of reproducing. Genes in the current offspring have a greater interest in the current offspring than in future offspring and will be selected to maximize transfer of resources to the current offspring. Some genes can be imprinted with information about their paternal origin. This fact makes the situation more complicated if the mother has offspring from different fathers because paternally active genes in the current offspring have no stake in offspring fathered by different males. Haig provided

arguments and evidence addressing how these conflicts have influenced the evolution of the female reproductive system and how they can lead to serious health problems for mothers, such as gestational diabetes and preeclampsia.

*Adaptations as Decision Makers.* An adaptation can be an anatomical structure, a physiological process, or a behavior pattern that contributed to ancestral survival and reproduction (Williams, 1966; Wilson, 1975). The beaks of Darwin's finches, which can be used to characterize the different species of finches living on the Galapagos, provide a classic example of an adaptation that is an anatomical structure. But adaptations can also be understood in terms of processes for carrying out the cost-benefit analyses an ancestral organism required to survive its daily encounters with environmental problems. The fever adaptation, for example, can be considered as a set of decision processes for dealing with certain kinds of invading bacteria. If bacteria A or B is invading, raise body temperature by X degrees. Harmful bacteria may be destroyed if the body temperature is raised X degrees, which is beneficial to the individual (the opposite is seen when fever is blocked by drugs and resistance to infection appears lowered). But the adaptation has costs as well. Energy is required to raise the body temperature. Moreover, the rise in body temperature can damage other systems of the body if it is excessive and prolonged (Williams & Nesse, 1991).

Thus, a good working definition of an adaptation is: a "set of genetically-coded decision processes that enabled ancestral organisms to carry out cost-benefit analyses in response to a specific set of environmental contingencies, and that organized the effector processes for dealing with those contingencies in such a way that gene(s) producing the decision processes would be reproduced better than alternate sets of genes" (Crawford, 1998).

When considering the behavioral domain, sets of decision rules can be thought of as mental mechanisms designed by natural selection for producing the different behaviors required for ancestral survival, growth, and reproduction. Buss (1999) offered the term evolved psychological mechanisms for mental mechanisms shaped by natural selection. These are specialized learning mechanisms that organize experience into adaptively meaningful schemas. When activated by the appropriate problem content, they focus attention, organize perception and memory, and call up specialized procedural knowledge that leads to domain appropriate inferences, judgments, and choices.

### **Kinship and Psychology**

Kinship has long played a central role in anthropological analyses of social behavior, and one might have assumed it to play a similarly strong role in psychology. A focus on the family has been important in such areas as developmental psychology, whereas it has been largely deemed unimportant in other areas such as, for the most part, social psychology (see Daly, Salmon, & Wilson, 1997, for a discussion, and see Burnstein, Crandall, & Kitayama, 1994, for an example of evolutionarily informed social psychological research).

Although some areas of psychology (such as Family Studies) appreciate the importance of understanding familial relationships, the majority have suffered from a lack of attention to the qualitatively distinct types of close relationships found within the realm of family. Family psychology is relationship-specific. Humans have evolved specialized mechanisms for processing information and motivating behavior that deal with the distinct demands of being a mate, father, mother, sibling, child, or grandparent. Such an evolutionary perspective on family dynamics can provide insight into our behavior in a way that no other perspective offers.

## **Relationship-Specific Adaptations**

Family, or kinship, is not one relationship but many. The challenges that have faced human mothers, for example, are different from those confronting fathers or offspring or siblings.

***Motherhood.*** The most intimate of mammalian relationships is that between mother and offspring and it is the one with the greatest number of special purpose anatomical, physiological, and psychological mechanisms. But the tasks of motherhood are far more complex than that implied by the demands of conception, gestation, and nursing. Because offspring are not equally capable of translating parental nurture into the long-term survival of parental genes, there has been intense selection for subtle discriminations in the allocation of maternal effort. As a result, the evolved motivational mechanisms regulating maternal investment decisions are contingent on variable attributes of the young, of the material and social situation, and of the mother herself (Daly & Wilson, 1995).

Maternal allocation of investment also can be influenced by other interested parties, particularly offspring themselves. Parent-offspring conflict (Trivers, 1974) is endemic to sexually reproducing species because of genetic asymmetries in family relationships. A mother is equally related genetically to any two of her offspring, but each of those offspring is more closely related to themselves than to their sibling (unless they are identical twins). Thus, mother and offspring are selected to see the relative fitness value of offspring and hence the allocation of maternal resources somewhat differently. This conflict over allocation of maternal resources accounts for the otherwise puzzling existence of various aspects of mother-offspring interaction, including weaning conflict (Trivers, 1974) and the sometimes dangerously high levels of substances of fetal origin in the blood of pregnant women, such as placental lactogen which up-

regulates the fetus's access to maternal glucose stores, resulting in gestational diabetes (Haig, 1993). Such areas of conflict between parent and offspring are explored further in a later chapter (Salmon, this volume).

Many researchers interested in family psychology have focused on the maternal relationship and its special nature. But the sources of variation in maternal feeling and behavior often have been ignored, perhaps because of a lack of exposure to an evolutionary framework capable of making sense of such variation (Daly & Wilson, 1988). When attention has been paid to these issues, it has focused largely on the impact of maternal behavior on the developing child (Howes, Matheson, & Hamilton, 1994) and on maternal style as a personality attribute (Belsky, Fish, & Isabella, 1991), rather than on maternal behaviors as adaptively contingent responses (but see Belsky, 2000, and Bjorklund & Pellegrini, 2002, for examples of evolutionary developmental psychology). Heidi Keller focuses on maternal investment in Chapter 5.

***Fatherhood.*** There are clear parallels between paternal solicitude and maternal solicitude, but there also are crucial differences. In both mothers and fathers, parental solicitude evolved to vary adaptively in relation to cues of the expected impact of any parental investment on the offspring's future success, so both parents are selected to assess offspring quality and offspring need. And both father and mother are selected to discriminate with respect to available cues that the offspring is the parent's own. However, for mammalian mothers the evidence is clear: if you gave birth to it, it's yours. Because of internal fertilization and, in humans in particular, concealed ovulation, men can never be certain of paternity. Fathers must rely on sources of information about the mother's probable fidelity, or the offspring's phenotypic resemblance to his relatives or to himself. One prediction from this logic is that paternal affection is influenced by paternal perceptions of resemblance. Consistent with this prediction, people pay

more attention to paternal resemblance than to maternal resemblance, and mothers and their relatives actively promote perceptions of paternal resemblance (Daly & Wilson, 1982; Regalski & Gaulin, 1993). The issues faced by fathers in terms of investing in their offspring are discussed by David Geary in Chapter 6.

*Sibship.* An understanding of sibling relations also can benefit from a selectionist perspective (Mock & Parker, 1996). Sisterhood was at the heart of Hamilton's (1964) analysis of the evolution of sociality and altruism in haplodiploid insects. But if siblings are major social allies by virtue of relatedness, they are also major competitors, especially for limited maternal resources. As a result, sibling relationships are often ambivalent. Richard Michalski elaborates on the nature of sibling relationships in Chapter 9. And in Chapter 14, Nancy Segal discusses a special type of sibling relationship, that between twins.

Our sibships are the social environment into which we are born, with associated opportunities as well as costs and niches, and it would be extraordinary if we did not have evolved psyches to deal with the peculiarities of sibling relationships. Sulloway (1995) has used an evolutionary framework to explore niche differentiation with regard to how one deals with one's birth order within a sibship. He elaborates on this idea in Chapter 8. Evolutionary considerations suggest that parents will favor their eldest offspring when resources are scarce, and there is evidence that they do just that (Daly & Wilson, 1984). So it is not surprising that firstborn children are supporters of the status quo (Sulloway, 1995, 1996, 1999). There is some theoretical and empirical support for the notion of parental indulgence of lastborns as well, which suggests that it may be the middle children which derive the least benefit from parental investment. In support of this, Salmon (1999, 2003) has found firstborn and lastborn Canadians to differ from middleborns on measures of family solidarity and identity, suggesting that sibling

behavioral strategies are shaped by the parental investment environment. Sulloway has suggested that many sibling differences in personality traits are best explained as arising “because birth order is correlated with differences in age, size, power, and status within the family. These physical and social disparities cause siblings to experience family relationships in dissimilar ways and to pursue differing ways of optimizing their parents’ investment in their welfare” (Sulloway, 1999, p. 190).

**Grandparenthood.** Is grandparenthood a relationship for which we have specific adaptations? It is a cross-culturally general fact that postmenopausal women contribute significantly to their grandchildren’s welfare (Lancaster & King, 1985; Sears, Mace, & McGregor, 2000) and it is therefore plausible that mental processes specific to the task of adaptive allocation of grandparental investment have been targets of natural selection (Hawkes, O’Connell, Blurton Jones, Alvarez, & Charnov, 1998; Smith, 1988). Noting that paternity certainty could influence grandparental investment in particular, as well as paternal investment generally, Euler and Weitzel (1996) asked adults to rate the degree of grandparental solicitude they experienced from each of their four grandparents. The results demonstrated a strong link with relatedness and paternity certainty with mother’s mother showing the highest solicitude, followed by mother’s father, father’s mother, and father’s father. A maternal grandmother has the greatest certainty of her grandchild indeed being related to her. Father’s father, in contrast, has two uncertain links: the grandchild might not be his son’s child and his son might not be his own biological child (see also Michalski & Shackelford, 2005). Euler addresses, in Chapter 11, the nature of grandparental and extended kin relationships.

**Matship.** Although mates are not usually close genetic relatives (see Debra Lieberman’s discussion of incest in Chapter 10 for exceptions to this rule), their relationship is usually

considered a family one. Both parties typically have a shared genetic interest in their children. The longer lasting the relationship, the more likely it is that the optimal allocation of resources for one is the optimal allocation for the other. Issues surrounding mating, marriage, divorce and love are addressed by Helen Fisher in Chapter 13. The transition to parenthood that often accompanies a committed mateship is discussed by Jay Belsky in Chapter 4.

But there is an important difference between mateship and genetic kinship in that extrapair relations can shatter the commonality of interests. Daly and Wilson's studies of marital conflict and violence make this point clear. Suspected or actual infidelity is a uniquely potent source of severe conflict and spousal violence (Daly & Wilson, 1988; Wilson & Daly, 1993).

Step-relationships are such that a child raised by a couple is a potential vehicle of fitness for one partner but not the other. This relatedness asymmetry is known to both parties (as contrasted with instances of female infidelity and subsequent cuckoldry) before or very early in the relationship. Nevertheless, stepchildren are at an elevated risk of neglect, abuse, and homicide (Daly & Wilson, 1988, 1995), reinforcing the point that the motivational mechanisms of parental feeling are designed to channel affection and investment preferentially toward one's own offspring.

According to Daly and Wilson (1994), motivational differences generate differences in the methods by which stepparents and genetic parents kill a child. Using Canadian and British national-level databases, Daly and Wilson found that stepfathers were more likely than genetic fathers to commit filicide by beating and bludgeoning, arguably revealing stepparental feelings of bitterness and resentment not present to the same degree in genetic fathers. Genetic fathers, in contrast, were more likely than stepfathers to commit filicide by shooting or asphyxiation, methods which often produce a relatively quick and painless death. Weekes-Shackelford and

Shackelford (2004) sought to replicate and extend these findings using a United States national-level database of over 400,000 homicides. The results replicated those of Daly and Wilson for genetic fathers and stepfathers. In addition, Weekes-Shackelford and Shackelford identified similar differences in the methods by which stepmothers and genetic mothers committed filicide. In Chapter 12, Aaron Goetz and Todd Shackelford discuss the nature and incidence of violence and abuse within families, with a special focus on intimate partner violence.

### **Conclusions**

This volume is intended to illustrate the many ways in which an evolutionary perspective on the family can contribute to our understanding of behavior, as well as the many ways in which this kind of understanding may help us to deal with the unique aspects of these relationships in our everyday lives. Many of the conflicts and disagreements as well as the more enjoyable aspects of family life have been with us since the beginning. Our modern behavior is the product of our evolutionary response to those pressures. Further explorations of what evolutionary theory as a perspective brings to the study of the family can be found in Chapter 2, in which Mark Flinn presents evolutionary anthropological perspectives on the family and in Chapter 3, in which Sarah Hrdy addresses the evolutionary context of human development. In Chapter 15, David Bjorklund addresses the future of evolutionary applications to family psychology.

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