



# The Role of Heredity, Environment and Education in Personality Development

## KEYWORDS

heredity, environment, education.

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**ABSTRACT** Native capacities are not permanent, invariable elements. They change constantly under the influence of the environment, and of education in particular. However, if the conditions for this training are not created, the entire picture of development will suffer. This research aimed to achieve two objectives: first, providing the big picture of the results obtained from the answers given by students to a questionnaire on their knowledge of the role played by heredity-environment-education in personality development and second, presenting some priorities and directions of development to broaden the students' knowledge of this topic. This approach demonstrates that the shaping of students' personality is greatly influenced by the interaction between genetic and environmental factors, thus the controlled provision of proximal environmental influences and distal environmental influences lead to: better school results and better everyday behaviour; making the most of one's abilities.

## INTRODUCTION

The article focuses on some considerations on students' knowledge of the role played by heredity-environment-education in personality development. The investigative element of the research consisted of a questionnaire which aimed to capture the students' knowledge about the contribution of heredity-environment-education to the development of students between the ages of 14/15 and 18/19 years from upper-secondary schools in Oradea, Romania. It is important to mention that this stage of human development was chosen because, on the one hand, it is the stage during which the most intense and complex psychological changes take place (an intense personality development), and, on the other hand, because adolescence is the time when young people leave the tutelary and school type society and begin their complex and active integration in social life. According to Blandul (2014), adolescence represents the individual's inclusion in the adults' society.

The focus was on collecting data about the knowledge of the heredity-environment-education relationship, as well as on the interest in acquiring more information on this relationship and also on psychogenetics. The sample of the research included 10 pairs of twins, six monozygotic and four dizygotic, along with their classmates, from several upper-secondary schools from Oradea, Romania. The monozygotic twins included in the sample are raised together, in their families.

## DISCUSSIONS OF RESULTS

The questionnaires were given to all the students in the classes with twins. The first item of the questionnaire referred to *the influence of the genetic component and of the environment on the physical and mental development*. The information collected through this item shows the role of heredity and of the physical and social environment in both the physical and mental development. The answers show that the students are familiar with the terms mentioned in this item. The few exceptions were related to confusions over the meaning of mutagenic factor. In the respondents' opinion, expressed in percentage terms, the role of heredity is more important in the physical and mental development.

The second item focused on answers concerning qualita-

tive hereditary traits (eye colour, hair colour etc.) and less on quantitative ones (personality traits).

In the third item, the students were asked to give YES and NO choices about the possibility to change the traits listed in the item. 95% of the respondents stated that the traits could be changed, while 5% chose NO for 3h and 3i.

Regarding the inheritable diseases (item four), the majority of answers refer to cardiovascular diseases, diabetes, metabolic disorders (80%). Other answers refer to vision problems (myopia, hypermetropia), schizophrenia, daltonism etc. (20%). This 20% also includes tuberculosis, which is a wrong answer, as this is an infectious disease.

Connected with items two and three, the fifth one assessed knowledge about the role of heredity in achieving certain performances. The majority of examples were taken from the world of sports, football in particular, and music.

The sixth item referred to the share of inborn capacities and that of acquired knowledge in the process of learning at school. The answers show a great share (up to 60%) of heredity in the case of the following school subjects: Music, Physical Training, Fine Arts, Languages. As for some other subjects, such as Literature, Grammar, Computing, Biology, Mathematics, heredity got a share of 30-40%, which means that in the respondents' opinion education plays a key role in acquiring knowledge in these fields.

The seventh item, connected to item six, asked the respondents to give examples of good and poor results and try to assess the share of heredity and of the environmental factors in achieving them. The good results mentioned included getting prizes in school contests, sports competitions. 70% of the respondents claim that good results are achieved when there is an increased interest in learning, when extra time is allotted to study, when school attendance is very good, when students' work is checked by teachers and parents, when there is motivation coming both from teachers and parents. 25% believe that, besides those mentioned above, good results are obtained when there is a good cooperation between school and family. 5% of the subjects also believe that the students' material motivation by their parents, as well as chance, the help of

divinity etc. also matter. The information collected through this item was, in general, expressed in figures, assessments in percentages (on a conventional scale). Trying to mark on an axis from 0-100% the share of heredity and that of the environmental factors, the majority of the subjects chose 40-45% for environmental factors and the remaining 55-60% was attributed to the hereditary component.

The last item, which was an optional one, reveals a preference for genetic counselling (also psychopedagogical advice), for genetic determinism in intelligence, memory, behaviour and temperament, for genetic applications in psychology, for the influence of the environment in shaping personality.

By discussing the answers given, referring to the heredity-environment-education relationship, the goal was to provide a picture of the opinions of some students at the age of adolescence, a period characterised by the crystallisation of perception of the world and life, and by an intense personality development, as it is the age when life and behaviour models are chosen.

### PRIORITIES AND DIRECTIONS OF DEVELOPMENT

A comparative analysis of the information obtained from the answers given to the items of the questionnaire helps to outline some priorities and directions of development that would optimise the adolescents' education process. Relying on psychogenetic potential, education aims to activate it and thus speed up intellectual development, while taking into account the rhythm of each individual. This means that the education process should be differentiated and individualised (Helm, 2015).

The revalorisation of the form teacher's education activity, in cooperation with all teachers, and of topic systems under the generic title "*The factors that shape and develop human personality*", would lead to deepening the knowledge of the three factors that shape human personality. In addition, inviting psychologists, educationalists, geneticists, sociologists, doctors to school activities would help clarify not well understood aspects, concerns and mistakes that are specific to this age category. Giving parents questionnaires about the heredity-environment-education relationship would have a particular relevance. The success of any such initiative depends to a great extent on using standardised personality questionnaires/reports with a strong test-retest reliability, longitudinal stability, a factorial structure that has been validated on various populations and cultures, as well as reasonable correlations between self-assessments and assessments performed by other observers (K rner&Warwas, 2015).

The biopsychosocial differences, both at general and individual levels, require the differentiated treatment of students in the education process (Rita & Martin-Dunlop, 2014). The level and amount of information they are required to acquire, the number and the complexity of exercises they have to do in order to develop intellectual and practical abilities, the intensity and duration of the work required to perform the curricular and extracurricular activities should be adjusted to each age category and to each separate individual (Frumos, 2008, p.192).

Optimum sociocultural learning conditions, both at school and at home, the use of activating methods, as well as differentiated teaching, can accelerate the rhythm of intellectual development, can speed up transition to the next psychogenetic stage. On the other hand, unfavourable so-

ciocultural, socioemotional etc. conditions, as well as an inappropriate education, can slow down the development of human personality.

It seems that the school subject *Health Education* has become particularly relevant since it was included in the school curriculum 2-3 years ago. The advantage of including this subject in the curriculum comes from its complex and unitary approach to some aspects of the heredity-environment-education relationship, as it is a multidisciplinary subject. The creation of specific training modules, as well as of specific chapters within the traditional school subjects (for example, interdisciplinary modules: The factors that shape and develop personality or Elements of psychogenetic within subjects such as Biology, Pedagogy, Psychology) has the advantage of not overloading the students' school timetable; in order to carry out activities within these modules, teachers should either benefit from an interdisciplinary training or work in groups.

Including in the syllabuses of certain subjects, such as Biology, Pedagogy, Psychology etc., education messages with information contents specific to the factors that shape and develop human personality would result in developing a comprehensive view on the heredity-environment-education relationship and in capitalisation on all situations in which education is provided.

Knowing and taking into account students' age and individual particularities is a professional responsibility for each educator that teaches about the reality they will act on later, just as choosing the most appropriate education methods for personality development is (Bradea, 2014, p.65).

### CONCLUSIONS

*Personality* aspects can be noticeable and unnoticeable, and people can be aware or unaware of them. The essential question "*To what extent and how are the genetic component and the environmental factors present in the students' personality?*" continues to be a hard one to answer. There is no definite answer to it yet. *What should an upper-secondary student – an adolescent – know about the role of genotype-phenotype correlation in personality development?*

Psychogenetics explains the genotype-environment interaction and it shows that the genotype sets only the limits within which the phenotype occurs, while the various forms of the latter one are conditioned by the nature of environmental factors. "The improvement in living conditions was the environmental factor which made the strength of the genotype consisting of the constellation of genes involved in establishing certain traits to express itself as fully as possible, and to push the phenotype to its extreme reaction limits" (L. Gavril , 2011, p. 219). The continuous process of personality shaping is the result of the constant interaction between genetic factors and environmental ones. Personality is built from biological, behavioural, cognitive, and emotional structures that are interacting permanently. The term "educability" is commonly used by educational psychologists to describe the potential of human development under the influence of environmental or education factors.

The contribution of heredity, environment and education varies from one individual to another, and even from one mental function to another. None of them has an absolute role. It should not be forgotten that taking into account

age particularities, as well as the psychogenetic characteristics of intellectual functionality, does not mean the education's subordination to these particularities.

As a conclusion, during an individual's lifetime what belongs to heredity can express itself at different age stages, or can remain latent over the whole life in the absence of an activating factor. School success, expressed in a variety of results, shows that it depends on intellectual factors (intelligence, abilities), on non-intellectual ones (motivation, diligence), as well as on external conditions (teaching method etc.). Education takes the leading role, as it activates and guides the genetic potential, while weakening or containing its negative effects. Education creates and valorises the environment, and provides the individual with the opportunity for self-education.

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