

# You are what you do

[Business](#)



Look at your hands.

Examine your hair. Assess your taste in music. Where did it all come from? Was it your genetic makeup or your upbringing? The debate has raged on for decades, and just as soon as we believe we have unearthed the definite answer, we learn about new paradigm-shifting information that turns the debate on its head. With the answer to this century-long puzzle, as a global community, we can develop more effective mindsets for individual achievement. Carol Dweck, researcher at Stanford University and author of *Mindset: The Psychology of Success*, asserts that certain mindsets can limit our abilities, while others can encourage them to develop and transform. For instance, “[i]n a fixed mindset, people believe their basic abilities, like their intelligence or talent, they are simply fixed traits,” whereas, in a “growth mindset,” students believe they can develop and grow through personal effort (Dweck).

As both mindsets have their merits, by cracking the secrets of our genetic code, we will gain an understanding of which mindset will prove most effective and most plausible. In fact, recently, through the notable lack of female students entering STEM careers even in today’s modern world, teachers question if we can develop different systems to promote efficient learning (Cavanaugh). Should we separate classrooms to accommodate different mindsets, if there is such a thing? (Cavanaugh). If it is possible to overcome our genetic fate, what sort of behavior does it take? Additionally, discussing the topic of nature vs. nurture will also enable us to better understand the effects of stereotypes and other societal pressures on its victims. Are women so intimidated by gender roles that they dare not

explore a male-dominated field such as engineering? Or perhaps the subconscious conditioning of repeatedly being told that women cannot be good at math has turned women away from the hard sciences? Maybe it is just in our genes.

Instead of trying to achieve universal equality, maybe we should treat certain people differently on account of their genetic predispositions? Maybe stereotypes are genetically true to a certain extent. Today, with so much focus on the astounding ability of miniscule strands of DNA to build our bodies with all their intricacies, we have lost sight of the significant impact of the external environment on our bodies as well. Much of our behavior, physical traits and personality seem to be determined by genetic material passed down to us at birth. However, despite the DNA we inherit, evidence proves that we have the power to change our genetic predispositions through our experiences and external environment. While our external environment primarily affects our behavior and our personality, we do possess some fundamental physical traits that cannot be altered short of a major genetic mutation.

Everyone knows that our genes determine what we look like; DNA lets building proteins know that we need two eyes and mouth and a nose. This sort of basic genetic code is fairly similar between all people. However, the slight variations in skin pigment or eye color are passed down from our ancestors, just as we learn in high school biology. While these characteristics vary from person to person, our external environment cannot affect them. For example, someone whose family is from Africa will not assume the physical characteristics of the Swedes upon moving to Sweden. These <https://assignbuster.com/you-are-what-you-do/>

essential physical traits cannot be altered naturally by any amount of nurture, even though the external environment determines our behavior and personality.

Moreover, while our external environment and experiences can alter what our genetic material initially had in store for us, our genetic information does determine our potential to achieve in a given field. For example, variation in brain matter, or the weight of our grey matter, results from genetic information, and, as greater brain matter is an indicator of greater retention, it can determine greater potential to perform well in tasks that require route memorization (Ridley 89). Additionally, while Malcolm Gladwell's famed ten thousand hour rule, claiming that ten thousand hours of practice will result in mastery of that field, does hold true, opponents argue it is "the average numbers of hours of practice" between different musicians of varying potential (Epstein 22). As David Epstein, senior writer at Sports Illustrated and author of *The Sports Gene*, acknowledges, "You could have two people in any endeavor and one person took [zero] hours and another took 20,000 hours . . .

so there's your average of 10,000 hours, but that tells you nothing about an individual" (qtd. in Manfred). In fact, Guillermo Campitelli and Fernand Gobet, psychologists from Buenos Aires and West London, analyzed over one hundred and three chess players and discovered that on average, it takes about eleven thousand hours to reach the status of a chess master; however, one chess player attained that status in a mere three thousand hours (Epstein 21). This is "beyond slight variation" and might even suggest that there are certain individuals who are chess naturals and receive maximum

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benefit from their practice hours by virtue of their genetic makeup (Gladwell, "Complexity and The Ten-Thousand-Hour Rule). In addition, in the HERITAGE study, also mentioned in Epstein's *The Sports Gene*, Pennington Biomedical Research Center and Louisiana State University evaluated the claim that individuals respond differently to different stimuli, such as changes in diet or exercise (Epstein 80-81).

They specifically chose sedentary families who had not previously encountered any training programs and put them through identical exercise plans. Over a five-month period, the scientists found that about fifteen percent of subjects improved their cardiovascular fitness by about fifty percent, while another fifteen percent barely improved their fitness (Pennington Biomedical Research Center and Louisiana State University).

While analyzing the data, the researchers also found that families usually had similar rates of improvement, even though they were split up during the study, demonstrating that at least some part of trainability was determined by their genetic information (Pennington Biomedical Research Center and Louisiana State University). If some people are more trainable, or can change their habits more easily, than others on account of their genetic material, can others who have been genetically determined to be less trainable ever catch up? In a more scientific vein, other researchers have also attempted to breed mice in order to achieve a breed with a greater work ethic in order to prove that factors such as determination and motivation are genetically inherited (Epstein 233-234). In David Epstein's *The Sports Gene*, he recalls a study conducted by Garland where researchers bred mice that were considered high runners.

Normal mice run about three to four miles a night; high runners run about seven or eight without any external reward (Epstein 233). Through breeding these mice, they found that the children of the high runners sometimes ran up to eleven miles a night, once again with no external rewards (Epstein 233). When the researcher inspected the differences between the high runners and the mediocre mice, they found not only that the hearts of the high runners were larger, but also their brains. Garland speculates, “ Presumably the centers of the brain that deal with motivation and reward have gotten larger, ” and the genetic material involved in forming a brain larger than usual doesn’t simply develop over a few weeks, or a few months, but it must be genetically inherited from the parents (Epstein 234).

Therefore, as opposed to family or environment influence, deterministic factors of potential such as motivation and determination are derived from the genetic material we inherit from our ancestors. Factors such as basic genetic data, such as the kind that builds the essential human body, trainability, and motivation cannot be changed through the external environment, despite your ability to change other predetermined behaviors in your genetic fate.

Yet, despite the extent of the genetic ability our ancestors grant us, it is up to us to channel those abilities into a mastery of our passion. Regardless of genetics, without the right external environment, you cannot prosper. In Malcolm Gladwell’s book, *Outliers*, he reviews certain cases where the external environment determined the level of achievement of one’s potential. Christopher Langan, a man with an IQ of 195 who clearly had the potential to become a theoretical physicist, currently works on his little horse

farm. With the proper development and external influences, he could have attained the high levels of success his genetic material had supposedly predisposed towards (Gladwell, *Outliers* 115). He was born into a family of simple-minded farmers who never wanted anything big in life; they were content to cultivate their little farm (Gladwell, *Outliers* 114).

They never considered sending Langan off to college, or anywhere outside of their small town. With some guidance from others, his life could have turned quite different with a Nobel Prize gracing his mantle instead of a two-bit county fair certificate. On the other hand, as Gladwell describes, Bill Gates experienced the exact opposite effect as a result of his external environment (*Outliers* 55). When he attended Lakeside, Gates was granted access to one of the first mainframe computers available at the time. He also met his future business partner Paul Allen there (Gladwell, *Outliers* 52). This extra time with the computer enabled Bill to get comfortable with its complexities at a young age and granted him the opportunity to earn thousands of hours of practice more than others could (Gladwell, *Outliers* 54).

However, this opportunity was granted to his entire class, meaning that theoretically, any student in that classroom could have switched roles with Gates. However, the conditions of his upbringing, which led him to subscribe to a more logical school of thought, convinced him to take advantage of the opportunity as he fell in love with computer science. This combination of multiple factors from his external environment led him to success and the achievement of his predetermined potential. Yet, no part of this external environment was in Gates' control. While his success can be attributed to his environment, it is all just a game of chance.

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It is merely chance that he was born into his family as opposed to Langan's family. It is merely chance that someone decided to donate a mainframe computer to the Lakeside School and ended up fostering a billionaire tycoon. Despite the genetic similarities between Gates and Langan, their levels of achievement greatly varied, leaving one to cultivate his small farm; the other, a multi-billion dollar business. As the ten-thousand-hour rule proves, significant amounts of practice lead to significant gains in expertise in a certain field. Therefore, one's ability to master a given task is determined directly by their ability to practice said task. In his book *Outliers*, Gladwell analyzes the system of training that Canadian hockey players undergo.

He remarks, [T]he eligibility cutoff for age-class hockey is Jan. 1..... This being Canada, the most hockey crazed country on earth, coaches start to select players for the traveling 'rep' squad — the all-star teams — at the age of nine or ten and of course they are more likely to view as talented the bigger and more coordinated players, who have had the benefit of a critical extra months of maturity. (24) In this case, the hockey players who do have natural ability are overlooked in preference of the older players whose development may seem more visible. Coaches ignore naturally gifted athletes as a result of an arbitrary cut-off date, but the athletes who do benefit from the cut-off go on to receive world-class premier coaching.

However, if the eligibility cutoff was September first instead, the Canadian hockey team would have a completely different starting line up; now the kids who were originally considered the oldest and subjected to elite coaching, would only be mediocre because they would not be as developed as players born on the second. As a result, something as arbitrary as a cut off date

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stunts the growth of many capable young hockey players, affecting their ability to pursue a passion and accomplish the high levels of success in their field. They will no longer be considered for the national team. Likewise, the physical characteristics of our immediate environment can affect our ability to pursue interests by affecting our behavioral patterns. For example, larger areas where an individual is not constricted by their environment, such as spacious automobile seats and wider hallways, can make them feel more powerful and more likely to abuse that power (Mikaluk).

The Association for Psychological Science compiled the results of multiple studies to conclude that larger areas influenced the decisions of their occupants. Andy Yap, visiting professor at the MIT Sloan School of Management and expert on the effects of the social hierarchy on unethical behavior, comments, “[O]ur body postures are incidentally expanded and contracted by our surroundings ... and these environments directly influence the propensity of dishonest behavior in our everyday lives” (Mikaluk). In one study, the scientists manipulated this size of desks and workspaces and found that larger work areas correlated to greater dishonesty on a test (Mikaluk). Likewise, in a video game simulation, drivers grew more reckless as the size of their seat increased. In yet another study, in order to examine the results in “ a real world context”, researchers analyzed the size of the car driver’s seat, and found that a larger seat correlated to a higher volume of parking tickets (Mikaluk). If an extra square foot of desk space can manipulate us enough to display significant changes in the morality of our behavior, children who grow up in cramped spaces will be more likely to abuse their power when placed in wide, open spaces, like the corner office.

Furthermore, beyond the physical shape of one's environment, researcher also found that the color schemes of the immediate environment affect behavior. For example, many restaurants paint their walls red to boost appetite, coaxing us into ordering that extra plate of fries. Lindsey Gruson, writer for the New York Times, refers to an ongoing experiment where children in juvenile detention in San Bernardino, California are placed in a room painted "bubblegum pink" if they express any violent behavior. Paul E. C. Boccumini, the probation department's Director of Clinical Services remarks, "The children tend to relax, stop yelling and banging and often fall asleep within 10 minutes" (Gruson). Despite the proclivity to violence these children may have inherited from their ancestors or learned from a turbulent childhood environment, the bubblegum pink walls allay them into serenity.

If the color of a room can change behavior to make someone more mild-mannered, even someone whose shown predisposition to brutish behavior in the past, the power the external environment holds over us remains self-evident. In a related public psychology study, in an attempt to reduce the number of suicides, the city of London painted the Blackfriar Bridge green. The color green has been considered to make aggravated people more patient and accepting, and this expensive color change not only tested the urban legend but also proved it as fact; while the bridge sported its sprightly green, suicide rates dropped 34% (Gruson). Therefore, if someone grows up in a brightly colored environment, they will be more inclined to happiness due to the color's subconscious effects. Just as ability could be determined by genetic potential, it can also be largely affected by the immediate environment, arbitrary factors such as physical shape, and color. Beyond the

immediate environment and those who surround us, we are also influenced by our own habits.

In a study by K. Anders Ericsson, he determined that it takes approximately ten thousand hours to master an activity, essentially supporting the age-old claim that practice makes perfect. The study gave birth to the ten thousand hour rule, which claims that in order to master anything, one must practice for ten thousand hours (Gladwell, *Outliers* 37). Ericsson performs the study with his two colleagues in the 1990s at the Berlin Academy of Music, a music school reserved for the elite musical prodigies (Gladwell, *Outliers* 38). The academy professors separated their students into three categories: “ world class, good, and okay”(Gladwell, *Outliers* 38). After the splits had formed, the researchers analyzed the practice habits of the students in each category and found that, not only did the students destined to become world class performers practice more, but they practiced a lot more.

“ In fact, by the age of twenty, the elite performers had each totaled ten thousand hours of practice. By contrast, the merely good students had totaled eight thousand hours, and the future music teachers had totaled just over four thousand hours.” (Gladwell, *Outliers* 39) Since this study was conducted at an elite academy, the data explains that once one has reached the high levels of achievement, such as making it into the school, natural ability is no longer enough to propel him to the top. At that level, the students have all achieved equal footing in their ability; all that is left is how they choose to cultivate it. As he and his colleagues analyzed the situation, they soon formulated that ten thousand hours of practice enabled a person

to encounter all of the possible situations and understand how to correctly respond to them.

Gladwell extrapolates, “ There’s a reason the Beatles didn’t give us “ The White Album” when they were teen-agers. And if the surgeon who wants to fuse your spinal cord did some newfangled online accelerated residency, you should probably tell him no” (“ Complexity”). No matter how exhaustive five thousand hours may seem, habitual practice of a given task, specifically ten thousand hours worth, is necessary for mastery despite genetic potential. Likewise, while some may think that interests and passions are hardwired into genetic material, majority of one’s proclivities are not predetermined; rather, they are developed from the sensory input from the external environment. For example, Kendrick Lamar was not born with a passion for rap music, but he developed a taste for it as he grew up surrounded by it in his turbulent neighborhood. A recent study performed by Neil McLachlan, Associate Professor at the Melbourne School of Psychological Sciences, has determined that despite popular opinion, love of music is not developed solely at an early age, but throughout our lives.

McLachlan comments, “ it is a matter of training the brain to hear the sounds,” (“ Love of Music”) Therefore, anytime a brain is open to appreciating different forms of music, it can learn to fall in love with any genre, be it country or electronic (“ Love of Music”). However, interests are just a small part of the way the external environment imprints on a personality; the effect can also be observed in the case of morals and values. With the ever-growing impact of the media, personal values and morals have become carbon copies of those portrayed publicly by famed members of  
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society. Parents make an effort to instill Sesame Street into the minds of their children in order to point them towards the moral lessons portrayed in the show. Just as the external environment determines our interests at an early age, it also builds a basic sense of right and wrong, whether it be benevolent or flawed. Sesame Street works to expose kids at a young age to a fun learning environment in order to create a positive memory of early learning and turns them away from unsatisfactory paths.

Mr. Roger's Neighborhood taught multiple generations to solve problems themselves and take care of their community and each other with the help of puppets. Yet, not everyone watches PBS their entire childhoods and some kids do not ever receive the opportunity to learn these values; instead, their external environment subjects them to witnessing selfish acts by celebrities or hate crimes against people of a different race. In fact, this development of a sense of right and wrong does not simply happen during the early years, but continues on well into adolescence. As teenagers grow up, they crave their fifteen minutes of fame; they watch renowned politicians, celebrities, famous actors and singers, and even religious leaders plummet during a dramatic downfall that inevitably stems from immoral acts. Most teenagers do not know much about the best mayors in the country, but know about the one that consumes drugs in Toronto.

The media's heavy focus on the immorality of the nation has warped the basic sense of right and wrong in the developing minds of the current generation. If a basic sense of right and wrong were prewritten within the letters of the genetic code, each generation would not face a struggle of discovering one for themselves. No one would try to demolish buildings to

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terrorize an innocent people. No one would amble into a school and start shooting at students. No one would enslave another member of the human race.

However, the world still does not exist as a utopia, and these indisputable acts of evil stem from a lack of understanding of right and wrong. Morals, values, interests, and passions all develop as a response to the external environment, despite the commonly held belief that they are genetically predetermined. The nature-nurture debate may never settle itself, as the two are highly interdependent; without one, the other would not exist. The epigenome supports this view and gives both the environment and genetic material the credit they are due for shaping the human mind and body. On a general view, epigenetics supports the view that we can change our genetic material through our external environment and teach our DNA to behave differently in different situations.

Epigenetics is “nature via nurture”, so our genetic material is actually determined by our external environment and our ancestors. Randy Jirtle, a professor of radiation oncology at Duke University conducted an experiment concerning mice who expressed the agouti gene, making the mice “prone to cancer and diabetes” and turning them into “ravenous”, yellow creatures (Watters). Jirtle then used these mice to breed others, but during the pregnancy stage, he fed the mothers a “methyl-rich” diet. (Watters). Watters noted that the resulting child mice “were slender and mousy brown. Moreover, they did not display their parents’ susceptibility to cancer and diabetes and lived to a spry old age.

The effects of the agouti gene had been virtually erased.... thanks to their methyl-rich pregnancy diet, they had added to the gene a chemical switch that dimmed the gene's deleterious effects." The research gave way to epigenetics as the researchers proceed with their breeding and found that mating mice who did not express the agouti gene produced another generations that was completely free of the its injurious effects. The diet consumed during the mother's pregnancy has "switched off" the expression of the agouti gene in not only its immediate descendants, but in all of its future descendants (Watters). As the scientists looked to find an explanation, they compared the genetics of the mice to the human body to achieve more realistic and relevant information. The researchers cooked up an explanation: A human liver cell contains the same DNA as a brain cell, yet somehow it knows to code only those proteins needed for the functioning of the liver.

Those instructions are found not in the letters of the DNA itself but on it, in an array of chemical markers and switches, known collectively as the epigenome, that lie along the length of the double helix. These epigenetic switches and markers in turn help switch on or off the expression of particular genes. (Watters) As a result, scientists understood the capability of genetic material changing in the response to the environment, bringing together nurturists and naturists to achieve common peace. Sure, we all have two hands, the products of centuries of evolution and genetics tinkering. We all have different hair, bequeathed to us by our ancestors.

Our interests all vary, and that was determined by epigenetics, as our genetic material and our environment molded us from a lump of clay into the <https://assignbuster.com/you-are-what-you-do/>

people we are now. No two people are the same, no matter how similar they may seem; the infinite combinations of experiences and genetic material ensure it. But that is just the way it should be.