

Psychological Testing at Entrance Exam at “Dunarea de Jos” University of Galati, Romania

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Abstract: The university admission test comes after the high school graduation exam - the baccalaureate. The baccalaureate results of each candidate must be known by the university admissions committee. They provide information on the degree of intelligence, the skills acquired up to this date, but also the presence of inclinations and skills indispensable to the fulfillment of professional aspirations. The university entrance exam should not be focused only on quantity and quality of knowledge. Besides that, one of the objectives of this exam must be to test the interest in completing the studies through the university level for which he opts, but also the candidate's skills that “offer” him the productive and satisfying course of the entire cycle of higher education, even the perspective of future achievements. To realize that three psychological investigation tools of candidates (tests) can be used, necessary to highlight: - personality profile of the candidate; - interest profile, motivational; - aptitude profile. The paper proposes a new admission methodology: the data collected through the proposed tests and correlated with the high school graduation data can accept the candidates, as admitted to the profile they opted for, or can redirect them to choose the right path.

Keywords: Aptitudes profile, Early school leaving, Interest profile, Personality profile, University entrance.

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Introduction

In recent years, “Dunarea de Jos” University of Galati, from Romania, has faced a high early school leaving rate. This problem was identified also in Europe (Ross & Leathwood, 2013, Brunello & Paola, 2014) and in Africa or Asia (Momo et al., 2019). There are many factors that influenced the early school leaving: family, single parent-household, parents education, region of residence (Momo et al., 2019), the teachers, the colleagues, the school

(González-Rodríguez et al., 2019), motivational factors or student abilities (Fan & Wolters, 2014). In Romanian universities various projects have been implemented to reduce this dropout rate. These included some tutoring activities for students at risk of early school leaving, but also various extracurricular activities, for example visits to prominent companies in our country. The main objective was as students to have a direct contact with the economic environment and to make an idea of the place of work after graduation (ROSE). However, the rate was very little reduced.

Among the reasons cited by the students, one was the wrong choice of field at the university entrance exam, because in their first year of study they realized that their future job does not suit them. This is an important factor because it is a strong relation between career and life satisfaction (Hagmaier et al., 2018). In Figure 1 are presented some factors that influence the life satisfaction (Hyo Sung Cha & Mi Young Kwon, 2022), (Yoo & Lee, 2022), (Gulzar & Iqbal 2022), (Schmitt & Pulakos, 1985), (Huebner, 2004). So, scientific researches in the psychological field demonstrate that the level of satisfaction in life is determined by a conglomerate of interconnected aspects between the personal life and professional one. Therefore, satisfaction in the professional life is a component of the wellbeing that we all are seeking in our lives.



Figure 1. Life Satisfaction Factors

In Romania, now, most students choose their field of study based on the level of the job's remuneration and/or based on the level of demand on the labor market for the respective profession. But a decision taken on such considerations is not always the right one. This creates a series of problems related to the student's involvement and commitment during the educational act, related to the successful completion of their studies.

The present paper proposes a new university admission methodology: in addition to domain knowledge, the candidate will be psychologically tested for personality profile, interest profile and aptitude profile. In this way the changes of a wrong choice are reduced, the early school leaving rate is reduced and of course the life satisfaction level is increased. The direction and height of the aspiration for those admitted determines the interest for the

activity carried out for their professional benefit, the motivation to learn and research in more detail in the chosen field, a certain balance between their intellectual structure and the demands that the activity profile raises towards heads, as well as a certain satisfaction. Otherwise, they will feel an inner conflict, in fact, between each person's being, the possibilities of achieving the aspiration and the future job, a conflict triggering some known inappropriate behaviors, a negative stamp on the potential of the faculty, in general, on university teaching staff, especially.

Higher Education Admission Methods

In general, the universities select their students based on their high school knowledge (Silva et al., 2020). In some European countries, an important weight in the admission exam is given to aspects related to the student's personality – motivational essay, recommendations letters from high school teachers in France for example, or extracurricular interests, volunteering activities in London etc. We believe that the entrance exam should not look once again at the quantity and quality of knowledge, as is currently practiced at some faculties. In Romania, in 2022, for example at the faculty of medicine and pharmacy, the candidates are tested at biology (60 questions) and organic chemistry (40 questions).

The respective faculty does not take into account the psychological aspects of the candidates' personality necessary to complete the school course and then the professional one. Some faculties (Biology, Physics, Chemistry, etc.) understood this aspect, renouncing the written tests, and proceeded accordingly to the application-based competition, where only the baccalaureate score counts for 100%. Others, also based on the files, practice the system composed of 50% national exam score + 50% multi-year score. But there is also the situation when these values from certain tests of this exam are taken into account. There are also faculties, especially those with a vocational profile, which give appreciation to the skills targeted by that profile: motor skills in the case of the physical education and sports faculty, artistic skills in the case of the arts faculties, socio-human skills in the case of the Orthodox theological faculty, the pastoral section, or pedagogical skills in the case of those who embrace a teaching career.

In Table 1 are summarized the admission procedure in Romanian faculties.

Table 1. Criteria Taken into Account in The Admission Procedure in Romanian Faculties

Admission Procedure	Medicine	Architecture	Engineering
		Arts Physical Education and Sport	Physics Chemistry
Knowledges examination	√	√	-
High School Diploma	-	-	√
Specific skills	-	√	-

The New Proposed Admission Methodology

Since the professional and social future of a student depends on the quality and functions of the university admission exam, the measurement, precision of the data are the necessary coordinates to highlight the relationship between the level of professional aspirations and the real possibilities of achieving these desires. Thus, we believe that the main objective of this exam must be to test the interest in completing the studies through the university level for which he opts, but also the candidate skills that ensure the productive and satisfactory course of the entire cycle of higher education, even the perspective of achievements future. Another important aspect is the personality profile, thus more comprehensively defining the profile of each candidate. We propose a new university admission methodology represented schematic in Figure 2.

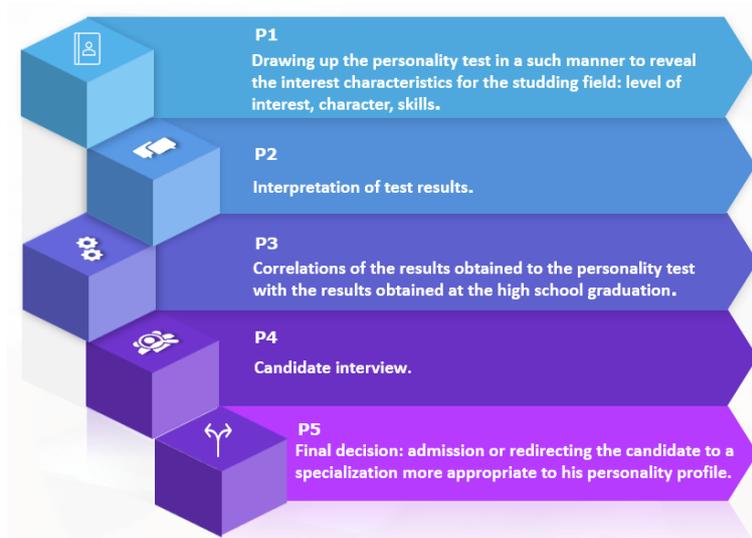


Figure 2. The New University Admission Methodology

In the above figure, the personality test is a generic term, because we consider three psychological investigation tools that would be used, necessary to highlight (von Humboldt et al., 2021):

- the personality profile of the candidate;
- the interest profile, motivational;
- the aptitude profile. (Stan, 2016)

Regarding the first aspect, the *personality profile*, the content of the test must highlight the native predispositions of the candidate, but also other dominant characteristics that give the personality type of the subject, together ensuring well-being during studies, implicitly during future job. These characteristics are placed in pairs: "extraversion and introversion", "sensory and intuitive function", "reflective and affective function", "judicial and perceptive function" (Hedges, 2013). After receiving a list of the specific traits of each pair of characteristics, placed on two columns, that is, four pairs of characteristics - eight columns of specific traits, the subject reads

them, feels that he finds himself or that he resonates with certain statements that for him are more strongly imprinted and, after a moment of self-talk, in silence, chooses a term from each pair, proceeding to underline, circle or rewrite it in the required space, as determined by the exam board or the test makers. Thus, out of the eight characteristics, the subject takes into account only four, the ones that actually define his individuality. These, taken together, give the exact personality type of each candidate.

Following the theories and research undertaken by C. G. Jung, Switzerland, Katharine Myers from the United States and Patricia Hedges from Great Britain resulted in a number of sixteen personality types: Extraverted-Intuitive-Affective-Judgmental; introverted-Intuitive-Affective-Judgmental; extraverted-intuitive-affective-perceptive; introverted-Intuitive-Affective-Perceptive; extraverted-Intuitive-Reflexive-Judgmental; introverted-Intuitive-Reflexive-Judgmental; Extraverted-Intuitive-Reflexive-Perceptive; introverted-Intuitive-Reflexive-Perceptive; Extraverted-Sensory-Reflexive-Judgmental; introverted-Sensory-Reflexive-Judgmental; introverted-Sensory-Affective-Judgmental; Extraverted-Sensory-Reflexive-Perceptive; introverted-Sensory-Reflexive-Perceptive; extraverted-Sensory-Affective-Perceptive; introverted-Sensory-Affective-Perceptive (Hedges, 2013). Considering these types of personality, the characterization of the chosen one is provided, and the candidate has the opportunity to confirm the authenticity of the made choice. After that, both the candidate and the examining teacher/psychologist consult the list of professions corresponding to the respective personality type. The candidate expresses his option for the future job. The examiner gives his consent or declares his disagreement for the selection of the candidate; in case of disagreement proceeding to reorient him to the profession that suits him; in the case of agreement, the subject receives a score that is added to the calculation of the admission score. Career guidance, as well as the tests application and the results evaluation, will be done by the members of the Career Counseling and Guidance Center from university center.

The interest profile must indicate the attraction that the candidate feels for the job he is aiming for, the pleasure in studying the subjects that ensure his qualification, the attention he is able and willing to give to solving the problems of any topics, especially the in-depth ones, as well as the achievement of a brilliant career, the ability to respond to a large request that is suitable for personal objectives, the passion for research in the field for which he opts, the innovative desire to bring improvements to the technological process or managerial quality (Di Fabio & Maree, 2013). We believe that the test to establish the interest profile must have the content of the items related to the work within the studies, but also within the future career, with short-term and long-term personal objectives, with personality traits, with the environment in which he will work after graduating from college. Consulting the list of occupations that they would have after the entire university course, as well as the specific activities of each occupation, is more than necessary to be able to clarify the agreement between interest, personality and the work that will be performed.

Enrollment of candidates in technical faculties partly highlights their interest profile. These people are especially attracted to the practical side of things, to the idea of knowing about the composition and operation of some

installations or machines, to the exploration of economic fields, but also to the preference of being a businessman. However, these things must be confirmed by the interest test. It is a necessity to know the interest and we believe that this aspect should be a criterion in the entrance exam because the selection of candidates will be more effective, for those admitted it is a stimulus in activating the will to learn and prepare more thoroughly for each course, laboratory, exam. It is also a reason to know as many of the secrets of the job for which he labors during the years of study. The quality of the expression of interest for the type of faculty and for the type of preferred activity will be quantified in some way, through a grade, qualification, score, measurement useful in determining the situation of success or failure, to be admitted or rejected.

The aptitude profile reveals the maximum behavior of a person, informing about the aptitudes that any candidate has (Stan, 2016). Identifying those skills that are indispensable in higher education, as well as in the career, is a difficult task for the university admission committee. In Romania there is the "Psychological Test Battery of Cognitive Aptitudes (BTPAG, 2003), developed by those experts in psychology and computer science included in the COGNITROM group (COGNITROM), which provides test models.

The special skills are each person qualities which favors his success in certain fields of activity. Some skills should candidates possess, especially in the profile of our faculty are summarized in Figure 3 (Hotca): learning aptitude, embodied by analytical reasoning, analogical transfer, flexibility of categorization, cognitive inhibition and short-term memory, working memory, cognitive interference, focused attention; numerical aptitude which concerns mathematical calculation and mathematical reasoning; shape perception ability with the elements shape constancy, detail perception, complex perceptual analysis; reaction speed ability highlighted by simple reaction time, choice reaction time, memory access reaction time, decision-making ability. Our faculty is a technical one. The evaluation of these tests ends with the grade, the score that highlights the level of these skills. Knowing the skills that the candidates have is, in our opinion, an imperative because they express the quality of human resources, the students, whose potential will be worked with throughout the years of study, effectively or ineffectively.

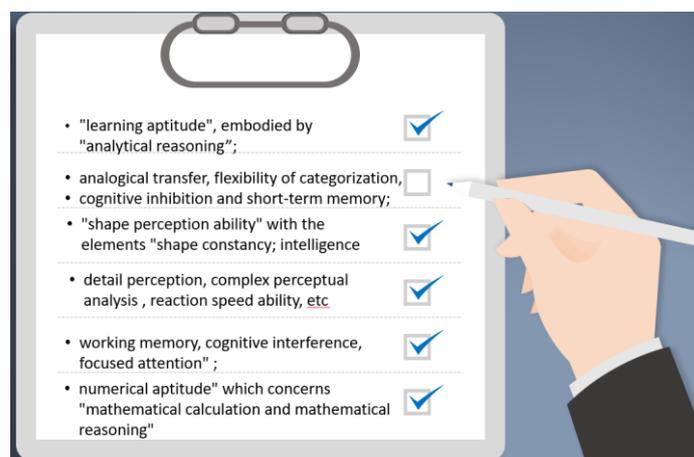


Figure 3. Skills That Candidates to Our Profile Have to Posses

The aptitude tests, like the other personality and interest tests, are constructed and applied by the members of the Career Counseling and Guidance Center together with the members of the examination board. This collaboration adds value to the exam session. The data collected through the proposed tests and correlated with the high school graduation scores, concretized in an average or admitted/rejected formula can accept the subjects, as admitted to the profile they opted for, or can redirect them to choose the right path. Here you can also see the correlation between the options for an occupation provided by the three tests or, on the contrary, the confusion in which the candidate finds himself.

Conclusion

The paper proposes a new university admission methodology which involves psychological testing of students using 3 instruments: personality, aptitudes, and interest. The results from these will be correlated with the scores from the national exam and will guide the candidate towards a job that suits him and for which he has certain skills. In this way, the early school leaving is reduced, the student's life satisfaction is increased because they study and practice what they love. So, the direction and height of aspiration for those admitted candidates determines:

- a) love for the activity carried out for their professional benefit;
- b) motivation for learning and researching the chosen field in more detail;
- c) a certain balance between their intellectual structure, the possibilities of achievement and the demands raised by the activity profile towards which they are heading;
- d) as well as a certain satisfaction.

As a result, the faculty gains in the quality of the education process, in the ways of involvement in all kinds of research activities and in student competitions, in offering promotions of engineers capable of replacing generations of future retirees. Otherwise, they will feel an inner conflict, in fact between each person's being, the possibilities of achieving the aspiration and the future job, a conflict triggering known inappropriate behaviors (sporadic participation in classes, self-study or out of obligation towards parents, attitudes of rejection of information or disobedience to the education system, culminating in the abandonment of studies), a negative stamp on the potential of the faculty, in general, on university teaching staff, in particular. And why not, implicitly, to the family.

The student, the future engineer (in our case), also benefits, because he chooses exactly the path and service he wants, a professional life that suits him. He becomes aware of his qualities and more realistic with himself. And it is known that when what you do harmonizes with your predispositions and sensitivities, you achieve the desired well-being and performance, with a positive effect on spirit, health, work and the community in a wider sense.

References

- Brunello, G., & Paola, M. D. (2014). The costs of early school leaving in Europe. *IZA Journal of Labor Policy*, 3(1), 22. <https://doi.org/10.1186/2193-9004-3-22>
- BTPAG. (2003). *Psychological Test Battery of Cognitive Aptitudes*. ASCR, Cluj-Napoca, Romania.
- COGNITROM. (n.d.). <https://www.cognitrom.ro/>
- Di Fabio, A., & Maree, J. G. (2013). Effectiveness of the career interest profile. *Journal of Employment Counseling*, 50(3), 110–123. <https://doi.org/10.1002/j.2161-1920.2013.00030.x>
- Fan, W., & Wolters, C. A. (2014). School motivation and high school dropout: The mediating role of educational expectation. *British Journal of Educational Psychology*, 84(1), 22–39. <https://doi.org/10.1111/bjep.12002>
- González-Rodríguez, D., Vieira, M.-J., & Vidal, J. (2019). Factors that influence early school leaving: A comprehensive model. *Educational Research*, 61(2), 214–230. <https://doi.org/10.1080/00131881.2019.1596034>
- Gulzar , S. & Iqbal , A. (2022). Attachment, interpersonal relations anxiety and life satisfaction in university students. *Clinical and Counselling Psychology Review* , 4 (1) , 1 – 1 5. <https://doi.org/10.32350/ccpr.41.01>. (n.d.).
- Hagmaier, T., Abele, A. E., & Goebel, K. (2018). How do career satisfaction and life satisfaction associate? *Journal of Managerial Psychology*, 33(2), 142–160. <https://doi.org/10.1108/JMP-09-2017-0326>
- Hedges, P. (2013). *Personality and temperament/ Guide to psychological types*,. Publishing House Humanitas, Bucharest, Romania.
- Hotca, M. A. (n.d.). *Temperament, character, special abilities and intelligence – the essential elements of human personality*. <https://www.juridice.ro/essentials/1863/temperamentul-caracterul-aptitudinile-speciale-si-inteligenta-elementele-esentiale-ale-personalitatii-omului>
- Huebner, E. S. (2004). Research on Assessment of Life Satisfaction of Children and Adolescents. *Social Indicators Research*, 66(1), 3–33. <https://doi.org/10.1023/B:SOCI.0000007497.57754.e3>
- Hyo Sung Cha & Mi Young Kwon. (2022). Changes in Factors Affecting the Life Satisfaction of Multicultural Adolescents in Korea. *Iranian Journal of Public Health*, 51(11). <https://doi.org/10.18502/ijph.v51i11.11168>
- Momo, M. S. M., Cabus, S. J., De Witte, K., & Groot, W. (2019). A systematic review of the literature on the causes of early school leaving in Africa and Asia. *Review of Education*, 7(3), 496–522. <https://doi.org/10.1002/rev3.3134>
- ROSE, <https://www.rose-edu.ro/romania-secondary-education-project/>
- Ross, A., & Leathwood, C. (2013). Problematising Early School Leaving. *European Journal of Education*, 48(3), 405–418. <https://doi.org/10.1111/ejed.12038>
- Schmitt, N., & Pulakos, E. D. (1985). Predicting Job Satisfaction from Life Satisfaction: Is There a General Satisfaction Factor? *International Journal of Psychology*, 20(2), 155–167. <https://doi.org/10.1080/00207598508247729>
- Silva, P. L., Nunes, L. C., Seabra, C., Balcao Reis, A., & Alves, M. (2020). Student selection and performance in higher education: Admission exams vs. High school scores. *Education Economics*, 28(5), 437–454.

<https://doi.org/10.1080/09645292.2020.1782846>

Stan, A. (2016). *Treatise on research methodology in psychology*, „Alexandru Ioan Cuza” University Press, Iași, Romania.

von Humboldt, S., Rolo, J., & Leal, I. (2021). Psychological Assessment. In D. Gu & M. E. Dupre (Eds.), *Encyclopedia of Gerontology and Population Aging* (pp. 4023–4030). Springer International Publishing.
https://doi.org/10.1007/978-3-030-22009-9_84

Yoo, J.-J., & Lee, S. E. (2022). Factors influencing life satisfaction: Role of physical fitness, body satisfaction, and shopping. *Family and Consumer Sciences Research Journal*, n/a(n/a).
<https://doi.org/10.1111/fcsr.12461>