

Chapter 12

What you choose lives on.

Each law of life we have learned thus far has focused on your choices and behaviors (what you say, do, think, or feel) in the present moment. The law we just learned “Your point of power is in the present moment” very specifically stressed the importance of awareness of the present moment and acting within that moment in ways that are produce the results you want in the present. This last chapter is devoted to the last, 12th law of life: “What you choose lives on” and, as you will see, it describes the *future* impacts of your present choices. What you choose now, in your present moment, is so powerful that it will affect, for good or ill, not only you but your children, grandchildren, and beyond. There are three fields of scientific research that offer support for this law “what you choose lives on.” Let’s take a look at the first.

It would be very hard to find someone with any education at all who has not heard of DNA (DeoxyriboNucleic Acid). Most of us have at least a very basic understanding of genetics and the role DNA plays. We know, for example, that both our mother and father each contribute half of our genetic makeup by each contributing half of our complete DNA sequence. The combination of these two sets of genes makes us who we are, at least genetically. To a large extent these genes determine our skin, hair, and eye color, our height, our likelihood of resisting or contracting certain diseases, our temperament, etc. Although many of us cannot explain all the genetic details beyond this general understanding, we do grasp the basic idea that who we are biologically is largely determined genetically. Over the last century or so this biological or genetic contribution to who and what we are today has been called “nature”. The other main contribution, called “nurture” covers all the things that happen to us beyond our genetic inheritance and which influence *how* our genetic inheritance gets expressed in the person we become.

“Nature”—our genetic blueprint—is pretty much a given and you can’t do anything to change that. “Nurture”, however, is very much under the control of our early caregivers and the people who influence the environment in which we grow up. We will see, later, that, as we mature and begin taking more responsibility for our lives and choices, “nurture” comes under our control and we can do a great deal to make changes in it. In terms of early development, though, here are some of the things that fall under the category of “nurture”.

- The prenatal environment in which a young body is growing and developing. A mother who takes good care of her health while pregnant with a baby is creating a good environment in which the baby can mature until ready for birth. Eating a balanced diet, staying away from illicit drugs and alcohol, getting enough rest, managing stress well, etc. are all ways a mother creates a “nurturing” environment for optimal development of the baby according to his/her genetic blueprint.

- The postnatal early home environment in which the newborn baby grows and develops. A healthy home environment consists of things like a good diet, physical, emotional, and psychological safety, low stress, adequate sleep, a great deal of physical contact with parents, siblings, lots of different kinds of positive stimulation (toys, music, color, light, etc.).
- The home and school environment of a young child (unconditional love, proper limits, discipline with love but not fear, supportive teachers, positive early friendships, good relationships with siblings and friends who teach the child that s/he will need to cooperate and share, etc.).
- Healthy middle and later school experiences characterized by learning without shaming, learning to play on teams, early romances, social experiences outside the home or school, involvement in religious or other community building kinds of experiences, etc.

So, “nature” is what a new human being is given as a blueprint for development via its genetic makeup while “nurture” is what we choose to provide that baby as it develops. What we choose powerfully affects how a baby’s “nature” gets expressed—how the baby actually turns out. That is, genetics alone aren’t the final word. DNA is not destiny. Genetics are a powerful *first* word...they are the blueprint...but all the important factors of “nurture” that constitute the environment in which that blueprint is used to build the child may be as much as half of what makes us who we are. It makes sense, doesn’t it?

Imagine if you took two identical twins, both having the exact same genetic makeup and separated them at birth. One twin goes to a home full of love, safety, stimulation, education, great nutrition, and so on. The other twin goes to a home or an institution where s/he receives little if no love at all, is not really cared for or cared about, is abused physically or emotionally or sexually (or all three), has little contact with other children, does not go to school or goes to one where there is only more shaming, has poor nutrition, is exposed to violence, alcohol and drug abuse, etc. Now fast forward to the twins at age 10. Will they be different? How about at age 20? Which twin has a better life? Which twin had has the better environment (nurture) in which to fully express all of his or her genetic potential? Clearly, the twin with the nurturing environment has a much greater chance of being physically and emotionally healthier. Some of the genes that might have set both twins up for a certain inherited tendency like obesity, diabetes, or a psychological/mental illness will, likely, be much more *suppressed* in the twin with the nurturing environment but more like to be *expressed* in the twin with the unhealthy environment.

I want to drive the point home, again, that our genes are the *first* but not *final* word on how we turn out. The kind of nurturance we receive (or not) powerfully influences how our genes are expressed in terms of our physical and even psychological traits. We call the genetic or “nature” component of a person his/her “genotype”. We call the constellation of changes in a person resulting from the environment or “nurture” component his/her “phenotype”. Our genotype is the set of genetic instructions for how

we are made. Our phenotype is how these instructions actually got carried out as influenced by all the environmental choices made for us when we were very young. So you can begin to see, I think, that the choices we, as caregivers, make in raising our children are incredibly important and impact them in ways that live on in them for the rest of their lives. In fact, the choices you make for yourself create an ongoing environment that influences how your genes are expressed even though you are no longer a growing child. In some ways, then, you are parenting yourself every day by the daily choices you make. The choices you make in your present moment, each day, impact you not only on that day and in that moment but collectively impact your future. The further truth is that even the choices you think you make only for and about yourself have the power to influence those around you and these choices live on in your children, grandchildren, and beyond. Your choices are powerful! What you choose lives on.

Massive strides have been made over the past sixty years or so in the field of genetics. The shape and content of the DNA molecule was discovered in the 1950's and 50 years later the entire human genetic map (the human genome) was detailed. More recently, many of the factors we have, above, been calling "nurture" or factors that influence someone's "phenotype" have been the subjects of a great deal of research. What we are just beginning to discover is fascinating. This field, devoted to those environmental factors (many products of the early choices we made or ones made for us by our caregivers) that influence the genetic expression of a child is called "epigenetics". In Greek "epi" means "above" or "over". For example, your "epidermis" is the layer of skin above, or over all the other deeper layers. Epigenetics, then, is a field that studies factors lying above and influencing deeper genetic mechanisms. Specifically, epigenetics examines the chemical processes that cause suppression or expression of certain genetic tendencies. Epigenetics is showing us that these chemical processes are influenced by many things in our environment including choices we make about eating, drinking, using drugs, dealing with stress, etc.

The research in epigenetics is showing that events that happen to us, especially very early in our lives, and the choices made by our early caregivers help turn on or off chemical processes that, in turn, essentially turn on or off certain genes we inherited from our parents. Our DNA does not change—remember it is a "given" and there is not much we can do about that. The *activities* of certain genes that form our DNA can change, however, based on the environmental factors we experience or choose. The changes that happen in our genes are like a "cellular memory" and these changes can be passed on, via our DNA, as we produce children. These changes in gene expression are not only something we experience, then, in our own lives but many of these genetic "switches" are passed on to our children and grandchildren, and beyond. Some of these changes may last for even more generations. In a very real way, then, what you choose today lives on in your heirs. Let me cite a very well known example from this research. A team of Swedish and British researchers published two studies, in 2002 and in 2006, in the *European Journal of Human Genetics* that investigated the physiological effects on children of environmental factors and choices made by their parents and grandparents in their own young lives. The researchers collected health data from 164 men and 139

women born in 1920 and their 1,818 grandparents and parents born in 1890 and 1905, respectively.

The first published study examined the impact of overeating/overfeeding. The researchers used historical records of harvest/crop yields and food prices in the Overkalix area in northern Sweden to help them determine when more food might have been available and might have allowed for a subject to eat more than at other times when food was more scarce or, at least, less available due to higher prices. The researchers wanted to know if increased food intake during a child's slow growth period (before the normal prepubertal spike in growth rate and when environmental factors have a larger impact on the body) could increase the risk of death from cardiovascular disease and/or diabetes in that child's descendants. That is, could a parent/grandparent's own food intake during their slow growth period (9-12 years of age in boys and 8-10 in girls) affect their children's or grandchildren's risk of developing these diseases in their later lives? Because the results can be tough to get straight, I will explain them and will describe them in two tables, below. The results showed that when food was *not* readily available during the slow growth period of a boy (who later became a paternal grandfather—the grandfather of his son's children), then the risk of his *male* but not female grandchildren dying from cardiovascular disease or diabetes was *decreased*. That is, if you are male, poor food for your dad's father means decreased risk for you. Conversely, when food was readily available (and, presumably, more was eaten) during the slow growth period of a boy (who later became a paternal grandfather), then the risk of his *male* but not female grandchildren dying from cardiovascular disease or diabetes was *increased*. That is, if you are male, good food for your dad's father means increased risk for you.

An inverse effect existed for grandmothers: if a girl (who later became a paternal grandmother—the grandmother of her son's children) had good access to food when she was a young girl (or even as a fetus or infants), then the risk of her *female* but not male grandchildren dying from cardiovascular disease or diabetes was *increased, in fact doubled!* In other words, if you are female, then good food for your dad's mother means increased risk for you. If, however, the paternal grandmother had poor food intake when she was young, there was no significant effect on either her male or female grandchildren. So, whether you are male or female, poor food for your dad's mother has no impact on your risk. There was no effect of good or poor food availability/consumption for *maternal* grandmothers or grandfathers. It seems the genetic effects are transmitted on the male side of families, not the female. What did the data show in terms of just one generation—mothers/fathers and their children?

Young girls who later became mothers and who had *poor* access to food as a youth had daughters with *decreased* mortality risk due to cardiovascular disease or diabetes. Their sons were not affected one way or the other in terms of risk. On the other hand, mothers with *good* access to food as a youth had daughters with *increased* risk and sons with a possible increased risk (the data approached but did not reach a level of significance). Fathers with *poor* food access as a boy had both sons and daughters with no change in their risk. But, fathers with *good* access to food as boys had daughters, but not sons, with increased risk. A greater availability of food (and, hence, more food choices) may

be associated with increased health problems for later generations in two ways. First, people tend to eat things that are less healthy for them when more food choices are available (resulting in epigenetic changes that show up later). Second, people pass on the tradition/habit of overeating—something that can only happen when there is more food available—to their families and when their children/grandchildren continue this bad habit they experience more food-related health problems later in their own lives.

Ancestor with **Poor** Food as a Youth

Ancestor	Change in Mortality Risk of CV Disease/Diabetes on:			
	Daughter	Son	Granddaughter	Grandson
Mother	<i>Decreased</i>	No Change	N/A	N/A
Father	No Change	No Change	N/A	N/A
Maternal Grandmother	N/A	N/A	No Change	No Change
Maternal Grandfather	N/A	N/A	No Change	No Change
Paternal Grandmother	N/A	N/A	No Change	No Change
Paternal Grandfather	N/A	N/A	No Change	<i>Decreased</i>

Ancestor with **Good** Food as a Youth

Ancestor	Change in Mortality Risk of CV Disease/Diabetes on:			
	Daughter	Son	Granddaughter	Grandson
Mother	<i>Increased</i>	Possible Increase	N/A	N/A
Father	<i>Increased</i>	No Change	N/A	N/A
Maternal Grandmother	N/A	N/A	No Change	No Change
Maternal Grandfather	N/A	N/A	No Change	No Change
Paternal Grandmother	N/A	N/A	<i>Increased X 2</i>	No Change
Paternal Grandfather	N/A	N/A	No Change	<i>Increased</i>

The second study examined the impact of another important early health choice: smoking. The researchers identified 166 fathers out of a much larger pool who reported started smoking before age 11 and compared the growth of these boys' descendents with the descendents of other boys who started smoking later in life. The period of a boy's life before he starts puberty is important because, before puberty, his testicles are not producing sperm. Unlike girls who are born with X-chromosome carrying eggs at birth, boys are more susceptible to epigenetic changes in their Y chromosome (carried by sperm) just as their sperm are starting to form (when boys are around 10 or 11 years old). The study found that the descendents of boys who started smoking early was associated with a greater body mass index (increased body fat) in their *sons* at nine years of age, but not in their daughters at any age. Why is that finding important? For two reasons: (1) because it demonstrates a huge sex-linked epigenetic change, and; (2) because the research in adult obesity (a major health problem and the cause of a huge number of other health problems) shows that obesity in childhood is highly predictive of obesity in adulthood and throughout life. If a choice made by your father when he was a

boy is significantly related to something that influences your life-long health and lifespan as a man, then that is a big deal! No change was noted in body mass index in either the male or the female children of boys who started smoking later in life. In both the first and second study, the results suggest that the effects of at least some of a boy's or girl's environment or choices *when they are young* are passed on to their descendents and that these effects are determined, in part, by the sex of the young child who later becomes a parent/grandparent. In other words, children and grandchildren may inherit problems related to the environment or choices made by their fathers and mothers or their grandfathers and grandmothers, depending on the sex of their ancestor and their own sex.

To sum it up, the Overkalix studies show us how an *environmental* factor (having or not having much food) or a personal *choice* (smoking or not smoking early in life) not only affects the child in his/her young lifetime but also affects his/her descendants. Since eating is not only a matter of having food available to you but also is about what *choices* you make in what you eat, and since smoking is certainly a choice, it can be said that both *environment* and the *choices* young children make impact their later generations. This research suggests that, at least in part, significant things you choose, even very early in your life, live on...so be very careful about the important choices you make.

The epigenetic mechanisms cited for these and other sex-specific effects are sometimes called "parental imprinting" and, as above, represent the "genetic switches" or "cellular memory" that are passed from one generation to another. Currently, estimates are that while only 1-2% of our genes (totaling fewer than 100 distinct genes) are subject to this kind of imprinting, the studies above demonstrate the power of even small changes in a small number of genes. As we have seen, not only our environment in the *womb* but also our *early childhood* environment and the choices our parents make for us or, in some cases, allow us to make have profound impact not only on our lives at that time but carry over as effects for our children and grandchildren. Remember, though, that epigenetic changes are about the *activities* of certain genes and that our DNA is not changed. I do not want to mischaracterize the growing field of epigenetics or its findings as saying that "the ice cream cone I eat today will kill my grandkids and there is no way out for them." It is not that simple or that dire. In fact, the activities of certain genes that may be affected by our environment or choices will fade over time if the environmental pressures change. But, at the same time, we would be foolhardy to ignore the truth that the *environment* in which we grew up, the one we create for our children, and the significant *choices* we make and continue to make over time not only impact us and our children but the effects live on much longer than we might have imagined. We will have to see what the emerging field of epigenetics offers to increase our understanding of how the environmental factors around us and the choices we make affect the expression of certain genes that form the DNA that we inherited from our parents. We don't have to wait, however, to learn more about the other ways our choices are transmitted to or impact those around us, including our children and grandchildren. Let's turn our attention now to two completely different fields of study that describe how our choices live on.

The first field is physics and, more specifically, thermodynamics. You may recall that, back in Law # 8, *Envy cripples you*, I discussed the first law of thermodynamics that says that energy is neither lost nor gained but only changes. I presented the example of the car accident and bending the paper clip to illustrate how mechanical energy is converted to heat and metal bending energy but that the overall energy is not lost...just changed. This same law of conservation of energy applies to you and the choices you make. Let me explain.

Epigenetics suggests that choices you make are not lost but can live on in the expression of certain genes that influence the lives of those who come after you. The law of conservation of energy is saying much the same. The energy that is involved in the choices you make about the activities and behaviors you perform in your life and with or for the lives of others does not disappear but is simply changed into another form that lives on. Simply put: the things you say, do, think, and feel today, if repeated often enough, live on in your children tomorrow. Think back about the “nurture” factors we discussed, above. All of those things a parent consistently provides for a child (or fails to provide) have an impact on that child. If you want to think in terms of energy, the energy used to provide the good things (safety, love, limits, nutrition, socialization) is changed into a sense of love, security, warmth, trust, etc. in the child. The energy used to supply bad things (physical, emotional, or sexual abuse, poor nutrition, exposure to drugs, alcohol, etc.) is changed into a sense of hurt, loss, insecurity, low trust, poor self-image, and poor ability to relate to others in the child. Energy, whether it is for good or ill, has an effect and does not simply go away. It changes people and lives on in them. We choose the kind of energy we put into the system. The system says “whatever you put into me will continue to live”. Be careful, then, about the kind of emotional and psychological energy created by the choices you make. This energy continues to work long after you have forgotten about those choices.

The field of psychology offers yet another way of understanding how what we choose lives on. One very basic principle of psychology, especially in developmental psychology (the study of children as they develop) is modeling. Modeling describes how a child’s behavior or attitude changes as s/he watches and listens to the behavior or attitudes of those around him/her. Children learn by watching and listening and they are watching/listening all the time. If you have children I will bet that there are many times you have heard your child say something or witnessed your child do something that is exactly like what you, yourself, said or did sometime earlier. Children are like very soft clay that is shaped and molded by parental behavior. If you use certain words or expressions (helpful ones or hateful ones) in front of your children don’t be surprised when you hear the very same thing come out of their mouths. If the words, expressions, or behaviors you modeled for your children were helpful and loving ones, then you will be proud when you hear/see your child doing the same thing with others. If the words, expressions, behaviors were things you would be embarrassed for others to see/hear in public then you will be very embarrassed when your child does the same thing publicly. The child is like a sponge: s/he soaks up whatever solution s/he is dipped in and that is what gets squeezed out as the child relates with self and others. This is not only true for children, however.

Modeling is something that all of us humans do constantly throughout our lives. We are always observing the words, actions, and expressed thoughts and feelings of others. In very subtle ways, even when we think we are “too old to be changed” we are being changed by what we see, hear, and experience in the behavior of others. Sometimes I wince when I hear my wife repeat something negative that came out of my mouth many dozens of times before. I cringe when I hear her state a negative attitude that previously hadn’t been hers but was one of mine that I repeatedly expressed. She has observed me and picked up some things that I wish I hadn’t said, done, thought, or felt. I become only aware of how many times I said, did, thought, or felt the negative thing and she heard or saw it when I hear her say or do it, too. When I hear my own negativity in her it seems so much louder and is rather stunning. I really feel such regret for having offered her such negative modeling in the past. She isn’t mimicking me, she is simply being changed by my modeling and demonstrating that. I am being changed by her modeling, too, and demonstrate some of her words, behaviors, and attitudes. The good news is that we both also demonstrate really positive things the other has modeled. When I hear her say or do something positive that I have done in the past, I also see how much my behavior impacts and changes hers. The same is true for her with my behavior. The closer you are to someone and the more you love and respect them, the more their modeling changes you even if you are not aware of it. Modeling can be a very subtle and quiet process that takes place over time and we become aware of how much we are changed by others and have changed them when we see our behavior come out in them or theirs out in us.

Behavioral modeling is another very important way that the choices we make in what we say, do, think, and feel live on in our children, grandchildren, spouses, friends, etc. What you choose for your behavior, over time, shapes the behavior of those around you. How you behave makes a difference in your life for you but also in the lives of those who are close enough to you to be impacted by your choices. If you want to see your spouse, children, grandchildren, friends, and coworkers demonstrate a new behavior or attitude then you will be wise to model it for them over and over. As you perform the new behavior, even if you are doing it not because it is your natural response but one you feel is a more healthy one, you will find that, surprisingly, you are changed, too. The behavior or attitude that might have seemed artificial at first becomes, with repetition, part of you. In a sense, you are modeling for you! Slowly you may then notice that those around you begin to pick up small parts of your behavior or attitude and you can take pride in the fact that you are helping others to act more positively. Change begins with you. It begins with the choices you make on a consistent basis and it continues because the choices you make live on in the behavior, attitudes, self-image, etc. of those around you. You are powerful! Be wise in the choices you make about your words, deeds, thoughts, and feelings because the energy of each of these will change others.

Let’s sum up what we have learned about this 12th law of life: *What you choose lives on.* Whether you want to think about your choices in terms of the emerging field of epigenetics, or older fields like thermodynamics or psychology, the basic truth is the same: what you choose has an impact not only today but in the future. *What you choose lives on.* Epigenetics may be showing us that there are laws of conservation or

preservation of our choices passed on via changes in the expression of our genes which, in turn, are passed onto to our children and so influence them for good or for ill. *What you choose lives on.* The field of thermodynamics has shown that energy is never lost but only transformed. *What you choose lives on.* Psychological modeling teaches that your choices are picked up by and shape the behavior and choices of those around us. *What you choose lives on.* The choices you make today affect you and make lasting changes in your life. These changes set you up to mould and teach your children and others in your world. So the choices of your behavior, attitudes, mindset, thought patterns, images of yourself, your world, and others in it are energies that are not lost nor do they die with you. They mould and shape the behavior, attitudes, thought patterns, self-image, and view of the world/others in all those with whom you have contact. The energy is not lost but only transferred and shows up in some form in the life of your spouse, friends, children, and grandchildren. The currently emerging field of epigenetics may be showing that these changes also take place on the genetic level. If the science bears this out you have even more reason to be very careful about what you choose to say, do, think, and feel today in your private life because you see that your private choices have public consequences. Should epigenetics not uncover a significant genetic impact of your daily choices, there remains no escape from the other physical and psychological laws that hold: the energy of your choices doesn't simply evaporate like ether. The energy of your choices changes you today and by virtue of the closeness of your life to your children and others, changes them. The energy of your choices is not lost, it is only transformed into yet another impact (positive or negative—you decide) on yourself and your children. Be wise and loving about your choices of those things you say, do, think, and feel because *what you choose lives on.* It is a law of life!

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