

Current Perception of Nature vs. Nurture Debate among Students at the University of Medicine of Tirana

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Abstract

Introduction: One topic still debated in the scientific community and beyond is the influence of genetic or environmental factors on an individual's behavior. The essence of this debate lies in discussing the role and impact of genetic and environmental factors on an individual's behavior, known otherwise as the nature-nurture debate.

In a survey-type study, we sought to assess perceptions of the *nature-nurture* argument among first-year technical medical sciences students at the University of Tirana, Albania.

Materials and Methods: A cross-sectional study was conducted using a survey-type questionnaire on a sample of 100 first-year medical university students at the Faculty of Medical Technical Sciences, University of Medicine in Tirana, in April 2023. The questionnaire was based on six specific questions underlying the potential impact of genetic (nature) and environmental factors (nurture) influencing certain types of behavior, such as personality, sexual orientation, and intelligence—or psycho-emotional stress.

Results: According to the analysis of the data collected on our sample of students, 84.9% of them perceive that acquired factors (nurture) influence more than innate factors (nature) in forming personality traits, whereas 15.1% perceive the opposite. After adjusting for potential confounders, environmental factors remained statistically significant compared with genetic factors (odds ratio 1.42, 95% CI 0.65 to 0.97).

Conclusion: Genetic and sociological research has shown that genetics, life experiences, and *environmental factors* influence the expression of key traits in shaping behavior. In this study, we confirm the perception of this interaction among medical students. For some aspects of behavior, students are less likely to believe in genetic explanations and more likely to believe in environmental causes.

Keywords: nature, nurture, environmental factors, psycho-emotional stress, behavior.

Introduction

Throughout the history of humanity, society at large has attempted to explain the roots of our social and personal behaviors and what triggers our endless actions throughout

life. The infamous nature vs. nurture debate is at the heart of this debate for answers. The essence of this debate is the role and impact of genetic and environmental factors on an individual's behavior and other psychological attributes throughout his lifetime. Over the last 50 years or so, with the genetic revolution in human biology and continuous scientific progress at large, both *nature* and *nurture* have been considered integral parts of social human behaviors, and the interplay between them is of utmost importance in the development of human psychological traits. However, the debate on which factor, either nature or nurture, *has the upper hand* is still ongoing in human society based on different individual perspectives and opinions. Various unique upbringings, levels of education on the subject, and current social trends in the age of digital culture influence these perceptions.

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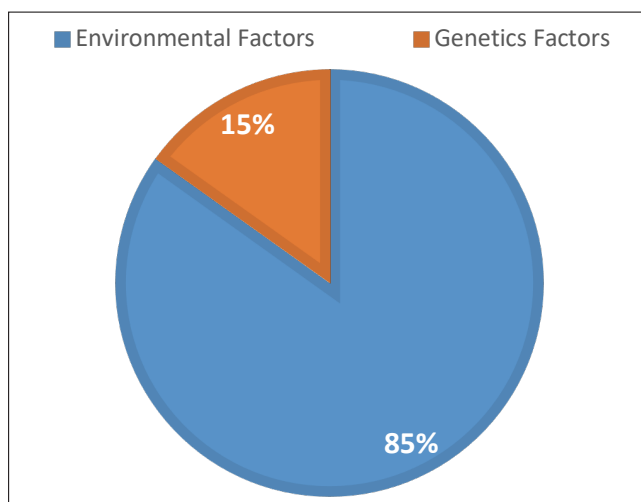


Material and Methods

A cross-sectional study was conducted using a survey-type questionnaire on 100 first-year medical university students at the Faculty of Medical Technical Sciences, University of Medicine in Tirana, in April 2023. The questionnaire was based on six specific questions underlying the potential impact of genetic (nature) and environmental factors (nurture) influencing certain types of behavior, such as *personality, sexual orientation, intelligence, or psycho-emotional stress*. The students that participated in the study were asked to respond to six questions in Google form about what they thought was more influential, nature (genetics) or nurture (environment), on different behavior and psychological traits.

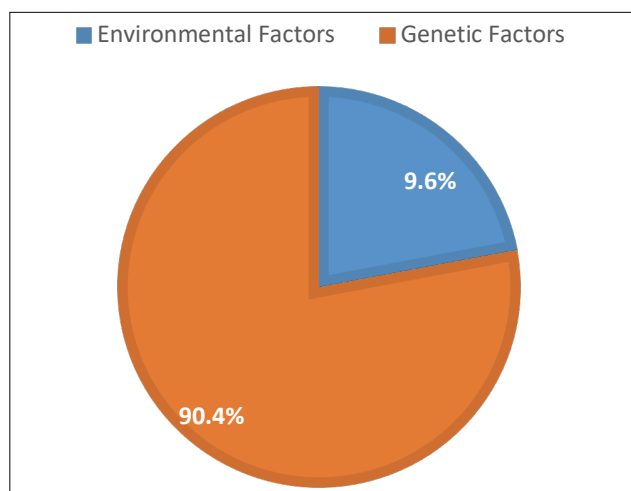
Results:

According to the analysis of the data collected on our sample of students and using simple descriptive statistics, 84.9% of them perceive that acquired factors (nurture) influence more than innate factors (nature) in the formation of personality traits, whereas 15.1% perceive the opposite as indicated in the pie graph below (Graph 1).



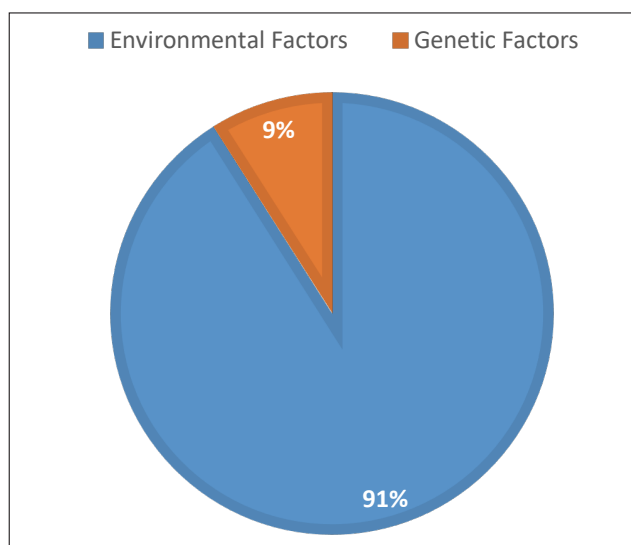
Graph 1- Question 1: Which factor has the most influence on the formation of personality

In the case of awareness of the impact of *nature vs nurture* on behavior, 90.4% perceived that *nurture* plays a significant role, compared to 9.6% of students who believed that current behavior is due to *nature*, as represented by the graph below. (Graph 2).



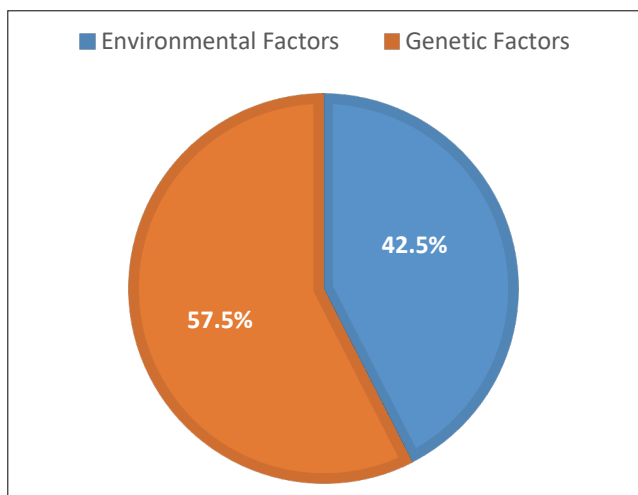
Graph 2. Question 2: Which factor influences the formation of behavior most?

To the third question on “Which factor affects IQ (intelligence) more?”, 91% perceive that *nature* plays a significant role, and 9% think that intelligence is *nurtured*, as shown by the graph below (Graph 3).



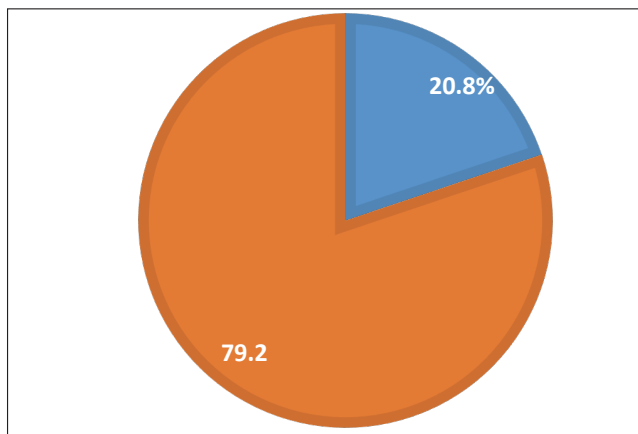
Graph 3. Question 3: Which factor affects IQ (intelligence) more?

On the fourth question: “Which factor affects sexual orientation more?” 57.5 % of students emphasize *innate factors/nature*, whereas 42.5% think that *acquired factors/nurture* affect sexual orientation. (Graph 4).



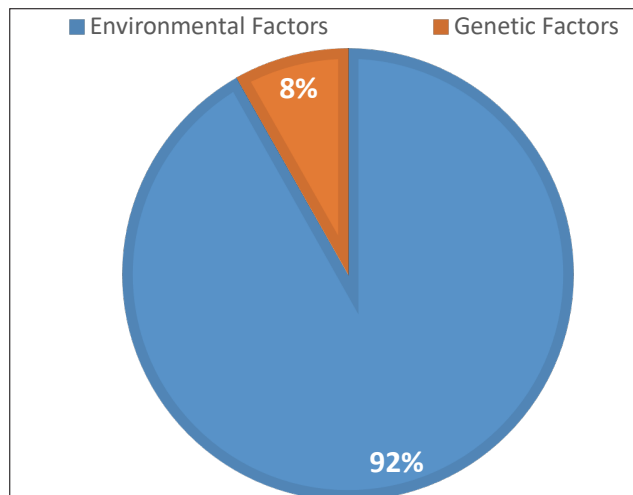
Graph 4. Question 4: Which factor affects sexual orientation more?

On the fifth question: “Which factor affects psycho-emotional stress more?”, students perceive psycho-emotional stress as more related to acquired factors than innate ones (79.2% vs. 20.8%). (Graph 5).



Graph 5. Question 5: Which factor affects psycho-emotional stress more?

The sixth question: “Which factor has more influence on the general formation of a person?” the most significant influence is perceived by students as the product of the interaction of genetic and environmental factors, where the genetic factor plays the leading role with 72.6% against the ecological factor with 27.4%. For all the data samples of 100 students who asked the questions above, we analyzed, using Excel 2010, all the percentages and significant statistical factors. After adjusting for potential confounders, environmental factors or *nurture* remained statistically substantial compared with genetic factors or *nature* with an odds ratio of 1.42, 95% CI 0.65 to 0.97. (Graph 6).



Graph 6. Question 6: Which factor has more influence on the general formation of a person?

Discussion:

Genetic and sociological research has shown that *genetics*, *life experiences*, and *environmental factors*, so in general, both *nature and nurture* influence the expression of significant characteristics in shaping one’s behavior [2]. In this study, we confirmed the perception of this interplay in students of the medical field. On certain behavioral aspects, students were less likely to believe in genetic explanations and more likely to believe in environmental ones. This reflects the social media trends that increasingly *overemphasize* the power of thoughts, discipline, and other so-called *self-help techniques* on behavior characteristics. The latest research shows that many aspects of behavior traits have a strong genetic predisposition to how they develop. This has been referred to as *the nature of nurture concept* by the scientific community. Anyhow, over the last 50 years or so, with the genetic revolution in human biology and with continuous scientific progress at large, both *nature* and *nurture* have been considered integral parts of social and psychological human behaviors, and the interplay between them is of uttermost importance in the development of human psychological traits. The association of the personality disorder spectrum with genetic factors, according to classical studies with monozygotic twins, indicates a heritability of these disorders ranging from 30 to 80%. In monozygotic twins (*100% identical DNA*), if one twin develops a personality disorder, the other twin has an average range from 20-50% chance of also developing the disorder [1]. This is true even if they are grown separately. In fraternal twins, who share only 50% of their DNA, when one twin develops a personality disorder, the other has only an average 1 in 8 (12.5%) chance of developing the condition.

Meanwhile, when we talk about environmental factors or *nurture*, some psychosocial stressors that cause personality disorders are such as socio-economic status, abusive experiences while growing up, psychological and physical violence from the family environment, and

bullying [11]. Meanwhile, according to recent studies [3, 11], aggressive behavior is very much influenced by changes in the genes of the serotonergic circuit and early life experiences. Current studies [6, 14] aim to investigate the contribution of inherited *SNP polymorphisms* in some genomic regions that are part of the complex mechanisms of neurotransmitters such as *serotonin*, *dopamine*, *GABA*, and *noradrenaline*.

In another aim of an Indian University, 1065 school students between 12 and 16 were recruited. A questionnaire consisting of questions related to the influence of various environmental factors such as parents' education, profession, income, and physical activity of students was addressed compared to *IQ scores* were divided into three groups: In this study, it was observed that environmental factors such as residence, physical activity, family income, parent's education, and father's profession had an impact on children's IQ. Children who live in cities ($p < 0.001$), children who have physical activity more than 5 hours/week ($p < 0.001$), children with parents who have a postgraduate or graduate level of education ($p < 0.001$), children whose father who have a professional job ($p < 0.001$), and those with higher family income ($p < 0.001$) were more likely to have high IQ. Therefore, a child must be provided with an optimal environment to develop their full genetic potential.

The association between genes and sexual behavior has been investigated several times. One such study with a vast population sample set out to find out how genes relate to same-sex sexual behavior [15]. The study team analyzed the genomes of 477,522, almost five hundred thousand people in the United Kingdom and the United States who had only had same-sex interactions. They compared that data set with the genomes of 358,426, almost four hundred thousand people in the same countries who had only had encounters with the opposite sex. The team found that genes associated with homosexual behavior are also found in heterosexual people. Common genetic elements found in both groups were shown to increase the predisposition to have more sexual partners. The argument drawn from the data has led the authors to speculate that genes may have less to do with sexual preference and more to do with sexual desire/will.

One environmental factor that significantly impacts emotional states is the excessive use of social networks such as *Facebook*, *Instagram*, *Tok-tok*, etc. Recent studies [9] have shown that social networks can create addiction, deprive quality sleep, affect daily activities, and create social isolation in terms of interpersonal relationships. With all the literature and scientific research, some of which just mentioned, the eternal debate on which factor, *either nature or nurture*, has the upper hand in human psychological development is still an ongoing argument among the scientific community and society. As illustrated in our student sample, people have different opinions based on different perspectives and perceptions around this subject. These perceptions are very much influenced by various individual upbringings, level of education on the subject, and current social trends in the age of digital culture.

Conclusion:

Genetic and sociological research has shown that *genetics*, *life experiences*, and *environmental factors* influence the expression of key traits in shaping behavior. In this study, we confirm the perception of this interaction among medical students. For some aspects of behavior, students are less likely to believe in genetic explanations and more likely to believe in environmental causes. This reflects a social media trend emphasizing the power of thinking and strong will over behavioral traits. As we know from several decades of research, many aspects of behavioral traits have a strong genetic predisposition to how they develop.

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Conflict of Interest Statement: The authors declare no conflict of interest.

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