

## Review Article on “Importance of Behavioral Genetics on the Psychological Development of the Person”

### Abstract

The study of behavioral genetics holds great promise for revealing the genetic and environmental factors that impact both typical and abnormal behavior. The ideas and techniques that have been used to identifying the constituent parts of complex human characteristics serve as the foundation for behavioral-genetic procedures. To analyze the genetic component of these complex features, new tools are now accessible. We can start investigating how certain genes interact with environmental variables in development as they are discovered. Important factors to take into account include how we interpret these results, how we pose fresh questions, how we celebrate the information, and how we make use of or abuse this knowledge. These problems are prevalent in all human research fields, but they are particularly evident in human behavioral genetics. In this article, we review the results of studies and theories, explore their implications for our knowledge of adult personality development, and highlight outstanding issues that require more investigation.

**Keywords:** Behavioral genetics, environment factors of personality, genetic, impact of environment on personality, impact of genetic factors on personality development, personality development, psychological development

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### Introduction

As believed by various scientists, the genotype of the person influences almost all the traits of a person. However, the point of interest or question is that “Are the genes, only the triggering factor for the expression of various traits or are there any other factors which work in conjugation with genes and influence its action.” The answer to this question can be explained by “behavioral genetic studies,” which aim at understanding the genetic and environmental influences on behavior.

In this article, the topic of interest picked to consider is the “importance of behavioral genetics on the psychological development of a person.” This article provides you a “bird’s eye point of view” of the effect of genotype on personality and how the environment shows its effect on the expression of a particular gene.

As Cole and Bruce described, “from the moment of conception it grows. ‘Whole,’ having within itself possibilities of developing into a dynamic, active, walking,

talking, thinking, feeling human being, provided that the environment furnishes the raw materials and the appropriate conditions of stimulation.”<sup>[1]</sup> This perspective clearly suggests that the environment triggers or suppresses the action of genes under certain circumstances.

### Genes versus Environment

It is a well-established fact that genes are the basis for the expression of any trait in living organisms. Talking more concisely, the development of psychological personality in human beings, there are various debates so far regarding the extent of impact or the contribution of genes and the environment. Although the impact of genes is likely on the person, it is often shaded and/or masked by various environmental factors that they are surrounded with.

According to the “first law” of genetics, “Each human conduct feature is heritable.” Researchers in psychology, sociology, political science, economics, and industry have proven that all conduct studied by their disciplines is inherited by the validity of this first law and using statistical methods. In addition, they say in several

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**Ethics committee approval:** There is no need for ethics committee approval.

instances that unique genes have been found that play a part.<sup>[2]</sup> This is interpreted as the source for the development of personality of the person coming from genes-the genetic factors. Further, the quality of the scientific methodology used to justify these arguments will decide the various genetic conduct as a science.

It is also interesting to know that as per Kandler and Papendick, genetic variations are no longer contentious, as they are reflecting the differences in all individual characteristics such as personality traits, which account for above 40%–50% of diversity due to genetic sources.<sup>[3]</sup> The various tests of personality traits provide sufficient data to prove the heritability estimates stand way higher. The combined observations of multiple family genetics and molecular genetics studies reveal minor effects of genes that communicate with each other in a complicated way and with the numerous environmental factors leading to its contribution to the genetic basis of personality traits. An important point here to be noted is that the genetic variations caused by the individual interactions led to the creation of individual traits within the environmental opportunities.

As cited above, there is various scientific evidence which strongly supports the influence of environmental variables on the development of psychological personality. Data from adoption research suggests that the shared environment affects the cognitive ability of children at an early point of life, but this effect eventually deteriorates as hereditary factors grow in their developmental impact. This indicates that upbringing and other family influences such as financial status, and educational background have an effect on the success of younger children in intelligence quotient assessment but are shortlisted. Biology, i.e. genetic factors are crucial to human variation in the cognitive skills in adulthood rather than nurturing them.<sup>[4]</sup> However, a word of caution is justified. The findings involve children residing in the usual anticipated spectrum. The exploitation or neglect of children has very genuine harmful long-term effects.

## **The Various Psychological Theories Explaining the Personality of the Person**

About what personality means, psychologists disagree with one another. The word “personality,” which most people think refers to as a theatrical mask used by Roman players in Greek tragedies, was first used in Latin. The masks (personas) used by these historical Roman actors were used to create a character or fake look.<sup>[5]</sup> Naturally, this superficial description of personality is inadequate. The word “personality,” as used by psychologists, refers to more than just the roles that people perform.

There is not a specific definition of personality that all personality theorists agree on, though. Since they disagreed on the essence of mankind and each viewed personality

from a different perspective, they really developed original and important theories.

All theories are a mirror of the individual backgrounds, early life experiences, philosophies of life, interpersonal interactions, and distinct worldviews of their writers. Because each observer’s frame of reference affects how they interpret data, there may be a wide range of ideas.<sup>[5]</sup> Divergent theories can still be helpful, though. A theory’s utility is determined by its capacity to produce research and to describe research data as well as other observations, not by its applicability to common sense or by its conformity with other theories.

## **Viewpoints in Personality Theories**

Psychologist’s attempt explaining how people’s ideas, feelings, motivations, and behaviors function. There are five kinds of perspectives:

### **Psychodynamic theories**

Since Freud, psychodynamic and then more broadly psychoanalytic methods have emphasized the significance of early events and parental interactions as forces influencing personality development.<sup>[5]</sup> This viewpoint holds that the unconscious mind and motivations are far more potent than conscious awareness. As a primary method of treatment for mental disease and neurosis, psychoanalysis typically employed dream interpretation to elucidate unconscious ideas, feelings, and impulses. Following Freud, these thinkers shifted their focus from the significance of sexuality to social and cultural causes.

### **Humanistic-existential theories**

The main tenet of the humanistic approach – currently referred to as “positive psychology” – is that individuals seek for purpose, development, well-being, happiness, and psychological health. Happiness and good emotional states promote prosocial conduct and psychological well-being.<sup>[5]</sup> Studying these adaptively beneficial features of human behavior offers just as much insight into human nature as understanding the problematic ones. Existential theorists believe that in addition to our desire for meaning, we are also motivated by unpleasant events that can lead to psychological development. These experiences include failing, facing mortality, losing a loved one, and experiencing anxiety.

### **Dispositional theories**

Dispositional theorists contend that the distinctive and enduring propensities to act in certain ways make up the core of our personality. The term “trait” refers to these particular tendencies, including such extraversion or anxiousness.<sup>[5]</sup> The discipline has come to the consensus that there are five main characteristic dimensions in individual personality. Certain actions are made more probable in some persons by traits.

## Theories of biological evolution

Individual variations in fundamental genetic, epigenetic, and neurological systems have an impact on behavior, thoughts, feelings, and personality. Some persons have distinctive characteristics, attitudes, and modes of thought because of variations in their chromosomes and central nervous systems (neurochemistry and brain structures). Human intellect, conduct, and personality have been influenced by processes of evolution (natural and sexual selection) over millions of years since they are founded on developed brain systems. Environment, body, and brain interact and develop together, and this viewpoint stresses that what we experience psychologically is more important than everything else, therefore, nature (biological) and nurture interact to shape what we think, feel, and do.<sup>[5]</sup>

## Theories of learning-(social) cognition

Focus solely on conduct, not hypothetical situations, if you want to comprehend behavior and internal, imperceptible states including emotions, motivations, urges, and ideas.

All actions are taught by association and/or their results (whether it is reinforced or punished). To mold desired behaviors, we must first comprehend and then create the circumstances that lead to those specific actions.<sup>[5]</sup>

## Sexual Psychology and Personality

Eysenck was the first to seriously examine the connections between sexuality and personality (1976). We may try to frame our knowledge of the connections between sexual psychology and personality as a result of sexual selection by following the advice provided from an evolutionary perspective.<sup>[6]</sup> According to the parental investment theory (Trivers, 1972), human females would invest more resources in raising their children, whereas males will prioritize mating.

## Genes and Well-Being

Happiness is no exception to the rule that genetic variables tend to play a significant effect in the majority of human characteristics.<sup>[7]</sup> Heritability estimates generally vary from 0.30 to 0.50.<sup>[8-13]</sup> Various conceptualizations of well-being. A meta-analysis of 13 research from 7 distinct nations with more than 30,000 twins found a weighted average heritability of 0.40 for happiness.<sup>[14]</sup> Further supporting the theory that there is no set heredity for well-being, this meta-analysis discovered significant variation in heritability estimates among studies, above and above that predicted by random fluctuations. Instead, the proportion of variation explained by hereditary variables differs among cultures, age groups, and the specific well-being phenomena addressed. The average heritability for well-being was 0.36 according to a separate meta-analysis by Bartels, which used somewhat separate inclusion criteria, samples, and analytical methodology.<sup>[15]</sup>

There is evidence of genetic impacts that are particular to the various components<sup>[13,16]</sup> as well as genetic factors that are common to the many well-being components, such as subjective happiness, life satisfaction, subjective well-being, and psychological well-being. The genetic impacts on social support<sup>[17]</sup> and, in reverse, depression<sup>[18]</sup> and internalizing disorders,<sup>[19-21]</sup> are partially connected to the genetic influences on well-being. Longitudinal studies have furthermore demonstrated that genetic variables are largely responsible for the stability in well-being, with heritability for the stable variation, or dispositional well-being, predicted in the range of 70%–90%.<sup>[22,23]</sup> In contrast, the primary cause of variance in well-being is environmental factors.<sup>[23,24]</sup>

Despite abundant evidence of significant genetic implications on welfare generally, results on life satisfaction are inconsistent, with heritability estimations varying from 0 to 0.59.<sup>[12,21,24-27]</sup> The meta-analysis by Bartels<sup>[15]</sup> particularly looked at the heritability of life satisfaction and found that it had an average heritability of 0.32. Thus, compared to other aspects of well-being, life satisfaction seems to be considerably more impacted by environmental circumstances. Furthermore, although rates of life satisfaction often only minimally change with age, genetic, and environmental influences may also moderate with age. Given that life satisfaction is an assessment of one's life so far, older age presumably entails more life experiences, challenges, and victories than younger age, indicating greater environmental than genetic influences.

## Environmental Factors

### Societal influences on personality

When an individual has group experiences and contacts with others, his or her personality is influenced by others in a give-and-take relationship that may be positive or negative depending on the associations, in which he or she maintains. Every person has a unique position and status in society.

Toward instance, younger people in our culture are expected to show respect for seniors. Numerous additional social elements, such as the environment, social interactions with others, family, and media, shape people's personalities on a daily basis. It is possible to state that anything that comes into touch with a person's social life has an impact on their personality and determines whether they have a good or poor personality.

### Culture's influences on personality

An individual's personality is influenced by both material and nonmaterial culture. People who are immersed in their culture either deliberately or unintentionally embrace the qualities and behave appropriately. An individual's personality and actions are determined by the culture of



the society, in which they live, and they are expected to behave accordingly. When someone conforms to all of the social standards of a society, a good personality is formed, but when someone does not, an abnormal or bad personality is formed. Thus, a person adjusts to and develops their personality in the society, in which they seek happiness.

### Geographical Setting

In addition, a person's physical surroundings affect their personality. Land, rivers, hills, mountains, forests, plains, and other environmental aspects can influence a person's personality and whether it is strong or weak, good, or negative. A person's physical environment, to which they belong, determines all of their thoughts, feelings, opinions, attitudes, routines, and behavior as well as their physical makeup. As an illustration, rural and urban populations differ in terms of body type, physique, color, and health. These individuals grow into a range of personalities as a result of their varied environments. Contrary to rural residents who lack these amenities, city dwellers have facilities and sophisticated lifestyles that help sensitive bodies and minds grow.

### Situational Factors of Personality

A person's personality development is also entirely influenced by situational conditions. Situational personality traits change in response to social circumstances. Every individual encounters a variety of circumstances during their lives that provide them the opportunity to alter their behavior. For instance, a teacher could be harsh and strict with pupils but not with his or her own family. An officer could act differently among subordinates than they would with friends. Personality is not the outcome of just one thing; each component contributes equally to its creation. When a person interacts with their surroundings, culture, society, parents, friends, and random strangers, their behavior and personality come into being.

According to behavioral genetics research, environment influences personality, yet siblings are not identical. This has been taken as a challenge to the notion that raising children and family gatherings are significant. Reviewing behavioral genetics and developmental psychology research, the following conclusions are drawn: due to methodological, measurement, and outcome variable limitations, sibling dissimilarity may be overestimated; however, developmental psychology conceptualizes the family as involving interactions between the person and their environment, and personality as being multidetermined, so sibling dissimilarity is not surprising; additionally, objective and subjective family experiences differ for siblings due to age differences, birth order, genetics, gender, and idiosyncrasies; and finally, sibling dissimilarity is not surprising.

## Introduction and Definition of the Multidimensional Personality Questionnaire

The Multidimensional Personality Questionnaire (MPQ) is a self-report questionnaire used to measure personality using 11 lower-order ("main") trait scales that load onto three higher-order variables that represent temperamental characteristics. The entire edition of the inventory has 276 items; there are also shorter versions with standard and simplified wordings (155 and 157, respectively). The MPQ only accepts "true" or "false" responses for each question. Along with this, the inventory includes validity scores that evaluate social desirability, acquiescence versus "Nay-saying," and random response. The MPQ has been especially helpful in elucidating the connections between psychological dispositions related to temperament and both normal and unhelpful conduct.<sup>[28]</sup>

The MPQ is a normal-range personality test that evaluates a variety of fundamental characteristics such as emotional sensitivity and motivation, interpersonal style, and more. To estimate higher-order broad dimensions such as positive emotionality, negative emotionality, and constraint, these trait scores can be differently weighted. Broad trait scores, on the other hand, must be almost entirely administered since they must be calculated using proprietary regression algorithms.<sup>[29]</sup> Through the development of condensed item-based estimates of these weighted scores, we intended to improve measurement effectiveness. Classical test theory and item response theory methodologies were utilized to choose five items from each primary trait scale that approximated the weighted estimates while still retaining the breadth of MPQ content coverage to parsimoniously define and separate the broad qualities.<sup>[29]</sup>

### Conclusion

Every person's behavioral and psychological traits – including intelligence, personality, and susceptibility to mental illness – are influenced by genes. These traits can have an impact on both parents and children within a family.

There are three major findings. First, throughout the adult life span, there is a strong and largely stable genetic basis for individual differences in personality; second, environmental influences become more significant and contribute to increasing rank-order stability of personality traits; and third, both genetic and nonshared environmental influences influence both the stability and change of personality traits. For future research, (i) Identification of quantifiable environmental elements and (ii) to depict the interaction of hereditary and environmental factors on personality stability and variation throughout adulthood will supposedly be critical subjects.

### Patient informed consent

There is no need for patient informed consent.

## Ethics committee approval

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- Bhavyaja Chakrala (100%): Design the research, data collection and analyses and wrote the whole manuscript.

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