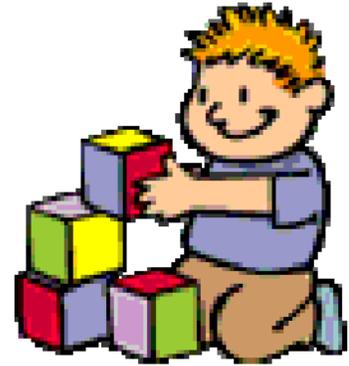


DEVELOPMENTAL PSYCHOLOGY





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How the First Nine Months Shape the Rest of Your Life
By Annie Murphy Paul

What makes us the way we are? Why are some people predisposed to be anxious, overweight or asthmatic? How is it that some of us are prone to heart attacks, diabetes or high blood pressure?

There's a list of conventional answers to these questions. We are the way we are because it's in our genes: the DNA we inherited at conception. We turn out the way we do because of our childhood experiences: how we were treated and what we took in, especially during those crucial first three years. Or our health and well-being stem from the lifestyle choices we make as adults: what kind of diet we consume, how much exercise we get.

But there's another powerful source of influence you may not have considered: your life as a fetus. The kind and quantity of nutrition you received in the womb; the pollutants, drugs and infections you were exposed to during gestation; your mother's health, stress level and state of mind while she was pregnant with you — all these factors shaped you as a baby and a child and continue to affect you to this day.

This is the provocative contention of a field known as fetal origins, whose pioneers assert that the nine months of gestation constitute the most consequential period of our lives, permanently influencing the wiring of the brain and the functioning of organs such as the heart, liver and pancreas. The conditions we encounter in utero, they claim, shape our susceptibility to disease, our appetite and metabolism, our intelligence and temperament. In the literature on the subject, which has exploded over the past 10 years, you can find references to the fetal origins of cancer, cardiovascular disease, allergies, asthma, hypertension, diabetes, obesity, mental illness — even of conditions associated with old age like arthritis, osteoporosis and cognitive decline.

The notion of prenatal influence may conjure up frivolous attempts to enrich the fetus: playing Mozart to a pregnant belly and the like. In reality, the shaping and molding that goes on in utero is far more visceral and consequential than that. Much of what a pregnant woman encounters in her daily life — the air she breathes, the food and drink she consumes, the chemicals she's

List the "conventional" answers to why we are the way we are:

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List four of the other powerful sources of influence:

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Explain "fetal origins":

Vocabulary check:

Define *visceral* as used in this sentence.

exposed to, even the emotions she feels — is shared in some fashion with her fetus. The fetus incorporates these offerings into its own body, makes them part of its flesh and blood.

Often it does something more: it treats these maternal contributions as information, biological postcards from the world outside. What a fetus is absorbing in utero is not Mozart's Magic Flute but the answers to questions much more critical to its survival: Will it be born into a world of abundance or scarcity? Will it be safe and protected, or will it face constant dangers and threats? Will it live a long, fruitful life or a short, harried one?

Research on fetal origins — also called the developmental origins of health and disease — is prompting a revolutionary shift in thinking about where human qualities come from and when they begin to develop. It's turning pregnancy into a scientific frontier: the National Institutes of Health embarked last year on a multidecade study that will examine its subjects before they're born. It's also altering the perspective of thinkers outside of biology. The Nobel Prize — winning economist Amartya Sen, for example, co-authored a paper about the importance of fetal origins to a population's health and productivity: poor prenatal experience, he writes, "sows the seeds of ailments that afflict adults." And it makes the womb a promising target for prevention, raising hopes of conquering public-health scourges like obesity and heart disease through interventions before birth.

If you had access to any and all resources how would you deal with this issue?

The Origins of Fetal Origins

Two decades ago, a British physician named David Barker noticed an odd correlation on a map: the poorest regions of England and Wales were the ones with the highest rates of heart disease. Why would this be, he wondered, when heart disease was supposed to be a condition of affluence — of sedentary lifestyles and rich food? He decided to investigate, and after comparing the adult health of some 15,000 individuals with their birth weight, he discovered an unexpected link between small birth size — often an indication of poor prenatal nutrition — and heart disease in middle age. Faced with an inadequate food supply, Barker conjectured, the fetus diverts nutrients to its most important organ, the brain, while skimping on other parts of its body — a debt that comes due decades later in the form of a weakened heart.

According to one study, what lead to heart disease in middle age? Explain the correlation.

When he presented his findings to colleagues, he was greeted with hoots and jeers. "Heart disease was supposed to be all about genetics or adult lifestyle factors," says Barker, now 72 and a professor at the University of Southampton in England and at Oregon Health and Science University. "People scoffed at the idea that it could have anything to do with intrauterine experience." Barker persisted, however, amassing evidence of the connection between birth weight and heart disease in many thousands of individuals. For years the idea was known as the Barker hypothesis.

What is the Barker hypothesis? Explain it in your own words.

In time his idea began to win converts. Janet Rich-Edwards, an epidemiologist at Brigham and Women's Hospital in Boston, deliberately set out to disprove the Barker hypothesis. "I was convinced that your current risk factors determine your odds of developing disease," says Rich-Edwards, "not something that happened when you were a fetus." But, she adds, "there's nothing like your own data to change your mind." Rich-Edwards analyzed findings from the Nurses' Health Study, a long-running investigation of more than 120,000 RNs. Even when she took account of the nurses' adult lifestyles and socioeconomic status, the relationship between low birth weight and cardiovascular-disease risk remained robust. "Similar studies have been conducted at least two dozen times since then," she notes. "It's one of the most solidly replicated findings in the field of public health."

As a journalist who covers science, I was intrigued when I first heard about fetal origins. But two years ago, when I began to delve more deeply into the field, I had a more personal motivation: I was newly pregnant. If it was true that my actions over the next nine months would affect my offspring for the rest of his life, I needed to know more.

Of course, no woman who is pregnant today can escape hearing the message that what she does affects her fetus. She hears it at doctor's appointments, sees it in the morning newspaper and in the pregnancy guidebooks: Do eat this, don't drink that, always be vigilant — but never stressed. Expectant mothers could be forgiven for feeling that pregnancy is nothing but a nine-month slog, full of guilt and devoid of pleasure, and this research threatened to add to the burden.

What advice is typically given to pregnant women?

But as I began applying what I learned to my own pregnancy, I developed a very different perspective on fetal origins. The scientists I met weren't full of dire warnings but of the excitement of discovery — and the hope that their discoveries would make a positive difference. We're used to hearing about all the things that can go wrong during pregnancy, but as these researchers are finding out, it's frequently the intrauterine environment that makes things go right in later life.

The Power to Change Behavior

Take, for example, the prospect of maintaining a healthy weight. Americans are heavier than ever, and their weight gain begins ever earlier in life. Could it be that a tendency for obesity is being programmed in the womb? A pair of studies conducted by researchers at Harvard Medical School suggest that may be the case: the greater a woman's weight gain during pregnancy, one study found, the higher the risk that her child would be overweight by age 3. The second study indicated that this relationship persists into the offspring's adolescence. Compared with the teenagers of women who had moderate weight gain during pregnancy, those of women who had excessive weight gain were more likely to be obese.

Of course, children could share eating habits or a genetic predisposition to obesity with their mothers; how can we know the prenatal environment is to blame? Researchers have compared children born to obese mothers with their siblings born after the mothers have had successful antiobesity surgery. The later-born children inherited similar genes as their older siblings, and (research shows) practice similar eating habits, but they experienced different intrauterine environments. In a 2006 study published in the journal *Pediatrics*, researchers found that the children gestated by women postsurgery were 52% less likely to be obese than siblings born to the same mother when she was still heavy. A second study by the same group, published in 2009, found that children born after their mothers lost weight had lower birth weights and were three times less likely to become severely obese than their older brothers and sisters.

"The bodies of the children who were conceived after their mothers had weight-loss surgery process fats and carbohydrates in a healthier way than do the bodies of their brothers and sisters who were conceived at a time when their mothers were still overweight," says John Kral, a professor of surgery and medicine at SUNY Downstate Medical Center in New York and a co-author of both papers. Their metabolisms were, in effect, made normal by their prenatal experience — perhaps through a process known as epigenetic modification, in which environmental influences affect the behavior of genes without altering DNA. It may be that the intrauterine environment is even more important than genes or shared eating habits in passing on a propensity for obesity, Kral says. If that's so, helping women maintain a healthy weight before and during pregnancy may be the best hope for stopping obesity before it starts.

What is believed to be influenced by the mother's weight during pregnancy?

Recent news articles state that parents should be held accountable for their obese children . . . "Take the tax deduction away for parents that have obese kids." Is what one senator stated. With this new understanding is that a fair consequence? Why or why not?

The science of fetal origins also offers hope to people who believe that heredity has doomed their families to disease — people like the Pima Indians of the Gila River Reservation in Arizona, who have the highest rate of Type 2 diabetes in the world. There is little doubt that the high incidence of diabetes among the Pimas, and among Native Americans in general, has a significant genetic component. But new research from a study that has followed a large group of Pima Indians since 1965 points to an additional influence: prenatal experience. During pregnancy, a diabetic woman's high blood sugar appears to disrupt the developing metabolism of the fetus, predisposing it to diabetes and obesity.

Exposure to maternal diabetes in utero accounts for most of the increase in Type 2 diabetes among Pima children over the past 30 years, says Dana Dabelea, associate professor of epidemiology at the University of Colorado at Denver and an investigator on the study, and it may well be a factor in the alarming rise of the disease nationally. But it also opens a door to intervention. "If we could intensively control diabetic women's blood sugar during pregnancy," Dabelea says, "we could really bring down the number of children who go on to develop diabetes."

What's more, an understanding of the role of gestational factors in disease can change individual behavior, notes Daniel Benyshek, a medical anthropologist at the University of Nevada at Las Vegas, who has interviewed members of Arizona's Native American tribes. He finds that those who believe diabetes is their genetic destiny tend to hold fatalistic attitudes about the illness. When Benyshek shared findings about the fetal origins of diabetes with tribe members, however, he noticed a different reaction. "The idea that some simple changes made during pregnancy could reduce the offspring's risk for diabetes fosters a much more hopeful and engaged response," he says. "Young women in particular are enthusiastic about the idea of intervening in pregnancy to break the cycle of diabetes. They say, 'I tried dieting, I tried exercising, and I couldn't keep it up. But I could do it for nine months if it meant that my baby would have a better chance at a healthy life.'"

What other epidemic diseases could be better controlled through understanding fetal origins?

Do you believe this could lead to overall improved health as a Nation? Why or why not?

The Impact of Air

The chance of a healthier life is what Frederica Perera is trying to give children in some of New York City's struggling neighborhoods. Perera, the director of the Center for Children's Environmental Health at Columbia University, became interested in the effects of pollution on fetuses more than 30 years ago, when she was conducting research on environmental exposures and cancer in adults. "I was looking for control subjects to compare to the adults in my study, individuals who would be completely untouched by pollution," she says.

She hit on the idea of using babies just out of the womb as her controls, but when she received the results from samples of umbilical-cord blood and placental tissue she'd sent to a laboratory to be analyzed, she was sure there had been a mistake. "I was shocked," she says. "These samples I thought would be pristine already had evidence of contamination."

Since then, research by Perera and others has tied exposure to traffic-related air pollution during pregnancy to a host of adverse birth outcomes, including premature delivery, low birth weight and heart malformations. One of Perera's most striking studies got under way in 1998, when more than 500 pregnant women fanned out across upper Manhattan and the South Bronx wearing identical black backpacks, which they wore every waking moment for two days. Inside each backpack was an air monitor continuously measuring levels of polycyclic aromatic hydrocarbons, or PAHs, a type of pollutant that comes from vehicle exhaust and is also present in the fumes released by cigarettes and factory smokestacks.

The monitors revealed that 100% of the women were exposed to PAHs during their pregnancies. After their babies were born, analyses of cord blood from the infants showed that 40% had subtle DNA damage from PAHs — damage that has been linked to increased cancer risk. Further analysis found that those exposed prenatally to high levels of PAHs were more than twice as likely to be cognitively delayed at age 3, scoring lower on an assessment that predicts performance in school; at age 5, these children scored lower on IQ tests than children who received less exposure to PAHs in the womb.

Investigations like these have prompted scientists to expand their list of populations that are especially vulnerable to pollution. "We used to worry about elderly people and asthma patients," Perera says. "Now we worry about fetuses." And efforts to reduce environmental toxins can make a measurable difference, she says. "Over the years that we've been tracking exposures, New York City buses have switched to cleaner technology, and restrictions have been placed on the idling of diesel buses and trucks," Perera notes. "As a result, we've seen the levels of pollutants in pregnant women's blood coming down, which means their fetuses are encountering fewer of these substances too."

How can air pollution be harmful to a fetus in the womb?

Many disabilities seem to be increasing as population increases. What factors do you think might contribute to these increases?

The Sources of Stress

At the farthest edge of fetal-origins research, scientists are exploring the possibility that intrauterine conditions influence not only our physical health but also our intelligence, temperament, even our sanity.

Evidence indicates, for example, that pregnant women subjected to starvation or extreme stress give birth to children with a higher risk of schizophrenia.

Schizophrenia is a complex disorder with many potential causes. But a study based on 30 years of case records from Anhui province in China strongly suggests that prenatal factors can play a role. In the mid-20th century, residents of that region experienced severe malnutrition during the famine that accompanied the Great Leap Forward, Mao Zedong's disastrous modernization campaign. Individuals born to women suffering from the famine were twice as likely to develop schizophrenia as those gestated at other times. Likewise, a study of the health records of more than 88,000 people born in Jerusalem between 1964 and 1976 found that the offspring of women who were in their second month of pregnancy in June 1967 — the time of the Arab-Israeli Six-Day War — were significantly more likely to develop schizophrenia as young adults.

Catherine Monk, an assistant professor of psychiatry at Columbia University, has advanced an even more startling proposal: that a pregnant woman's mental state can shape her offspring's psyche. "Research indicates that even before birth, mothers' moods may affect child development," Monk says. "Can maternal mood be transmitted to the fetus? If so, what is the mode of transmission? And how do such moods affect fetal development? These are new questions to be asking," she says. "We're still figuring out how to get fetuses to answer."

In fact, Monk and her colleagues have gone some way toward putting the fetus on the couch. At her lab, pregnant women who are depressed or anxious and pregnant women with normal moods are hooked up to devices that measure their respiration, heart rate, blood pressure and nervous-system arousal, as well as the movements and heart rate of their fetuses, and then subjected to challenging mental exercises. All of the women show physiological signs of stress in response to the tests, but only the fetuses of depressed or anxious women display disturbances of their own.

If a fetus is in a stressful womb, what impact can that have on the child as it ages?

"This difference suggests that these fetuses are already more sensitive to stress," Monk says. "Perhaps that's because of a genetic predisposition inherited from the parents. Or it could be because the fetuses' nervous systems are already being shaped by their mothers' emotional states." Women's heart rate and blood pressure, or their levels of stress hormones, could affect the intrauterine milieu over the nine months of gestation, Monk explains, influencing an individual's first environment and thereby shaping its development.

The differences Monk has found among fetuses appear to persist after birth. And because basic physiological patterns like heart rate are associated with more general differences in temperament, Monk says, "it may be that the roots of temperamental variation go back to the womb."

It could even be the case that a pregnant woman's emotional state influences her offspring's later susceptibility to mental illness. "We know that some people have genetic predispositions to conditions like depression and anxiety," Monk says. "And we know that being raised by a parent with mental illness can increase the risk of mental illness in the offspring. It may be that the intrauterine environment is a third pathway by which mental illness is passed down in families." This kind of research, says Monk, "is pushing back the starting line for when we become who we are."

What does Monk imply is "pushing back the starting line for when we become who we are."?

Back to the Future

Ten years ago, when Matthew Gillman, a professor of population medicine at Harvard University, launched Project Viva — a study tracking more than 2,000 Boston-area children since they were fetuses — he knew he wanted to explore the effects of childhood experiences on later health. "But David Barker's research had started me wondering: When do these experiences really begin?" says Gillman. "I came to think they begin before birth, and so my study would have to start there too." Already the project has begun to illuminate the fetal origins of asthma, allergies, obesity and heart disease, as well as the role of gestational factors in brain development.

Do you believe long-term studies of this size will eventually allow scientists an opportunity to minimize pregnancy issues?

There are more revelations on the way. This year, the first of 100,000 pregnant women began enrolling in the National Children's Study, a massive, federally funded effort to uncover the developmental roots of health and disease. Researchers are conducting interviews with the women about their behaviors during pregnancy; sampling their hair, blood, saliva and urine; and testing the water and dust in their homes. The women and their children will be followed until the offspring turn 21, and the first results from the study, concerning the causes of premature births and birth defects, are expected in 2012.

What limitations do you think this encompasses?

Another line of research is developing interventions aimed at preventing disease. David Williams, a principal investigator at the Linus Pauling Institute at Oregon State University, is testing the notion that certain substances consumed during pregnancy can provide offspring with lifelong chemoprotection from illness. In Williams' studies, the offspring of mice that ingested a phytochemical derived from cruciferous vegetables like broccoli and cabbage during pregnancy were much less

likely to get cancer, even when exposed to a known carcinogen. After they were weaned, the offspring in Williams' experiments never encountered these protective chemicals again, yet their exposure shielded them from cancer well into maturity. He predicts that one day, pregnant women will be prescribed a dietary supplement that will protect their future children from cancer. "It's not science fiction," he says. "I think that's where we're headed."

Knowledge gleaned from fetal-origins research may even benefit those of us whose births are in the past. "I always ask my adult patients what their birth weight was," says Mary-Elizabeth Patti, an assistant professor at Harvard Medical School and a physician-scientist at the university-affiliated Joslin Diabetes Center. "Patients are often surprised at the question — they expect me to ask about their current lifestyle. But we know that low-birth-weight babies become adults with a higher risk of diabetes, so having that information gives me a more complete picture of their case." Patti is researching how data about patients' birth weight could translate into tailored courses of treatment.

These possibilities may seem strange and surprising, but then the notion that we owe anything about our mature selves to our experiences during childhood was once considered preposterous too — before Sigmund Freud first pointed our attention to those formative years. With time and evidence, the idea that our health and well-being are shaped during gestation could also come to seem commonsensical. Perhaps our children, whose first snapshots were taken not in a hospital bassinet but inside a uterus, won't find the idea of fetal origins odd at all.

As for me, the baby in my belly for those nine months is now a sandy-haired toddler named Gus. Where did his particular qualities come from? Will he be strong or sickly, excitable or calm? What will his future hold? These are the questions parents have long pondered about their children. More and more, it looks as if many of the answers will be found in the womb.

Reflection:

How can this information about prenatal environments be applied in the future?

What was your birth weight?

Do you have any health issues that might be traced back to fetal origins?

Name _____

When Bad Children Aren't Bad

No matter how charming the child, eventually parents find themselves exasperated with their child's behavior. Sometimes it is easy for a parent to assume intentional misbehavior when other motives actually may be at work. By watching his own children, Piaget gave us some cognitive concepts to reexamine what bad kids may really be up to. **See if you can identify the cognitive concept from Piaget that explains each child's cognition.**

1. Although the parents spent \$300 on holiday toys for their 1-year-old daughter, she spent more time playing peek-a-boo by sticking her head in and out of a box that one of the toys came in. Why should the parents have kept their money?

2. A well-meaning aunt talked with her 9-month-old nephew about meeting her new boyfriend. However, when he saw the young man, the child shrieked inconsolably. "It must be his mustache!" the aunt exclaimed.

3. "Stop doing that!" screamed the exasperated mother in response to her infant's irritating habit of throwing his bottle from the high chair to the floor. She must have stooped over at least twenty times during this meal alone and her child just wasn't learning! Why should the child's behavior not be surprising?

4. An older brother and younger sister constantly fight when they are playing cards. No matter how many times the brother explains the rules to his sister, the sister spreads hers out in a long line instead of a pile and declares, "I win! I have more cards!" What principle is keeping the sister from learning the rules?

5. A 4-year-old girl walks into the kitchen and sees her mother pouring herself a glass of juice. The little girl asks for a glass too, so the mother reaches into a cabinet and pulls out a kid-sized cup. Her daughter screams and cries because she wants "a bigger amount of juice." She doesn't stop crying until her mother pours the juice out of the child's cup and into a larger container.

6. Two-year-old twins were forever arguing about whose toy belonged to whom. The young father decided to put a stop to the arguing once and for all. He sat them both down and gave them a lecture about understanding the way the other twin felt. Although the twins nodded their heads, they were fighting again almost before the father had left the room. Why should the father have saved his breath?

Gone to the dogs: the girl who ran with the pack

Elizabeth Grice
July 19, 2006

SHE bounds along on all fours through long grass, panting with her tongue hanging out. When she reaches the tap she paws at the ground, drinks noisily with her jaws wide open and lets the water cascade over her head.

Up to this point, you think the young woman could be acting — but the moment she shakes her head and neck free of droplets, exactly like a dog when it emerges from a swim, you get a creepy sense that this is something beyond imitation. Then she barks.

The furious sound she makes is not like a human being pretending to be a dog. It is a proper, chilling, canine-like burst of aggression and it is coming from the mouth of a young woman dressed in T-shirt and shorts.

This is 23-year-old Oxana Malaya reverting to behaviour she learnt as a young child when she was brought up by a pack of dogs on a rundown farm near the village of Novaya Blagoveschenka in Ukraine. When she showed her boyfriend what she once was and what she could still do — the barking, the whining, the four-footed running — he took fright. It was a party trick that went too far and the relationship ended.

Miss Malaya is a feral child, one of only about 100 known in the world. The story goes that, when she was three, her indifferent, alcoholic parents left her outside one night and she crawled into a hovel where they kept dogs. No one came to look for her or even seemed to notice she was gone, so she stayed where there was warmth and food — raw meat and scraps — forgetting what it was to be human, losing what toddler's language she had and learning to survive as a member of the pack.

A shameful five years later, a neighbour reported a child living with animals. When she was found, at the age of eight in 1991, Oxana could hardly speak and ran around on all fours barking.

Though she must have seen humans at a distance, and seems occasionally to have entered the family house like a stray, they were no longer her species.



A grown-up Oxana Malaya demonstrates her bark for the camera.

Judging from the complete lack of documentation about her physical and psychological state when found, the authorities were not keen to record her case — neglect on this scale was too shameful to acknowledge — even though it has been of huge and continuing interest to psychologists who believe feral children can help resolve the nature-nurture debate.

What is known about "the Dog Girl" has been passed down orally, through doctors and carers. "She was like a small animal. She walked on all fours. She ate like a dog," is about as scientific as it gets.

Last month, British child psychologist Lyn Fry, an expert on feral children, went to Ukraine with a Channel Four film crew to meet Miss Malaya, who now lives in a home for the mentally disabled. Five years after a Discovery Channel program about her, they wanted to see if she had integrated into society. Ms Fry wanted to find out how far the girl was still damaged — and to see a reunion with her father.

"I expected someone much less human," says Ms Fry, the first non-Ukrainian expert to meet Oxana. "I'd heard stories that she could fly off the handle, that she was very unco-operative, that she was socially inept, but she did everything I asked of her.

"Her language is odd. She speaks flatly as though it's an order. There is no cadence or rhythm or music to her speech, no inflection or tone. But she has a sense of humour. She likes to be the centre of attention, to make people laugh. Showing off is quite a surprising skill when you consider her background. In the film, Miss Malaya looks unco-ordinated and tomboyish. When she walks, you notice her strange stomping gait and swinging shoulders, the intermittent squint and misshapen teeth. Like a dog with a bone, her first instinct is to hide anything she is given. She is only 1.52 metres tall but when she fools about with her friends, pushing and shoving, there is a palpable air of

menace and brute strength. The oddest thing is how little attention she pays to her pet mongrel. "Sometimes, she pushed it away," says Ms Fry. "She was much more orientated to people."

After a series of cognitive tests, Ms Fry concluded that Miss Malaya had the mental capacity of a six-year-old and a dangerously low boredom threshold. She can count but not add up. She cannot read or spell her name correctly. She has learning difficulties, but she is not autistic, as children brought up by animals are sometimes assumed to be.

Experts agree that unless a child learns to speak by the age of five, the brain misses its chance to acquire language, a defining characteristic of being human. Miss Malaya was able to learn to talk again because she had some childish speech before she was abandoned. At an orphanage school, they taught her to walk upright, to eat with her hands and, crucially, to talk.

Through an interpreter, Miss Malaya tells Ms Fry that her mother and father "completely forgot about me". They argued and shouted. Her mother would hit her and she would pee herself in terror. She says she still goes off by herself into the woods when she is upset. Although she knows it is socially unacceptable to bark, she certainly can.

Miss Malaya seems to be happy looking after cows at the Baraboy Clinic's insalubrious farm, outside Odessa. "It was dirty, terribly rundown and primitive," says Ms Fry, "but in Ukrainian terms, very desirable. Her carers are good people with the best interests of their charges at heart, though there is no therapy as such. Oxana is doing things she is good at."

It was here that the reunion with her father was staged a few weeks ago.

In the film, they stand awkwardly apart and it is ages before anyone speaks. Miss Malaya breaks the silence. "Hello," she says. "I have come," replies her father. The exchange is moving in its halting formality. "I thank you that you have come. I wanted you to see me milk the cows."

Questions:

- 1) Does the case of Oxana support Nature or Nurture? Give at least two examples to support your view.

- 2) Which language theory is supported by this view: B.F. Skinner or Noam Chomsky? What items from this case support this theory?



Moral Dilemma?



In a country in Africa, a woman was near death from a unique kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2000 for a small dose. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he would only get \$500. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. The druggist refused, stating that he discovered it and was going to make money from it. Heinz got desperate and broke into the man's store to steal the drug for his wife.

Was Heinz right or wrong to steal the drug? Explain

In a country in Europe a poor man named Valjean could find no work, nor could his sister and brother. Without money, he stole food and medicine that they needed. He was captured and sentenced to prison for six years. After a couple of years he escaped from the prison and went to live in another country under a new name. He saved money and slowly built up a big factory. He gave his workers the highest wages and used most of his profits to build a hospital for people who couldn't afford food or medical care. Twenty years had passed when a tailor recognized him as Valjean, the escaped convict whom the police had been looking for back in his hometown.

What should the tailor do? Explain.

A student has planned to go in to see a teacher for help one morning. When they get to the teacher's room the door is open but the teacher is not there. When the student goes to leave a note on the teacher's desk to say they had stopped by for help they notice a copy of the upcoming test sitting on the desk.

Would it be alright for the student to look over the questions on the test? Explain.

A student is a teacher's aide for a class in which their significant other is a student. They are often given the grades to homework and tests and asked to enter them into the teacher's grade book. The teacher does not often check the aide's work. The significant other just recently failed an important test and forgot to complete a homework assignment.

Would it be ok for the aide to help their significant other by boosting the numbers on the test and subbing in a grade for the missing assignment? Explain.

Who Needs Marriage? A Changing Institution

By Belinda Luscombe

Anticipation Guide: Respond to these statements true or false.

Statement	Before Reading	After Reading
Women initiate more divorces than men.		
Despite the current state of marriage it is still revered and desired.		
According to current trends, if you are a high school graduate, you are more likely to marry than a college graduate.		
Marriage is becoming obsolete.		
The fact that many women are taller than their husbands is changing the roles of men and women in the union.		
As it stands, the way America marries is making the American Dream reachable for many.		

The wedding of the 20th century, in 1981, celebrated a marriage that turned out to be a huge bust. It ended as badly as a relationship can: scandal, divorce and, ultimately, death and worldwide weeping.

To whom this paragraph is referencing?

So when the firstborn son of that union, Britain's Prince William, set in motion the wedding of this century by getting engaged to Catherine Middleton, he did things a little differently. He picked someone older than he is (by six months), who went to the same university he did and whom he'd dated for a long time. Although she is not of royal blood, she stands to become the first English Queen with a university degree, so in one fundamental way, theirs is a union of equals. In that regard, the new couple reflect the changes in the shape and nature of marriage that have been rippling throughout the Western world for the past few decades.

In fact, statistically speaking, a young man of William's age — if not his royal English heritage — might be just as likely not to get married, yet. In 1960, the year before Princess Diana, William's mother, was born, nearly 70% of American adults were married; now only about half are. Eight times as many children are born out of wedlock. Back then, two-thirds of 20-somethings were married; in 2008 just 26% were. And college graduates are now far more likely to marry (64%) than those with no higher education (48%).

When an institution so central to human experience suddenly changes shape in the space of a generation or two, it's worth trying to figure out why. This fall the Pew Research Center, in association with TIME, conducted a nationwide poll exploring the contours of modern marriage and the new American family, posing questions about what people want and expect out of marriage and family life, why they enter into committed relationships and what they gain from them. What we found is that marriage, whatever its social, spiritual or symbolic appeal, is in purely practical terms just not as necessary as it used to be. Neither men nor women need to be married to have sex or companionship or professional success or respect or even children — yet marriage remains revered and desired.

As a high school student, do you believe marriage is still revered and desired? Explain.

And of all the transformations our family structures have undergone in the past 50 years, perhaps the most profound is the marriage differential that has opened between the rich and the poor. In 1960 the median household income of married adults was 12% higher than that of single adults, after adjusting for household size. By 2008 this gap had grown to 41%. In other words, the richer and more educated you are, the more likely you are to marry, or to be married — or, conversely, if you're married, you're more likely to be well off.

Does this change your view of marriage?

The question of why the wealth disparity between the married and the unmarried has grown so much is related to other, broader issues about marriage: whom it best serves, how it relates to parenting and family life and how its voluntary nature changes social structures.

Vocabulary check:
Define disparity as used in this sentence.

The Marrying Kind

In 1978, when the divorce rate was much higher than it is today, a TIME poll asked Americans if they thought marriage was becoming obsolete. Twenty-eight percent did.

Since then, we've watched that famous royal marriage and the arrival of Divorce Court. We've tuned in to Family Ties (nuclear family with three kids) and Modern Family (nuclear family with three kids, plus gay uncles with an adopted Vietnamese baby and a grandfather with a Colombian second wife and dorky stepchild). We've spent time with Will and Grace, who bickered like spouses but weren't, and with the stars of Newlyweds: Nick & Jessica, who were spouses, bickered and then weren't anymore.

1978 – 28% believed marriage is obsolete. Today, do you think it is obsolete? Explain why or why not.

We've seen some political marriages survive unexpectedly (Bill and Hillary Clinton) and others unpredictably falter (Al and Tipper Gore).

We've seen the rise of a \$40 billion-plus wedding industry, flames fanned by dating sites, and reality shows playing the soul-mate game — alongside the rise of the prenup, the postnup and, most recently, divorce insurance. We care about marriage so much that one of the fiercest political and legal fights in years is being waged over whom the state permits to get married. We've seen a former head of state's child (Chelsea Clinton) marry after living with her boyfriend and a potential head of state's child (Bristol Palin) have a child before leaving home.

Which of these do you support, recognize, side with?

So, as we circle back around to witness another royal engagement, where are we on the marriage question? Less wedded to it. The Pew survey reveals that nearly 40% of us think marriage is obsolete. This doesn't mean, though, that we're pessimistic about the future of the American family; we have more faith in the family than we do in the nation's education system or its economy. We're just more flexible about how family gets defined.

Even more surprising: overwhelmingly, Americans still venerate marriage enough to want to try it. About 70% of us have been married at least once, according to the 2010 Census. The Pew poll found that although 44% of Americans under 30 believe marriage is heading for extinction, only 5% of those in that age group do not want to get married. Sociologists note that Americans have a rate of marriage — and of remarriage — among the highest in the Western world. (In between is a divorce rate higher than that of most countries in the European Union.) We spill copious amounts of ink and spend copious amounts of money being anxious about marriage, both collectively and individually. We view the state of our families as a symbol of the state of our nation, and we treat marriage as a personal project, something we work at and try to perfect. "Getting married is a way to show family and friends that you have a successful personal life," says Andrew Cherlin, a sociologist at Johns Hopkins University and the author of *The Marriage-Go-Round: The State of Marriage and the Family in America Today*. "It's like the ultimate merit badge."

Who does the author suggest is "the marrying kind"?

But if marriage is no longer obligatory or even — in certain cases — helpful, then what is it for? It's impossible to address that question without first answering another: Who is marriage for?

The New Marriage Gap

To begin to answer that question, it might be useful to take a look at the brief but illustrative marriage of golfer Greg Norman and tennis star Chris Evert, who married in June 2008 and divorced 15 months later. From all reports, their union had many of the classic hallmarks of modern partnerships. The bride and groom had roughly equal success in their careers. Being wealthy, sporty and blond, they had similar interests. She was older than he, and they'd had other relationships before. (She'd had two previous spouses and he one.) Plus, they'd known each other a while, since Evert's newly minted ex-husband, Andy Mill, was Norman's best friend.

Apart from the interest the union generated in the tabloids, this is typical of the way many marriages start. Modern brides and grooms tend to be older and more similar. In particular, Americans are increasingly marrying people who are on the same socioeconomic and educational level. Fifty years ago, doctors commonly proposed to nurses and businessmen to their secretaries. Even 25 years ago, a professional golfer might marry, say, a flight attendant. Now doctors tend to cleave unto other doctors, and executives hope to be part of a power couple.

How would you classify this practice?

The change is mostly a numbers game. Since more women than men have graduated from college for several decades, it's more likely than it used to be that a male college graduate will meet, fall in love with, wed and share the salary of a woman with a degree. Women's advances in education have roughly paralleled the growth of the knowledge economy, so the slice of the family bacon she brings home will be substantial.

Women's rising earning power doesn't affect simply who cooks that bacon, although the reapportioning of household labor is a significant issue and means married people need deft negotiation skills. Well-off women don't need to stay in a marriage that doesn't make them happy; two-thirds of all divorces, it's estimated, are initiated by wives. And not just the Sandra Bullock types who have been treated shabbily and have many other fish on their line but also Tipper Gore types whose kids have left home and who don't necessarily expect to remarry but are putting on their walking boots anyway.

The changes can be seen in more subtle ways too. New York University sociologist Dalton Conley notes that between 1986 and 2003, the most recent year for which figures are available, the proportion of marriages in which the woman was taller than the man increased by more than 10%. "In absolute terms, it's still a small minority of marriages," he says. "But I think the trend signals an incredible shift in marital and gender norms." There has also been a sharp uptick in the percentage of marriages in which the wife is older, signifying, Conley believes, a whole different understanding of the roles of men and women in the union.

Here the author implies two things have changed the roles of men and women in the marriage union. What are they and why are they significant?

Despite the complications that have ensued from this marital restructuring, it's not likely to be undone. In the 1978 poll, fewer than half of all respondents thought that the best kind of marriage was one in which both

the husband and the wife worked outside the home. In the new Pew poll, 62% do. Perhaps that's not surprising given these parallel data: in 1970, 40% of wives worked outside the home. Now 61% do.

So fundamental is the shift that it's beginning to have an impact on what people look for in spouses. While two-thirds of all people think a man should be a good provider, more men than women do. Meanwhile, almost a third of people think it's important for a wife to be a good provider too.

On the face of it, this might explain why fewer people are married. They want to finish college first. In 2010 the median age of men getting hitched for the first time is 28.2, and for women it's 26.1. It's gone up about a year every decade since the '60s.

But here's the rub. In the past two decades, people with only a high school education started to get married even later than college graduates. In 1990 more high-school-educated couples than college graduates had made it to the altar by age 30. By 2007 it was the other way around.

What has brought about the switch? It's not any disparity in desire. According to the Pew survey, 46% of college graduates want to get married, and 44% of the less educated do. "Fifty years ago, if you were a high school dropout [or] if you were a college graduate or a doctor, marriage probably meant more or less the same thing," says Conley. "Now it's very different depending where you are in society." Getting married is an important part of college graduates' plans for their future. For the less well educated, he says, it's often the only plan.

Promising publicly to be someone's partner for life used to be something people did to lay the foundation of their independent life. It was the demarcation of adulthood. Now it's more of a finishing touch, the last brick in the edifice, sociologists believe. "Marriage is the capstone for both the college-educated and the less well educated," says Johns Hopkins' Cherlin. "The college-educated wait until they're finished with their education and their careers are launched. The less educated wait until they feel comfortable financially."

But that comfort keeps getting more elusive. "The loss of decent-paying jobs that a high-school-educated man or woman could get makes it difficult for them to get and stay married," says Cherlin. As the knowledge economy has overtaken the manufacturing economy, couples in which both partners' job opportunities are disappearing are doubly disadvantaged. So they wait to get married. But they don't wait to set up house.

All this might explain why there was a 13% increase in couples living together from 2009 to 2010. Census researchers were so surprised at the jump that they double-checked their data. Eventually they attributed the sharp increase to the recession: these newly formed couples were less likely to have jobs.

So, people are living together because they don't have enough money to live alone, but they aren't going to get married until they have enough money. That's the catch. In fact, the less education and income people have, the Pew survey found, the more likely they are to say that to be ready for marriage, a spouse needs to be a provider.

Cohabitation is on the rise not just because of the economy. It's so commonplace these days that less than half the country thinks living together is a bad idea. Couples who move in together before marrying don't divorce any less often, say studies, although that might change as the practice becomes more widespread. In any case, academic analysis doesn't seem to be as compelling to most people as the example set by Angelina Jolie and Brad Pitt. Or as splitting the rent.

But cohabitation among the economically blessed is a whole different ball game than it is among the struggling. For most college-educated couples, living together is like a warm-up run before the marital marathon. They work out a few of the kinks and do a bit of house-training and eventually get married and have kids. Those without a college degree, says Cherlin, tend to do it the other way around — move in together, have kids and then aim for the altar. And children, as Bristol Palin and Levi Johnston discovered, change everything.

The Kids May Not Be All Right

Rarely is there a bigger chasm between what Americans believe to be the best thing for society and what actually happens than in the bearing and raising of children. Half or more of the respondents in the Pew poll say that marital status is irrelevant to achieving respect, happiness, career goals, financial security or a fulfilling sex life. When it comes to raising kids, though, it's a landslide, with more than three-quarters saying it's best done married.

Yet very few people say children are the most important reason to get hitched. Indeed, 41% of babies were born to unmarried moms in 2008, an eightfold increase from 50 years ago, and 25% of kids lived in a single-parent home, almost triple the number from 1960. Contrary to the stereotype, it turns out that most of the infants born to unmarried mothers are not the product of casual sexual encounters. One of the most extensive databases on such kids, the Fragile Families and Child Wellbeing Study, a joint project of Princeton and Columbia universities, which has been following 5,000 children from birth to age 9, found that more than half of the unmarried parents were living together at the time their child was born and 30% of them were romantically involved (but living apart).

Do you support this idea (why or why not):
To be successful in life you must graduate high school, go to college, graduate college, find a job and find a good mate?

How do you feel about this statement?

Do you agree with this trend? Explain.

Do you like the idea of being a 'warm-up run'? Explain.

Vocabulary check:
Define *chasm* as used in this sentence.

Most of those unwed mothers said their chances of marrying the baby's father were 50% or greater, but after five years, only 16% of them had done so and only about 20% of the couples were still cohabiting. This didn't mean that the children didn't live with a man, however, since about a quarter of their moms were now living with or married to a new partner. That doesn't always work out as well as it seems to in *Modern Family* or *Phineas & Ferb*. Offspring from earlier relationships put pressure on new ones. For the least wealthy children, Mom's new boyfriend often means their biological father is less likely to visit and less likely to support their mother. Many stepparents are wonderful and committed, but a series of live-in lovers is not at all the same thing. "About 21% of American children will see at least two live-in partners of their mothers by the time they're 15," says Cherlin. "And an additional 8% will see three or more."

Is this trend disturbing or expected? Explain.

Would marriage really stop the conveyor belt of parent figures? "Marriage is still the way Americans tend to do long-term, stable partnerships," says Cherlin. "We have the shortest cohabiting relationships of any wealthy country in the world. In some European countries, we see couples who live together for decades." To this day, only 6% of American children have parents who live together without being married.

Is this fact disturbing or expected? Explain.

Cohabitation seems to have no negative effect on a marriage's chances if it's preceded by an engagement, no previous live-in lovers and no children. Who has the clout to put those conditions into place? Women with their own means of support and guys who don't need a woman to look after them: the wealthy and well educated. The others often are left in limbo — not able to get married and not able to move on. "Ironically, the very people who would benefit from a committed marriage the most are the people who have the toughest time locating reliable long-term partners," says Stephanie Coontz, a marriage historian who teaches at Evergreen State College in Olympia, Wash.

The D Word

Even when couples are married, family life is a different experience for those with a college education and those without one. Professional occupations are much more likely to offer provisions for parental leave, the ability to work from home and flexible hours. Wealthy people can outsource the more onerous or dreary or time-sucking tasks that couples fight over. And the college-educated tend to have picked up more conflict-resolution and negotiation skills along the way. Their marriage is insulated from some of the stresses of balancing work and family. A sick child throws a much bigger wrench into the machinery of a factory or retail or service worker's life.

Vocabulary check:
Define *onerous* as used in this sentence.

In recent years, the overall rate of divorce has plateaued somewhat, and leaving a spouse is on the decline among college graduates. But that drop is being offset by a rise in splits among those at the lower end of the socioeconomic spectrum, the people least able to afford to divorce, so the rate is still high. Says Cherlin: "One statistic I saw when writing my book that floored me was that a child living together with unmarried parents in Sweden has a lower chance that his family will disrupt than does a child living with married parents in the U.S."

It seems that the 21st century marriage, with its emphasis on a match of equals, has brought about a surge in inequality. It's easier for the college-educated, with their dominance of the knowledge economy, to get married and stay married. The less well off delay marriage because their circumstances feel so tenuous, then often have kids, which makes marrying even harder. "A marriage gap and a socioeconomic gap have been growing side by side for the past half-century," the Pew study's authors note, "and each may be feeding off the other." But because it's unclear whether the burdens of poverty are making people's relationships less permanent or people's impermanent relationships are worsening their poverty, the solution is not obvious.

What to Do About I Do

Is marriage, which used to be like the draft, now becoming more like West Point, admitting only the elite and sending the others off to the front line? Depends whom you ask. "The basis of marriage changed in the last century," says Seth Eisenberg, president and CEO of the PAIRS Foundation, one of the biggest relationship-education operations in the country. "But very few couples have had a chance to learn really what are the new rules of love and intimacy — not because the rules are so difficult to learn, just because no one told them. To interpret that as meaning there's something broken about the institution of marriage itself would be a horrible, horrible mistake."

In your opinion, what is the "basis" of marriage?

Marriage educators' solution is to bolster marriage, to teach people how to better communicate with their spouses. While they believe their techniques could work with any couple, they're big advocates of the legal union. Marriage is like glue, says Eisenberg. You can build something with it. Living together is like Velcro. "The commitment of marriage gives people the opportunity to grow and thrive in ways that other relationships do not," he says.

Rules? What rules of love and intimacy do you know?

Sociologists tend to believe the answers lie outside marriage. Coontz thinks that if we changed our assumptions about alternative family arrangements and our respect for them, people would be more responsible about them. "We haven't raised our expectations of how unmarried parents will react to each other. We haven't raised our expectations of divorce or singlehood," she says. "It should not be that within marriage you owe

Do you agree with this statement? Explain.

everything and without marriage you don't owe anything. When we expect responsible behavior outside as well as inside marriage, we actually reduce the temptation to evade or escape marriage."

As an example, she cites the 2001-03 Fox reality show *Temptation Island*, in which couples who were living together were invited to a desert island to see if they could be lured into cheating. "They found one couple was married, and with a great show of indignation, they threw them off the island," says Coontz. "In my point of view, it's just as immoral to break up a committed cohabiting relationship as it is a marriage."

Could living together become respected and widespread enough that it challenged the favored-nation state of marriage? The American Law Institute has recommended extending some of the rights spouses have to cohabiting partners. But cohabitation has not yet proved to be a robust enough substitute for most Americans to believe they can build a family on it. And as a successful marriage increasingly becomes the relationship equivalent of a luxury yacht — hard to get, laborious to maintain but a better vessel to be on when there are storms at sea — its status is unlikely to drop. As it stands, the way America marries is making the American Dream unreachable for many of its people. Yet marriage is still the best avenue most people have for making their dreams come true.

Prince William gave his intended bride Diana's engagement ring. He wanted his mother to have a part in the day, he said. And despite how his parents' marriage faltered, not all the old traditions of marriage are obsolete.

Who can enforce "responsible behavior" inside or outside of marriage?

What is your opinion, could living together become respected and widespread enough that it challenged the favored-nation state of marriage? Why?

Go back to the Anticipation Guide and reconsider the statements, adjust your initial responses if necessary.

Reflection:

In 10 years, what do you believe the marriage institution will look like?

Name: _____

**INFANT & CHILDHOOD DEVELOPMENT:
LANGUAGE AND ATTACHMENT THEORIES**

STATION #1: PLAY FROM A THEORETICAL POINT OF VIEW

1. Summarize what each of the following believes about playing:

- A. Piaget

- B. Erikson

- C. Vygotsky

BONUS – What do these theories have in common?

STATION #2: LEV VYGOTSKY

2. How does Vygotsky's cognitive theory differ from Piaget's?

3. What is the connection between the MKO and the ZPD?

BONUS – How have you seen Vygotsky's principles in your own educational experiences?

STATION #3: PARENTS' GUIDE TO SPEECH/LANGUAGE DEVELOPMENT

4. What can you infer about language development from the age of 2 (2-word stage) to the age of 5?

STATION #4: A SPECIAL PRIMER

5. What struggles did you have as you read through this story?

6. How does this illustrate the following:

- A. Noam Chomsky's language acquisition device

- B. Benjamin Whorf's language relativity hypothesis

STATION #5: KONRAD LORENZ & IMPRINTING

- 7. Describe the results of Konrad Lorenz’s studies with birds.

- 8. Do humans imprint? Explain your answer.

STATION #6: MARY AINSWORTH & THE “STRANGE SITUATION”

- 9. Describe Ainsworth’s “strange situation.”

- 10. Describe the three attachment styles Ainsworth developed from the “strange situation.”
 - A. Secure

 - B. Anxious-Ambivalent

 - C. Anxious-Avoidant

BONUS – Make a connection between Harry Harlow’s monkey experiment and Ainsworth’s attachment theory.

STATION #7: PARENTING STYLES

11. Fill in the proper parenting styles in the chart below based on the characteristics provided:

Responsiveness to Child’s Needs	Parents’ Demandingness of Child		
		LOW	HIGH
LOW			
HIGH			

12. Which parenting style do you believe fits your parents best? Explain.

STATION #8: ERIK ERIKSON

13. How do Erik Erikson’s psychosocial stages compare/correspond with other theories of childhood development?

ERIKSON’S STAGE	THEORETICAL CONNECTION	EXPLANATION
Trust v. Mistrust		
Autonomy v. Shame & Doubt		
Initiative v. Guilt		
Industry v. Inferiority		