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Mother Bodies, Father Bodies

How Parenthood Changes Us from the Inside Out



About this Report

IN 2008, ABOUT 40 RESEARCHERS from across the country met for three days at the University of Virginia in Charlottesville to review commissioned papers and engage in structured deliberation on the seemingly simple question of “What is a parent?” The spirit of the initiative was to cross boundaries and promote fresh dialogue—on the one hand by bringing together scholars from across the political spectrum, and on the other by bringing together scholars from both the natural and social sciences.

From this experiment emerged two books of essays: *What is Parenthood?: Contemporary Debates About the Family*, edited by Linda C. McClain and Daniel Cere (New York: New York University Press, 2013) and *Gender and Parenthood: Biological and Social Scientific Perspectives*, edited by W. Bradford Wilcox and Kathleen Kovner Kline (New York: Columbia University Press, 2013).

This report by Kline and Wilcox, *Mother Bodies, Father Bodies: How Parenthood Changes Us From the Inside Out*, has its origins in this initiative and particularly in conversation with the volume they co-edited, *Gender and Parenthood*.

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Executive Summary

WHAT DOES IT MEAN TO BE A MOTHER OR A FATHER IN THE TWENTY-FIRST CENTURY? Do mothers and fathers experience parenthood in the same ways? Is parenting just something that some of us do, a role we take on that anyone can play, or does it go deeper? Besides the obvious physical changes of pregnancy and lactation in women, are there other ways in which men's bodies as well as women's might be impacted by becoming a parent? How might attention to our bodies help as we confront the unique physical and social challenges and joys of becoming parents?

To investigate these questions, leading scholars from the natural and social sciences came together at a conference at the University of Virginia in the fall of 2008. At the conference, part of a project funded by a grant from the U.S. Department of Health and Human Services and hosted by the Institute for American Values and the Center of the American Experiment, scholars presented and closely discussed original papers on gender and parenthood. Those completed papers are published in *Gender and Parenthood: Natural and Social Science Perspectives*, edited by W. Bradford Wilcox and Kathleen Kovner Kline (Columbia University Press, 2013).

Their research reveals:

1. Motherhood changes the female brain and body beyond pregnancy and lactation.
2. Fatherhood changes the male brain and body as males spend time with their mate and child.
3. From an evolutionary perspective, males and females have a strong interest in seeing their offspring survive, but they achieve success in different ways.
4. Humans found success with a strategy some call "cooperative breeding."
5. As parents, human mothers and fathers are similar.
6. As parents, human mothers and fathers are also different.
7. Together, mothers and fathers create a parental synergy.

8. In most cultures, these similarities and distinct yet complementary differences have found shape in marriage.
9. Not only do affection, sex, and cuddling make happy couples, they cement stable families.
10. There is significant variety in the range of adaptations married couples choose in work and family decisions. Families benefit when women and men are able to approach motherhood and fatherhood in the ways that best suit themselves and their mates.

Economic realities have shifted, gender roles are more flexible, and women and men change over the course of their lives, taking on and adapting to new challenges at different stages of life. Women and men embarking on family formation and child-bearing will benefit from a richer understanding of the changes that take place in themselves, their partners, and their relationships as they create and sustain the families that will guide and nurture the next generation. ■

Introduction

“BABIES CHANGE EVERYTHING.” It’s a refrain often heard by anyone contemplating becoming a parent, from those who have been there. From sleep disruption to loss of free time, from financial worries to discipline conundrums, couples are frequently warned that after a baby life will never be the same again. Yet despite how parenthood can feel like a leap into the unknown, millions of us continue to make that leap every year. Some long for a warm bundle to hold against our chests, a smiling gaze to rivet us, a silly toddler to chase, buy toys for, and fuss over during the holidays. Others imagine someone to throw a ball with, to tussle with on the floor, to teach life lessons to or pass on a bit of our legacy into the future. We know, all too well, what an impact we parents will have on our children. But what is less well known is how our children will change *us*, as mothers and fathers—even at the biological level.

Today, natural and social scientists are learning a great deal about how babies change their parents and how mothers and fathers are changed in both similar and different ways. Animal studies of pair-bonding mammals are yielding fascinating insights into how fathers as well as mothers experience changes at the biochemical level, beginning even before the offspring is born. Meanwhile, social scientists are learning how parental investments in areas such as money, time, discipline, and play are similar and different for fathers and mothers. It turns out that, for men and for women, parenthood changes our bodies and our lives. Parenthood quite literally changes us from the inside out.

Why is this the moment to share and reflect on these findings? Today it is perhaps more confusing and more daunting than ever to be a parent. In recent decades, profound changes have upended accepted notions of mothering and fathering, providing new opportunities but also often leaving many new mothers and fathers feeling as though they must figure out how to do their parenting jobs largely on their own.

Over the second half of the twentieth century, the U.S. experienced widespread changes in women’s labor force participation, in the time that fathers and mothers devote to their children, and in public attitudes toward the public and private roles of men and women.¹ In an effort to acquire more schooling, get established in a job, and find the right partner, many young men and women in America are taking more time to get married and to have their first child. They are marrying on average about five years later than they did in 1970. The age at which a woman has her first child rose

from about 21 in 1970 to 26 in 2011.² Later childbearing is especially true for college-educated women. Their average age at the birth of their first child is over 30.

Parenthood has also become a more intense and expensive experience. Today's parents devote more time and money to the parenting enterprise than did earlier generations. It is estimated that mothers and fathers in the U.S. now spend 50 percent more time with their children than parents did in 1975. According to 2010 figures from the U.S. Department of Agriculture, the average family spends \$226,920 on each child by the time he or she is 18 years old—up from \$185,856 in 1960.³ At the same time, as parenthood begins later in life and people are having smaller families and are living longer, the intense experience of parenting children in the home now covers a smaller portion of the adult life course than it once did.

*Parenthood has become
a more intense and
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Parenthood can also be more isolating than it used to be. Recent increases in out-of-wedlock childbearing, cohabitation, and divorce make men and women much more likely to bear or rear children outside of marriage and to raise them alone. The retreat from marriage has been especially common among Americans without a college degree. One study found that 42 percent of firstborn children of less-educated women spend some time outside of a stable married family in their first ten years of life, compared to just 17 percent of children born to college-educated women. While most single parents have less help with the demanding tasks of childrearing, even married parents today have less help from extended family and their community than did parents in previous eras.⁴

Moreover, the recent recession has been especially hard on working-class men and their families. In 2000 the annual unemployment rate for high school-educated men was 3.4 percent. According to the Bureau of Labor Statistics it was 8.5 percent in 2012.⁵ More than 75 percent of job losses were concentrated among men—the majority of them working-class.⁶

These social and economic changes have made some aspects of the contemporary transition to parenthood especially daunting. For many of us, a shared script for marriage, work, and family and home life no longer exists. The sacrifices associated with parenthood can prove mystifying for adults who may have spent a decade or more living on their own and have grown accustomed to an adult-centered lifestyle. Some couples feel that the arrival of a baby turns a marriage upside down. They discover

that nothing stresses even a good relationship like the round-the-clock needs of a fussy infant.⁷ Yet despite the challenges, parenthood remains one of the most transformative and meaningful events in our lives.

We begin by examining the evolutionary and biological underpinnings of parenthood. What makes many of us want to be parents? Even if we are hesitant about becoming parents, what aspects of our biology help us step up to the plate when the occasion arises? What happens to our brains and bodies when women become mothers and men become fathers? Are the stakes the same, or different, for each sex? Why, across history and cultures, have women typically been more involved in childcare? Why are some fathers very involved in their children's lives and others not at all? Finally, when a couple becomes parents, what becomes of the couple? ■



Beach Blankets, 1960, by Milton Avery. Gift of Marian L. Beren and S.O. Beren, Wichita Art Museum, Wichita, Kansas.

1. Motherhood and the Female Body

Motherhood changes the female brain and body beyond pregnancy and lactation.

We are familiar with the most visible and dramatic ways in which pregnancy changes a woman's body. Very soon after implantation many women begin to experience physical changes, even if they are not yet aware that they are pregnant. Their breasts become tender, their appetite increases, and their senses, including their sense of smell, can intensify. They may feel nausea, queasiness, and strong aversions to certain foods. As the pregnancy progresses they begin to gain weight. Their breasts and abdomen enlarge. Their joints become looser. By midway through the pregnancy women begin to feel the baby move inside them. Soon their bodies become quite heavy, their center of gravity shifts, and their pelvic bones begin to spread. Some women have periods of great energy, while others are exhausted. Some encounter complications that can be uncomfortable, or painful, or even life-threatening to themselves or the baby.

In the great drama of labor the child is born, and more changes await. The new mother's breasts fill with milk to nurse the child. For as long as she nurses, her body engages in this distinctive physical experience, her breasts filling and emptying in sync with the baby's appetites, her hormone levels continuing to be more similar to a woman who is than one who is not pregnant. And long after the child grows up, a woman's body will still bear the marks of pregnancy, childbirth, and nursing.

Most of this we did not need to learn from scientists. For as long as we have been human, women themselves, their mates, and their own mothers, sisters, and children have experienced and noted it all. The process of reproduction that takes place within a woman's body has even informed the stories that cultures tell about the origins of life itself.

Today, science is probing ever more deeply into the mothering experience. From studies of mammals and of human mothers researchers are learning just how profoundly motherhood changes women from the inside out.

It is seldom recognized that for humans and other mammals, the most critical organ for reproductive success just might be the brain. For mammal mothers, caring for their babies requires focused attention and an increased awareness of the environment.

Mothers must guard their young against predators and other threats. They must also feed them, which makes finding food sources and maintaining food stores a constant challenge. To raise their young successfully mammalian females require the cognitive capacity not only to solve problems, but to solve multiple problems simultaneously—what some now refer to as “multitasking.”

To learn more about how motherhood builds the brains of female mammals, we can turn to the humble rat. Psychologist Kelly Lambert and her colleagues have studied the brain-building nature of parenthood in a group of two-parent rodents. Lambert’s team was first intrigued by reports that estrogen could increase brain growth in areas involved in learning, especially spatial memory. A new mother nursing her young has increased energy demands. The more adept she is at remembering where the best food supply is, the better. She also has to use clues to figure out where food can likely be found the next time she needs to eat. Then, she has to be bold enough to venture into the realm of potential predators to secure nourishment.

Lambert’s team developed a series of maze experiments.⁸ These tests compared the cognitive abilities of rats that had been mothers at least twice— some call them “multi-moms”—with first-time mothers and with female rats that never had a litter. The study showed that the mother rats with the most mothering experience learned

Animal Studies and Human Insights

Animal models have long been used by researchers to provide insights into related patterns of human behavior and their underlying neurochemical mechanisms. Some of the research in this report refers to animal models, especially examinations of animal species, which, like humans, are “cooperative breeders.” Such models are always thought-provoking, but the extent to which they are relevant to humans can only be ascertained by human-based studies. Nonetheless, from such animal studies and their companion human studies neuroscientists continue to learn a great deal about the neurotransmitters, hormones, and circuits in the brain, and how they can interact with our environment to shape our behavior. ■

most efficiently and retained their knowledge longest. These multitasking mothers had to prioritize tasks, tune out distractions, solve problems, make decisions, and change strategies when circumstances required. In one study, the rats had to use memory as well as social awareness in a competition to find food. The multi-moms bested the competition 60 percent of the time, compared to 33 percent for first-time mothers, and just 7 percent for the never-moms. The multi-moms triumphed too in studies of physical agility, balance, coordination, and strength. Their brains even displayed less of the protein that is found in Alzheimer's disease, suggesting a possible brain-protecting effect of motherhood.

Researchers caution that it is difficult to say whether the brain boost seen in mother rats is mostly a product of the nurturing experience, or the biochemicals stimulated by the experience, or both. For a mother rat, the tasks of nurturing is accompanied by brain-stimulating sensory exposure to the sight, sound, touch, smell, and even taste of her young. In one study, rats that had been "foster moms" but had never undergone the physiological changes associated with gestating their own litters showed enhancement of spatial memory. In another study, researchers showed that directly infusing the social glue hormone called "oxytocin" into the brain can improve spatial learning. Whatever the exact causes, rat studies suggest that compared to their non-mother female peers, mammal mothers demonstrate greater boldness and ability to manage new situations and multiple tasks, and they do so with less activation of centers of the brain associated with stress and fear. ■

2. Fatherhood and the Male Body

Fatherhood changes the male brain and body as males spend time with their mate and child.

Until recently, we might not have had reason to think that men experience much in the way of biological changes when they become fathers. But researchers are now finding that in mammalian species in which both fathers and mothers care for their young, fathers also undergo physiological changes. Fathers, too, are changed quite literally from the inside out.

*As they care for their young,
fathers undergo many
biological changes.*

The male hormone that people are most familiar with is testosterone. Ample work has demonstrated that testosterone is strongly connected to male behavior. Indeed, comparatively higher levels of testosterone in fathers (as compared to mothers) might help account for the fact that, on average, fathers take a more assertive approach to discipline and play than mothers do.⁹ Less well-known is that men typically appear to experience a drop in testosterone after becoming fathers, especially if they are living with the mother of their offspring. One study found that the sex steroids of both fathers and mothers (testosterone in men and estradiol in women) fall after the birth of their child.¹⁰ Other studies of fathers in countries ranging from Canada to China have also found that men who are fathers have lower levels of testosterone than their childless peers.¹¹ These patterns are noteworthy in part because lower levels of testosterone in fathers are associated with more responsive parenting.¹²

But researchers are discovering far more than a drop in testosterone. Psychologist and zoologist Charles T. Snowdon has found that for mammalian fathers at least two processes seem to be at work during and after the birth of their offspring.¹³ Some biological changes seen in fathers seem to come from exposure to the mother of their offspring. Others seem to come from actively caring for their offspring. In fact, it now appears that first-time fathers begin to experience hormonal changes *before* the birth of their offspring. Researchers speculate that these changes may occur in reaction to scents emitted from the expecting partners and from affectionate interaction with the partner herself. They found in studies of tamarin monkeys, that even before the infant is born, fathers showed increased prolactin, cortisol, estrogen, and testosterone during the course of their mate's pregnancy. Interestingly, fathers with prior infant care experience showed these hormonal changes earlier in their mate's

pregnancy. Both marmoset and tamarin primate fathers even gained weight during the pregnancy, apparently storing fuel for the increased energy demands that helping to care for the new infant would require.

Several studies show that many biological changes fathers undergo appear to take place after the birth, acquired from their experience of actively caring for their young. In studies of males from two-parenting species, Lambert has noted, experienced fathers, like mothers, demonstrate enhanced boldness, food-finding abilities, and problem-solving. When presented with a needy pup, males with caregiving experience showed the greatest activation of the problem-solving and memory centers of the brain. Even in males who are not fathers, just being exposed to pups causes increases in the bonding neurotransmitters that appear to facilitate other learning.¹⁴

Other changes in his brain after his offspring are born appear to direct the mammal father's attention to caretaking of his mate and family and to make him less vulnerable to distractions. For example, male marmosets generally show great interest in the odors of an unfamiliar, ovulating female marmoset. But in one study, marmosets who were fathers did not have the testosterone spike that was seen in the single males who were exposed to the same sexual odors. Even the pair-bonded males who were not yet fathers had a hormonal response to the female that the fathers did not.¹⁵

When scientists investigated further, they discovered that the prefrontal cortex of experienced marmoset fathers shows changes in cell structure and an increase in the neuroreceptors for vasopressin.¹⁶ This hormone, along with oxytocin and prolactin, is associated with affiliation. Fatherhood appears biologically to focus marmoset fathers on their responsibilities to their young, making them less distracted by available females.

It is possible that for fathers, as for mothers, many of the brain changes associated with fatherhood—both reproductive and caregiving—may have lasting benefits for males and possibly provide some protection against age-related decline. ■

3. Evolutionary Success

From an evolutionary perspective, males and females have a strong interest in seeing their offspring survive, but they achieve success in different ways.

We have learned how women and men are changed from the inside out when they become mothers and fathers. But humans do not reproduce asexually (that is, alone), but sexually (in twos). What happens when male and female come together? Is there a biology of couplehood? How, if at all, does parenthood change couples?

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and are valuable
for human survival.*

For insight, we can turn to the field of evolutionary psychology and the theory of kin altruism. A primary tenet of evolutionary theory is that the species that survive are the ones that are able to adapt to their environment. Evolutionary success is not based on whether *you* survive—rather, success is measured by whether you are able to produce offspring who survive, reproduce, and carry your genes into future generations.

Survival of one's offspring is in the interest of both the mother and the father, but these interests are not identical. Childbearing and childrearing impose different burdens, allowing for different opportunities for males and females. As evolutionary psychologists David F. Bjorklund and Ashley C. Jordan note, "Although an offspring carries the genes of both its mother and father, suggesting that the payoff, and thus investment in, any offspring should be the same for the two sexes, that is not always so."¹⁷

In mammals, conception and gestation occur within the female body. Her body is made for postpartum suckling. In most mammalian species, females engage in more of the childcare, such as carrying the infant and foraging for food. For a typical female mammal what some scientists call the "fixed costs" of childbearing are high.

Bjorklund and Jordan point out that males, by contrast, must at a bare minimum invest only the time required for attracting a mate and for the subsequent sexual act. It might be in a male's interest to find as many females as possible who are willing to mate with him and to bear and nurture his offspring. Citing biologist Robert Trivers's parental investment theory,¹⁸ the authors write that, over time, males evolved to

focus more attention on mating, including efforts to compete for, attract, and retain potential mates, while females evolved to focus their attention on parenting. This divergence could help to explain the relatively higher sex drive in men and the relatively higher nurturing drive in women, and the fact that “male parenting is observed in fewer than five percent of mammalian species.”¹⁹

Yet in human history, something different happened. At some point fathers were recruited into the mother-child dyad. Fathers began to stick around. Why?

We might consider again the benchmark for evolutionary success. To succeed requires that you produce offspring who *themselves* survive and produce offspring of their own. From this perspective, males scattering their seed widely might not be the best strategy. Perhaps a species does better if males stick around to work with the mother in securing resources and protection for the offspring. If paternal investment in his offspring is indeed critical to their survival, then evolution will favor those whose fathers make this investment.

Furthermore, if a father is going to stick around (and give up those chances to spread his seed widely with many mates), he wants to be pretty sure that the offspring he is rearing are actually *his*. The more certain the father is that his parenting benefits his own offspring, in evolutionary terms, the higher the benefit of parenting to him. Consequently, human males generally place a high value on female monogamy. ■

4. “Cooperative Breeding”

Humans found success with a strategy some call “cooperative breeding.”

Females and males alike have a strong evolutionary interest in seeing their offspring survive. But for each of them, the calculus about how to achieve that success is different. Over time in human history females and males seemed to work out a strategy together. This strategy maximized each of their interests and on average seemed to ensure better survival for their offspring. Anthropologist Sara Hrdy applied the term “cooperative breeder” to describe the way that human mothers and some other primates raise their offspring with the help of family members.²⁰

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Human beings have big brains. In order to pass through the birth canal they are born at a relatively early and quite helpless stage of development, after which they go through a long period of dependency. For human babies, as with other mammalian babies, there is no being more important for its survival than its mother. In traditional human societies, an infant without a mother usually dies.²¹

Mothers are essential, but are they enough? For humans, the answer over time has generally appeared to be no. Human mothers need help. The theory of kin altruism reinforces the idea that such help is most likely to come from the father and other family members.

If committed fathers were and are valuable for human survival, then the success of our female ancestors required the ability to attract and sustain the commitment of a mate who would help care for, protect, and provide for her offspring. It made sense for females to be selective, preferring men who were dependable and resourceful. As evolutionary psychologist David Buss and colleagues describe:

Because sex is one of the most valuable reproductive resources women can offer, they have evolved psychological mechanisms that cause them to resist giving it away indiscriminately. Requiring love, sincerity, and kindness is a way of securing a commitment of resources commensurate with the value of the resource that women give to men.²²

Small monkeys called tamarins provide an example. Motherhood for tamarins is quite demanding. Tamarin mothers often give birth to two sets of twins in a year. Each set can weigh up to 20 percent of the mother's weight. It is not uncommon for the mother to be nursing and carrying around one set of twins while trying to forage enough food to sustain herself, her milk supply, and a twin pregnancy. Studies in the field and in the optimized environment of the lab show that infant survival in this species is much greater when there are multiple helpers. In short, tamarin mothers need assistance.

As primate expert and psychologist Charles Snowdon reports:

Much to our surprise, when we looked at data from our captive cotton-top tamarin colony, we found a similar result: We did not see 100 percent infant survival in families that had fewer than five helpers—mother, father and three others.²³ This was true despite the fact that our captive animals had an abundant food supply, temperature was carefully regulated, travel distances were much smaller, and there were no predators.²⁴

In tamarin colonies, fathers and other caregivers carry the infants and keep them warm. They provide vigilance against predators, search for and direct others to food and, when weaning time comes, offer solid food to infants. A common way for researchers to measure energy use is by measuring the weight of their subjects. Among tamarins, fathers can lose up to 10 percent of their body weight while caring for their infants. And in a fascinating observation, scientists find that among tamarins, the more caretakers involved in infant care, the less weight loss to any one individual. Many monkey hands make light work.

Accepting help from other competent caregivers is also important. Field and captive studies of tamarins have found that not only do more experienced mothers have more well-honed skills and more grown helpers such as the infant's older siblings to assist with infant care, they are also more willing than new mothers to accept caregiving help from others. New mother tamarins may carry infants for as much as 90 percent of the time in the first few weeks, but experienced mothers accept help more readily. The result is that the energy of the experienced mother is less depleted, and her infants benefit: infants of "multi-moms" actually have lower mortality [rates] than infants of first-time moms.

David F. Bjorklund and Ashley C. Jordon elaborate on the ways in which our foremothers and forefathers cooperated to survive:

Our ancestors likely lived in groups of between 30 and 60 people, making a living as hunters, gatherers, and scavengers. There was likely substantial division of labor, with males involved in hunting and primitive warfare while females did most of the gathering and carried the bulk of the responsibility for childcare.²⁵

They suggest that the distinctive biological endowments and psychological orientations of men and women, which evolved over time in connection with their distinctive reproductive strategies, also translate into different strengths when it comes to parenting. Fathers, for instance, can translate their more aggressive orientation into the protection of their daughters and—as a consequence—girls who grow up with their fathers are more likely to delay sexual activity and childbearing. Mothers, in turn, can translate their superior ability to regulate emotion to establish a strong attachment with their children, which, in turn, provides their children with a secure emotional base for navigating the emotional and social challenges of life.

The “cooperative breeder” enlists the help of her mate and other family members to raise her offspring.

Bjorklund and Jordon are careful to point out that particular sociocultural conditions are more likely to favor higher levels of paternal *and* maternal investment. For instance, men are more likely to invest in one mate and in one set of children when they have a high degree of paternity certainty, when a culture demands monogamy of them, and when their paternal investment increases the likelihood of their offspring’s survival. It appears that some aspects of contemporary social life favor high parental investments, while others do not.

Modes of cooperative breeding can take different forms across species, over time, and across the family life cycle.

In almost all species with cooperative or biparental care, scientists observe shifting phases in the parental activities of mother and father. In the early weeks of life, the mother is the predominant caretaker. After that time the father’s involvement increases. Mothers may continue to predominate in certain types of grooming and protective responses, but later on the father may become the infant’s main caregiver. Among pygmy marmosets, for example, once the mother decides no longer to carry the infant the father and other caregivers take over that responsibility. ■

Gender and Culture

The animals we've discussed are all males or females, but we don't imagine them thinking about that fact. In contrast, the self-conception of being male or female, of having a gender, has powerful psychological and social meaning for humans, with deep relevance to discussion of motherhood and fatherhood. Psychologist Marc Bornstein puts it this way:

Genetics and anatomy play undeniable and consequential parts in defining the self and our roles in life, but being a “girl” or a “boy” has implications that carry considerably beyond the biological. Most of what we believe and how we behave are gendered. Apart from biological influences, socialization pressures, and cultural variation, children universally and normatively develop a reasonably clear sense of self as female or male and master all of the roles generally associated with their assigned gender.²⁶

Even though different societies treat gender in quite varied ways, what is a virtual human universal is that women tend to invest more in parenting—especially of infants and toddlers—than men. In Bornstein's words, “in almost all species and all regions of the world, across a wide diversity of subsistence activities and social ideologies, observational studies indicate more maternal than paternal investment in parenting.”²⁷ At the same time, as Western forms of schooling and popular culture become more influential in societies around the world, gender differences in parenting are in many societies becoming less prominent.

Biological differences may predispose us to experience our environments differently, but our environments also shape the differences and similarities between human males and females. Parents are the first socializing force in children's lives, and we know that human parents bring their own preconceptions about gender differences to childrearing. Classic studies show that adults speak to infants differently and handle them more roughly or gently depending on whether they think the infant is a boy or a girl. Expectant moms, dads, and other relatives eagerly await the discovery of a fetus's gender, and then paint rooms and buy toys accordingly. Consciously or unconsciously, adults try to shape children in ways that will help them be successful in their culture. In one analysis of 158 studies of socialization of children, the only significant common effect was parents' encouragement of gender-typed behavior in their children.

The process of shaping children's gendered behavior takes many forms. Parents may communicate different expectations to boys and girls. They may give more praise or support to traditional gendered activities. Parents also serve as role models of appropriate behaviors for males and females. They "scaffold" children's learning by encouraging different activities and assigning household chores in ways that anticipate adult division of labor. Finally, parents provide the earliest learning environments that shape skill development for their children.

The initial environments shaped by parents at home usually reflect the larger "opportunity structures" for males and females within the culture. These differentiated patterns have a pervasive effect.

To the extent that gender-differentiated situations become customary in their lives, all features of children's gender-related knowledge, expectations, abilities, and activities are likely to be biased. "These kinds of control of children's opportunity structures mean that parents do not need to differentially socialize, model, scaffold, or reinforce gendered beliefs or behaviors in their children" because contexts per se "may elicit or ordain desired gendered beliefs or behaviors" in children.²⁸

There is certainly great variation among cultures in the intensity of differential socialization by gender. Some traditional cultures have a very sharp demarcation in behaviors allowed by males and females, while others are much less rigid. But these structures of opportunity shape the way individuals think of themselves and behave. Consider the impact of Title IX legislation, which exponentially increased the competitive sports programs available to girls and women, and consequently, how many more females participate in sports and consider themselves athletes. Consider the opportunity structure in a culture where only boys go to school and girls stay at home to care for siblings.

Gender socialization is not merely an "adult conspiracy," as some social constructionists might suggest. Cross-culturally, children themselves, as early as two years of age, show a clear preference for same-sexed peers. This gender segregation is also seen in many species of nonhuman primates. Children elicit gender-typical behavior from adults, and continue to function as "gender police" of their peers, sternly enforcing codes of appropriate and forbidden gender-specific behaviors. Boys appear more resistant to nontraditional gender attitudes than girls.

Some cultural differences in gender expectation have been attributed to patterns of meeting basic survival needs. In subsistence level societies, where there is little accumulation of food, and all members contribute to food stores, social organization is similar for males and females. In contrast, in more “sedentary” societies that accumulate more food, there is more division of labor, with females being encouraged to be more “nurturant and compliant.”²⁹ Other studies find that men do more childcare in cultures where women have more education and status and prioritize their careers.³⁰ Even within individual cultures there are significant variations in gender expectations and behavior depending on education, social class, ethnic and religious traditions, and other factors.

Finally, all cultures acknowledge the undeniable gender differences related to childbearing. Pregnancy is the crossroads at which the most dramatic differences between genders appear, and these substantial changes in parents, especially women, have a formative impact on children. ■

5. Similarities of Human Mothers and Fathers

As parents, human mothers and fathers are similar.

At the same time that physical scientists have been discovering how parenthood changes males and females in similar and differing ways on the *inside*—including surprising changes in both sexes at the biochemical level—social scientists have been discovering how parenthood changes men and women in similar and differing ways on the *outside*—in the way they behave.

In her seminal work on parenthood, psychologist Diana Baumrind found that an authoritative approach to parenting that combines high levels of affection and involvement, the requisite measure of structure, and clear and consistent discipline was associated with the best outcomes for children.³¹ Baumrind's work indicated that authoritative parenting was superior to authoritarian, permissive, and neglectful styles of parenting. Subsequent research has found that an authoritative approach to parenting is associated with a range of positive psychological and social outcomes for most American children.³²

In terms of social skills, for example, research indicates that infants and toddlers who develop a secure attachment to both parents will rely on each parent “as a secure base for exploration and as skilled social partners, who teach turn taking, emotional intelligence, and other skills that translate into more effective peer relationships for securely attached children in comparison to insecurely attached children.”³³

As for education, children with authoritative parents are more likely to have higher grade point averages, greater engagement in classroom activities, and more positive feelings about school. One study of more than six thousand adolescents found that children who were raised in authoritative homes were more likely to have significantly higher levels of academic performance (measured by factors such as grade point average, time devoted to homework, and educational expectations) and academic engagement (measured by factors such as bonding with teachers and decreased school misconduct).³⁴

Social science research also indicates that children have the best psychological outcomes when their parents share an authoritative approach to parenting. A study of 475 college students found that these students had higher rates of self-esteem and lower rates of depression and anxiety when they reported that both their mother and

father took an authoritative, as opposed to an authoritarian or permissive, approach to parenting.³⁵

Recent research has made clear that mothers and fathers alike can be authoritative parents. Fathers can be very involved with and affectionate toward their children, just as mothers can be firm disciplinarians. Both mothers and fathers can take partial or primary responsibility for a range of parental tasks—from managing their children’s health care to directing extracurricular activities.³⁶

Consider infant care—a sphere of parenting that has traditionally been governed by mothers. Psychologist Ross D. Parke and his colleagues have conducted studies that found that “mothers and fathers showed patterns of striking similarity” when it came to interacting with their newborns; “they touched, looked [at], vocalized, rocked and kissed their newborns equally.”³⁷ Parke also found that fathers can be as responsive as mothers to infants’ behaviors and verbal cues.³⁸ After assessing his own research and the larger body of literature on this topic, Parke has concluded that “both men and women seem to be equally competent caregivers and exhibit high degrees of similarity as caregivers.”³⁹

Likewise, sociologist David Eggebeen has examined the relative contributions of mothers and fathers to the welfare of adolescents and young adults.⁴⁰ Analyzing data from the National Longitudinal Study of Adolescent Health (Add Health)—an ongoing study of more than 15,000 young persons in the U.S.—Eggebeen sought to determine the ways in which fathers contribute to their children’s well-being that are additive, redundant, or unique in comparison to the contributions of mothers. Eggebeen considered a range of parental predictors, from parents’ education to parent-child closeness, and their links to depression and delinquency among teenagers in the second wave of the Add Health study, as well as at depression, antisocial activity, and civic engagement among young adults in the third wave of the study.

Eggebeen found that 42 percent of the relationships between parental inputs and child outcomes were significant and additive. That is, in these cases *both* mothers and fathers appeared to make similar contributions in reducing the odds that their adolescents and young adults experienced depression and antisocial behavior, or in increasing the odds that their children were civically engaged later in life. In another 12 percent of the cases the parental contributions were redundant. That is, the chil-

Children have the best psychological outcomes when their parents share an authoritative approach to parenting.

dren appeared to benefit from the involvement, support, or education of at least one of their parents, but the contributions of the second parent did not improve the children's outcomes as teenagers or young adults. Thus, in 54 percent of the associations between parental inputs and child outcomes, the contribution of one or both parents mattered for the welfare of the children in a way that does not seem to have been distinctively gendered. Accordingly, Eggebeen's study does provide some support for the notion that both mothers and fathers make important contributions to their children's well-being in ways that can often be similar.

Eggebeen also found that 22 percent of the relationships between parental inputs and adolescents' outcomes were unique and statistically significant.⁴¹ This means that for slightly more than one-fifth of the outcomes, youths benefited from the input of their father or mother, but not both. In particular, "fathers appear to make unique contributions to the well-being of their children through their human capital while mothers make unique contributions through their availability and closeness to their children."⁴² ■

6. Differences of Human Mothers and Fathers

As parents, human mothers and fathers are also different.

Although mothers and fathers can and do make similar contributions to the welfare of their children, it would be a mistake to conclude that they typically play the same role in their children's lives. Mothers and fathers commonly differ in terms of their financial contribution to the family, the responsibilities they assume on behalf of their children, and the amount of involvement as well as the style of interaction they have with their children.

It would be a mistake to conclude that mothers and fathers play the same role in their children's lives.

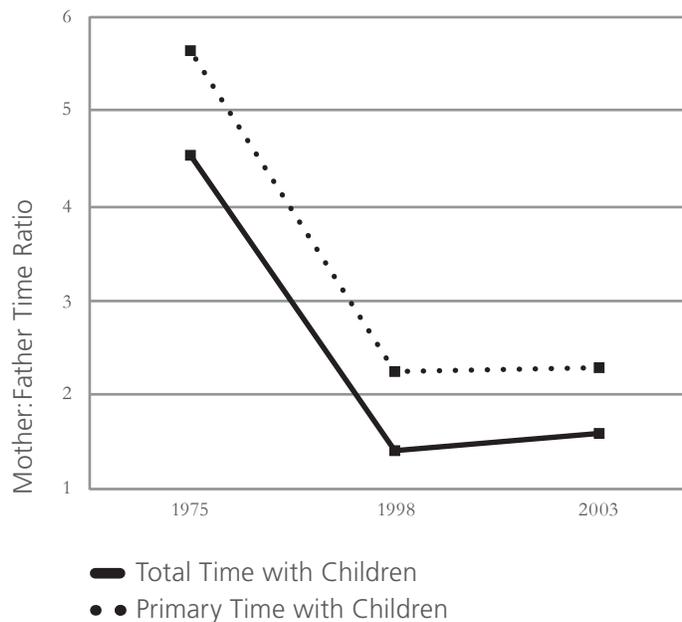
Consider money—a subject that typically does not get enough attention in the parenting literature. Financial resources play a crucial role in determining the neighborhoods in which children grow up, the schools they attend, the food they eat, their extracurricular activities, and more. A family's financial resources greatly influence the odds that children attain educational success, steer clear of trouble with the law, and get the health care they need.⁴³

In households headed by two married parents, fathers provide the lion's share of household income. While it is true that financially mothers contribute much more to the family now than a half-century ago, in the average two-parent home the father still takes the lead in this respect. In 2012, husbands in married-couple families earned about 69 percent of the income.⁴⁴ Despite the disproportionate loss of men's jobs during the Great Recession, fathers have continued to play a primary role in providing financial support in the average married-couple family.

If we switch the lens from money to time, mothers continue to take the lead in amount of time parents invest in their children. Despite dramatic increases in maternal labor force participation since the 1960s, mothers today invest more hours in parenting than mothers did a generation or two ago, and they continue to outpace fathers. As Figure 1 shows, the average daily time that mothers in married-couple families spent in the presence of their children rose 17 percent from 330 minutes in 1975 to 387 minutes in 2003. The total time that fathers spent in the presence of their children rose 240 percent from 73 minutes 1975 to 248 minutes in 2003. The time that mothers devoted “primary time,” or one-on-one interaction, to their children increased 17 percent from 81 minutes in 1975 to 95 minutes in 2003. Fathers' primary time tripled, from 14 minutes in 1975 to 42 minutes in 2003. In addition

to illustrating how parental investment of time in children varies with gender, these findings also illustrate the increasingly intense character of parenting in contemporary America.

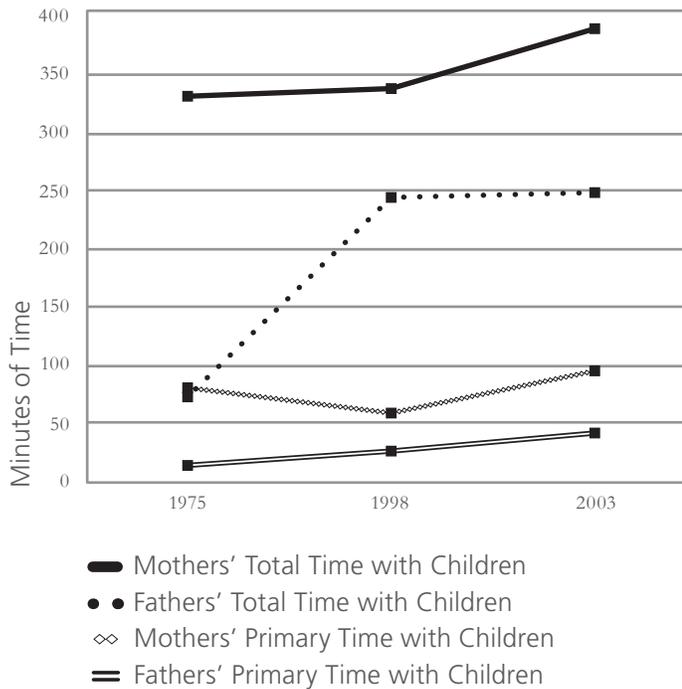
Figure 1. Changes in Parent-Child Time Ratio



Source: W. Bradford Wilcox and Jeffrey Dew, “No One Best Way: Work-Family Strategies, the Gendered Division of Parenting, and the Contemporary Marriages of Mothers and Fathers,” eds. W. Bradford Wilcox and Kathleen Kovner Kline, *Gender and Parenthood: Biological and Social Scientific Perspectives* (New York: Columbia University Press, 2013), 275.

Figure 2, which illustrates the ratio of mother to father time spent with children among married couples, provides another way of looking at these differences over time. The ratio of mother to father total time with children fell from 4.5 in 1975 to 1.6 in 2003. The ratio of mother to father primary time with children fell from 5.6 in 1975 to 2.3 in 2003. Overall, then, Figure 2 suggests that while married fathers are making greater investments in parenting, their investment, relative to that of married mothers, has not increased since the 1990s. Even in the face of tremendous changes, women still invest more time in their children, especially when it comes to one-on-one interaction.

Figure 2. Changes in Parent-Child Time



Source: W. Bradford Wilcox and Jeffrey Dev, “No One Best Way: Work-Family Strategies, the Gendered Division of Parenting, and the Contemporary Marriages of Mothers and Fathers,” eds. W. Bradford Wilcox and Kathleen Kovner Kline, *Gender and Parenthood: Biological and Social Scientific Perspectives* (New York: Columbia University Press, 2013), 277.

Another area of examination is parental responsibility for various tasks in children’s lives. Mothers continue to take the lead on responsibilities associated with parenthood—from monitoring children’s health care to managing childcare to shopping for children’s clothing. One recent study found that 55 percent of fathers and 64 percent of mothers reported that mothers were mainly responsible for basic caregiving. (In the same study, 35 percent of fathers and 34 percent of mothers reported that they shared this responsibility.)⁴⁵ After studying patterns of parental responsibility and housework, sociologist Scott Coltrane offered this observation: “In most families, husbands notice less about what needs to be done, and wait to be asked to do various chores and require explicit directions if they are to complete the tasks successfully.” He added that, in most American homes, fathers are perceived as “‘helping’ their wives.”⁴⁶

*At right: Nude
Combing Hair by
Milton Avery. ©
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(ARS), New York.*



These patterns in the United States are consistent with cross-cultural studies of parents around the globe. Anthropological evidence indicates that mothers are the primary caretakers of children in the vast majority of cultures.⁴⁷ When it comes to time and managerial responsibility for the care of children, mothers outpace fathers.

This asymmetrical pattern is especially evident in the care of infants and toddlers. In the earliest phase of life, mothers are particularly likely to play a leading role in parenting.⁴⁸ Even among the Aka pygmies of Central Africa, one of the most gender egalitarian cultures in the world, studies indicate that fathers hold their infants for an average of 57 minutes per day compared to mothers' 490 minutes.⁴⁹

Even in relatively egalitarian societies such as the U.S., parenting remains gendered in important respects.

Similarly, Ross Parke points out that, even in relatively egalitarian societies such as the U.S., parenting remains gendered in important respects. Mothers are markedly more engaged, more available, and more responsible for their children than are fathers in countries such as the U.S., Australia, France, and Japan. The style of parenthood is also gendered. With an infant or toddler, for example, a father's "hallmark style of interaction is physical play that is characterized by arousal, excitement and unpredictability," whereas a mother is more likely to attend to feeding, diapering, and emotional security.⁵⁰ While Parke stresses the social and cultural factors that are implicated in these gender differences, he also thinks that biology helps to explain them. Here, he believes that research on primates is instructive: "Biological factors cannot be ignored in light of the fact that male monkeys show the same rough and tumble physical style of play as American human fathers and infant male monkeys tend to respond more positively to bids for rough and tumble play than females."⁵¹ Parke paints a complex portrait of contemporary parenthood that suggests many areas of overlap between fathers and mothers, some areas of difference, and a range of biosocial reasons that help to account for the similarities and differences we now find among today's mothers and fathers.

Psychologist Rob Palkovitz extends the focus beyond early childhood,⁵² offering conclusions that parallel Parke's, in large part because both scholars believe that mothers and fathers bring similar talents to the parenting enterprise even as they retain some distinctive gendered orientations. Palkovitz argues that the most fundamental factors associated with good parenting such as "positive affective climate, behavioral style, and relational synchrony" are often found in both mothers and fathers.⁵³ In his view, these factors are more important than the distinctive

factors associated with gendered parenting in fostering optimal child development outcomes.

At the same time, Palkovitz suggests that children also benefit from the distinctively maternal and paternal parenting styles. Fathers, he writes, “play a particularly important role in stimulating children’s openness to the world in exciting, surprising, destabilizing, and encouraging them to take risks and to stand up for themselves.”⁵⁴ Fathers also play a key role in protecting the sexual and reproductive welfare of their daughters, insofar as “paternal absence has been cited by multiple scholars as the single greatest risk factor in teen pregnancy for girls.”⁵⁵

Palkovitz also reports that there is some evidence that parents who exhibit traditional (father exhibits primarily masculine traits, mother exhibits primarily feminine traits) or androgynous (both parents exhibit masculine and feminine traits) parenting styles have children who are better adjusted than parents who exhibit nontraditional traits (where parents primarily exhibit the traditional traits of the opposite sex). He concludes that parents should take into account these findings, while also understanding that their own needs for fulfillment and family justice are important.

Psychologist Ayelet Talmi describes the ways in which mothers and fathers respond to changing developmental needs of children and other household members, demographic forces, historical trends, and economic circumstances.⁵⁶ She examines the family life course as it moves from couple formation, the transition to parenthood, the care of young and school-aged children, and meeting the needs of adolescents and launching young adults, to the later stages of retirement, caring for elders, and establishing reciprocal relationships of care and support with adult children. Talmi notes that at each stage factors internal to the family, such as the birth of a new child or the developmental needs of a particular age, work in tandem with external factors such as employment options or historical events to “drive renegotiation of roles and responsibilities and alter expectations regarding partner contributions.”⁵⁷

At each family life stage, mothers and fathers must decide how to divide domestic and paid labor as they consider childrearing needs, partner suitability to provide certain types of care, partner preferences, and economic realities. Gender similarities and differences can appear more or less prominent at different stages.

But parenthood is not simply a matter of managing children’s lives or punching a time clock. The nature of a parent’s engagement also matters. Here, too, the

research indicates that there are important differences, on average, in mothering and fathering.

In “Why Mothers and Fathers Play Differently,” a posting on the *Motherlode* blog of the *New York Times*, Lisa Belkin reports on a recent Israeli study of eighty first-time-parent couples in which researchers found similarly high levels of the bonding hormone, oxytocin, in both mothers and fathers when the child was six weeks and then six months old. But researchers also noticed a divergence in the behavior of mothers and fathers. “Women with the highest levels of oxytocin were most likely to demonstrate what the journal article calls ‘affectionate parenting behaviors,’” Belkin writes, “while men with the highest levels were most likely to demonstrate ‘stimulatory parenting behaviors.’”⁵⁸

The father’s style of interaction seems to push children out of the nest whereas the mother’s style seems to make them feel at home in the nest.

In numerous studies, fathers are noted to be the more physical, playful, surprising, challenging, and risk-oriented parent. The father’s style of interaction seems geared to push children out of the nest. By contrast, mothers seem to be the more verbal, affectionate, predictable, comforting, and protective parent. Their style of interaction seems geared to make children feel at home in the nest. Taken together, these two diverse parenting styles supply children with a varied parenting diet.

Over the years, the maternal style of parenting has received the most attention from family scholars. This work indicates that mothers focus on providing emotional support and security to their children. Throughout childhood and adolescence, mothers are more likely to concentrate on comforting their children and on building and maintaining emotional closeness with them.

Beginning in infancy, the research suggests, mothers are more attuned to their baby’s emotional state and are more likely to take actions intended to keep their infant feeling safe, secure, and happy—in part because they typically spend much more time with their baby.⁵⁹ And babies notice this. One Harvard study found that babies quickly figure out which parent is likely to comfort them. At six weeks, babies would close their eyes, relax their shoulders, and reduce their heart rate when their mother approached.⁶⁰

This difference in parenting style between mothers and fathers does not stop in their children’s infancy. Rather, the differences extend throughout childhood into

the teen years. Mothers, more than fathers, regularly take their teenagers' emotional temperature and seek to provide the emotional support needed to negotiate the ups and downs of ordinary life. Parke observes that mothers continue to "maintain more open communication and emotional closeness with their offspring during adolescence."⁶¹

By contrast, fathers are more likely than mothers to intervene in their children's lives in ways that are surprising and challenging to their offspring. They are also more likely to act in a unilateral fashion toward their children, for example, by directing their children to do things without first inquiring what they want. Palkovitz hypothesizes that this distinctive style of parental engagement allows fathers to make up for the fact that they typically spend less time with their children. He writes, "[F]athers may compensate for their relative absence through increasing the salience of their interactions with their children."⁶²

With infants and toddlers, the paternal style of interaction is more likely to be "characterized by arousal, excitement and unpredictability in terms of the pace of the interaction."⁶³ Fathers, for example, are much more likely to throw their young in the air than are mothers. Again, babies notice this. The Harvard study mentioned above found that when fathers approached their six-week-olds, the babies' eyes opened wider, their heart rate rose, and they hunched their shoulders—all signs that they were ready for playtime and action with dad.⁶⁴ In a recent study of toddlers, psychologist Daniel Paquette noted that fathers who are available to supervise, but less quick than mothers to intervene, provide toddlers with important exploratory stimulation.⁶⁵

Mother-father differences also manifest in the ways that parents play with their children. When mothers play with their young children they tend to rely on toys and games in a predictable fashion. They are less likely to tickle or roughhouse and they tend to use play as a teachable moment, for example, by talking about numbers and colors.⁶⁶ Mothers are also more likely to take steps to ensure that their children have a positive play experience. As one team of researchers noted, "Mothers tend to tip the playing field in the direction of their children's needs and self-confidence, actively helping their children solve problems."⁶⁷ Taken together, mothers' style of play seems designed to help their children feel increasingly comfortable in the world they inhabit.

By contrast, fathers are more likely to engage in surprising and rough-and-tumble play. They chase, tickle, and wrestle, especially with their preschool-age children.⁶⁸

They are less likely to play board games or to use toys in a predictable fashion. They are more prone to rely on power-assertive tactics in which they assert dominance over their children. Fathers are less likely than mothers to tilt the playing field to their children's advantage. Instead, they are more likely to treat their daughters and especially their sons as worthy competitors.⁶⁹ This distinctive style of paternal play seems geared to help children gain a competitive edge, not only in the home but also on the playing fields of outside life.

Gender differences are also evident when it comes to discipline. Mothers tend to do more when it comes to setting limits and imposing penalties on children for misbehavior. They do so for two reasons. First, they spend more time in one-on-one interactions with their children, so they have more occasions to impose discipline. Second, mothers are often considered to be the responsible parent, even when both parents are home.⁷⁰

Mothers' and fathers' different styles of parenting can provide a positive mix of involvement, affection, discipline, comfort, and challenge.

But even though fathers are less likely to impose discipline on their children, when they do so, they tend to be firmer disciplinarians. Fathers are less likely to accommodate discipline to children's wishes, more likely to press a disciplinary consequence when children resist, and more likely to stick to a strict interpretation of family rules.⁷¹ Fathers spend less time reasoning or explaining their disciplinary decisions to their children. They tend to rely more on commands when it comes to getting their children to act in a particular way.⁷²

Sociologist David Popenoe summarizes the complementary strengths of maternal and paternal discipline in this way:

[T]he disciplinary approach of fathers tends to be "firm" while that of mothers tends to be "responsive." While mothers provide an important flexibility and sympathy in their discipline, fathers provide ultimate predictability and consistency.⁷³

This paternal style continues into middle childhood and adolescence. Compared to mothers, fathers are more physical with their children. They are more likely to encourage their children to embrace novel people and situations and they more often encourage their children to engage life's challenges and opportunities. They also tease their teenagers more than do mothers.⁷⁴ These fatherly interactions seem to help develop a sense of independence in children and to build a capacity to survive and thrive in the outside world.

Overall, the literature on fathers and mothers indicates that there are important gender differences between the sexes when it comes to parental investments of time, levels of responsibility, styles of engagement, and discipline. Taken together, the different styles typically offered by mothers and fathers can provide a positive mix of involvement, affection, discipline, comfort, and challenge. This environment seems to allow children to develop strong attachments to their parents and to acquire the social, emotional, economic, and educational resources they need to launch into the outside world with success. ■

7. The Synergy of Mothers and Fathers

Together, mothers and fathers create a parental synergy.

Mothers and fathers have unique as well as similar ways of approaching parenthood. It turns out that this distinct but overlapping approach by both the sexes can have positive outcomes for children.

It is perhaps during pregnancy that the distinction between mother's and father's roles in their child's life is most clear. It is, after all, the mother who carries the child in her body. Many aspects of her health and behavior impact the developing embryo. Optimal health and well-being in the mother generally promote optimal prenatal development. Poor maternal nutritional status, exposures to medications, alcohol, nicotine, drugs of abuse, infections, or excessive stress⁷⁵ can all have detrimental effects on the embryo and developing fetus.

Before birth, a father can play a critical role in making sure his mate's pregnancy thrives.

Pregnancy is also the critical time for structural brain development. All of the eighty billion neurons that comprise a mature brain are present by halfway through the pregnancy. On some days, as many as 250,000 neurons are created each minute. Assaults to a pregnant woman's health or toxins that pass to her fetus may have lifelong impact on the baby's intellectual, physical, and behavioral abilities. A healthy full-term pregnancy and a safe delivery provide maximum protection to the baby's sensitive brain. Child psychiatrists Kathleen Kovner Kline and Brian Stafford point out that the safety and physical and emotional well-being of the mother during pregnancy and during the early child-rearing period is an essential component of healthy child development:

[T]he foundations of childhood emotional and behavioral health are laid during pregnancy. The maternal-fetal dyad is a remarkable, but vulnerable system. The maternal lifeline to the fetus requires fundamental physical and emotional nourishment, as well as protection from environmental toxins. The social and cultural support and guidance provided to mothers has significant influence on child outcomes.⁷⁶

Yet just because the child first grows within the mother's body does not mean the father has no real importance. Before birth, fathers and others can play a critical role in making sure that a woman has the nutrition, medical care, and emotional support that make a pregnancy thrive.

Once the baby is born, continued child development depends on sensitive and responsive care. While the structural development of the brain is completed largely before birth, the functional development of the baby's brain after birth is made possible by selective strengthening and pruning of brain synapses and circuits through experience with the physical and relational environment.⁷⁷ The genes that drive a baby's brain maturation switch on and off at various times in development, often in response to changes in surroundings. The infant's immediate environment is provided by the physical and emotional responsiveness of the caregiver.

In many ways, nature biologically attunes the mother to be the predominant caretaker during her offspring's first few months of life. In rat pups, central nervous system neurotransmitters respond to the warmth, smell, and touch of the mother. And we have much evidence to show that human infants recognize and are comforted by the sound smell, touch, and taste of their mothers.

Mothers, especially experienced ones, do seem to be primed to provide the kind of sensitive and responsive care that infants need. However, fathers and others can share in providing this type of optimal care. The reciprocal behavior between infant and caregiver—seen, for example, in the provision of nutrition, warmth, sensory stimulation, and rhythmical responsiveness—appears to help regulate the development of neural mechanisms that modulate and control brain arousal, and to regulate the newborn's behavioral, neurochemical, autonomic, and hormonal functions. “Sensitive caregiving”⁷⁸ requires the caregiver's capacity to recognize, accurately interpret, and appropriately and promptly respond to the infant's signals.⁷⁹ Animal and human studies alike have made it clear that sensitive, responsive caregiving has positive effects on memory, cognition, stress tolerance, and emotional and behavioral regulation, as well as cardiovascular, metabolic and immune function.⁸⁰

While both fathers and mothers can and do provide sensitive care for their infants, the relative contributions of each can vary over different domains and throughout the stages of the child's and family's development.

In part because mothers tend to excel at communicating with and monitoring the emotional life of their offspring, research suggests that maternal care is particularly helpful in fostering language development, emotional self-knowledge, and communication skills among children. Mothers' verbal style of interaction is associated with the quality of children's memory, problem-solving, and language skills.⁸¹

Mothers appear to be more adept at helping their children understand their own feelings and comprehend and attend to the feelings of others, in part by talking more about feelings and by encouraging their children to consider the feelings of others.⁸² Mothers play a central role in connecting their children to friends and kin. One study that compared the relative influence of fathers and mothers on social ties found that mothers were markedly more important than fathers in shaping the extent and quality of children's ties with friends and family.⁸³

Mothers' abilities to monitor their children's emotional welfare and their desire to foster a sense of emotional security and happiness in their children's lives are also linked to high levels of emotional well-being on the part of their children. One study found that infants show a slight preference for their mothers when they are distressed.⁸⁴ Other studies indicate that school-age children report that their mothers know them better than their fathers, and they take comfort from the closeness they experience with their mothers.⁸⁵

The distinctive style of parenting associated with fathers also matters for their children. The surprising, physical, and playful style of interaction that fathers often display with their young children has been associated with children's ability to regulate their emotions and their bodies when they are playing with others. Studies have found that fathers who engage their children in lots of positive play have children who register the highest levels of popularity with their peers.⁸⁶

Fathers also appear to play an important role in establishing a climate of order and self-control in families. Studies suggest that children are more likely to comply with paternal demands than maternal demands, and that children ascribe more authority to their fathers than to their mothers.⁸⁷ Paternal involvement has been linked to lower levels of delinquency and criminal activity among adolescents, even after controlling for maternal involvement.⁸⁸ Adolescents who experience increasing closeness with their father are less likely to be delinquent, whereas teens whose relationships with their father deteriorate are more likely to fall prey to delinquency.⁸⁹ Finally, boys whose fathers are absent are much more likely to end up in trouble with the law. One study found that boys in single-mother homes were more than twice as likely to end up in jail or prison before they turned 30, compared to boys who were raised by their mother and father.⁹⁰

Fathers who engage their children in lots of positive play have children who register the highest levels of popularity with their peers.

It is not just boys who benefit from paternal involvement when it comes to steering clear of trouble. Girls who receive high levels of attention and affection from their fathers are markedly less likely to be sexually active and to become pregnant as teenagers.⁹¹ When dealing with the opposite sex, girls with engaged fathers benefit from a stronger “internal locus of control” and the sense that they are loved and appreciated by their fathers. In contrast, girls with absent or disengaged fathers are much more likely to seek out the attentions of a partner and to become pregnant.⁹² One recent study of more than 2000 adolescents found that girls’ closeness with their fathers, but not their mothers, predicted whether or not girls transitioned into sexual activity.⁹³

Other studies have found that girls are much more likely to become pregnant as teenagers if their fathers are absent from the home, especially if the father left when the children were young. Psychologist Bruce Ellis and colleagues found that only 5 percent of teenage girls became pregnant if they were raised in a home with their father. By contrast, 10 percent of teenage girls became pregnant if their father left when they were school-age, and 35 percent of teenage girls became pregnant if their father left before they turned six.⁹⁴ Such research suggests that teenage girls who have a father who is involved, affectionate, and simply present are much less likely to end up pregnant than their peers without such a father.

Finally, the challenging, assertive parenting style that fathers often embrace seems to help foster a spirit of independence and achievement among their children. Toddlers, for instance, are more likely to engage in novel activities, interact with strangers, and develop a spirit of independence at the urging of their fathers rather than their mothers.⁹⁵ Teenage boys and girls are more likely to succeed in school when they have involved fathers. One study of more than 1,000 families found that boys and girls who have fathers who spend leisure time with them, share meals, and help them with homework or reading do markedly better in school than children with less involved fathers.⁹⁶ Another study that compared the relative influence of fathers and mothers on children’s educational performance found that “fathers account for more of the variance” in children’s educational achievement than do mothers.⁹⁷ ■

Single-Parent and Same-Sex-Headed Families

What, does the research on gender and parenthood suggest about children's experience of single-parent and same-sex families?

Some research on parenting in single-mother families suggests that children from these families can have difficulty building and maintaining strong ties with their father.⁹⁸ In light of these realities, Professors William Doherty and Shonda Craft counsel single mothers to consider three steps.⁹⁹ First, they encourage single mothers whenever possible to speak positively to their children about their fathers. Second, they advise single mothers to do what they can to encourage their children's fathers to maintain a consistent, authoritative presence in their children's lives. Finally, they urge single mothers to identify and involve positive male role models for their children, especially when nonresidential fathers are not playing a constructive role in the lives of their children.

How is this to be done? Doherty and Craft suggest that single mothers:

seek out positive relationships with men at a faith community, at work, or in other venues. It is important to show children long-term positive relationships with men that are not sexual and that do not end in breakups. And it is important to have boys involved with men they can emulate, particularly if their father is not in their lives.¹⁰⁰

They also acknowledge that any effort to promote male positive attitudes in communities marked by high levels of fatherlessness and male irresponsibility

must also at times include acknowledgement of men's failures. Still, because they wish to break the patterns of male irresponsibility and gender distrust, Doherty and Craft contend that it is essential that community leaders, policy makers, and practitioners initiate a dialogue with single mothers in these communities about how to "raise children who value and trust men."¹⁰¹

The research on same-sex parenting is ongoing, but there are some grounds for thinking that gay and lesbian parents may provide a complementary form of parenting to their children. For instance, research suggests that biological lesbian mothers are more involved in the primary care of their children, whereas nonbiological lesbian mothers often focus more on providing for their families.¹⁰² We do not know yet if these family role differences translate into differences in parenting styles among lesbian couples, and even less is known about family role differences among gay men with children. Ross Parke observes that more research is needed to determine if gay and lesbian couples engage in the complementary style of parenting often found in heterosexual parents, and if children in these households benefit from the apparent advantages that this differentiation of roles and styles can bestow in heterosexual families.¹⁰³ ■

8. Marriage, Children, Mothers, and Fathers

In most cultures, these similarities and distinct, yet complementary, differences have found shape in marriage.

There is an institution that helps to predict more than any other whether both a father and a mother will be involved in a child's life, and to what extent. That institution is marriage. Mothers and fathers are more likely to share in the tasks of parenthood when they are married to each other. Fathers who live apart from their children, either because of a divorce or because they were never married to the mother, are far less likely to be able to maintain an authoritative approach to parenting their children.¹⁰⁴ As family scholar William Doherty and his colleagues conclude in a research review, fathering is uniquely sensitive to the quality and stability of the relationship with the mother, and any work on father involvement must include an understanding of the relational triangle of mother, father, and child. Fathers tend to parent in triads with mothers. Especially with their young children, fathers defer to mothers, look to them for permission and guidance, and are more apt to exit the lives of their children when the primary relationship with the mother ends.¹⁰⁵

More than any other institution, marriage predicts whether both a father and a mother will be involved in a child's life, and to what extent.

Fathers are more likely to be involved and engaged parents when they enjoy high-quality bonds with the mother of their children, and when mothers value the involvement of a father in their children's lives. A father's involvement in care giving, playfulness, and satisfaction with fatherhood can be predicted from the quality of the marital relationship. Overall, studies consistently find that fathers and mothers who enjoy a strong pair bond with each other are more likely to be involved and affectionate caretakers of their children.¹⁰⁶

Marriage matters for mothers, too. Not only does a spouse share the tasks and burdens of parenting, but also the pleasures and affections that are characteristic of a woman's relationship with her infant are correlated with the quality of her marital relationship. The emotional support that a mother receives is often central to caregiving sensitivity that she displays towards her infant.¹⁰⁷

But why this particular family form? Why would humans, distinct from so many other species, raise children in this way? In many other species the male serves as progenitor and little else. He fertilizes the female and disappears. Why did human males start sticking around?

In *The Future of Marriage*, author David Blankenhorn writes that for most scholars the answer is found in the long period of dependency of the human child. Human infants “are more helpless, and more dependent, than the offspring of any other primate.”¹⁰⁸ The human child needs a great deal of care for a long time. The mother-father bond arose because the mother cannot do this difficult work of raising dependent children in a harsh environment for many, many years alone. She needs a helpmate, someone to cooperate with her to feed and protect these vulnerable creatures. She needs someone she can trust and count on, someone who has an intense interest in her as well as in the child. In short, as a species, “to increase the likelihood of survival and success, the human infant needs a father and the human mother needs a mate.”¹⁰⁹ Long ago, societies started to call this thing “marriage.” ■

9. Sex and Cuddling

Not only do affection, sex, and cuddling make happy couples—they cement stable families.

Not all mammals raise their young in pair bonds. But among those that do maintain strong pair bonds, scientists have discovered extensive courtship behaviors between the male and female. The pair bond itself seems to be strengthened and reinforced by physiological changes within the male and female that come from proximity, physical affection, and sexual activity.

Prairie voles are a type of rodent known for their monogamous pair bonds. Researchers who study prairie voles find that the almost continuous sexual activity in new pairs (or “couples”) induces the release of the neurotransmitter oxytocin in females and vasopressin in males, both of which seem to cement the relationship. The amount of “non-conceptive sex” is clearly in excess of that required to generate offspring, so researchers speculated that it must have another important role. It now appears that all that sex helps to maintain close relationships and even to strengthen prairie vole bonds when they are under stress.

The amount of sexual activity among prairie vole couples does decrease over time (as is typical among human couples after those heady, early days of frequent sex), but the voles appear to keep sexual activity going enough to keep the bond strong.¹¹⁰ In humans, oxytocin connected to sexual activity also has been shown to increase trust and trustworthiness. Since trust is needed for a father to be confident that the offspring he cares for are his own and for a mother to be confident that the father will help care for children when they are born, behaviors that nurture human trust in couples are critically important.¹¹¹

Other forms of physical affection also strengthen pair bonds in mammals. In some animals, grooming, caressing, and stroking of the hair induce the release of oxytocin and natural opioids associated with feelings of well-being and social reward.¹¹² Studies of marmosets and tamarins indicate that while both male and female partners groom each other (for up to 20 percent of their active time, according to some studies), males often initiate and provide the majority of this form of physical affection as well as initiate sexual contact. Among these monkey males, having a stable affectionate mating relationship can induce physiologic changes in the brain that

It is the couple's ongoing emotional entanglement and interest in one another that helps create the couple that will raise the child.

are associated with well-being. Yet, while male oxytocin levels are associated with the amount of sex they have, female oxytocin levels are associated with the amount of physical contact the females receive. In these mammals, the combination of lots of physical affection, especially by males toward females, and high levels of sexual activity, seems to be the recipe for both sexes to thrive.

Anthropological studies and brain research are revealing that this social act of pair bonding also has biological roots in humans. It starts with sex. For humans, sex is a big deal. Drawing on this research, Blankenhorn explains:

Both [human] males and females are generally interested in, and open to, a lot of sexual activity, all the time—not only the sex act itself, but elaborate foreplay and complex sexual stimulation and game-playing that go far beyond the mechanics of coitus, including the tendency of the sex partners to become emotionally entangled and intensely attracted to one another over a long period of time.¹¹³

He notes that scholars often point to the loss of estrus as a distinctly human “biological innovation.”¹¹⁴ Although estrus is also concealed among other cooperatively breeding primates, in other mammals, there can be obvious physical signs when the female is fertile. Among human females, while there may be extremely subtle indications to her partner that she is in her fertile period, ovulation is generally concealed and difficult to determine, sometimes even for the woman herself. This means that among women and men any act of intercourse can potentially be a fertile one. In this world, writes anthropologist Peter J. Wilson, males and females are now “characterized by their intense, continuing, and mutual sexual interest in each other.”¹¹⁵

Of course, sex can be pleasurable and the requisite for reproduction. But this intense attraction to one another over time serves perhaps an even larger purpose. Blankenhorn notes it is the couple’s ongoing emotional entanglement and interest in one another that helps to *create the couple that will raise the child*. Ongoing sexual interest brings the father into the mother-child dyad. It promotes bonds between parents. It helps to establish a particular family structure: a lasting pair bond that bridges the sexual divide and creates fathers for children. ■

10. Gender Variation in Work and Family Balance Across the Life Cycle

There is significant variety in the range of adaptations married couples choose in work and family decisions. Families benefit when women and men are able to approach motherhood and fatherhood in ways that best suit themselves and their mates.

Sociologists W. Bradford Wilcox and Jeffrey Dew have explored the impact of gender on the division of parenting labor, family-work strategies, and marital quality among married couples. They argue that a broadly neotraditional set of arrangements now characterize the lives of most married mothers and fathers in the U.S.¹¹⁶ They are “neo” in the sense that fathers are doing much more childcare now than they did forty years ago, most mothers work in the paid work force, and most married parents endorse egalitarian gender role attitudes. But they are also “traditional” in the sense that mothers still do markedly more childcare than fathers, most mothers do not work full-time, and most married mothers indicate that they would prefer to work part-time or stay at home.

Take, for instance, the time that parents devote to their children. We have already noted the dramatic increases in maternal labor force participation over the last fifty years, yet mothers still continue to invest more hours in parenting than fathers, even though fathers have considerably increased the amount of time they contribute to their children’s care.

When it comes to work-family arrangements, Wilcox and Dew find that the vast majority of married couples with children have fathers who worked full-time—91 percent, in fact. By contrast, only 44 percent of married mothers worked full-time. Moreover, only 18 percent of these mothers wished to work full-time. A plurality (46 percent) wished to work part-time, and 36 percent wished to be at home full-time. Finally, in examining the link between these patterns and the marital quality of contemporary women, Wilcox and Dew find that married mothers are happiest in their marriages when their work-family preferences are realized in practice.

Wilcox and Dew suggest that no one ideal or pattern of behavior captures the organization of contemporary parents’ work and family lives. Nevertheless, “most parents—

Neotraditional arrangements now characterize the lives of most married mothers and fathers.

including most mothers—do not wish to pursue an egalitarian work-family strategy where both parents work full-time.”¹¹⁷

Psychiatrist Scott Haltzman tackles similar themes. He points out that the dramatic investments that fathers and mothers make in their children as they respond to what some scholars call the “parental emergency”—that is, a child’s immediate and relentless need for nurture, food, protection, socialization, and discipline—have important implications for their own marriage.¹¹⁸ The first is that women shift much of their relational attention away from their husband and their work and toward their child(ren), whereas men tend to maintain their commitment to their work, in part because they see providership as a way of supporting their family. The second is that both parents typically take somewhat different approaches to parenthood, and often along gendered lines, at least in the earlier stages of childrearing.

The divergent ways in which husbands and wives handle the transition to parenthood, and the parenting enterprise itself, can pose a real challenge to the quality of their married life. “Because a woman is less likely to identify herself with her job, and more likely to see her prime identity as wife or mother, she may view a husband’s commitment to his workplace as abandonment,” notes Haltzman.¹¹⁹ Nevertheless, he maintains that couples need to work through these challenges, in large part because “research indicates the profound benefit of a child being raised with both parents.”¹²⁰

How can this be done? First, research indicates that couples do better when they recognize that the challenges they face adjusting to parenthood are common. Second, couples do better when they receive support from friends and family, for instance, with babysitting help that allows them to maintain time for couple-centered activities. Finally, Haltzman believes that efforts to educate couples about gender differences in parenting will be helpful in providing husbands and wives with a new appreciation of the unique contributions they both make to the welfare of their children. Or, in Haltzman’s words, “efforts should be made to educate society at large, and parents in particular, that gender differences in parents are real, and, rather than be extinguished or ignored, they should be embraced.”¹²¹

All of this means that in most American families today fathers still take the lead when it comes to providing for their families and mothers still take the lead when it comes to nurturing. This is the case even though most married couples with children now have more egalitarian work-family and parenting arrangements than did their

parents and grandparents, and most mothers and fathers spend more time with their children than did their parents and grandparents.¹²²

Ayelet Talmi also reminds us that families are not static organizations. The roles of mother and father can evolve as the couple transitions throughout parenthood to respond to the changing needs of their children as they grow and mature. Eventually their caretaking expertise may be employed in the care of their own elders, their grandchildren, or each other.

At each stage mothers and fathers consider childrearing needs, partner suitability to provide certain types of care, partner preferences, and economic realities as they decide how to divide domestic and paid labor. Gender similarities and differences may appear more or less prominent at different family life stages.¹²³ ■

Conclusion

TODAY, PARENTHOOD IS TYPICALLY MORE INTENSE, expensive, and relatively shorter in lifespan duration than it was in the past half century. Economic realities have shifted, gender roles are more flexible, and women and men change over the course of their lives, taking on and adapting to new challenges at different stages of life. Women and men embarking on family formation and child-bearing need a guide, an adaptable recipe that can help them understand the key ingredients and pathways to thriving for themselves and their children. And while there is no one recipe that is right for all, there seem to be key ingredients that are more likely to yield success.

Most of the time the two big ingredients are a mother and a father. This report has sought to shed light from the natural and social sciences on what typically happens when those two ingredients are combined. Of course, you can also cook without those particular ingredients—you can use substitutes, or leave something out, and often get good results, but it can be harder.

In the past, the culture used to give us the recipe. Now we have more freedom, choice, and uncertainty. In our highly complex society it is more important than ever to help men and women understand the profound internal and external transformations that accompany parenthood. In so doing, mothers and fathers will be better able to navigate the pathways of parenthood and provide the nurturing, direction, and mutual support required for families to thrive. ■

Appendix: Academic Papers

THE FOLLOWING PAPERS were presented at the University of Virginia conference, “Is Parenthood Gendered?” in fall 2008 and were published in W. Bradford Wilcox and Kathleen Kovner Kline, eds., *Gender and Parenthood: Natural and Social Scientific Perspectives* (New York: Columbia University Press, 2013):

- Marc H. Bornstein, “Parenting x Gender x Culture x Time”
- David F. Bjorklund and Ashley C. Jordan, “Human Parenting from an Evolutionary Perspective”
- William Doherty and Shonda Craft, “Single Mothers Raising Children without Fathers: Implications for Rearing Children with Male-Positive Attitudes”
- David J. Eggebeen, “Do Fathers Matter Uniquely for Adolescent Well-Being?”
- Scott Haltzman, “The Effect of Gender-Based Parental Influences on Raising Children: The Impact on Couples’ Relationships”
- Kathleen Kovner Kline and Brian Stafford, “Essential Elements of the Caretaking Crucible”
- Kelly G. Lambert and Catherine L. Franssen, “The Dynamic Nature of the Parental Brain”
- Rob Palkovitz, “Gendered Parenting’s Implications for Children’s Well-Being: Theory and Research in Applied Perspective”
- Ross D. Parke, “Gender Differences and Similarities in Parental Behavior”
- Charles T. Snowdon, “Family Life and Infant Care: Lessons from Cooperatively Breeding Primates”
- Ayelet Talmi, “Gender and Parenting across the Family Life Cycle”
- W. Bradford Wilcox and Jeffrey Dew, “No One Best Way: Work-Family Strategies, the Gendered Division of Parenting, and the Contemporary Marriages of Mothers and Fathers”

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About Milton Avery

DESCRIBED BY THE ART CRITIC HILTON KRAMER as possessing “the finest eye for color in the entire history of American painting,” Milton Avery (1885–1965) used simplified forms and pleasing harmonies of color to evoke serene emotion and to convey archetypal images and themes. In some respects Avery bridges the gap between realist and abstract art. While his primary concerns were the use of color and the relationships between forms, his paintings were always grounded in representations based on observed reality. Picasso and especially Matisse appear to have been important influences on his work. In turn, U.S. Abstract Expressionists such as Mark Rothko, Adolph Gottlieb, and Barnett Newman clearly owe a debt to Avery’s exploration of color and to what Rothko, at the time of Avery’s death, called Avery’s “poetry of sheer loveliness.”

Avery was born in 1885 in the northern New York town of Sand Bank. His father was a tanner. In 1898, his family moved to Wilson Station, Connecticut, near East Hartford. For ten years, from about 1901 to 1911, Avery was employed as a factory worker. Shortly after his father died in 1905, however, Avery had enrolled in a night class on lettering sponsored by the Connecticut League of Art Students. Starting in 1911, when he was 26 years old, Avery was able to devote himself almost exclusively to art. In 1925, he moved to New York City. The following year, he married Sally Michel, also an artist. For the next four decades, the couple was a notable presence in the New York art world. Milton Avery died in 1965.



About the Center of the American Experiment

Founded in Minneapolis in 1990, Center of the American Experiment is a nonpartisan, tax-exempt public policy and educational institution that seeks to build a culture of prosperity in Minnesota and the nation. In addition to key economic and other issues, it has focused for nearly a quarter of century on strengthening families, often by working with path-breaking organizations such as IAV in propelling national movements on behalf of engaged fatherhood and healthy marriages. An early collaborative product was *The Fatherhood Movement: A Call to Action*, an invaluable 1998 anthology co-edited by Wade Horn of the National Fatherhood Initiative, David Blankenhorn of IAV, and Mitch Pearlstein, founder of American Experiment. Visit CAE on the web at www.americanexperiment.org.

About IAV

Founded in 1988, IAV's mission is to study and strengthen civil society—those relationships and institutions that are close to the ground, fill up most of our lives, and contribute to fostering competence, character, self-help, and mutual aid. We oppose the culture wars, bringing together left and right to take fresh approaches to contentious issues. We're interdisciplinary, bringing together scholars from across the human and natural sciences to work together over time. We reject partisan research and strive for scholarly excellence. We give high priority to conversation and engagement. Our signature product is the jointly-authored public appeal or report. Visit IAV on the web at www.americanvalues.org.

About the Institute for Family Studies

The Institute for Family Studies (IFS) is a new research institute committed to strengthening marriage and family life, and advancing the well-being of children, through research and public education. IFS pursues this mission through a rigorous research program, regular reports, and frequent contributions in the public square. As a nonpartisan, nonsectarian, and interdisciplinary research institute, IFS is committed to engaging family topics in a spirit of civility with reasoned arguments, the latest social science, and thoughtful family-friendly perspectives from across the ideological spectrum. Visit IFS on the web at www.ifstudies.org.

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